A Phonological and Grammatical Description of the Pangu Language
of the Rafi Local Government Area, Niger State, Nigeria

Language autonym = [tɔrjɨ:]  
ISO 639-3 code = [png]

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Contents

Acknowledgements from James MacDonell 7
Acknowledgements from Steve Dettweiler 7
Introduction 9
Part I - Phonology 12

1. Word Patterns 12
   1.1. Noun Class Markers 12
   1.2. Root Word Patterns 13

2. Syllable Patterns 15
   2.1. CV Syllable Pattern 15
   2.2. Restricted CCV Syllable Pattern 15
   2.3. An Ambiguous CVC Syllable Pattern 15
   2.4. Restricted N and hN Syllable Patterns 16

3. Suspect Sounds and Sequences 18
   3.1. Suspect Sounds 18
   3.2. Suspect Sequences 18
   3.3. Consonant Clusters 19
   3.4. Nasalised and Lengthened Vowels 21
   3.5. Vowel Sequences 21

4. Phonetic Charts 22
   4.1. Consonant Phones 22
   4.2. Vowel Phones 23

5. Phonetic Sounds in Contrast 24
   5.1. Consonants 24
   5.2. Vowels 29

6. Rules 33
   6.1. Distribution of Allophones 33
   6.1.1. Nasalised Vowels as Allophones of Oral Vowels 33
   6.1.2. Palatalisation Rules 34
   6.1.3. Labialisation Rules 35
   6.2. Phonological Processes 36
   6.2.1. Nasal Assimilation 36
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.5. Subject Focus</td>
<td>66</td>
</tr>
<tr>
<td>2.3.6. Using a 3rd Person Plural Pronominal to Convey Passive Meaning</td>
<td>67</td>
</tr>
<tr>
<td>2.4. Possessive Pronouns</td>
<td>67</td>
</tr>
<tr>
<td>2.5. Diminutive and Augmentative Noun Forms</td>
<td>69</td>
</tr>
<tr>
<td>2.6. Noun Modifiers</td>
<td>71</td>
</tr>
<tr>
<td>2.6.1. Use of Descriptive Nouns</td>
<td>71</td>
</tr>
<tr>
<td>2.6.2. Use of Quantifiers and Numerals</td>
<td>71</td>
</tr>
<tr>
<td>2.6.3. Use of Demonstratives</td>
<td>72</td>
</tr>
<tr>
<td>2.6.4. Predicate Use of Adjectives and Other Descriptive Strategies</td>
<td>73</td>
</tr>
<tr>
<td>2.7. Associative Marker ᵇ</td>
<td>74</td>
</tr>
<tr>
<td>2.7.1. Used in an Associative Noun Phrase</td>
<td>74</td>
</tr>
<tr>
<td>2.7.2. Used in Introducing a Relative Clause</td>
<td>76</td>
</tr>
<tr>
<td>2.8. Preposition Morpheme ᵃ</td>
<td>76</td>
</tr>
<tr>
<td>3. Verbs and Verb Phrases</td>
<td>80</td>
</tr>
<tr>
<td>3.1. Verb Classes</td>
<td>80</td>
</tr>
<tr>
<td>3.1.1. Class A Verbs</td>
<td>80</td>
</tr>
<tr>
<td>3.1.2. Class Ax Verbs</td>
<td>82</td>
</tr>
<tr>
<td>3.1.3. Class B Verbs</td>
<td>83</td>
</tr>
<tr>
<td>3.1.4. Class C Verbs</td>
<td>84</td>
</tr>
<tr>
<td>3.1.5. Monosyllabic Verbs</td>
<td>85</td>
</tr>
<tr>
<td>3.1.6. Irregular Verbs</td>
<td>87</td>
</tr>
<tr>
<td>3.1.7. Contrasting Tone Patterns in Perfective Forms</td>
<td>89</td>
</tr>
<tr>
<td>3.2. Imperatives</td>
<td>89</td>
</tr>
<tr>
<td>3.3. Verbal Nouns</td>
<td>92</td>
</tr>
<tr>
<td>3.4. The Verb Phrase and Suffixes on the Verb Root</td>
<td>93</td>
</tr>
<tr>
<td>3.4.1. Benefactive Marker</td>
<td>94</td>
</tr>
<tr>
<td>3.4.2. Pluractional Marker ᵇ</td>
<td>96</td>
</tr>
<tr>
<td>3.4.3. Pluractional Benefactive Marking</td>
<td>98</td>
</tr>
<tr>
<td>3.4.4. Negative Marker</td>
<td>99</td>
</tr>
<tr>
<td>3.4.5. Causatives</td>
<td>100</td>
</tr>
<tr>
<td>3.5. Prefixes on the Verb Root</td>
<td>101</td>
</tr>
<tr>
<td>3.5.1. Verbal Prefix Slots</td>
<td>102</td>
</tr>
<tr>
<td>3.5.2. Reflexive Marker ᵃ</td>
<td>105</td>
</tr>
<tr>
<td>3.5.3. Auxiliary Verb Prefixes</td>
<td>105</td>
</tr>
</tbody>
</table>
3.5.4. Copular Verbs
3.6. Adverbs
3.7. Expressing Non-Declarative Modalities

4. Observations on Single-Clause and Multi-Clause Syntax

4.1. Conjunctions
4.1.1. Noun Phrase Conjunction
4.1.2. Verb Phrase Conjunction
4.1.3. Other Conjunctions
4.1.4. A Two-Clause Construction Using Proclitic ku

4.2. Comparative Clauses

4.3. Negation of Clauses with Standard Verbs

4.4. Negation of Clauses with Copular Verbs
4.4.1. Predications of Description
4.4.2. Predications of Existence, Location and Possession

4.5. Clauses in Interrogative Mood
4.6. Clauses Constructed with Focus Copula tā
4.6.1. Simple Clauses with tā as Sole Predicator
4.6.2. Combined Clauses with tā

5. Summary - Themes & Further Research
5.1. Themes
5.2. Questions for Further Research

Appendix 1 – Testing Nasalisation
Appendix 2 – Abbreviations

References
Table 9 - Locative Preposition with Various Class Prefixes .................................................. 78
Table 10 - Class A Verbs ......................................................................................................... 81
Table 11 - Class Ax Verbs ....................................................................................................... 82
Table 12 - Class B verbs ........................................................................................................... 83
Table 13 - Class C verbs .......................................................................................................... 85
Table 14 – Class D Verbs ........................................................................................................ 86
Table 15 - Class E Verbs ......................................................................................................... 86
Table 16 - Class F Verbs .......................................................................................................... 87
Table 17 - Irregular Verbs ....................................................................................................... 88
Table 18 - The Verb Phrase .................................................................................................... 94
Table 19 - Benefactive Marking ............................................................................................. 94
Table 20 - Benefactive Marking on Class Ax Verbs ................................................................. 95
Table 21 - Pluractional Marking ............................................................................................. 96
Table 22 - Pluractional Marking on Class Ax Verbs ............................................................... 98
Table 23 - Pluractional Benefactive Marking ........................................................................ 98
Table 24 - Verbal Prefixes ..................................................................................................... 101

Figure 1 - Subclassification of Kainji Languages (Blench 2018: 64) .................................. 10
Figure 2 - Subclassification of Shiroro Languages (Blench 2018: 95) ................................. 10
Figure 3 - Nasalisation Leftward Spread Rule ........................................................................ 39
Figure 4 - Observed Pairs of Pangu Noun Class Markers .................................................... 51
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Introduction

The Pangu people live mainly in Rafi Local Government Area, Niger State. Their main town is Pangu Gari and this is where the chief of all the Pangu people is resident. There are many other Pangu settlements in the area south of Kagara and north of Zungeru. As a result of migration, there are also quite a number of settlements outside the traditional heartland (surrounded by other ethnic groups).

*The Ethnologue* uses the name Pangu (code: [png], and the ISO 639-3 standard has recently been changed from the older spelling "Pongu" ¹). Pangu is the Hausa name for the people and their language and will be used throughout this paper. It is not derogatory in any way and Pangu people themselves use the term freely with speakers of other languages. However, in their own language, they refer to themselves as [ã̃̄ɾjĩ̃́ː] and their language as [tə̃̃́ɾjĩ̃́ː] (currently written in the orthography as <Arin> and <Ta̱rin> respectively).

There are nine clans or families, though historically there were only seven (two families having divided). These are:

- <Acçegeɾe> [àtʃɛgiɛˈɾjɛ]
- <Acaamajere> [àtʃãːmádʒɛˈɾjɛ]
- <Acaansun> [àtʃãːsǔ]
- <A'ubaqbâ> [ãʔubóbâ]
- <Asãbi> [ãsõbĩ]
- <Azhiga> [ãʒĩɡã]
- <Acaawundu> [àtʃãʔũndũ]
- <Akwan> [àkwã]
- <Awãnsan> [àwɔsã]

No correlation has been observed between family and any dialectal variation.

The majority of Pangu people are subsistence crop farmers. However, some are also school teachers and several well educated Pangu are in positions of authority in local and state governments.

In the mid-1980s a subcommittee of the Pangu Community Development Association (Jayawa) was appointed to undertake the work of writing down the Pangu language. The work was never completed, but one of the members (Alhaji Ibrahim Madugu, currently residing in Kagara) still holds some documents which were being worked on at that time. No other known

¹ https://iso639-3.sil.org/code/png
work has been done in the Pangu language apart from sociolinguistic surveys carried out in 1991 and 1992 (Dettweiler & Dettweiler 2002).

The Ethnologue (Eberhard, Simons & Fennig 2021) classifies Pangu as: Niger-Congo, Atlantic-Congo, Volta-Congo, Benue-Congo, Kainji, Western, Kamuku. Blench and McGill (2012) give a more detailed sub-classification of Kainji languages with the Pangu language named as 'Rin' and classified as a member of the Central hypothetical proto-group and then the Shiroro cluster within that, alongside Baushi, Gurmana and Fungwa. Pangu (Rin) speakers report lexical similarities with a number of these neighbouring languages. This sub-classification is also shown in diagram form in Blench (2018).

Figure 1 - Subclassification of Kainji Languages (Blench 2018: 64)

Figure 2 - Subclassification of Shiroro Languages (Blench 2018: 95)
This paper is an extensive revision of the initial report of May 2004, which was a result of the field work of James MacDonell and Philip Smith during an 18-month short-term voluntary programme in Nigeria (January 2003 to June 2004). Initial language learning was done while living in Pangu Gari with support of the Pangu chief at that time. During the 18 months spent in the field, work on the phonology, grammar and orthography of the Pangu language was conducted. Due to time constraints, the initial phonology was based on a data set of about 400 nouns (but this has subsequently been expanded to over 700 nouns, as well as more than 300 verbs). The initial grammar analysis was based mainly on phrases and sentences elicited during language learning, or noted from conversation.

In May of 2005 James MacDonell returned to Nigeria to continue Pangu language development and literacy. An informal literacy programme has since been established with publication of literacy primers and a number of other titles. Bible translation work is also ongoing, with a book of New Testament Scripture portions published in 2017. Since the initial draft of this linguistics report in 2004, significant corrections and additions have been made, especially in 2018 and 2019. Various language speakers have contributed to this work, but those most recently involved have been Felix B. Usman (Kagara) and James Gambo Usman (Kagara), both of whom have given informed consent for the audio recording and use of their language data. Revisions were incorporated with the help Steve Dettweiler during a visit in early October 2018, a subsequent meeting in June 2019 and further electronic communication to date.

Recordings are available for the majority of the examples in this paper. Consult the bibliographic entry for MacDonell 2019 for a link to the complete volume of phonology recordings on REAP and the entry for MacDonell 2020 for a link to the volume of grammar recordings. References to recorded sets of examples are listed throughout the paper which include an alphanumeric label identifying the particular recording session(s) for those examples.
Part I - Phonology

1. Word Patterns

Evidence concerning Pangu word patterns and syllable patterns is drawn primarily from noun roots, with some verb roots also represented. The noun class markers which occur on nouns as prefixes are bound morphemes – they are part of the noun word but not part of the noun root. Section 1.1 presents the syllable structure of noun class markers. These are syllables which frequently occur at the beginning of noun words, but that is not evidence in itself that they are valid phonological syllables in Pangu. Thus Section 2.2 presents root word patterns as a basis for determining the phonological syllable types.

Throughout this phonology, 'C' represents a consonant, 'V' a vowel, and 'N̩' a syllabic nasal consonant.

1.1. Noun Class Markers

Pangu nouns have a system of class markers that prefix each noun, showing the following patterns:

V
N̩
CV

The area of noun class markers is dealt with further in Grammar 2.1. Class Markers. The following realisations have been observed as class-marking prefixes on nouns:

[bu]  singulars, person
[bi]  singulars (particularly livestock)
[u]  singulars (very common)
[a]  some singulars; mostly plurals
[i]  some singulars; plurals
[ru]  singulars
[n̩] / [m̩] / [ŋ̩]  plurals (syllabic nasal)
[su]  plurals
[ma]  liquid nouns
[tə]  mass nouns (and others, e.g. language names)
The above class markers are sometimes observed with nasalised vowels, but this is an assimilatory effect of nasalised vowels in the following noun root (see Phonology 6.2.5. Nasal Spread).

1.2. Root Word Patterns

The following are root word patterns of Pangu with examples.² Examples in this section are found in MacDonell (2019: recording session A).

CV

CVCV

CVCVCV

CVCVCVCV

Examples:

CV

[rò] type of tree
[nà] 'scorpion'
[tà] 'lightning'

CVCV

[pútù] 'dust'
[bóbá] 'leaf'
[rùrù] 'neck'

CVCVCV

[kíríká] type of cricket
[kástákù] 'meeting hut'
[júrúgò] 'evening'

CVCVCVCV

[fígídárá] 'white wood (after removal of bark)'
[dákút蒙古] 'shake head (many times)' (v)

² Grammar 3.4. The Verb Phrase and Suffixes on the Verb Root shows that the final two examples are multi-morphemic words. They have not been excluded since they do not give any evidence of a new syllable type.
There is also limited evidence of root word patterns containing CVC syllables. This evidence is discussed in Phonology 2.3. **An Ambiguous CVC Syllable Pattern.** Since there are no examples of unambiguous CVC syllables, further discussion is necessary in Phonology 3.3. **Consonant Clusters** on the interpretation of various possible CVC syllables.
Part I – Phonology

2. Syllable Patterns

The following analysis is based primarily on noun roots and some verb roots (and ignores bound morphemes such as class markers). Each Pangu syllable consists of a mandatory onset and nucleus. The examples are shown with syllable boundaries indicated with a full stop ( . ). The syllable pattern in focus is in bold.

2.1. CV Syllable Pattern

The only univalent (unambiguous) syllable pattern found in Pangu noun roots is CV.

- [ù.ɾò]  
  type of tree
- [à.nà]  
  'scorpion'
- [pú.tù]  
  'dust'
- [bi.gə̃.ɡə̃.ɾì]  
  'cooking pot'

Comment on possible vowel-initial syllables:

There are some root words that might be perceived as suggesting the existence of a VCV word pattern (and hence a V syllable pattern) in Pangu. Examples are /ara/ 'hand'; /ina/ 'house, compound'. However the V pattern is only observed word initially. Also, Pangu always handles a sequence of two adjacent vowels by the insertion of a glottal stop [ʔ] rather than creating lengthened vowels or vowel glides. This can be seen in the plural forms of the above words, [àʔarà] and [ùʔìnà] respectively. Although it is not easily audible when such words are uttered in isolation, it is proposed that these roots are actually CV.CV, and have a glottal stop in initial position. As further evidence of the glottal stop being a syllable onset, Phonology 3.2. Suspect Sequences shows examples where the glottal stop is the first onset in syllables of the type /ʔjV/ and /ʔwV/, which contrast with semivowels as the only onset in a CV syllable, i.e. /jV/ and /wV/.

2.2. Restricted CCV Syllable Pattern

A restricted CCV syllable pattern is proposed, where the second consonant in a cluster is a semivowel ([j] or [w]). This is explained in Phonology 3.2. Suspect Sequences.

2.3. An Ambiguous CVC Syllable Pattern

Examples in this section are found in MacDonell (2019: recording session A).

Although most verbs allow the elision of the final vowel in rapid continuous speech, such elision only occurs for nouns when they end in /Ni/. This results in pronunciation of a syllable with a nasal in the coda. (See also Phonology 6.2.2. Word-Final Vowel Elision.)

Word-final CVC

- [gə̃mǐ]  \( \rightarrow \)  
  [góm] / [góŋ]  
  'me (1st singular emphatic pronoun)'
[ùbámí] → [bám] 'tool for beating ground'

[ìjámi] → [jám] 'food'

[ŋmàndí] → [ŋmànd] 'I give'

Besides allowing a CVN syllable word-finally, Pangu shows limited evidence for CVr or CVr (free variation of alveolar tap or trill) in a word-medial or word-initial environment.

CVC.CV (potential word-initial CVC)

[hárká] 'sweep!'

CV.CVC.CV (potential word-medial CVC)

[pàkárká] 'armpit'

In these two examples it is possible there is an epenthetic vowel between the [ɾ]/[r] and the [k], but many speakers have no awareness of the presence of a vowel in this position. When the distribution of vowels following [ɾ] was analysed to check for gaps, no gaps were found. This suggests there is no underlying vowel following the alveolar tap or trill.

Although there are no unambiguous examples of a CVC pattern, Pangu gives evidence of a variety of contexts where such syllables are pronounced.

2.4. Restricted N̩ and hN Syllable Patterns

Examples in this section are found in MacDonell (2019: recording session B).

1. A syllable can consist of a single consonant only when that consonant is a syllabic nasal. It can occur as the initial syllable of word roots, but also as a prefix, whether on a verb as a subject pronominal (1st pair of examples) or on a noun as its class marker (2nd set of examples).

Examples of verb roots with initial N̩ syllable

[ŋbàː] 'have' (copula) [ŋm̩ɓàː] 'I have.'

[ŋgá] 'call' (v) [ŋŋgàːn̩í] 'I called.'

Examples of noun roots with N̩ as prefix and/or initial syllable

[ŋkwɔɡí] 'shyness'

[ŋɾábí] 'sleeping'

[ŋ[pírwa] 'appearance'

[ŋm̩ɓá] 'wheat or rice chaff'
The final example shows the $N$ syllable type in both possible positions – prefix and root-initial.

2. A limited number of verbs have been observed that begin with an unusual sound. The initial syllable sounds like a syllabic nasal preceded by a short voiceless nasal. For example:

\[
\text{[m̥m̥b̩á.ɾ̃́]} \quad \text{'wash!' Suggested underlying form: /h̃mbáɾ/}
\]

\[
\text{[m̥m̥b̩ó.g̃́]} \quad \text{'hold!' Suggested underlying form: /h̃mbóɡ/}
\]

The voiceless nasal can be interpreted to be a syllable onset /h/ in which the coda is the syllabic nasal. This interpretation is borne out by an example of verb inflection: the imperative form 'wait!' is \text{[m̥m̥b̩á]} or \text{[h̃m̥b̩á]}, while the realisation of the perfective verb form can be seen in the phrase 'Let them wait.' \text{[á.hã̃mbj̃̃́] (suggested underlying form /á-hã̃mb̩é/)}. 


3. Suspect Sounds and Sequences

3.1. Suspect Sounds

Based on the CV syllable pattern above, the vowels [i] and [u] are treated as follows:

When preceding a vowel (i.e. syllable onset) they function as consonants, [j] and [w] respectively:

\[\text{[bi.\,jɔ]} ~ \text{'goat'}\]
\[\text{[bi.\,ɡɔ.\,jɔ]} ~ \text{'bean'}\]
\[\text{[bi.\,ʃu.\,wá]} ~ \text{'palm nut tree'}\]

Elsewhere they are interpreted as vowels.

In addition, Pangu has two semivowels (glides), [ɥ] and [ɰ]. The velar approximant [ɰ] only occurs in syllable onsets and is interpreted as a consonant. The labial-palatal approximant [ɥ] is not considered phonemic since it only occurs preceding the open-mid back vowel [ɔ] and consonants are always labialised preceding this vowel (see the second rule in Phonology 6.1.3. Labialisation Rules).

Comment on word initial taps:

Word initial taps are realised by the addition of a preceding short vowel [ə] (of approximate length 0.05 ms in contrast to normal vowel length of around 0.1 ms). Thus [ɾiŋɡjɛ] is actually realised as [ɾiŋɡjɛ] when pronounced in isolation. However, this preceding vowel is assumed to have no significance and so is not represented in phonemic transcriptions or syllable patterns.

3.2. Suspect Sequences

Based on the CV syllable pattern, the affricates [tʃ] and [dʒ] are considered to be single consonant units. The double-articulated stops (rare in the language) are treated as single units, [kp] and [ɡb].

A consonant followed by a [j] sound or a [w] sound is a very common occurrence. In order to conform to the CV syllable pattern, these could be interpreted as single units – palatalised consonants and labialised consonant respectively. However, this adds a large number of sounds to the phonetic inventory as almost all consonants have been observed with such forms.

An additional syllable pattern is therefore proposed. This is a restricted CCV syllable pattern. Phonetically speaking the second C can be any of the sounds [j], [w] or [ɥ]. The phonological syllable pattern can be represented as CGV. Here G represents either of the two phonemic sounds /j/ or /w/ (known as glides or semivowels), but [ɥ] is understood to be an allophone of /j/ that predictably occurs before a rounded vowel. For the following list of examples, an underlying representation is shown to the right in phonemic brackets whenever it differs...
segmentally from the phonetic form. All but the final item in the list contain an example of a CGV syllable in their underlying form.\(^3\)

\[
\begin{align*}
[hj] & \quad [hjù] & \quad & \text{'guinea corn'} \\
[ʔj] & \quad [ʔjá.ɾù] & \quad & \text{'three stones for cooking'} \\
[bw] & \quad [bwá.zá] & \quad & \text{'dry season'} \\
[fw] & \quad [fwá.ɾù] & \quad & \text{'to wrestle'} \\
[sw] & \quad [bì.swá.ɾì] & \quad & \text{'fingernail'} \\
[tfw] & \quad [tfwá.ɾá] & \quad & \text{'to swallow'} \\
[kw] & \quad [ù.kwà.sù] & \quad & \text{'roof frame'} \\
[kq] & \quad [kq̃á] & \quad & \text{'ginger'} \\
[ʔq] & \quad [ʔq̃á] & \quad & \text{'grasshopper'} \\
[bj] & \quad [bj̃á] & \quad & \text{'child'}
\end{align*}
\]

3.3. Consonant Clusters

It is common in Pangu roots to have what could be interpreted as an NC consonant cluster, where the N is a nasal consonant, the C is a voiced obstruent (i.e. a plosive, fricative, or affricate), and the N is homorganic with the C. Most frequently this NC is word-medial: in this case the cluster could be split between two syllables as ...CVN.CV..., with the N viewed as coda of the CVN syllable (discussed in Phonology 2.3. An Ambiguous CVC Syllable Pattern) and the obstruent it precedes as onset of the next CV syllable. However, Pangu also has examples of word-initial NC, though they are not as common as word-medial NC. A word-initial NC is best interpreted as a single consonantal phoneme, namely a prenasalised obstruent. In Phonology 5.1. Consonants prenasalised voiced consonants are shown to be in contrast with the corresponding consonant lacking prenasalisation, e.g. \([mb]\) in contrast with \([b]\), \([ndʒ]\) in contrast with \([dʒ]\), \([ŋg]\) with \([g]\). The following are examples of noun and verb roots with initial prenasalised consonants:

\[
\begin{align*}
[mbìʃírì] & \quad \text{'pity' (n)} \\
[dʒíbá] & \quad \text{'sharpen'} \\
[dá.já] & \quad \text{'see'}
\end{align*}
\]

\(^3\) The \(j\) sound is predictably pronounced before front vowels such as \(ɛ\) just as the \(w\) sound is predictably audible before back (rounded) vowels.
Interpretation of word-initial NC as being a single prenasalised consonant, not a cluster, is a strong argument in favour of interpreting word-medial NC in the same way. This interpretation virtually dispenses with the need for any CVC syllable pattern, though it does require accepting a number of voiced prenasalised obstruents into the phonemic inventory. Here are some examples of noun and verb roots with word-medial voiced prenasalised consonants:

- [bìkùⁿbùrù] 'fruit stone' underlying representation: /bì-kùⁿbù.rù/4
- [ùsùⁿdà] 'meat' underlying representation: /ù-sùⁿdà/
- [tùhìⁿdʒé] 'hair' underlying representation: /tù-híⁿdʒé/
- [hàgá] 'feel, hear' underlying representation: /hà.gá/

**Residue**

The following words appear to contain examples of a lengthened nasal consonant. These examples are found in MacDonell (2019: recording session C).

These words could be interpreted as CVC.CV if the marginal syllable pattern CVC is permitted (see the discussion in Phonology 2.3. An Ambiguous CVC Syllable Pattern). However, it is more likely that the anomalous pattern arises due to adaptation from another language (suspected in the first example, from Hausa sāanan 'this time') or due to contraction in fast speech of an expression with more than one morpheme. The latter is clearly the case in the third example, where it can be noted that the separate morphemes have only CV syllables.

- [sàná] 'harmattan'
- [nàná] 'this one'
- [mànɔmáttáɡá] type of tree (name believed to be a contraction of [mànì ná mátáɡá], where the three components are glossed 'water', 'of', and 'solid food' respectively)

4 The underlying (phonemic or morphemic) representations on the right show morpheme breaks with hyphens and root syllable divisions with dots. Predictable nasalisation of vowels is not included in these representations.
3.4. Nasalised and Lengthened Vowels

Nasalised vowels that demonstrate suitable contrast with their oral counterparts are interpreted as phonemes in line with the CV syllable pattern. Their distribution pattern is given in Phonology 6.1.1. Nasalised Vowels as Allophones of Oral Vowels.

As there are no univalent CVV syllable patterns in the language, lengthened vowels are interpreted to be unit phonemes /iː/, /eː/, /ɛː/, /əː/, /aː/, /ɔː/, /oː/, and /uː/ after demonstration of suitable contrast with their regular (unlengthened) counterparts.

So both nasalised vowels and lengthened vowels are included in the chart of phonemic vowels (see Phonology 8.2. Vowel Phonemes).

3.5. Vowel Sequences

Three vowel sequences have been observed, occurring word-finally: [ai], [ai] and [au] (as well as their nasalised counterparts). A VV interpretation is not preferred since there are no univalent CVV syllable patterns. Therefore the vowel sequences are interpreted as single vowels – in other words, vowel glides (diphthongs): [aʾ], [aʾ] and [aʾ]. This means adding new phonemes to the vowel chart, but according to speaker intuition, these vowel sequences are only a single syllable and no significant increase in length has been observed. Some syllables containing vowel glides may be contractions of CV.CV, where the consonant onset of the second syllable is a glide ([j] or [w]). These examples are found in MacDonell (2019: recording session D).

[bʊgəlʼ] 'stranger'
[birá] 'charm'
[ʊɡʃʃə] type of bird
[ʊʃwə] type of jumping frog
[biswə] 'bee'
[məʔə] 'water that has been poured over ash'
[ʊbʊɡʃ] 'trap (for rat)'
[ɡəʔəɡə] type of black ant
4. Phonetic Charts

4.1. Consonant Phones

<table>
<thead>
<tr>
<th>p</th>
<th>pʲ</th>
<th>pʷ</th>
<th>t</th>
<th>tʷ</th>
<th>k</th>
<th>kʲ</th>
<th>kʷ</th>
<th>kʰ</th>
<th>ʔ</th>
<th>ʔʲ</th>
<th>ʔʷ</th>
<th>ʔʰ</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>bʲ</td>
<td>bʷ</td>
<td>d</td>
<td>dʷ</td>
<td>g</td>
<td>gʲ</td>
<td>gʷ</td>
<td>gʰ</td>
<td>ɲd</td>
<td>ɲg</td>
<td>ɲgʲ</td>
<td>ɲgʷ</td>
</tr>
<tr>
<td>m</td>
<td>mʲ</td>
<td>mʷ</td>
<td>n</td>
<td>nʲ</td>
<td>v</td>
<td>vʷ</td>
<td>z</td>
<td>zʷ</td>
<td>dʒ</td>
<td>dʒʷ</td>
<td>nʒ</td>
<td>nʒʷ</td>
</tr>
<tr>
<td>ɾ</td>
<td>ɾʲ</td>
<td>ɾʷ</td>
<td>j</td>
<td>ɻ</td>
<td>ɰ</td>
<td>w</td>
<td>ɕp</td>
<td>ɡb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 1 - Consonants**

Evidence for [ kp̚] and [gb] is limited.

Words in the language have been found that contain a rare phonetic sound, the labiodental flap [v]. Examples from two different speakers are found in MacDonell (2019: recording sessions E1 and E2). This has been observed in languages further east in Nigeria and central Africa. Only a few words containing this phone have been discovered in Pangu and it is therefore impossible to determine any distribution rules for this phone. All known words are ideophones and determining consistent English translations is difficult.

[wávè] or [bʷawè] ‘by force, with speed, immediately’

[wávʲ] ‘strongly, suddenly’

[wáváwàvwà] ‘sound of running seriously through vegetation’
### 4.2. Vowel Phones

<table>
<thead>
<tr>
<th>i ː</th>
<th>ï ː</th>
<th>u ː</th>
<th>ũ ː</th>
</tr>
</thead>
<tbody>
<tr>
<td>e ː</td>
<td>ë ː</td>
<td>o ː</td>
<td>ŵ ː</td>
</tr>
<tr>
<td>æ ː</td>
<td>ō ː</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a ː</td>
<td>ŋ ː</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 - Vowels

The central (schwa) vowel [ə] represents a close-mid central vowel but at times may be nearer to the close central position.
5. Phonetic Sounds in Contrast

In this chapter, selected pairs of sounds that are in contrast are shown. Examples of consonant contrast are found in MacDonell (2019: recording sessions F1–F3). Examples of vowel contrast are found in MacDonell (2019: recording sessions G1–G4). Wherever possible to elicit, noun class markers have been written (separated from the noun root by a hyphen). Perceived tone has been indicated. For most pairs of contrasting sounds, the environment is analogous rather than identical.

5.1. Consonants

[p] [b]

[bíǥàpà] 'yam'
[ùgábà] type of tree (Hausa tunya)

[úkàpà] 'western-style belt'
[bìkábá] 'blacksmith’s tool'

[b] [m]

[ùgábà] type of tree
[gámà] 'happiness'

[bánà] 'go out'
[mánà] 'pull, lead'

[ⁿb] [b]

[màⁿbóː] 'heat'
[bóː] 'stir (food)'

[wàⁿbá] 'start to dry out (of grass)'
[wábá] 'draw out of water'

[t] [d]

[bíqátá] 'heart'
[bídádá] 'termite mound'

[tàqà] 'solid food' (Hausa tuwo)
[bídádá] 'termite mound'
Part I – Phonology

[ⁿd] [ⁿd] [/ⁿd̥i/, /ⁿd̥i/] 'smoked'
[d̥i/] 'openly'

[sáⁿdâ] 'overflowing'
[sádâ] 'upright'

[t] [ʧ] [/t̥arã/, /t̥arã/] 'sky'
[ʧʧʧʧ] 'axe'

[biʧt̥arã] 'eating pot'
[ʧʧʧʧʧʧ] 'inner stomach'

[t] [s] [/uʧa/, /uʧã/] 'lightning'
[sã] 'healthy, alright'

[zâtú] 'year before last'
[ ámbãsã] 'dawn'

[d] [ʤ] [/uʤûrã/, /uʤûrã/] 'room'
[ʤʤgwa] 'frog'

[bidâdã] 'termite mound'
[dʒãgã] 'go!'

[ⁿdʒ] [ⁿdʒ] [/ⁿdʒibã/, /ⁿdʒibã/] 'medicine'
[ⁿdʒiɾi] 'type of animal (like cat)

[ⁿdʒûkã] 'chin'
[ⁿdʒûgʷã] 'frog'
Part I – Phonology

[d] [z]  
[dăbă] 'get!'
[zŭbă] 'north'

[kŭdăgă] 'fold (e.g. clothes)' (v)
[hŭzó] 'break, collapse'

[d] [n]  
[ădădxă] 'mother'
[ănănă] 'grandmother'

[ŭdănmă] 'vulture'
[ŭnănă:] 'low walled area'

[d] [ɾ]  
[bĭdădă] 'termite mound'
[ŭrărá] 'cloud'

[ŭdŭră] 'room'
[ŭrŭră] 'neck'

[f] [v]  
[ŭfŭkă] 'lungs'
[ŭvŭrŭgă] type of tree

[v] [v]  
[ŭvŭ:vŭ:vă:] 'wasp'
[ŭvŭrŭgă] type of tree

[s] [z]  
[bisă] 'tell, discuss'
[ŭbĭbĭză] 'yard, waste area'

[ŭsŭrî] type of tree
[rŭzŭpî] 'pocket'

[ⁿz] [z]  
[ŭzăⁿză] 'cunning folktale character'
[ŭzŭzŭ] 'wrapper'


26
Part I – Phonology

[s] [ʃ]  
[bisǎkərũ]  'traditional shelter'
[ŋjəkərjɛ]  'chaff drink'

[ʃ] [ʃ]  
[ũsũrĩ]  type of tree
[bijũwã]  'necklace'

[ʃ] [tʃ]  
[bijɛjɛ]  'shea nut stone'
[ŋtʃɛjɛ]  'ground, land'

[aβiʃi]  'they told'
[ũbɪʃi]  'cheetah'

[z] [ʒ]  
[bũzã]  'he is not there'
[ʒɛ̃]  'marry'

[bũzũmbɔ]  'thief'
[bijũwã]  type of bird

[ⁿʒ] [ʒ]  
[ũⁿʒĩⁿwã]  'debris'
[uỹɛ̃gɛ]  'place of many vines'

[z] [dʒ]  
[ʒà:]  'marry'
[dʒã]  'come'

[ʒɔ:]  'song'
[bũdʒɔ]  'he went'

[k] [g]  
[ũkãpã]  'western-style belt'
[biɡãpã]  'yam'

5 The authors acknowledge the problem of showing contrast of these phones preceding [+ front] vowels, since this environment neutralises the contrast with their non-palatalised counterparts [ⁿz] and [z].
[ùkə̃́gú] type of insect
[ùgóbí] 'leopard'

[ŋ] [g] [ùŋgútā] 'handle of tool'
[ùgúpə] type of grass

[ùrǐ̷gós] 'urine'
[ùrích] 'shea nut tree'

[k] [ʔ] [bùkó] 'one (person)'
[bùʔə] 'woman'

[ùkú̷ˈdú] 'spider'
[ùʔú̷ˈdú] 'hill, mountain'

[ʔ] [h] [sùʔubó] 'cough'
[àhúbò] 'stomach of pregnancy'

[biʔúmú] 'bracelet'
[ùhùrů] 'shade, shelter'

[m] [n] [sùqùmà] 'wound'
[ùbúnà] 'leg'

[múrú] 'complete'
[ùnùmù] 'low joining wall'

[n] [ɾ] [ànà] 'scorpion'
[ùră] 'fire'

[ùʔï̷nà] 'house, compound'
[rùʔirà] 'arrow'
Part I – Phonology

[ɰ] [w]         [ɰã] 'they'
[ûwã] 'mosquito'

[j] [ɰ]         [bùjàtù] 'my sibling'
[bùwãrí] 'husband'

5.2. Vowels

[i] [e]         [ùdʒírì] type of hyena
[bidʒèrè] type of drum

[bòrì] 'spread out!'
[bóré] 'today'

[e] [e]         [wùtʃé] 'arrived'
[màgwàtʃé] 'back of head'

[ájìʃé] 'eye'
[ùgwàfè] 'ram'

[e] [a]         [ùʔwè:] 'tree'
[ùʔwá:] 'load'

[ùgwàʃé] 'ram'
[bwázá] 'dry season'

[ɔ] [o]         [uɡɔrɔ] type of big rat
[ùrɔ] 'locust bean tree'

[bisɔkɔtɔ] 'trousers'
[bisösɔ] 'small water jar'
[ə] [u]  
[àhjóː]  'smoke'
[àhjʊ]  'guinea corn'

[ʊ̃fɪbò]  'antelope'
[ùbjábú]  'animal fat'

[i] [ə]  
[kí]  'right (correct)'
[ká]  'one'

[e] [ə]  
[biswɛːswɛ]  type of bird
[biswɔrí]  'fingernail'

[bidʒɛrɛ]  type of drum
[ùgírɔ]  'charm (unseen)'

[e] [ə]  
[ùtfɛbjɛ]  'ear'
[àtfɛɡʊ]  'axe'

[a] [ə]  
[bùwɔ]  'traditional doctor'
[biwɔ]  type of tree

[ùɡɪtə]  'night'
[bigítɔ]  'wheel, roof struts'

[o] [ə]  
[ùrõbí]  'daytime rain (light)'
[ùrõbɔ]  'eyebrow'

[ədúbɔ]  'doorway'
[sùʔúbɔ]  'cough'

[u] [ə]  
[bùrùbɔ]  'blind man'
[ãrõbɔ]  'eyebrow'
<table>
<thead>
<tr>
<th>Sound</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/bʊtʊ/</td>
<td>'man'</td>
<td></td>
</tr>
<tr>
<td>/ʊtə/</td>
<td>'lightning'</td>
<td></td>
</tr>
<tr>
<td>/aː/</td>
<td>/[aː]dáːdá/</td>
<td>'grandfather'</td>
</tr>
<tr>
<td>/bɪdáːdá/</td>
<td>'termite mound'</td>
<td></td>
</tr>
<tr>
<td>/aː/</td>
<td>/[aː]də̃̀də̃̀/</td>
<td>'mother'</td>
</tr>
<tr>
<td>/ʊrə̃̀bə̃́/</td>
<td>'eyebrow'</td>
<td></td>
</tr>
<tr>
<td>/uː/</td>
<td>/[uː]sʊːɡə̃́/</td>
<td>'judgement'</td>
</tr>
<tr>
<td>/ʊsʊɡə́/</td>
<td>'lump of food'</td>
<td></td>
</tr>
<tr>
<td>/ɪ/</td>
<td>/[ɪ]pɪ́ɾə́/</td>
<td>'wring'</td>
</tr>
<tr>
<td>/pɪ́ɾɛ́tə/</td>
<td>'over there'</td>
<td></td>
</tr>
<tr>
<td>/bɪhɪ́fɪ́/</td>
<td>'buffalo'</td>
<td></td>
</tr>
<tr>
<td>/ʊbɪ́fɪ́/</td>
<td>'cheetah'</td>
<td></td>
</tr>
<tr>
<td>/ɔ̃/</td>
<td>/[ɔ̃]ʊsʷɔ̃́sʷɔ̃́/</td>
<td>'locust bean tree pod flesh'</td>
</tr>
<tr>
<td>/mə́rə́sʷɔ́s∧/</td>
<td>'second day of an occasion'</td>
<td></td>
</tr>
<tr>
<td>/ʊ/</td>
<td>/[ʊ]rʊ́rʊ́/</td>
<td>'knee'</td>
</tr>
<tr>
<td>/ʊrʊ́rʊ́/</td>
<td>'neck'</td>
<td></td>
</tr>
<tr>
<td>/ʊ́rʊ́kʊ́/</td>
<td>type of sedimentary rock</td>
<td></td>
</tr>
<tr>
<td>/ɡʊ́ɾʊ́kɑ́/</td>
<td>'drinking too much' (v)</td>
<td></td>
</tr>
<tr>
<td>/ɛ/</td>
<td>/[ɛ]tʊ̀/</td>
<td>'joining'</td>
</tr>
<tr>
<td>/ʊtɔ́/</td>
<td>'thunder'</td>
<td></td>
</tr>
<tr>
<td>/pjɑ́ɾʊ́kɑ́/</td>
<td>'scoop, scrape!'</td>
<td></td>
</tr>
<tr>
<td>/ʔʊ́ɾʊ́kʊ́/</td>
<td>'meet!'</td>
<td></td>
</tr>
</tbody>
</table>
Part I – Phonology

\[[\text{ũ}] [u]\] [\text{ùdùː}] 'cane'
[\text{vúdùː}] 'hairy'

\[[\text{ã}] [a]\] [\text{tàː}] 'pick up!'
[\text{táː}] 'lie down!'

[\text{ùbáː}] 'bundle of corn stalks'
[\text{ābáː}] 'back'

\[[\text{ã}] [e]\] [\text{bidzêː}] type of tree
[\text{dzêː}] 'straight'

[\text{ãː}] [æ] [\text{màhjáː}] 'blood'
[\text{hjáhjáː}] 'meandering'

\[[\text{ã}ᵰ] [a]\] [\text{birá'}] 'charm'
[\text{bírá}] 'plant!'

\[[\text{ã}ᵰ] [æ]\] [\text{dá}'] 'full'
[\text{dá'}] 'just' (from Hausa)

\[[\text{ã}ᵰ] [e]\] [\text{ùbá'ᵰ}] type of tree
[\text{àribá}] 'crow'

\[[\text{ã}ᵰ] [aᵰ]\] [\text{ùtàká'}] type of grass
[\text{tàká'}] 'power'

\[[\text{ã}ᵰ] [oᵰ]\] [\text{ùká'ᵰ}] type of rock
[\text{ùbá'ᵰ}] type of tree
6. Rules

A number of examples from this chapter are found in MacDonell (2019: recording sessions H, I, J1 to J3, and K).

6.1. Distribution of Allophones

Two (or more) closely related sounds are known as allophones of the same phoneme when there are certain environments in which they do not contrast. In this section, rules are stated to specify which allophone can be predicted to occur in which kind of environment. For Pangu there are two such rules pertaining to the distribution of nasalised vowels and two rules pertaining to the distributions of palatalised consonants and labialised consonants respectively.

6.1.1. Nasalised Vowels as Allophones of Oral Vowels

A significant pattern within Pangu words is that the vowel preceding a prenasalised obstruent or a nasal plosive is always a nasalised vowel. Thus Pangu vowels show anticipatory assimilation of nasalisation: the vowel in the nucleus of a syllable anticipates the nasal feature of the consonant which follows it as the onset of the next syllable.6

The following set of distribution rules is proposed to describe predictable occurrences of nasalised vowels in Pangu words:

\[
\begin{align*}
\text{a. } & V \rightarrow V / \text{ } \underline{\text{C}} \text{ (preceding prenasalised obstruents)} \\
& \quad \quad [\text{+nas}] \quad \quad [\text{-son}] \\
& \quad \quad \underline{\text{N}} \quad \quad \text{ (preceding nasal plosives)} \\
\text{b. } & V \rightarrow V / \text{ } \text{N} \underline{\text{C}} \text{ (following nasal plosives)} \\
& \quad \quad [\text{+nas}] \\
\end{align*}
\]

Part b of the set of rules adds another environment where it is predictable that a Pangu vowel will be nasalised, not oral. The vowel is nasalised whenever it is the nucleus of a syllable which has a nasal plosive as its onset. This is known as progressive rather than regressive (anticipatory) nasalisation of the vowel, and it is less common in the world's languages. (Crystal 2008: 40)

The following examples illustrate this set of distribution rules. In each syllable of each example with the exception of the final one, nasalisation is phonetically present or absent on

6In A Dictionary of Linguistics and Phonetics, David Crystal says that anticipatory (or 'regressive') assimilation is "the commonest type of coarticulation" (2008: 27–8). As an example of this phenomenon, he gives "the nasalization which can be heard on vowels followed by a nasal consonant, when the soft palate begins to lower in anticipation of the consonant during the articulation of the vowel."
the syllable nucleus due to the type of consonant immediately following the nucleus (Rule $a$) or immediately preceding it (Rule $b$).

Examples:

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Rule(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ùʔèⁿdzè/</td>
<td>[ùʔèⁿdzè]</td>
<td>($a$)</td>
</tr>
<tr>
<td>/ùkáⁿdàqà/</td>
<td>[ùkáⁿdàqà]</td>
<td>($a$)</td>
</tr>
<tr>
<td>/màríɡà/</td>
<td>[màríɡà]</td>
<td>($b$)</td>
</tr>
<tr>
<td>/ùkùt̥màó/</td>
<td>[ùkùt̥màó]</td>
<td>($a,b$)</td>
</tr>
<tr>
<td>/bìⁿz̥kè/</td>
<td>[bìⁿz̥kè]</td>
<td>($a, ?? final syllable$)</td>
</tr>
</tbody>
</table>

The last two examples show that Rule $a$ also applies to class marker vowels – they remain oral when preceding an oral consonant and are nasalised when preceding a nasal or prenasalised consonant. The final example demonstrates that not all occurrences of vowel nasalisation in Pangu are allophones (predictable due to their environment). In fact, Phonology 5.2. Vowels gives examples showing that oral vowels and nasalised vowels are contrastive in two environments, one of which is the final syllable of a word. The final syllable of /bìⁿz̥kè/ 'shelter' is an example of this.

6.1.2. Palatalisation Rules

Consonants become palatalised when preceding the open-mid front vowel ([ɛ]). It seems for nasals and possibly other types of consonants, palatalisation can be a matter of speaker variation.

[-syllabic] $\rightarrow$ [+ palatalised] / _ [ɛ]

Examples:

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>/bè:/</td>
<td>[bʲè:]</td>
</tr>
<tr>
<td>/ùrègwà/</td>
<td>[ùrʲègwà]</td>
</tr>
<tr>
<td>/birířèkè/</td>
<td>[birířèkèj]</td>
</tr>
<tr>
<td>/ájènè:/</td>
<td>[ájʲènè:]</td>
</tr>
</tbody>
</table>

In this environment, the palatalised consonants are predictable, not contrastive. But when a palatalised consonant occurs before [-front] vowels such as [ə] or [a], this has been found (in Phonology 3.2. Suspect Sequences) to be contrastive with the regular (non-palatalised)

---

7 Phonology 6.2.5. Nasal Spread shows one more environment where vowel nasalisation is predictable, due to nasal spread.

8 This is actually interpreted as a Consonant-Glide cluster, as explained in Phonology 3.2. Suspect Sequences.
consonant. So what we have preceding \[\text{ɛ}\] is actually a neutralisation of this contrast. Similarly Phonology 5.2. Vowels show the contrast between oral and nasalised vowels in word-final syllables and in a certain type of word-medial syllable, and Phonology 6.1.1. Nasalised Vowels as Allophones of Oral Vowels shows three environments in which this contrast is neutralised.

The above generalisation can be further developed for alveolar plosives and fricatives, which are handled by the following rules:\(^9\)

1. Preceding the three front vowels, alveolar plosives and alveolar affricates are neutralised.
   
   \[
   /t/ \rightarrow [\text{tʃ}] / \_ \ [i,e,\text{ɛ}]
   
   /d/ \rightarrow [\text{dʒ}] / \_ \ [i,e,\text{ɛ}]
   \]

2. Preceding the three front vowels, alveolar fricatives and post-alveolar fricatives are neutralised.

   \[
   /s/ \rightarrow [\text{s}] / \_ \ [i,e,\text{ɛ}]
   
   /z/ \rightarrow [\text{z}] / \_ \ [i,e,\text{ɛ}]
   \]

Examples:

   /bìsòtì/ \rightarrow [bìsòtì] 'stream, small river'

   /ûdìrí/ \rightarrow [ûdìzìrí] type of animal

   /ûgwàsè/ \rightarrow [ûgwájè] 'ram'

   /sírí/ \rightarrow [jírí] 'black'

   /ûžòm'bírá/ \rightarrow [ûžìm'bírá] 'needle'

6.1.3. Labialisation Rules

1. Velar plosives are labialised when preceding the close-mid back vowel \([\text{o}]\). As a result of speaker variation some sounds may sound more clearly labialised than others.

   \[
   \text{C } [\text{+ velar}] \rightarrow [\text{+ round}] / \_ \ [\text{o}]
   \]

   Examples:

   \[
   /gò/ \rightarrow [gʷò] 'different'
   
   /ûkòkòː/ \rightarrow [ûkʷòkʷòː] type of tree
   \]

2. All consonants are labialised when preceding the open-mid back vowel \([\text{ɔ}]\), though some are more clearly labialised than others depending on the individual speaker.

   \[
   \text{C } \rightarrow [\text{+ round}] / \_ \ [\text{ɔ}]
   \]

\(^9\) Exceptions to these rules are mainly a few verb forms and nouns influenced by Hausa.
Examples:

/bɪkɔ̃ːɾɔ̃ː/ → [bɪkʷɔ̃ːɾɔ̃ː] type of plant
/rʊsɔ̃ːbɔ̃ː/ → [rʊsʷɔ̃ːbɔ̃ː] 'liver'

In this environment preceding back vowels, the labialised consonants are predictable, not contrastive. But when a labialised consonant\(^\text{10}\) occurs before [-back] vowels such as [ɛ] or [a], this is in contrast with the regular (non-labialised) consonant (see Phonology 3.2. Suspect Sequences). So preceding back vowels, what we have is actually a neutralisation of this contrast.

6.2. Phonological Processes

Phonological phenomena which have more than one segment as their domain are often called suprasegmental, though "some phonologists have used the term ... to refer only to length, tone, and stress." (Burquest 2001: 186) The phonological processes discussed here are nasal assimilation, resyllabification across morpheme boundaries in fast speech, spread of nasalisation between syllables within a morpheme, and vowel harmony.

6.2.1. Nasal Assimilation

In the normal fast-speed pronunciation of a phrase, a syllabic nasal will always assimilate to the same place of articulation as the initial consonant of the following morpheme. Place of articulation assimilation also occurs when a word-initial syllabic nasal resyllabifies into the coda of the final syllable of the preceding word (see Phonology 6.2.3. Resyllabification).

Examples 3 and 4 show how [ŋ] surfaces as an allophone of the phoneme /n/ due to nasal assimilation. Examples 1 and 5 have prefixes shown phonemically as /ŋ̃-/ and surfacing phonetically as an allophone [m̃] due to nasal assimilation.

\begin{align*}
(1) /ŋ̃-báñi/ & \rightarrow [ŋbáñi] \\
& 1sg-\text{come.out.PFV}\text{\footnote{PFV = perfective (see Appendix 2 – Abbreviations)}}
& 'I came out' \\
(2) /ŋ̃-dʒə̃ː/ & \rightarrow [ŋdʒə̃ː] \\
& 1sg-\text{go.PFV}
& 'I went' \\
(3) /ŋ̃-kwɔtɔñi/ & \rightarrow [ŋkwɔtɔñi] \\
& 1sg-\text{catch.PFV}
& 'I caught' \\
\end{align*}

\footnote{This is actually interpreted as a Consonant-Glide cluster, as explained in Phonology 3.2. Suspect Sequences.}
6.2.2. Word-Final Vowel Elision

In polysyllabic words the final close front vowel [i] may be elided when following a nasal consonant. While most verbs allow this elision of the final vowel in rapid continuous speech, only some nouns can elide the final [i] vowel (and none that belong to classes 2 or 10). This process of resyllabification for phonetic output results in a syllable with a nasal in the coda.

\[
\begin{align*}
/ùbámí/ & \rightarrow [bám] \quad \text{'tool for beating ground'} \\
/ùjámí/ & \rightarrow [jám] \quad \text{'food'} \\
/pànì/ & \rightarrow [pàn] \quad \text{'gave'} \\
/kèné/ & \rightarrow [kèn] \quad \text{'fell'}
\end{align*}
\]

The tone of the preceding syllable remains the same when the elided vowel is of the same tone level.

\[
\begin{align*}
(6) \ /ùbámí \ tā/ & \rightarrow [ùbán tā] \\
\mathrm{CM3}.\text{tool} & \quad \text{FOC} \\
& \quad \text{'It is a tool.'}
\end{align*}
\]

\[
\begin{align*}
(7) \ /ù^这笔 dô / bámí nà àwà/ & \rightarrow [ù^这笔 dô bán nà wà]^{13} \\
\mathrm{lsg}.\text{sec.PFV} & \quad \text{tool} \quad \text{PREP} \quad \text{dog} \\
& \quad \text{'I see a tool with a dog.'}
\end{align*}
\]

\[
\begin{align*}
(8) \ /ùjámí \ tā/ & \rightarrow [ùján tā] \\
\mathrm{CM3}.\text{food} & \quad \text{FOC} \\
& \quad \text{'It is food.'}
\end{align*}
\]

\[
\begin{align*}
(9) \ /ù^这笔 dô / jámí nà àwà/ & \rightarrow [ù^这笔 jâm nà wà] \\
\mathrm{lsg}.\text{sec.PFV} & \quad \text{food} \quad \text{PREP} \quad \text{dog} \\
& \quad \text{'I see the food with a dog.'}
\end{align*}
\]

When the tone of the preceding syllable is of a different tone level, the tone of the elided vowel will assimilate to give a contour tone.

---

12 CM7 indicates that the syllabic nasal is the class marker prefix for noun class 7, which is a plural class. The noun class system is discussed in Grammar 2. Nouns and Noun Phrases.

13 Note also the elision of the final vowel in the morpheme nô 'with'. This is optional, frequently happening in fast-speech pronunciation.
When the shortened form of such a word is used in continuous speech the nasal consonant in the syllable coda may syllabify to the same place of articulation as the onset of the next syllable.

(14) /ùbámí  tá/  →  [ùbán tá]

CM3.tool  FOC
'it is a beating tool.

(15) /ù-pàní  bê:  jò/  →  [ùpêm bê: jò]

1sg.give.PFV  3sg  goat
'I gave him a goat.

6.2.3. Resyllabification

In continuous speech, syllabic nasals (e.g. 1st person singular pronoun or the plural class marker [n]) are often resyllabified into the coda of the preceding syllable. The tone of the syllabic nasal may then be carried to the preceding syllable, as in (16).

(16) /básáná  ḋtjêjê/  →  [básánán tjêjê]

beat.IMPV  CM7.ground
'Beat the ground!

6.2.4. Vowel Length

Vowels carrying Rising or Falling tone will inevitably show some vowel lengthening. However, the contrasts in Phonology 5.2. Vowels provide evidence for phonemic vowel length on the same tone level.

6.2.5. Nasal Spread

Examples establishing phonemic contrast between oral vowels and nasalised vowels are given in Phonology 5.2. Vowels. Two kinds of environment show such contrast: (1) word-final syllables and (2) word-medial syllables where the onset of the following syllable is a voiceless obstruent.
This section illustrates the process of nasal spread: in Pangu the [+nasal] feature spreads leftwards from any syllable nucleus that is nasalised through a [+sonorant] onset to the next syllable nucleus to the left. The leftward spread of nasalisation is only blocked when the onset consonant is an obstruent or when a word boundary is reached. Nasal spread extends to prefixes such as class markers (on noun roots) and subject pronominals (on verb roots) whenever the root-initial consonant is a sonorant. The rule for nasal spread can be represented as follows:

\[
\begin{array}{ccc}
\text{[+ syll]} & \text{[- syll]} & \text{[+ syll]} \\
\text{[+ son]} & & \\
\text{[+ nas]} & \\
\end{array}
\]

\textit{Figure 3 - Nasalisation Leftward Spread Rule}

In the examples below, syllables affected by nasal spread are highlighted with grey:

\[
\begin{align*}
/hùrù/ & \rightarrow [hù\ ūrù] \quad \text{'shelter, shade'} \\
& \text{nasal spread leftward from final syllable through sonorant /ɾ/ to first syllable} \\
/ùwá:ˈwá/ & \rightarrow [ùwáːwá] \quad \text{'fig tree'} \\
& \text{nasal spread leftward from final syllable through 2 /w/’s to class prefix} \\
/ùr̥t̥u/ & \rightarrow [ùr̥t̥ù] \quad \text{‘tongue’} \\
& \text{both root syllables are emically nasalised; spread leftward from syllable /ɾ̥/ to prefix} \\
/biʔɔːkáwá/ & \rightarrow [biʔɔ:káwá] \quad \text{type of tree} \\
& \text{nasal spread leftward from final syllable through /w/ to medial /a/, then blocked by /k/} \\
/ùuqášu/ & \rightarrow [ùuqášu] \quad \text{‘bed’} \\
& \text{spread leftward from syllable /uqá/ through sonorant /uq/ to prefix}
\end{align*}
\]

Leftward nasal spread does not extend to the noun class prefix in the following examples, due to blocking by obstruents (highlighted with yellow):

\[
\begin{align*}
/bikùmˈbùrù/ & \rightarrow [bikùmˈbùrù] \quad \text{‘stone of fruit’} \\
/ásáˈdɔːgá/ & \rightarrow [ásáˈdɔːgá] \quad \text{‘final weeding’} \\
/əʔirù/ & \rightarrow [əʔirù] \quad \text{‘mortar’}
\end{align*}
\]

The results of testing of a variety of noun roots by acoustic methods also shows that nasalisation does spread from right to left (see \textit{Appendix 1 – Testing Nasalisation}).
6.2.6. Vowel Weakening

Some speakers have been observed to weaken or delete vowels occurring between voiceless consonants across morpheme boundaries, such as class markers prefixing noun roots:

/tı̀káⁿdǎːɾú/ → [tı̊káⁿdǎːɾú] type of stinging leaf

While it is possible some speakers may delete the vowel completely, such a consonant cluster is not permitted by the syllable patterns of the language. This is considered a variant in pronunciation conditioned by the phonetic environment.

6.2.7. Vowel Harmony

Although evident in related languages, vowel harmony has not been observed within Pangu noun roots. There is limited vowel height harmony operating within certain verb classes (see Grammar 3.1. Verb Classes).
7. Tone

Pangu has both lexical and grammatical tone. Examples of grammatical tone include tonal contrast between 2nd and 3rd person singular pronouns (see Grammar 2.3.1. 2nd Person Pronominals as Subject Prefixes) and between regular (indicative) and subjunctive perfective (see Grammar 3.1.7. Contrasting Tone Patterns in Perfective Forms).

Examples of lexical tone patterns furnished here are primarily based on noun roots, but the same tone patterns have been observed on verb roots also. Examples are found in MacDonell (2019: recording session L).

7.1. Lexical Tone Patterns

There are two level tones, High and Low. The following are some examples of these tones occurring in monosyllabic and disyllabic noun roots.\(^{14}\)

<table>
<thead>
<tr>
<th>Tones</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>'bow' [tà]</td>
</tr>
<tr>
<td></td>
<td>'five' [tá]</td>
</tr>
<tr>
<td></td>
<td>'stalk (of maize)' [sâ:]</td>
</tr>
<tr>
<td></td>
<td>'large pot' [sâ:]</td>
</tr>
<tr>
<td></td>
<td>'sun, God' [hʷê]</td>
</tr>
<tr>
<td>LL</td>
<td>'neck' [rùrù]</td>
</tr>
<tr>
<td></td>
<td>'type of fish' [bídʒídʒô]</td>
</tr>
<tr>
<td></td>
<td>'shelter, shade' [hùrù]</td>
</tr>
<tr>
<td></td>
<td>'dove' [hùrú]</td>
</tr>
<tr>
<td>LH</td>
<td>'necklace' [bįjúwâ]</td>
</tr>
<tr>
<td></td>
<td>'oil palm tree' [bįjúwá]</td>
</tr>
<tr>
<td></td>
<td>'grandfather' [dá:dâ]</td>
</tr>
</tbody>
</table>

Trisyllabic roots have been found to carry all eight possible combinations of High and Low tones.

\(^{14}\) A few examples near the end of this set are trisyllabic, but the reader is assured that the first syllable in these examples is a mandatory noun class prefix, not part of the noun root. The disyllabic noun root is what exemplifies the tone pattern.
Pangu roots also exhibit Falling and Rising tones. No distribution pattern associating these contour tones with a particular syllable position has been established, though their association with long vowels is noted. So these tones are understood to be phonemic.

[jô:] 'slowly, cool'
[rʷĩː] 'laziness, smallness'
[pâkù] 'bag'
/bindâːjî] type of small pot
[bipôːsóːri] 'cattle egret'
[bipáp̥ːrú] 'calabash piece, for cooking'
[jîpá] 'soup'
[kẫːwá] type of grasshopper
[swëːswëː] type of bird

The system of High, Low, Falling and Rising tones can be extended to the entire lexicon of the language.
8. Phonemic Inventory

8.1. Consonant Phonemes

<table>
<thead>
<tr>
<th></th>
<th>labial</th>
<th>alveolar</th>
<th>palatal</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>t</td>
<td>k</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>d</td>
<td>g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ⁿb</td>
<td>ⁿd</td>
<td>ⁿg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>s</td>
<td>ʃ tf</td>
<td>h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v</td>
<td>z</td>
<td>3 dʒ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ⁿv</td>
<td>ⁿz</td>
<td>ⁿ3 nʃ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>w</td>
<td>j</td>
<td>u</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 3 - Consonant Phonemes*

Comments

[k̚p] and [g̚b] appear to be phonemic and yet are very rare. It is thought these sounds are dying out in Pangu. They can also be realised by [p] and [b] respectively, though this is a matter of speaker variation.

[u] is understood to be a sequence [jw] occurring only before [ɔ] and thus not phonemic. [k̚b̚] 'ginger' and [ʔb̚b̚] 'grasshopper' are interpreted as /kjɔ̃/ and /ʔjɔ̃/ respectively, with anticipatory lip rounding on the onset consonant cluster (see Phonology 6.1.3. Labialisation Rules).

8.2. Vowel Phonemes

<table>
<thead>
<tr>
<th></th>
<th>i iː</th>
<th>iː</th>
<th>ɛ eː</th>
<th>ɛː</th>
<th>e ɛː</th>
<th>ɔ oː</th>
<th>ɔː</th>
</tr>
</thead>
<tbody>
<tr>
<td>a aː</td>
<td>aː</td>
<td>aː</td>
<td>a aː</td>
<td>aː</td>
<td>aː</td>
<td>aː</td>
<td></td>
</tr>
</tbody>
</table>

*Table 4 - Vowel Phonemes*
8.3. Distribution Restrictions

/ɰ/ has been observed only to occur before central vowels.

Syllabic nasals only occur in root-initial position.

Nasalised vowels are phonemic but only occur in contrast with their oral counterparts in word-final position or prior to voiceless obstruents.
Part II – Grammar

1. Lexical Categories

The emphasis in this section is more on the way words of the various categories function in Pangu propositions than on formal definitions of each category. Grammatical properties are noted for nouns and verbs, but not necessarily for more ambiguous word forms such as adjectives, adverbs and conjunctions. The intention is to give a practical overview of word categories that is useful particularly to those involved in the development of a written standard for the language.

1.1. Nouns

Pangu nouns can be divided into noun classes based on a system of bound class markers (see Grammar 2.1. Class Markers). As well as morphological class, these noun class prefixes also represent singular and plural number.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ù-rwągà</td>
<td>'river'</td>
</tr>
<tr>
<td>à-rwągà</td>
<td>'rivers'</td>
</tr>
<tr>
<td>bì-káràbì</td>
<td>'sheep'</td>
</tr>
<tr>
<td>bì-káràbì</td>
<td>'sheep (plural)'</td>
</tr>
</tbody>
</table>

1.2. Pronouns

Pronouns are tied into the noun class system. For example, bound pronominal prefixes frequently occur on verbs indicating subject and even object agreement with referents of particular classes. But there are also independent forms of pronouns, also marked for class, which function syntactically as distinct words.

a. Personal – see Grammar 2.3. Personal Pronominals.

b. Possessive – see Grammar 2.4. Possessive Pronouns.

c. Indefinite

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ījájíni¹⁵</td>
<td>'something'</td>
</tr>
<tr>
<td>kó: rí / kó: jájíni / kó: bù-kó¹⁶</td>
<td>'nothing / nothing / nobody'</td>
</tr>
<tr>
<td>kàjá:</td>
<td>'somewhere'</td>
</tr>
<tr>
<td>kó: kàjá:</td>
<td>'nowhere'</td>
</tr>
</tbody>
</table>

¹⁵ Phonemic representation is used for Pangu words throughout Part II Grammar, building on discoveries made in Part I Phonology. Phonemic brackets are not included as part of this representation; Pangu words in the body of the text are italicised.

¹⁶ kó: is derived from Hausa ko ('even')
1.3. Noun Modifiers

Pangu does not seem to have any "true" adjectives. Mostly other descriptive strategies are used. Only quantifiers, numerals and demonstratives directly modify the noun.

hwárapí  'many'
má  'much, plenty'
gé  'few'
nonné  'this'
jéré:  'that'
nonnédérè  'that particular'

Examples:
à-uqátú hwárapí  'many people'
à-jùwà má  'much money'
ù-címà nonné  'this farm'
ù-címà jéré:  'that farm'

1.4. Verbs

Verbs have the following grammatical properties:

1. They can take a variety of prefixes and suffixes indicating tense and aspect.
2. The tone pattern and final vowel of the verb stem indicate modality and some kinds of aspect, as is demonstrated in Grammar 3.1. Verb Classes.
3. They always have identifiable subjects and potentially also have identifiable objects and other arguments such as location, as appropriate to the semantic properties of the verb.
4. They can show subject concord (by a pronominal prefix indicating the noun class membership of the subject referent) but, unlike nouns, they have no class markers, whether explicit or inherent. This is further discussed in Grammar 2.2. Noun Class Agreement.

\[17\] bi- is a noun class marker and any other noun class marker can be used in its place.
(1) to (6) are examples of verbs (with each verb root indicated in **bold** and the final vowel suffix segmented by a hyphen)\(^{18}\), found in MacDonell (2020: recording session B).

1. **Adverbs**

Most commonly, Prepositional Phrases function in place of adverbs. However there are a few adverbs and ideophones and these tend to appear in final position in the verb phrase (see Grammar 3.6. **Adverbs**). Examples in this section are found in MacDonell (2020: recording session C).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>fúkù:</td>
<td>'gently, carefully'</td>
</tr>
<tr>
<td>sá:</td>
<td>'slowly'</td>
</tr>
<tr>
<td>kí / tò</td>
<td>'well, accurately'</td>
</tr>
<tr>
<td>gúmùnù</td>
<td>'well'</td>
</tr>
<tr>
<td>mázámáza</td>
<td>'fast' (from Hausa)</td>
</tr>
</tbody>
</table>

The following are examples of sentences containing adverbs. The last example shows an adverb in a marked position, at the beginning of a clause.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>húrò fúkù:</td>
<td>'Go carefully!'</td>
</tr>
<tr>
<td>fà: wù: sá:</td>
<td>'Put it (down) slowly!'</td>
</tr>
<tr>
<td>bì-ndjẹ tò</td>
<td>'You did well.'</td>
</tr>
<tr>
<td>gà: ròtjí gúmùnù</td>
<td>'Did you sleep well?'</td>
</tr>
<tr>
<td>gòn ròtjí gúmùnù</td>
<td>'I slept well.'</td>
</tr>
</tbody>
</table>

---

\(^{18}\) The final suffix on the verb is not always segmented in the presentation of examples in later sections as it is in (1) to (6). Usually it is left unsegmented because its form is not relevant to the thrust of the presentation (e.g. where noun forms and not verbs are under discussion). The gloss line may still signify its presence.

\(^{19}\) The vowel quality of this suffix varies depending on the class the particular verb belongs to.
'Indeed, I slept well.'

1.6. Prepositions

The preposition morpheme *nə* is obligatory in Prepositional Phrases. Grammar 2.8. Preposition Morpheme *nə* explains that this morpheme is realised by different allomorphs depending on the class membership of the noun that follows it (and its tone varies with the tone of the final syllable of the preceding word). (7) to (10) all use the common allomorph *nə*. This is glossed simply PREP to cover the variety of context-determined English glosses referring to location such as 'on', 'in', 'at', 'by', 'with'. The Prepositional Phrase consists of the preposition followed by a noun phrase – in (9) and (10) a locational noun precedes the preposition to give more specific locational information (MacDonell 2020: recording session D).

(7) *bù-nè: ná-tʃimà* 3sg-be.LOC PREP-farm 'he is in the farm'
(8) *bù-nè: ná-inà ndábwà* 3sg-be.LOC 3sg.POSS 'he is in his house'
(9) *bù-nè: dškó ná-inà ndábwà* 3sg-be.LOC nearness PREP-house 3sg.POSS 'he is close to his house'
(10) *bù-nè: tútú ná-inà ndábwà* 3sg-be.LOC distance PREP-house 3sg.POSS 'he is far from his house'

1.7. Conjunctions

There are a number of words that can be used to join clauses. Some example sentences are given in Grammar 4.1. Conjunctions.

* Má 'and' (as Verb Phrase conjunction)
* Wáná 'because'
* Ná 'when'
* Àmá 20 'but'

1.8. Question Words

Question words often fill argument and adjunct slots in a sentence as pronouns or adverbs do. However, they are presented here in a separate category because of their importance in focus constructions. Grammar 4.5. Clauses in Interrogative Mood gives examples of their usage in interrogative sentences.

*i-bò* 'what?'
*i-mbá tá* 'what?'

20 From Hausa.
ì-já:  'who?'
ì-já  'which?'
pék, pékátá  'where?'
hánhbà  'how many?'
pâ: / hà:  'how is?'
nû:  Yes/No question marker
2. Nouns and Noun Phrases

2.1. Class Markers

Every Pangu noun can (but does not always) take a bound class marker prefix. As outlined in Phonology 1.1. Noun Class Markers, a class marker can be one of the following:

1. \( bù \)\(^{21} \) singulars, person
2. \( bì \) singulars, person, some animals
3. \( ù \) singulars (very common)
4. \( à \) some singulars; plurals\(^{22} \)
5. \( ì \) some singulars (rare); plurals
6. \( rù \) singulars
7. \( ñ / ñ̃ \) plurals (syllabic nasal)
8. \( sù \) plurals
9. \( mà \) liquid nouns
10. \( tô \) mass nouns (and others)

In the above list each class marker has been numbered and these numbers are used when glossing language data. However, the numbers are arbitrary and not intended to correspond to the classification of noun classes put forward for other Kainji languages, e.g. (Paterson 2012). Based on the same data available to us, Blench (2018: 94–95) asserts Pangu has retained some important proto-Niger-Congo prefixes. He presents a paired alignment of Pangu class prefixes with his own comments on semantic classification, but no numbering except for classes 1 and 6 (the latter is here identified as class 9).

Phonological processes can cause the vowels of some \( CV \) class markers to vary, but all variants are treated as being realisations of the same class marker. It is noted that \( tô \) sometimes exhibits backness harmony with the initial noun root vowel (though the extent of this can vary between speakers). However, similar harmonising behaviour has not been observed with any of the other class marker prefixes. The syllabic nasal (which could be represented Ñ) assimilates to the place of articulation of the first syllable onset of the following noun root.

It has been difficult to determine semantic classes with greater detail than given in the list above. Certain class markers tend to prefix noun roots referring to people (\( bù \), and \( à \) in the plural), liquids (\( mà \)) as well as mass nouns and names of languages (\( tô \)).

\(^{21}\) The underlying tone on all class markers is believed to be Low.

\(^{22}\) Class 4 and Class 5 are each presented as two separate classes in Section 2.2. Noun Class Agreement, with Classes 4a and 5a being singulars and Classes 4b and 5b being plurals.
More common (or domestic) animals (e.g. cows, sheep, goats) generally belong to the *bi* singular class and these mostly take *i* in the plural form. *bi* can also prefix some roots to give a diminutive meaning (though that does not mean all nouns with this class marker are necessarily in the diminutive form). An example is shown below, but see Grammar 2.5. **Diminutive and Augmentative Noun Forms** for more examples of diminutive forms.

\[
\begin{align*}
\text{ù-ʔúndú} & \quad \text{'mountain'} \\
\text{bi-ʔúndú} & \quad \text{'hill'}
\end{align*}
\]

It is not easy to establish genders based on pairings of class markers. Although many noun roots do appear to have "default" class markers, some do not consistently take the same markers, particularly in the plural form (where two or more plural class markers may be appropriate for some noun roots). In some cases other semantic differences may be encoded, e.g. the plural for 'tooth' is ā-ʃā ("teeth"), but sù-ʃā is used to refer to the 'teeth' of something man-made, such as the links on a bicycle chain.

Figure 4 shows the possible pairings of class markers a noun root can take for singular (left hand side) and plural (right hand side). The lines in bold show the most common pairings. No pairings are associated with *ma* and *tə*, since nouns in those classes are not countable.

![Figure 4 - Observed Pairs of Pangu Noun Class Markers](image)

The dotted line in Figure 4 represents an uncommon pairing. There is very limited evidence for *i* as a singular class marker. While some nouns can take this class marker (and ḳ̄ for plurals) they can also legitimately take a more common gender. For example, both of the following pairings are correct:

\[
\begin{align*}
\text{i-ʃimā} & \quad \text{'farm'} \\
\text{ṅ-ʃimā} & \quad \text{'farms'}
\end{align*}
\]
It may be that the *u- / a-* noun class pairing indicates greater size, value or importance of the noun but this is a matter for further research.

### 2.1.1. Erosion of Noun Class System

It has been suggested that Pangu also has a zero class marker, but this is no longer believed to be the case. When pressed, a speaker can give a non-null class marker prefix for any noun. What is instead evident is that the class marker system is eroding. As Blench (2018: 94) puts it, "The Rin [Pangu] system of nominal prefixes is quite reduced ..." 23

How does this erosion show itself? Though class marker prefixes are still regularly used on plural and uncountable nouns (classes 7-10), singular nouns of classes 3 and 4 (*ù* and *à*) frequently appear without their class marker prefix. In the following example set, (11) shows both the absence and presence of the *ù* class marker on the noun *kújá* 'chicken' (MacDonell 2020: recording session E1). The use of the class marker in this utterance may have some discourse function (e.g. topicality) that requires further investigation.

(11) *ù*-tʃìmà ʔwí

chicken die

'The chicken died'

(12) ñ̩̀-tá-sɔ́ kújá nì:-jò ù-kújá bwà ʔwí

1sg.PST.buy chicken PREP.CM2-goat CM3-chicken AG3.INDE die

'I bought (a) chicken and (a) goat. The chicken died.'

In the case of *bù* and *bì*, the class marker is realised when the noun is at the beginning of a clause but elsewhere erosion usually leads to the absence of the class marker and lengthening of the final vowel of the preceding word. Such vowel lengthening (and in this case, change of vowel quality) can be seen in the preposition *nɔ́* in (12) and (14).

(13) bì-jò: ʔwí

CM2-goat.CM2 die

'The goat died'

(14) ñ̩́-tá-sɔ́ kújá nì:-jò bì-jò: bè ʔwí

1sg.PST.buy chicken PREP.CM2-goat CM2-goat AG2.INDE die

'I bought (a) chicken and (a) goat. The goat died.'

Plural nouns require their prefixes to differentiate them from their singular counterparts.

---

23 Blench goes on to posit a zero singular prefix for many nouns in singular form, based on data that omitted the underlying class marker prefix for many singular nouns. However, our claim is that the zero prefix is never consistently upheld by Pangu speakers as the only possibility for any noun.
(11) – (14) do not show the behaviour of all noun classes. Further text collection and analysis are needed to determine what happens with these, and to ascertain whether the presence or absence of class markers has some relevance at the discourse level.

It is thought that the presence of the associative marker ná reduces the need for agreement noun class markers. The associative marker and the agreement affixes tend to be reduced to varying extents in West Kainji languages. Further evidence for the erosion of the noun class system is seen throughout the noun and verb phrase, and this will be highlighted as appropriate in this paper.

2.1.2. Loan Words

One of the most common singular/plural pairings is u/a. This is the gender borrowed nouns are most often assigned to, even if they refer to people (and would otherwise be expected to join the bu/a gender). For example:

ù-tákàdá   à-tákàdá   'book'
ù-dókútò   à-dókútò   'doctor'
ù-ópíšà   à-ópíšà   'officer'

It is interesting to note some loan words can be assigned to a noun class simply because the first syllable of that noun is identical to one of the class markers. For example, the Hausa loan màkàrántá ('school'), joins the liquids mà class as shown by the realisation of the ma class marker on modifiers of the noun.

(15) màkàrántá   mà-né mí
    CM9.school   AG9-1sg.POSS
    'my school'

2.1.3. Proper Names

It seems the names of people do have inherent class markers but these have been difficult to elicit along with the name.24 In some cases the class marker seems to reflect phonetic characteristics of the initial syllable of the name but often both the ù and i class marker are deemed acceptable for a proper name.

ì-bísálà 'Bisallah'   ù-íšá 'Isah'   i-jákúbù 'Yakubu'

However, for some speakers, optional class marker prefixes are used to emphasise physical stature.

---

24 One context where the noun class marker associated with a name becomes clear is a counterfactual statement, e.g. the Pangu equivalent to 'Had Yakubu been there, then they would have chosen him.'
í:sá 'Isah'
ù-í:sá 'Isah (big in size)'
bì-í:sá 'Isah (small in size)'

If required, the class marker of place names will always be ù.

2.2. Noun Class Agreement

Noun class markers in Pangu are mostly prefixes. Where class markers are realised on noun modifiers (or targets) within a noun phrase, they are usually identical to the class marker prefixing the noun. Related bound roots are prefixed or suffixed by the Associative (possessive) marker na 25. Table 5 shows the noun class agreement system. The column labelled Subject Agreement is for subject pronoun prefixes on the verb.26 These are identical to those used for demonstrative and number (not shown). The columns further right show the Independent Pronoun (which can also function as a subject pronoun), Object Pronoun, Associative marker used for Noun Phrases and the Possessive Pronoun (or Associative Pronoun, examples found in MacDonell (2020: recording session E2)).

---

25 See the "ASC" column of Table 5.

26 Haspelmath (2013: 197) contends that confusion arises in use of the concepts of ‘pronoun’ and ‘agreement’ in situations where there are bound person-marking forms on the verb. He proposes instead the concept of argument indexing for situations such as the one we are describing here for Pangu.
The following example sets illustrate the use of agreement markers (or sometimes lack thereof) for nouns of three different classes (MacDonell 2020: recording sessions E3–E5).

**Noun class marker 2 bi-: 'calabash' bi-gwàgà, and agreement for various syntax**

(16) **Noun Prefix (on object)**

  páná          bi-gwàgà
give.IMPV       CM2-calabash

'Hand over (give) calabash!'

(17) **Reduced pre-ASC**

  bi-gwàgà:      ndá:bwà
  CM2-calabash.AG2   AG1.POSS

'his calabash'

---

27 The class numbering system used in Grammar 2.1, Class Markers is repeated in Table 5, except that classes 4 and 5 are split between the Singular and Plural uses of the marker.

28 Parentheses indicate optionality of agreement markers occurring with *ná*. The agreement marker occurs before or after *na*, depending on which class it refers to. In theory, two agreement markers could link to *na* if N1 and N2 are of different classes and both display agreement or class markers. This case is considered in Grammar 2.7. Associative Marker *ná*. Most examples here have N2 as a modifier target, so only the agreement marker corresponding to N1 surfaces.
Part II – Grammar

(18) **pre-ASC, Subject Agreement**

\[
\begin{array}{llll}
\text{ní-ndō} & \text{bi-gwàgā}: & \text{nì:mǐ?} & \text{bi-hwàtʧí.} \\
\text{1sg-see.PFV} & \text{CM2-calabash.}\text{AG2} & \text{1sg.POSS} & \text{AG2-break.PFV}
\end{array}
\]

'Where is my calabash? (lit. Do I see my calabash?)' 'It is broken.'

(19) **reduced Subject Agreement**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{hwàtʧí} \\
\text{CM2-calabash.}\text{AG2} & \text{break.PFV}
\end{array}
\]

'A calabash is broken.'

(20) **reduced Subject Agreement**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{nì:-hwàtá} \\
\text{CM2-calabash.}\text{AG2} & \text{FUT-break.IPVF}
\end{array}
\]

'A calabash will break.'

(21) **pre-ASC**

\[
\begin{array}{llll}
\text{bì-tá-ndō} & \text{bi-gwàgā:} & \text{nì:mì} & \text{hùndárà? \text{è:} bì-tá-ndō} \\
\text{2sg-PST-see.PFV} & \text{CM2-calabash.}\text{AG2} & \text{1sg.POSS yesterday yes} & \text{1sg-PST-see.PFV}
\end{array}
\]

'Did you see my calabash yesterday?' 'Yes, I saw (it).'

(22) **object pronoun**

\[
\begin{array}{ll}
\text{bù-jàtù} & \text{tá tā-hwàtʧí bù:} \\
\text{CM1-sibling.1sg.INAL be.FOC PST-break.PFV AG2.OBJ}
\end{array}
\]

'My *brother*\(^{29}\) broke it.'

(23) **reduced pre-ASC, reduced pre-adjective**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{ná: fọ} \\
\text{CM2-calabash.}\text{AG2} & \text{ASC.}\text{AG2 new}
\end{array}
\]

'a new calabash'

(24) **reduced pre-ASC, reduced pre-adjective**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{ná: fíří} \\
\text{CM2-calabash.}\text{AG2} & \text{ASC.}\text{AG2 black}
\end{array}
\]

'a black calabash'

(25) **reduced pre-demonstrative**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{nì:nà} \\
\text{CM2-calabash.}\text{AG2} & \text{this}
\end{array}
\]

'this calabash'

(26) **reduced pre-demonstrative**

\[
\begin{array}{ll}
\text{bi-gwàgā:} & \text{jèrè:} \\
\text{CM2-calabash.}\text{AG2} & \text{that (visible)}
\end{array}
\]

'that calabash'

\(^{29}\) 'Sibling' is one of 18 nouns that take a set of inalienable possessor pronouns.
Part II – Grammar

(27) **reduced pre-demonstrative**

bi-gwàgà: nónndóré

CM2-calabash AG2 that (particular)

'that particular calabash'

(28) **interrogative pronoun agreement, reduced noun prefix**

bi-j jó: gwàgà

AG2-which CM2 calabash

'Which calabash?'

(29) **reduced number agreement**

bi-gwàgà: kó

CM2-calabash AG2 one

'one calabash'

(30) **number agreement**

̥-gwàgà ̥-tándátù

CM7-calabash AG7-eight

'eight calabashes'

(31) **reduced Relative construction**

bi-gwàgà: ná: gá: tá-ʃé:

CM2-calabash AG2 ASC AG2 2sg PST-buy DIST

'the calabash which you bought'

Noun class marker 3 ̥-: 'monkey' ̥-uá ámbá

(32) **no noun prefix**

páná uá ámbá

give IMPV monkey

'Hand over (give) monkey'

(33) **no agreement**

uá ámbá nímí

monkey 1sg.POSS

'my monkey'

(34) **subject agreement**

̥-ndšì uá ámbá? ̥-gídígì.

1sg-see.PFV monkey AG3-run.PFV

'Where is monkey? (lit. Do I see monkey?) 'He ran away,'

(35) **noun prefix, no subject agreement**

̥-uá ámbá gidígì

CM3-monkey run.PFV

'Monkey ran away.'

(36) **noun prefix, no subject agreement**

̥-uá ámbá ̥-gídàgò

CM3-monkey FUT-run.IPVF

'Monkey will run away.'
(37) **object pronoun**

\[
{\text{bf-tá-ndší}} \quad {\text{uúmá}} \quad {\text{húndáร่า}} \quad {\text{è}}: \quad {\text{ñ-tá-ndší}} \quad \text{wú:}
\]

2sg-PST-sec.PFV  monkey  yesterday  yes  1sg-PST-sec.PFV  AG3.OBJ

'Did you see a monkey yesterday?' 'Yes, I saw him.'

(38) **independent pronoun, possessive, subject agreement**

\[
{\text{bwá}} \quad {\text{ná-hjúhjú}} \quad \text{ndábwá} \quad \text{ù-ní-gidáŋó}
\]

AG3.INDE  PREP-head  AG3.POSS  AG3-FUT-run.PFV

'He himself will run away.'

(39) **no pre-ASC agreement**

\[
{\text{ñ-hmá}} \quad {\text{uúmá}} \quad \text{ná} \quad \text{tändé?}
\]

1sg-PST  monkey  ASC  white

'Where's a white monkey? (lit. Do I see a white monkey?)'

(40) **no pre-ASC agreement**

\[
{\text{ñ-hmá}} \quad {\text{uúmá}} \quad \text{ná} \quad \text{jírf?}
\]

1sg-PST  monkey  ASC  black

'Where's a black monkey? (lit. Do I see a black monkey?)'

(41) **no agreement**

\[
{\text{uúmá}} \quad \text{ñánhná}
\]

monkey  this

'this monkey'

(42) **no agreement**

\[
{\text{uúmá}} \quad \text{játá}^{30}
\]

monkey  that (known to you)

'that monkey'

(43) **no agreement**

\[
{\text{uúmá}} \quad \text{jéré:}
\]

monkey  that (visible)

'yonder monkey'

(44) **no agreement**

\[
\text{jó:} \quad \text{uúmá} \quad ?
\]

which  monkey

'Which monkey?'

(45) **no agreement**

\[
{\text{uúmá}} \quad \text{kó}
\]

monkey  one

'one monkey'

---

^{30} Four demonstratives occur in data in this section and are understood as follows: *ñánhná* 'this', *jéré* 'that' (referring to something visible), *ñándššé* 'that' (identifying one particular object among many visible), *játá* 'that' (referring to something not visible but already known about).
agreement on plural numbers
sù-ùsá mà: sù-ttàndàù
CM8-monkey AG8-eight
'eight monkeys'

no agreement (ASC as linking in a relative clause)
ù-ùsá mà: tà-t'à
CM3-monkey ASC 2sg.INDE PST-buy.DIST
'a monkey which you bought'

Noun class marker 9 mà: 'oil' mà-rìgà

noun prefix
pànà mà-rìgà
give.IMPV CM9-oil
'Hand over (give) oil'

agreement on possessive pronoun
mà-rìgà mà-nìmì
CM9-oil AG9-1sg.POSS
'my oil'

agreement on POSS, subject
ní ndàlì mà-rìgà mà-nìmì? mà-tà-ùsàjì
1sg-sec PFV CM9-oil AG9-1sg.POSS AG9-PST-spill.PFV
'Where is my oil? (lit. Do I see my oil?)' 'It has spilt.'

subject agreement
mà-rìgà mà-ùsàjì
CM9-oil AG9-spill.PFV
'Oil is spilt.'

subject agreement
mà-rìgà mà-nì-ùsàjì
CM9-oil AG9-FUT-spill.PFV
'Oil will be spilt.'

possessive agreement, object agreement
bì-tà-ndàlì mà-rìgà mà-nìmì hàndàrà? ní: ní-tà-ndàlì mú:
2sg-PST-sec.PFV CM9-oil AG9-1sg.POSS yesterday yes 1sg-PST-sec.PFV AG9.OBJ
'Did you see my oil yesterday?' 'Yes, I saw it.'

reduced subject agreement, object pronoun
bù-jàtù tà: tà-ùsàjì
CM1-sibling.1sg.INAL be.FOC.AG1 PST-spill.PFV AG9.OBJ
'My brother spilt it.'

ASC agreement
mà-rìgà nà mà-fò
CM9-oil ASC AG9-new
'new oil'
(56) **ASC agreement**

mà-rígò ná má-jëndʒè
CM9-oil ASC AG9-red
'red oil'

(57) **demonstrative agreement**

mà-rígò mà-nánná
CM9-oil AG9-this
'this oil'

(58) **demonstrative agreement**

mà-rígò mà-jάtά
CM9-oil AG9-that (known to you)
'that oil' / 'the oil'

(59) **demonstrative agreement**

mà-rígò mà-nάnndάré
CM9-oil AG9-that (particular)
'that particular oil'

(60) **agreement on interrogative pronoun**

mà-jά mà-rígò ?
AG9-which CM9-oil
'Which oil?'

(61) **agreement of relative clause object**

mà-rígò ná má-gά: tά-sά
CM9-oil ASC AG9-2sg.INDE PST-buy.PFV
'the oil which you bought'

It has been observed that independent pronouns representing nouns of classes 1 to 5 often do not have the optional agreement prefix (see **Table 5 - Noun Class Markers & Agreement Markers**). It may be the use of the class marker prefix signals topicality of the thing referred to, but further research would be needed to establish this. Singular nouns are often uttered without a class marker prefix on the noun or any agreement marking, and this is believed to be a result of erosion as discussed in Grammar 2.1.1. **Erosion of Noun Class System.** The class markers bù and bì do not display this optionality but on agreement targets the agreement markers are not always fully realised, instead often being evidenced by vowel lengthening on the preceding syllable (we have called this reduced agreement marking).

Nouns with mà and tó class markers always carry the class marker on the root and the agreement marker on each target. (61) to (68) are found in MacDonell (2020: recording session E1).

(62) mà-hί: nά má-jëndʒè
CM9-blood ASC AG9-red
'red blood'
Part II – Grammar

(63) has been elicited with class markers prefixing each noun modifier. However, (64) shows that all class markers can be omitted, apparently with no change of meaning.

(63) ù-təɾi  ù-nəŋnəðrɛ:  ù-ná  ətɔ  ù-ná  hè:  ù-kìnäi
   CM3-stone  AG3-that(particular)  AG3-ASC  big  AG3-ASC  wide  AG3-fall.over.PFV
 'That big wide stone fell over'

(64) təɾi  nəŋnəðrɛ:  ná  ətɔ  ná  hè:  kìnäi
   stone  that (particular)  ASC  big  ASC  wide  fall.over.PFV
 'That big wide stone fell over.'

As shown in (65), the class marker prefix on the noun is required to show plurality.

(65) à-təɾi  à-nəŋnəðrɛ:  à-ná  ətɔ  à-ná  hè:  à-kìnäi
   CM4-stone  AG4-that (particular)  AG4-ASC  big  AG4-ASC  wide  AG4-fall
 'Those big wide stones fell'

(66) is an example where the agreement marker is a suffix on the associative (na) morpheme.

(66) sù-wá  sù-jérɛ:  ná  sù-ndʒɛkɛ  sù-ʔwí
   CM8-mosquito  AG8-that  ASC  AG8-small  AG8-die.PFV
 'Those small mosquitoes (there), they died'

The syllabic nasal (plural) agreement marker is believed to prefix the associative morpheme and other modifiers, as shown in (67).

(67) ñ-gwàɡá  ñ-ná  ñ-fô
   CM7-calabash  AG7-ASC  AG7-new
 'new calabashes'

(68) shows a noun phrase in which the agreement target is a number. The number tá 'five' is not preceded by the na morpheme as is the modifier fô 'new' in (67). However, the agreement prefix on tá is pronounced with the same high pitch as the final syllable of the preceding word. It seems the spread of high pitch onto the AG7 prefix within the noun phrase is grammatically significant, so it is marked as emic High tone. Further research into this topic is recommended.

(68) ñ-ǰuwá  ñ-tá
   CM7-palm.tree  AG7-five
 'five palm trees'

2.3. Personal Pronominals

Grammar 2.2. Noun Class Agreement has shown how the 3rd person pronominals, whether as agreement prefixes or as independent pronouns, are an integral part of the Pangu noun class

31 For the same reason emic High tone is marked on the second occurrence of AG7 in (67). The significance of this tone spread is given further support with examples in Grammar 4.6. Clauses Constructed with Focus Copula tá.
system. This section looks primarily at pronominals which refer to 1st and 2nd person. These referents are independent of the noun class system.

Table 6 shows pronominals for 1st person and 2nd person. The 3rd person pronominals are already shown in the Subject Agreement column of Table 5 - Noun Class Markers & Agreement Markers. Most commonly these are prefixes bù- or bì- for a 3rd singular subject and à- for a 3rd plural subject.32

<table>
<thead>
<tr>
<th>Person &amp; number</th>
<th>Subject Prefix on Verb</th>
<th>AG#.INDE</th>
<th>AG#.OBJ Affix(es) on Verb</th>
<th>AG#.POSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>ŋ-</td>
<td>gán</td>
<td>ŋ- (Verb prefix)</td>
<td>nóm</td>
</tr>
<tr>
<td>2sg</td>
<td>bú- - bì-</td>
<td>gá:</td>
<td>double length of subject agreement prefix on Verb root</td>
<td>ndá:</td>
</tr>
<tr>
<td>1pl</td>
<td>tā-</td>
<td>gāstú</td>
<td>tā- (verb prefix)</td>
<td>ndástú</td>
</tr>
<tr>
<td>1pl.INCL</td>
<td>tàn-</td>
<td>gāstún / (ŋ)gāstù</td>
<td>tàn- (verb prefix)</td>
<td>ndástú</td>
</tr>
<tr>
<td>2pl</td>
<td>í-</td>
<td>gāshí</td>
<td>double length of subject agreement prefix on Verb root plus mà (after Verb)</td>
<td>nihí</td>
</tr>
</tbody>
</table>

Table 6 - Pronominals for First and Second Person

While independent pronouns function as words, affixes are bound to either a verb root or the tense and aspect "slots", described in Grammar 3.5.1. Verbal Prefix Slots. The independent pronoun has only been observed in object position as a question, in combination with an object affix, as a form of emphasis or focus. Further study of discourse patterns is needed to understand the use of the independent pronoun in various contexts.

(69) à:-pānī
3pl.2sg.OBJ-give.PFV
'they gave you'

(70) à:-pānī    gā:
3pl.2sg.OBJ-give.PFV INDE.2sg
'they gave you?'

2.3.1. 2nd Person Pronominals as Subject Prefixes

There are two different 2nd person singular subject pronoun prefixes, bù- and bì-. These are in tonal contrast to two of the 3rd person singular prefixes bù- and bì-. As is the case for 3rd person reference, which of these two 2nd person pronominals is used seems to be determined

32 But other Subject Agreement prefixes from Table 5, though less common, are possible depending on the noun class of the thing/person being referred to.
by the name or stature of the person being spoken to (though Pangu speakers who also know some English often equate bí- with 'you (diminutive)'). It is believed the only difference between declarative statements using the sets of 2<sup>nd</sup> person singular and 3<sup>rd</sup> person singular prefixes is that of tone. (MacDonell 2020: recording session F3).

(71) hùndárà bù-tá-tôñí kàsùwuá
yesterday 2sg-PST-enter.PFV market
'Yesterday you entered the market.'

(72) hùndárà bù-tá-tôñí kàsùwuá
yesterday 3sg-PST-enter.PFV market
'Yesterday he entered the market.'

(73) hùndárà bì-tá-re jàmí
yesterday 2sg-PST-eat.PFV food
'Yesterday you ate food.'

(74) hùndárà bì-tá-re jàmí
yesterday 3sg-PST-eat.PFV food
'Yesterday she ate food.'

2.3.2. 2<sup>nd</sup> Person Pronominals as Object Prefixes

In object position, the 2<sup>nd</sup> person singular pronoun is represented by a floating Low tone on the syllable immediately preceding the verb root. If a Low tone is already present on this syllable, vowel lengthening will result. Where a High tone is present on this syllable, vowel length along with a Falling tone is realised. (MacDonell 2020: recording session F4).

(75) jákùbú pàñí jùwà
Yakubu give.PFV money
'Yakubu just gave money'

(76) jákùbù: pàñí jùwà
Yakubu.2sg.OBJ give.PFV money
'Yakubu just gave you money'

(77) jákùbú tá-pàñí jùwà
Yakubu PST<sup>13</sup>-give.PFV money
'Yakubu gave money'

(78) jákùbú tâ:-pàñí jùwà
Yakubu PST.2sg.OBJ-give.PFV money
'Yakubu gave you money'

(79) jákùbú nì:-pàñá jùwà
Yakubu FUT-give.IPFV money
'Yakubu will give money'

The morpheme tá is believed to indicate a recent past (such as 'yesterday' or 'last week') that is more remote than the last few hours but still more immediate than Remote Past. (Some further discussion of this morpheme can be found in Grammar 3.5.1. Verbal Prefix Slots).
(80) jà:kúbú nèmàː-páná jùwà
Yakubu FUT.2sg.OBJ-give.IPFV money
'Yakubu will give you money'

2nd Person Plural functions in the same way, with the addition of the pronoun mà after the verb.

(81) jà:kúbú tàː-pònì mà jùwà
Yakubu PST.2sg.give.PFV 2pl money
'Yakubu gave you (plural) money'
(82) jà:kúbú nèmàː-páná mà jùwà
Yakubu FUT.2sg-give.IPFV 2pl money
'Yakubu will give you (plural) money'

Pangu speakers often use the Hausa greeting [sànnū] (from Hausa sanну) but add [ma] when greeting more than one person.

(83) sànnú mà
greeting 2pl
'Greetings' (to many people)
(84) à-ujàːtú mà
CM4-people 2pl
'People' (when addressing many people)

This marker is also used following the imperative verb form when addressing commands to more than one person.

(85) ʃíɾáːɡá
listen
'Listen!' (addressing 1 person)
(86) ʃíɾáːɡá mà
listen 2pl
'Listen!' (addressing many people)
(87) hùʃò ɡìʃò
pass reach.home
'Go home!' (addressing 1 person)
(88) hùʃò mà ɡìʃò
pass 2pl reach.home
'Go home!' (addressing many people)

2.3.3. Comment on Some 3rd Person Singular Pronominals

As with 2nd person singular, there are also a number of different realisations of the 3rd person singular subject pronominal. Though it is not clear, it seems bù- or bwà is used when referring
to people who are larger (physically) or of higher status than those referred to by bi- or bɛ̀.34
(females tend to have the latter forms). Alternatively, it may be that the class marker associated
with each Proper Name (though rarely realised) determines which form of the pronoun is used
(e.g. ù- class markers give rise to bù- or bwà and i- to bi- or bè). Further research is needed
here.

2.3.4. 1st Person Plural Pronominals

(MacDonell 2020: recording sessions F5 and F6).

As shown in Table 6 - Pronominals for First and Second Person (at the beginning of Grammar
2.3. Personal Pronominals), Pangu exhibits both exclusive and inclusive 1st person plural
pronoun forms. These usually indicate whether the listener is included or not, but have also
been observed to distinguish between a group of only two people and a group of a larger
number. The inclusive pronoun is the same as the exclusive except for the addition of /–n/ in
the final syllable coda of the pronoun.

Alternatively the inclusive may manifest on the independent pronoun as a syllabic nasal n̩- at
its beginning. In fast speech this syllabifies into the coda of the preceding syllable. This
alternative is illustrated in (91) and (92). (92) also shows that this syllabic nasal often copies
as a prefix on the root at the end of the verb phrase, here the Focus particle tá. 35

(89) fì: nà-ɡàtù
   be.not PREP-1pl.INDE
   'It is not with us (exclusive)'

(90) fì: ɡàtù tá
   be.not 1pl.INDE be.FOC
   'It was not us (exclusive)'

(91) fì: nà-ŋàtù
   be.not PREP-1pl.INCL.INDE
   'It is not with us (inclusive)'

(92) fì: ŋàtù ŋ-tá
   be.not 1pl.INCL.INDE AG.INCL-be.FOC
   'It was not us (inclusive)'

(95) and (96) show something similar happening for the inclusive 1st person subject agreement
prefix tən, except here the n coda is lost from the subject pronominal in its usual position at

34 A possible contraction (<*bia).

35 This appears to be a kind of subject agreement prefix. For Cicipu, a Kainji language from another subgroup than
Pangu, McGill shows that "a subject agreement prefix ... may come from either the gender-marked paradigm or
the person-marked paradigm" (2009: 208). It is suggested that (92) and (95) and (96) illustrate special use in
Pangu of a subject agreement prefix from the person-marked paradigm.
the beginning of the verb phrase and only manifests immediately before the verb root. (95) uses simply the syllabic nasal,\(^\text{36}\) whereas (96) uses \(máñ\), possibly a fuller form of the migrated 1\(^{st}\) person inclusive subject agreement prefix (glossed AG.INCL).

(93) tá-ní:⁻dʒáɡá
1pl-FUT-go.IPFW
'We will go (exclusive)'

(94) tá-tá-hóc⁻dʒáɡá
1pl-PST-already-go.IPFW
'We already went (exclusive)'

(95) tə̃́⁻ní⁻dʒáɡá
1pl-FUT-AG.INCL-go.IPFW
'We will go (inclusive)'

(96) tə̃́⁻hóc⁻máñ⁻dʒáɡá
1pl-PST-already-AG.INCL-go.IPFW
'We already went (inclusive)'

(97) to (100) illustrate additional alternatives for marking the inclusive form.

(97) ná gətú dʒá: tʃépə gətú rə jəm
When 1pl.INDE go.PFV town 1pl.INDE eat.PFV food
'We when we went to town, we ate food. (exclusive)'

(98) ná gətú n⁻dʒá: tʃépə gətú rə jəm
When 1pl AG.INCL-go.PFV town 1pl eat.PFV food
'We when we went to town, we ate food. (inclusive)'

(99) tə̃́⁻ɾə jəmí ʃtʃ
1pl-eat.PFV food plenty
'We ate much food. (exclusive)'

(100) tə̃́⁻ɾə jəmí ʃtʃ
1pl.INCL-eat.PFV food plenty
'We ate much food. (inclusive)'

\[\text{2.3.5. Subject Focus}\]

There are several different methods of indicating focus on various constituents of a clause, such as varying the word order, use of an independent subject pronoun or use of a focus marker (see Grammar 4.6. Clauses Constructed with Focus Copula \(tə\)). Showing agreement with the subject noun phrase by including a subsequent independent subject pronoun is commonly used in storytelling and may be regarded as a form of subject focus. (MacDonell 2020: recording session G1).

\[\text{\(^{36}\) But note a number of tonal changes in the verb phrase when compared to the corresponding exclusive form.}\]
The most common form of (101) does not have the subject agreement pronominal in its segmental form bù-. Instead the vowel of the final syllable of the lexical subject is lengthened and its pitch is raised. (101) is considered equivalent in meaning to (102), which does include bù-. (103) uses the independent pronoun to put marked focus on the subject.

(102) bù-gwàmà bù-nì-dʒá:
CM1-chief 3sg.AG1-FUT-come.IPFV
'The chief will come'

(103) bù-gwàmà bwà nì-dʒá:
CM1-chief AG1.INDE FUT-come.IPFV
'The chief, he will come'

### 2.3.6. Using a 3rd Person Plural Pronominal to Convey Passive Meaning

It is observed that when an action is done by an unspecified actor, a 3rd person plural pronominal prefix on the verb can be used to give passive meaning. (MacDonell 2020: recording sessions G2 and G3).

(104) à-ʃə̃̀pi ná: ndàtú
3pl-take.PFV cattle 1pl.POSS
'Our cattle were taken.' (literally 'they took our cattle')

(105) à-mə̃́ti bê:
3pl-give.birth.PFV child
'The child was born.'

(106) à-də̃́bə̃̀gi m-mwá:
3pl-bite.PFV CM7-children
'The children were bitten.' (literally 'they bit children')

(107) à-ré jàmí ndá'bwa
3pl-eat.PFV food 3sg.POSS
'His food was eaten.'

(108) à-pá á-uqàtú ndàtú njibí ná wè
3pl.give.PFV CM4:people 1pl.POSS medicine ASC evil
'Our people were poisoned.' (literally 'they gave our people poison')

### 2.4. Possessive Pronouns

Associative (or possessive) pronouns, as shown in the tables in Grammar 2.2. Noun Class Agreement and Grammar 2.3. Personal Pronominals follow the head noun they refer to.

(109) inà nímí
house 1sg.POSS
'my house'
A parallel with the possessive pronouns has been observed in a set of locational pronouns referring to 'the place of someone', in other words, where that person lives. These correspond only to person pronouns. (Proper names and noun phrases require a different construction which make use of a noun for 'place'.) Examples in this data set are found in MacDonell (2020: recording session G4).

\[
\begin{align*}
\text{wákámi} & \quad 'my place' \\
\text{wàkà:} & \quad 'your place' \\
\text{wá:bwà} & \quad 'his place'^{37} \\
\text{wá:bwè} & \quad 'his place'^{38}
\end{align*}
\]

While these locational pronouns are usually found in object position, (114) and (115) show that subject position is also possible, though it is more natural to use instead *pàri* 'place' as in (116).

\[
\begin{align*}
\text{(111) hùndará} & \quad à-tá-dẕá: \quad \text{wákámi} \\
& \quad \text{yesterday} \quad \text{3pl-PST-come} \quad \text{my.place} \\
& \quad 'Yesterday they came to my house/place.' \\
\text{(112) bù-kwàjè:ké:} & \quad \text{wá:bwà} \\
& \quad \text{3sg-return.PFV} \quad \text{his.place} \\
& \quad 'He has returned to his house/place.' \\
\text{(113) tóh-dẕó:} & \quad \text{wá:hí} \\
& \quad \text{1pl.IRR.INCL-go.PFV} \quad \text{your.place} \\
& \quad 'Let us (including you) go to your(pl.) house/place.' \\
\text{(114) wákámi} & \quad \text{ká-hùrú} \quad \text{wákà:} \\
& \quad \text{my.place} \quad \text{AG11-pass.PFV} \quad \text{your.place} \\
& \quad 'My house/place is better than your place.' \\
\text{(115) wákámi} & \quad \text{ká-zùmá:} \\
& \quad \text{my.place} \quad \text{AG11-be.good} \\
& \quad 'My place is fine.' \\
\text{(116) pàrì} & \quad \text{kà-ndá:tú} \quad \text{ká-zùmá:} \\
& \quad \text{place} \quad \text{AG11-1pl.POSS} \quad \text{AG11-be.good} \\
& \quad 'Our place is fine.'
\end{align*}
\]

---

37 *bù* subject prefix.
38 *bì* subject prefix.
(117) bì-swá: tànì pàrì kà-ndé:bè
CM2-rat enter.PFV place AG11-AG2.POSS
'The rat entered its place.'

(114) to (117) have been analysed as indicating the existence of an 11th noun class in Pangu, with null class prefix and ka- as agreement prefix. So far as is known, the membership of this class is restricted to the locational pronouns and pàrì 'place' as far as potential head nouns are concerned.

2.5. Diminutive and Augmentative Noun Forms

Most nouns can be realised as a "diminutive" form, meaning a smaller size or type than the typical example of that particular noun, or one of lower significance or value to the speaker. (It can be used to degrade something.)

ń-dői à-rìbò 'I see a crow'
ń-dői bì-rirìbò 'I see just a crow (i.e. not significant)'
ń-ńhà: dâbì 'I have a (long-style) shirt'
ń-ńhà: bì-dàdâbì 'I have a (short-style) shirt'

A diminutive can be created by prefixing the bì class marker onto noun roots that do not otherwise take bì. The corresponding diminutive plurals take the class marker ñ̩. A further diminutive form can then be formed by reduplication of the initial noun root syllable following the bì class marker. This form is shown in Table 7, with examples found in MacDonell (2020: recording sessions H1 and H2). However, as can be observed, there is some variation in the vowel of this extra syllable (for example, it becomes i preceding a palatalised plosive). Although only one gloss is given for each row, the diminutive forms represent the noun of a smaller size or of less importance or value, depending on the context.
Part II – Grammar

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Gloss</th>
<th>Regular Form</th>
<th>Reduplicated Diminutive Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>stone</td>
<td>ù-tārī</td>
<td>bi-tātā</td>
</tr>
<tr>
<td>2</td>
<td>cricket</td>
<td>'à-ndōkārē</td>
<td>bi-ñ̩̃̀ndōkārē</td>
</tr>
<tr>
<td>3</td>
<td>scorpion</td>
<td>à-nā</td>
<td>bi-nā</td>
</tr>
<tr>
<td>4</td>
<td>bush pig</td>
<td>à-dō</td>
<td>bi-dō</td>
</tr>
<tr>
<td>5</td>
<td>crow</td>
<td>à-rībō</td>
<td>bi-rībō</td>
</tr>
<tr>
<td>6</td>
<td>rabbit</td>
<td>à-zwō</td>
<td>bi-zwō</td>
</tr>
<tr>
<td>7</td>
<td>termite mound</td>
<td>à-dādā</td>
<td>bi-dādā</td>
</tr>
<tr>
<td>8</td>
<td>frog</td>
<td>à-dʒùgwā</td>
<td>bi-dʒùdʒùgwā</td>
</tr>
<tr>
<td>9</td>
<td>goat</td>
<td>bi-jōjó</td>
<td>bi-jōjó</td>
</tr>
<tr>
<td>10</td>
<td>rat, mouse</td>
<td>bi-swā</td>
<td>bi-swā</td>
</tr>
<tr>
<td>11</td>
<td>type of bird</td>
<td>u-zwā</td>
<td>bi-zʒùwā</td>
</tr>
<tr>
<td>12</td>
<td>shirt</td>
<td>u-džbī</td>
<td>bi-dʒdbī</td>
</tr>
<tr>
<td>13</td>
<td>grass mouse</td>
<td>bi-rūgā</td>
<td>bi-rūgā</td>
</tr>
<tr>
<td>14</td>
<td>type of eagle</td>
<td>bi-zumbō</td>
<td>bi-zumbō</td>
</tr>
<tr>
<td>15</td>
<td>dog</td>
<td>à-wā</td>
<td>bi-wā</td>
</tr>
<tr>
<td>16</td>
<td>bottom</td>
<td>à-_CAPTURED</td>
<td>bi-ki̞dʒē</td>
</tr>
<tr>
<td>17</td>
<td>stranger</td>
<td>bi-gājī</td>
<td>bi-gājī</td>
</tr>
<tr>
<td>18</td>
<td>woman</td>
<td>bi-tān̩</td>
<td>bi-tān̩</td>
</tr>
<tr>
<td>19</td>
<td>chief, king</td>
<td>bi-gwāmā</td>
<td>bi-ŋ̩̃̀gwāmā</td>
</tr>
<tr>
<td>20</td>
<td>tree</td>
<td>u-ñ̩̃́wē</td>
<td>bi-ñ̩̃́wē</td>
</tr>
<tr>
<td>21</td>
<td>rice paddy</td>
<td>u-dʒābā</td>
<td>bi-dʒdʒābā</td>
</tr>
<tr>
<td>22</td>
<td>snake</td>
<td>u-hwā</td>
<td>bi-hwā</td>
</tr>
<tr>
<td>23</td>
<td>flat rock</td>
<td>u-pāgā</td>
<td>bi-pāgā</td>
</tr>
<tr>
<td>24</td>
<td>mountain/hill</td>
<td>u-ñ̩̃́dū</td>
<td>bi-ñ̩̃́dūdū</td>
</tr>
<tr>
<td>25</td>
<td>pestle</td>
<td>u-ñ̩̃́wā</td>
<td>bi-ñ̩̃́wā</td>
</tr>
<tr>
<td>26</td>
<td>room</td>
<td>u-dūrō</td>
<td>bi-dūrō</td>
</tr>
<tr>
<td>27</td>
<td>shelter, chair</td>
<td>bi-ñ̩̃́kē</td>
<td>bi-ñ̩̃́kē</td>
</tr>
<tr>
<td>28</td>
<td>bow</td>
<td>ù-tā</td>
<td>bi-ñ̩̃́tā</td>
</tr>
</tbody>
</table>

Table 7 - Diminutive Forms with Reduplication

Many nouns also have augmentative forms, meaning a large (or important) instance or a large quantity. These are created in the same way as the diminutive forms but the singular class marker is ñ̩̃́ and the plural class marker is ñ̩̃́tā.

- ù-rwāgā 'river'
- rù-rùrwāgā 'large river'
- sù-ñ̩̃́pā 'soup'
- à-ñ̩̃́pā 'plenty of soup'

39 This form is regarded as a term of abuse.
40 This form is regarded as a term of abuse.
2.6. Noun Modifiers

2.6.1. Use of Descriptive Nouns

Most adjectival phrases consist of a head noun followed by the associative marker (see Grammar 2.7. Associative Marker na) and then a descriptive noun. (119) includes a possessive pronoun between the head noun and the descriptive noun. (118) to (122) are found in MacDonell (2020: recording sessions I1 and I2).

(118) təɡiːja ná jɪri
    cap   ASC blackness
    'black hat'

(119) ŋ-ʃəmbɔ ŋ-nımí ŋ-ná ŋ-ʃɛndʒɛ
    CM7-lip AG7-1sg.POSS AG7-ASC AG7-redness
    'my red lips'

Multiple descriptive nouns can modify the head noun.

(120) (ù)-ʔinà ná fo ná tandɛ
    (CM3)-house ASC newness ASC whiteness
    'new white house'

When other noun modifiers are present, the following appears to be the preferred word order NP → N (POSS) (NUM) (ASC N)*

(121) ŋ-dɔdɔbi ŋ-nifɛmí ŋ-rɛ: ŋ-ná ŋ-tandɛ ŋ-ná ŋ-fɔ
    CM7-shirt.DIM AG7-1sg.POSS AG7-two AG7-ASC AG7-white AG7-ASC AG7-new
    'my two new white shirts'

However it is permissible to have any word order, as long as the head noun is in initial position followed by any possessive pronouns and demonstratives.

(122) ŋ-dɔdɔbi ŋ-nifɛmí ŋ-ná ŋ-tandɛ ŋ-rɛ: ŋ-ná ŋ-fɔ
    CM7-shirt.DIM CM7-1sg.POSS AG7-ASC AG7-white AG7-two AG7-ASC AG7-new
    'my two new white shirts'

As illustrated by the formula, as well as (118) to (122), the associative na is present to link the noun which follows it into the noun phrase. It shows agreement marking with the head noun where required, but it is dependent on the descriptive noun for existence.

2.6.2. Use of Quantifiers and Numerals

(122) shows that if the head noun takes a class marker, then each modifying morpheme in the phrase takes the corresponding agreement marker. This also applies to quantifiers and numerals, as shown in MacDonell (2020: recording session I3). The ASC link is never used before numerals.
Part II – Grammar

(123) ṭi-emba: ŋ-kópi ŋ-hwárápí
    1sg-have CM7-cup AG7-many
'I have many cups'

(124) ṭi-emba: dűrò kó
    1sg-have room one
'I have one room'

(125) ṭi-emba: à-dűrò (à)-rɛ:
    1sg-have CM4-room (AG4)-two
'I have two rooms'

2.6.3. Use of Demonstratives

Demonstratives can vary their order with other noun modifiers, but generally they occur directly after the head noun. Note that agreement markers are required on the demonstratives only when the head noun class marker is mandatory. (126 to 132) are found in MacDonell (2020: recording session I4).

(126) ù-kújá nónnà rɛ ʃámi
    CM3-chicken this eat food
'This chicken ate food'

(127) ù-kújá jérɛ: rɛ ʃámi
    CM3-chicken that eat food
'That chicken ate food'

(128) ù-kújá nónndɛrɛ rɛ ʃámi
    CM3-chicken that (particular) eat food
'That particular chicken ate food'

(129) sù-wà sù-nánna sù-ʃi ná sù-fɛndʒɛ
    CM8-dog AG8-this AG8-be ASC AG8-red
'These dogs are red.'

(130) sù-wà sù-ʃɛrɛ: sù-ʃi ná sù-fɛndʒɛ
    CM8-dog AG8-that AG8-be ASC AG8-red
'Those dogs are red'

(131) sù-wà sù-nónndɛrɛ sù-ʃi ná sù-fɛndʒɛ
    CM8-dog AG8-that (particular) AG8-be ASC AG8-red
'Those particular dogs are red'

(132) sù-wà sù-ʃɛnú sù-ʃi ná sù-fɛndʒɛ
    CM8-dog AG8-this(new) AG8-be ASC AG8-red
'These dogs (new information) are red'
2.6.4. Predicate Use of Adjectives and Other Descriptive Strategies

Descriptive phrases lacking the associative marker between two nouns are rare. (133 to 140) are found in MacDonell (2020: recording sessions I5 and I6).

(133) bútú štɔtɔ⁴¹
CM1.man big
'big man' (referring to physical size)

(134) bútú: štɔ CM1.man.AG1 important
'big man' (an elder, someone of high rank or senior age)

Another construction has been observed that includes a noun followed by what appears to be a modifying noun (or attributive adjective), except no associative marker is present. Both the tone pattern on this "adjective" and the lack of the associative marker suggest it should be understood as a verb. To illustrate, compare (135) with (136). (137) to (140) further show the common descriptive strategy of using "adjectives" as predicates.

(135) ípɔ ními ná tjímətʃi
hoe 1sg.POSS ASC heaviness
'my heavy hoe'

(136) ípɔ ními tjímətʃi
hoe 1sg.POSS be.heavy.PFV
'My hoe is heavy.'

(137) à-ŋɡjɛʃɛ hɔgí
CM4-sand be.dry.PFV
'The soil is dry.'

(138) mɔnì má-zùmá:
CM9.water AG9-be.good
'The water is good.'

(139) mɔnì má-zùmá:cĩ
CM9.water AG9-be.good-NEG
'The water is bad.'

(140) júní ndɛ:bɛ swɔ:rɛ
food 3sg.POSS be.sweet.PFV
'His food is sweet.'

⁴¹ The noun modifier štɔtɔ is normally used to mean 'many, plenty, much'. 
2.7. Associative Marker ná

Grammar 2.6.1. Use of Descriptive Nouns illustrates use of the associative marker ná in a descriptive noun phrase before a modifier noun such as *tande* 'whiteness'. This section presents two further uses of *ná*.

2.7.1. Used in an Associative Noun Phrase

The Associative (or Possessive) marker is used in genitive constructions. It is usually realised as *ná*, though sometimes a noun class marker is affixed to it. It connects two nouns in a Noun Phrase, with the second Noun understood to be the possessor of the first, in the structure (CM₁)-Noun₁ ASC (CM₂)-Noun₂. (141) to (152) are found in MacDonell (2020: recording sessions J1 and J2).

(141) to (143) show nouns from class 3, where the use of the class marker is optional.

(141) (ù)-kùdò (ù)-ná (ù)-kújá
   (CM3)-house (AG3)-ASC (CM3)-chicken
   'house of chicken (chicken’s house)'

(142) (ù)-kùdò (ù)-ná sù-kújá
   (CM3)-house (AG3)-ASC CM8-chicken
   'house of chickens (chickens’ house)'

(143) (ù)-dùrò (ù)-ná mú:ssá
   (CM3)-room (AG3)-ASC Musa
   'Musa’s room'

The form of the associative marker is more complex when it must show agreement with Noun₁. Agreement on the associative marker depends on the class marker of Noun₁ (the preceding noun), according to the pattern in Table 8 - Forms of Associative Marker.
The associative marker does not show agreement with Noun\(_2\). However, when Noun\(_2\) is of class 1 or 2 its class marker prefix can be omitted, resulting in vowel lengthening of the associative marker (therefore, an associative marker with a lengthened vowel could be a result of either agreement with a Noun\(_1\) of class 1 or 2, or the omission of the noun class prefix of a Noun\(_2\) of class 1 or 2). When the prefix of a Noun\(_2\) of class 1 or 2 is present in an Associative Noun Phrase, there is evidence of a floating High tone influencing the tone pattern of that prefix but the reason for this is not yet understood.

The vowel of the final syllable of Noun\(_1\) will also be lengthened.

Table 8 - Forms of Associative Marker

<table>
<thead>
<tr>
<th>Class Marker of preceding Noun Root</th>
<th>Associative Marker, shown with agreement features (Noun(_2) may have its own CM prefix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. bù-</td>
<td>ná:\textsuperscript{42} / bù-ná: Noun(_2)</td>
</tr>
<tr>
<td>2. bì-</td>
<td>ná:\textsuperscript{43} / bì-ná: Noun(_2)</td>
</tr>
<tr>
<td>3. ù-</td>
<td>ná / ù-ná Noun(_2)</td>
</tr>
<tr>
<td>4. à-</td>
<td>ná / à-ná Noun(_2)</td>
</tr>
<tr>
<td>5. i-</td>
<td>ná / i-ná Noun(_2)</td>
</tr>
<tr>
<td>6. rù-</td>
<td>ná rù-Noun(_2)</td>
</tr>
<tr>
<td>7. ñ-</td>
<td>ñ-ná ñ-Noun(_2)</td>
</tr>
<tr>
<td>8. sù-</td>
<td>ná sú-Noun(_2)</td>
</tr>
<tr>
<td>9. mà-</td>
<td>ná mà-Noun(_2)</td>
</tr>
<tr>
<td>10. tò-</td>
<td>ná tò-Noun(_2)</td>
</tr>
</tbody>
</table>

(144) à-dò ná ìnà

CM4-pig ASC house

'pig of house (domestic pig)'

(145) sù-dò ná sù-ìnà

CM8-pig ASC AG8-house

'pigs of house (domestic pigs)'

(146) tò-tjèpè ná tò-tùtù

CM10-language ASC AG10-people

'language of people'

(147) bù-gwàmà: ná: kújá

CM1-chief.AG1 ASC.AG1 chicken

'chief of a chicken'

The vowel of the final syllable of Noun\(_1\) will also be lengthened.

\textsuperscript{42} The vowel of the final syllable of Noun\(_1\) will also be lengthened.

\textsuperscript{43} The vowel of the final syllable of Noun\(_1\) will also be lengthened.
2.7.2. Used in Introducing a Relative Clause

The associative marker also functions as a relative clause introducer, as in the (153) and (154). These illustrate restricted relative clauses, having a head noun followed by a descriptive proposition which makes a restriction on what that noun refers to. Most languages throughout the world use such clauses extensively.\(^{44}\) (154), showing nesting of two relative clauses, is permissible in Pangu though it may not be very natural.\(^{45}\) (153) and (154) are found in MacDonell (2020: recording session J3).

\[(153) \text{ù-rá hùní sùndá ná gən tá-kwànɛ} \]
\[\text{CM3-fire burn meat ASC 1sg.INDE PST-kill} \]
\[\text{The fire burned the meat that I killed.'} \]

\[(154) \text{ù-kújá ná tá-ré jəmí ná gən tá-mʃʃɛ ù-ʔwì} \]
\[\text{CM3-chicken ASC PST-eat food ASC 1sg.INDE PST-throw.out AG3-die} \]
\[\text{The chicken that ate the food that I threw out died.'} \]

2.8. Preposition Morpheme \textit{no}

Pangu makes heavy use of a single preposition morpheme. It has a general locative meaning, with its more precise meaning ('in, on, at, by, with', etc.) determined by the context. As the

\[^{44}\text{This is implied in Comrie's discussion of the definition of relative clause. He limits his definition to restrictive relative clauses, saying that they are 'more central to the notion of relative clauses than are non-restrictives.' (Comrie 1981: 136–137). Non-restrictive relative clauses, which English uses widely, are much less universal.}\]

\[^{45}\text{It is also possible to start a sentence with the relative clause introducer but a class marker prefix is mandatory to indicate topicality:} \]

\[\text{ù-ná gən tá-kwànɛ} \]
\[\text{CM3.ASC 1sg.INDE PST-kill} \]
\[\text{The one I killed (i.e. the animal/meat I killed).} \]
morpheme is often pronounced with a short vowel length it can be hard to determine exactly the vowel quality and tone, and speaker variation has been observed.

When referring to the location of something, the preposition morpheme often follows ne: 'be there' (a locative copula), but this is not always necessary. Many other verbs can also take a locational adjunct beginning with the preposition na, as shown in the examples throughout this section (MacDonell 2020: recording sessions K1–K4). In (155) to (158), the noun in each locational adjunct is from Class 3, and here the underlying class-marking prefix u- is unrealised. The tone of the preposition varies with the tone of the final syllable of the preceding word, so (155) and (157) have ná- while (156) and (158) have nà-.46

(155) à-dɔːxó nímk nè: ná-ʔnà
  CM4-mother 1sg.POSS be.LOC PREP-house
  'My mother is in the house.'
(156) mì-ʔmábári à-ʔwànà nímk nà-rwáqà
  1sg-wash CM4-clothes 1sg.POSS PREP-river
  'I washed my clothes at the river.'
(157) à-táqátú nè: ná-rwáqà
  CM4-people be.LOC PREP-river
  'People are there at the river.'
(158) mágąxó kímk nà-ʔwè:
  mango fall PREP-tree
  'A mango fell at the tree.'

It is proposed that the underlying form of the preposition morpheme is na-, but in continuous speech the vowel is sometimes elided and replaced with the vowel of the underlying class marker of the following noun. In other words, the preposition varies with the underlying noun class marker for vowel quality and vowel length, as shown in Table 9. The resulting morpheme will in some cases be glossed as a portmanteau morpheme that includes both the preposition and the class-marking prefix. (159) to (167) illustrate this, and also show that the tone of the morpheme is polar, opposite to the preceding syllable.

46 The tone of the locative preposition is thus polar or opposite to that of the preceding syllable. In Pangu this behaviour signals the beginning of any locational adjunct using na-. Snider (2017: 153) gives an example of polar behaviour of a locative suffix in the Chumburung language.
<table>
<thead>
<tr>
<th>Underlying Noun Class Prefix</th>
<th>Locative Preposition &amp; Class Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. bù-</td>
<td>nə- / nu- gloss: PREP.CM1-</td>
</tr>
<tr>
<td>2. bi-</td>
<td>nǐ-</td>
</tr>
<tr>
<td>3. ü-</td>
<td>nə- / nu- PREP-</td>
</tr>
<tr>
<td>4. à- can be sg. or pl.</td>
<td>na- / nə-à- PREP.CM4-</td>
</tr>
<tr>
<td>5. i- can be sg. or pl.</td>
<td>nə-</td>
</tr>
<tr>
<td>6. rù-</td>
<td>nən-rù- PREP-CM6-</td>
</tr>
<tr>
<td>7. ŋ</td>
<td>nə-ŋ- PREP-CM7-</td>
</tr>
<tr>
<td>8. sù-</td>
<td>nən-sù- PREP-CM8-</td>
</tr>
<tr>
<td>9. mà-</td>
<td>nəm-mà- PREP-CM9-</td>
</tr>
<tr>
<td>10. tà-</td>
<td>nən-tà PREP-CM10-</td>
</tr>
</tbody>
</table>

Table 9 - Locative Preposition with Various Class Prefixes

(159) à-uqátú nè: ná-pàgà
   CM4-people be.LOC PREP-CM4-rock
   'People are there at the rocks.'

(160) à-jiwà nè: nón-rù-zúpí
   CM4-money be.LOC PREP-CM6-pocket
   'Money is in the pocket.'

The preposition can also be used for expressions of accompaniment, instrument, time, etc.

(161) ŋ-dʒá: nǐ-kèké:
   1sg-come PREP.CM2-bicycle
   'I came by bicycle.'

(162) à-uqátú dʒá: nù-gwàmà
   CM4-people come PREP.CM1-chief
   'People came with the chief.'

(163) à-uqátú nè: nón-sù-kújá
   CM4-people be.LOC PREP-CM8-chicken
   'People are there with chickens.'

(164) ŋ-nè: ná-hàgàri ná ǹ-gàpà
   1sg-be.LOC PREP-frying ASC CM7-yam
   'I am frying yams.' (lit. I am at frying of yams)

(165) ŋ-hàgàrì ǹ-gàpà ǹ-númí nì/nà-jàkùbù
   1sg-fry CM7-yam AG7-1sg.POSS PREP-Yakubu
   'I fried my yams with Yakubu.'
The preposition morpheme can also function as a conjunction between nouns. Each preposition morpheme will conform to the following noun. In a phrase with multiple nouns, the class marker agreement on other targets (e.g. the verb) will be the $a$-plural marker.

(166) ù-kújá nà-wà (à)-gìdìɡèɡí
    CM3-chicken PREP.CM4-dog (3pl)-run.PFV
    'The chicken and the dog ran.'

(167) ãdàmù nà-ìbráːhì: nà-ìmìbáɽù (à)-dʒáː
    Adamu PREP-Ìbrahim PREP-Umaru (3pl)-come.PFV
    'Adamu and Ibrahim and Umaru came.'

When preceding Proper Names, the vowel of the preposition morpheme is influenced by an inherent class marker associated with each name. However, these have been difficult to elicit. A possible rule of thumb is that $nə$ is the default; for names beginning with i, e or j, the preposition becomes $nì$.

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47 The verb subject marker is in parenthesis indicating it is optionally present.
3. Verbs and Verb Phrases

3.1. Verb Classes

Pangu verbs have been grouped into classes based on their syllable structure and the morphological forms taken by their root in different sentence constructions. Every verb is understood to have an underlying root, though this is never realised in isolation.

Many Pangu verb roots exhibit vowel height harmony, with root-internal harmony spreading to certain verb suffixes, though there are exceptions. In cases when the verb root has [-high] vowel(s), it will take the suffix -a in one primary form and -i in another primary form. However when the verb root has [+ high] vowel(s), the -a is realised as -ə and the -i is realised as -ɛ or -e.

Every verb can also have a distal form that expresses the verb action happening in a location that is distant from the speaker. The distal form contrasts with both the Vroot-a form and the Vroot-i form. It is often similar to Vroot-i but with some different internal segments and tone pattern, and it does not observe vowel harmony. It is useful to think of the three primary forms of a Pangu verb of any class as being the Vroot-a form, the Vroot-i form, and the distal form. For each verb class, a table shows the three forms for several different verbs.

Irrealis statements begin with a High tone on the subject pronominal or, in the absence of a subject pronominal, on the verb root. Realis statements begin with a Low tone pronominal. This generalisation on tone for irrealis versus realis statements applies across all verb classes.

All examples of verb classes in the following sections can be found in MacDonell (2020: recording sessions M01-M10).

3.1.1. Class A Verbs

This class has the largest number of members.

Here are some observations on the structure of a Class A verb:

- The root is commonly CVC or CVCVC
- The simple imperative, in which a speaker commands a single person to perform a particular action, is from the Vroot-a form. Its overall tone pattern is HH (disyllabic) or HHL (trisyllabic), but non-imperative uses of Vroot-a may follow a different pattern.

---

48 Further, if the verb refers to directional motion, then the distal form indicates the direction of motion is towards the speaker or deictic centre whereas the other two forms refer to motion away from the speaker or proceeding from the speaker. Though the distal form can thus be identified as Ventive for a verb of directional motion, this paper uses the term distal as being more generally applicable to all kinds of verbs.

49 Class A does not include CVC verb roots where V is /i/ (included in Class B) or /u/ (included in Class C).
• The other main use of the -a form, besides the simple imperative, is in communicating an imperfective aspect to the verb's action.50
• The main use of the -i form is in communicating a perfective aspect to the verb's action. If any of the vowels of the root are open they are raised to a corresponding close vowel to harmonise with the -i suffix. The tone pattern is dependent on whether the action is irrealis or realis, as can be seen by looking at Sentence Examples using Class A verbs - (168) to (177). Table 10 examples represent a realis proposition such as 'He spread out a mat yesterday', with the Vroot-i giving an overall LH (disyllabic) or LLH (trisyllabic) tone pattern. An irrealis proposition such as 'Let them spread out a mat' has a distinct tone pattern on the verb phrase. Numerous examples of this tone contrast are given throughout Section 3.1, with a tentative conclusion stated in Grammar 3.1.7. **Contrasting Tone Patterns in Perfective Forms.**
• The distal form, unlike the -i form, does not show vowel harmony between the root and the suffix, except that if the final root vowel is i then the suffix becomes -ɛ or -e. The distal form gives an overall HH (disyllabic) or HHL (trisyllabic) tone pattern in a realis proposition such as 'He spread out a mat over there'.

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>DIST Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>bár-á *</td>
<td>bár-á</td>
<td>spread out</td>
<td>bár-í</td>
<td>spread out</td>
</tr>
<tr>
<td>bán-á *</td>
<td>bán-á</td>
<td>go out, exit</td>
<td>bán-í</td>
<td></td>
</tr>
<tr>
<td>b&quot;áť́jg-á</td>
<td>b&quot;áť́jg-á</td>
<td>remove (e.g. clothes)</td>
<td>b&quot;áť́jg-ɛ</td>
<td>remove (yonder)</td>
</tr>
<tr>
<td>kínd-š</td>
<td>kínd-š</td>
<td>dig</td>
<td>kínd3-í</td>
<td>dig (yonder)</td>
</tr>
</tbody>
</table>

**Table 10 - Class A Verbs**

**Sentence Examples using Class A verbs:**

**Example Set 1: bara, bəri 'spread', bari 'spread yonder'**

(168) bárá spread.IMPV bárəjínání. spread out a mat.'

(169) à-nì:-bárá 3sg-FUT-spread.IMPV bárəjínání. ‘They will spread out a mat.’

50 It seems unlikely that the imperative using the -a form implies any imperfective meaning, such as 'Be spreading out a mat.' There are imperatives using the -i form (see **Class E Verbs**), but they are less common.

51 An asterisk beside the first verb form in a row indicates there are examples of that verb (including some alternate forms) shown in a set below the table.

52 This is a direction-of-motion verb. The distal form refers to exiting from a distant location and moving towards the speaker, so the gloss is 'come out' rather than 'go out at a distance'.
3.1.2. Class Ax Verbs

This subclass of verbs is proposed in order to explain the behaviour of certain Class A verbs in the presence of Pluractional or Benefactive suffixes (described in Grammar 3.3. Verbal Nouns).

These verbs follow the pattern of Class A verbs except for the presence of the morpheme -an before the final vowel. It is seen as distinct from the verb root, but its function is not yet understood. So, for the purposes of this paper, it is referred to as the "X-morpheme".

This morpheme always follows the verb root (and undergoes the same harmonising processes) but the Pluractional morpheme precedes while the Benefactive morpheme replaces it.

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>kwót-án-á *</td>
<td>kwót-án-í</td>
<td>catch</td>
<td>kwót-án-í</td>
<td>catch yonder</td>
</tr>
<tr>
<td>bás-án-á</td>
<td>bás-án-í</td>
<td>beat</td>
<td>bás-án-í</td>
<td>beat yonder</td>
</tr>
</tbody>
</table>

*Table 11 - Class Ax Verbs*

Sentence Examples using a Class Ax verb: kwótòñá, kwótòñí 'catch', kwótòñí 'catch yonder'

(178) kwótòñá: dʒʊʃíːpà. 'Catch a fish!'

---

53 Some further discussion of the tá morpheme in these example sets can be found in Grammar 3.5.1. Verbal Prefix Slots.

54 Since pluractional and benefactive are both derivative suffixes, attached close to the verb root, this suggests the X-morpheme is also a derivative suffix, not inflectional. Roots of similar form and meaning but lacking the X-morpheme are unknown to the authors.
It is observed that all Ax verbs are transitive. In addition to those in Table 11, some further examples of verbs of this class are listed below:\textsuperscript{55}

- **bwatana** 'put on (clothing)'
- **duwənə** 'add'
- **gwatana** 'look at, face'
- **katana** 'climb'
- **ʃəːtənə** 'arrange (things), hope (for)'
- **zwaɡana** 'put inside'

### 3.1.3. Class B Verbs

Here are some observations on the structure of a Class B verb:

- Root = CVC, where the vowel is \( u \)
- Both the simple imperative and the imperfective take the -\( a \) form
- -\( a \) form tone pattern is either HH or LL
- -\( i \) form has labialisation of initial consonant, with \( u \) vowel lowered to \( a \) and final vowel lowered to \( ɛ \)
- Distal form is unchanged root with final vowel \( ɛ \); tone pattern is HH in realis propositions

<table>
<thead>
<tr>
<th>-( a ) Form (IMPV, IPFV)</th>
<th>-( i ) Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>zúr-( ă ) *</td>
<td>zúr-( ă )</td>
<td>zwâr-( ě )</td>
<td>zúr-( ě )</td>
<td>bathe yonder</td>
</tr>
<tr>
<td>kús-( ă ) *</td>
<td>kús-( ă )</td>
<td>kwâʃ-( ě )</td>
<td>kúʃ-( ě )</td>
<td>come back</td>
</tr>
<tr>
<td>múns-( ăn )</td>
<td>múns-( ăn )</td>
<td>mwâŋʃ-( ăn )</td>
<td>múŋʃ-( ăn )</td>
<td>throw yonder</td>
</tr>
<tr>
<td>fünd-( ă )</td>
<td>fünd-( ă )</td>
<td>fâwândʒ-( ě )</td>
<td>fûndʒ-( ě )</td>
<td>trek yonder</td>
</tr>
</tbody>
</table>

\textit{Table 12 - Class B verbs}

\textsuperscript{55} These examples are not supported by audio recordings.
Sentence Examples using Class B verbs:

Set 1 B-class verb: zura, zware 'bathe', zure 'bathe yonder'  

(183) zúrā məñi. 'Bathe!'  
     bathe.IMPV water
(184) bù-tá-zûrâ məñi kójô hwên. 'He bathes every day.'  
     3sg-PST-bathe.IPVF water every day
(185) bù-tá-zwàɾë məñi hùndârə. 'He bathed yesterday.'  
     3sg-PST-bathe.PFV water yesterday
(186) bù-nî:zûrë məñi. 'He will bathe yonder.'  
     3sg-FUT-bathe.DIST water
(187) bù-zûrë məñi. 'Let him bathe yonder.'  
     3sg.IRR-bathe.DIST (DIST verb form with irrealis tone pattern)

It can be observed that the statements in (183) and (187) are irrealis. The verb phrase in such statements tends to begin with a High tone on the subject pronominal (187). When there is no subject pronominal, as in the simple imperative (183), the verb root itself carries the High tone. (184) to (186), the three realis statements, begin with a Low tone pronominal.

Set 2 B-class verb: kusa, kwâʃe 'go back', kuʃe 'come back'

(188) kúsá. 'Go back!'  
     return.IMPV
(189) à-tá-kúsà kàsùwà kójô hwên. 'They go back to market every day.'  
     3pl-PST-return.IPVF market every day
(190) à-tá-kwàʃé kàsùwà hùndárá. 'They went back to market yesterday.'  
     3pl-PST-return.PFV market yesterday
(191) à-kwàʃé kàsùwà. 'Let them go back to market.'  
     3pl.IRR-return.PFV market (PFV verb form with irrealis tone pattern)
(192) à-nî:-kùʃé ìnà. 'They will come back to the house.'  
     3pl-FUT-return.DIST house
(193) à-tá-kùʃé ìnà hùndárá. 'They came back home yesterday.'  
     3pl-PST-return.DIST house yesterday (DIST form same for both perfective & imperfective)

3.1.4. Class C Verbs

Here are some observations on the structure of a Class C verb:

- Root = CVC, where the vowel is /ı/
- Both the simple imperative and the imperfective take the -a form
- -a form = Root + -a suffix of same tone as the final root vowel

56 The verb used in (183) to (187) means 'slap' or 'cane' and always requires an object pronoun (e.g. 'Cane it!). 'Bathe' is understood to be an idiom (lit. 'slap water').
• -i form = Root, with i vowel lowered to ε, + ε as final vowel suffix\textsuperscript{57}
• Distal form = Root + ε, tone pattern is HH in realis propositions

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>bír-á</td>
<td>bír-á</td>
<td>bér-é</td>
<td>bír-é</td>
<td>plant yonder</td>
</tr>
<tr>
<td>jínd-á</td>
<td>jínd-á</td>
<td>jínd5-é</td>
<td>jínd5-é</td>
<td>lean yonder</td>
</tr>
<tr>
<td>jír-án *</td>
<td>jír-án</td>
<td>jír-én</td>
<td>jír-én</td>
<td>slaughter yonder</td>
</tr>
</tbody>
</table>

Table 13 - Class C verbs

Sentence Examples using a Class C verb: jírán, jíren 'slaughter'; jíren 'slaughter yonder'

(194) jírán kújá. 'Slaughter a chicken!'

slaughter.IMPV chicken

(195) bù-ní:jírán kújá. 'He will slaughter a chicken.'

3s-FUT-slaughter.IPV chicken

(196) bù-tá:jírèn kújá. 'He slaughtered a chicken.'

3s-PST-slaughter.PFV chicken

(197) bù:jírèn kújá. 'Let him slaughter a chicken.'

3s.IRR-slaughter.PFV chicken

(198) bù-tá:jírèn kújá. 'He slaughtered a chicken yonder.'

3sg-PST-slaughter.DIST chicken

3.1.5. Monosyllabic Verbs

Most verb roots which are monosyllabic with structure CV fit into the pattern of a Class D verb, a Class E verb, or a Class F verb, as shown in the tables of this section. Irregular verbs, as shown in Grammar 3.1.6. Irregular Verbs, can be monosyllabic in some forms and disyllabic in others.

Class D verbs

• All verb forms are monosyllabic with long vowels
• Both the simple imperative and the imperfective take the -a form (with identical tone pattern)
• -a form has oral or nasalised ə:
• -i form has oral or nasalised i:

\textsuperscript{57}Dr. Matthew Harley, an SIL Nigeria colleague, in reviewing this paper, proposed that the data of Section 3.1 (i.e. 3.1.1 through 3.1.6) could be explained using just two underlying root forms, perfective and imperfective. Furthermore, the imperfective root can be derived from the perfective by the removal of /a/ (if the perfective root contains an /a/) or by the insertion of an /a/ (if the perfective root doesn't contain an /a/). The authors preferred not to introduce this level of abstraction into the body of the paper, but they see merit in the pursuit of Dr. Harley's proposal in future analysis.
Part II – Grammar

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ʃə̃́ːn *</td>
<td>ʃə̃́ːn</td>
<td>go down</td>
<td>tfín</td>
<td>come down</td>
</tr>
<tr>
<td>jás:</td>
<td>jás:</td>
<td>keep</td>
<td>jé:</td>
<td>keep yonder</td>
</tr>
</tbody>
</table>

*Table 14 – Class D Verbs*

Sentence Examples using a Class D verb: tfín, tfín 'go down', tfín 'come down'

(199) tfín  'Go down!'     
    go.down.IMPV

(200) bù-ní:-tfín  'He will go down.'    
    3s-FUT-go.down.IPFV

(201) bù-tá-tfín hündårà  'He went down yesterday.'    
    3s-PST-go.down.PFV yesterday

(202) bù-tfín  'Let him go down.'    
    3sg.IRR-go.down.PFV

(203) tfín  'Come down!'     
    go.down.DIST.IMPV

(204) bù-ní:-tfín  'He will come down.'    
    3s-FUT-go.down.DIST

(205) bù-tá-tfín hündårà  'He came down yesterday.'    
    3s-PST-go.down.DIST yesterday

(206) bù-tfín  'Let him come down.'    
    3sg.IRR-go.down.DIST

Class E verbs

- All verb forms are monosyllabic with long vowels
- Both the simple imperative and the imperfective take the -a form
- -a form has oral or nasalised aː
- -i form has oral or nasalised əː

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ɡá:</td>
<td>ɡá:</td>
<td>leave</td>
<td>ɡá:</td>
<td>leave yonder</td>
</tr>
<tr>
<td>ʒáː</td>
<td>ʒáː</td>
<td>marry</td>
<td>ʒáː</td>
<td>marry yonder</td>
</tr>
<tr>
<td>màːn *</td>
<td>màn</td>
<td>measure</td>
<td>'mán ^58</td>
<td>measure yonder</td>
</tr>
</tbody>
</table>

*Table 15 - Class E Verbs*

Sentence Examples using a Class E verb: màn, màn 'measure'; 'mán 'measure yonder'

(207) màn  ŋimbáká  'Measure rice.'     
    measure.IMPV rice

(208) bù-ní:-màn ŋimbáká  'He will measure rice.'    
    3sg-FUT-measure.IPFV rice

^58 The pitch of th

58 The pitch of this High tone (211) is considerably higher than that on the same verb in the (207), indicated with an upstep arrow . It clearly conveys a contrasting message, but the explanation for the pitch contrast is yet to be uncovered.
Part II – Grammar

(209) bù-tá-mān jimbáká  'He measured rice.'
3sg-PST-PFV rice

(210) bù-mān jimbáká  'Let him measure rice.'
3sg.IRR-measure.PFV rice

(211) 'mān jimbáká  'Measure rice yonder.'
measure.DIST.IMPV rice

(212) bù-ní-mān jimbáká  'He will measure rice yonder.'
3sg-FUT-measure.DIST rice

(213) bù-tá-mān jimbáká hundará  'He measured rice yonder yesterday.'
3sg-PST-measure.DIST rice yesterday

(214) bù-mān jimbáká  'Let him measure rice yonder.'
3sg.IRR-measure.DIST rice

Class F verbs
• All verb forms are monosyllabic
• Both the simple imperative and the imperfective take the -a form
• -a form has short vowel, a
• -i form has short vowel, ɛ
• Distal form has long vowel, ɛ:

- a Form (IMPV, IPFV)   - i Form (PFV)   Basic Gloss   Distal Form   Distal Gloss
bwá  bwá  bwé  throw  bʷéː  throw yonder
ndá  *  ndá  ndʒé  do  ndʒéː  do yonder

| Table 16 - Class F Verbs |

Sentence Examples using a Class F verb: ndá, ndʒé 'do', ndʒé: 'do yonder'

(215) ndá tumàn  'Do work.'
do.IMPV work

(216) bù-ní:ndá tumàn  'He will do work.'
3sg-FUT-do.IMPV work

(217) bù-ndʒé tumàn  'He did work.'
3sg-do.PFV work

(218) bù-ndʒé tumàn  'Let him do work.'
3sg.IRR-do.PFV work

(219) ndʒé: tumàn  'Do work yonder.'
do.DIST.IMPV work

(220) bù-ní:-ndʒé: tumàn  'He will do work yonder.'
3sg-FUT-do.DIST work

(221) bù-tá-ndʒé: tumàn hundará  'He did work yonder yesterday.'
3sg-PST-do.DIST work yesterday

(222) bù-ndʒé: tumàn  'Let him do work yonder.'
3sg.IRR-do.DIST work

3.1.6. Irregular Verbs
• Irregular verbs do not fit any of the descriptions of other verb classes
Irregular verbs are monosyllabic in some forms and disyllabic in others

<table>
<thead>
<tr>
<th>-a Form (IMPV, IPFV)</th>
<th>-i Form (PFV)</th>
<th>Basic Gloss</th>
<th>Distal Form</th>
<th>Distal Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>húwó *</td>
<td>húwó</td>
<td>finish</td>
<td>hwé:</td>
<td>finish yonder</td>
</tr>
<tr>
<td>gójó</td>
<td>gójó</td>
<td>go</td>
<td>gójé</td>
<td>come home</td>
</tr>
<tr>
<td>ḏʒáɡá *</td>
<td>ḏʒáɡá</td>
<td>go</td>
<td>ḏʒá:</td>
<td>come</td>
</tr>
<tr>
<td>hrínbá</td>
<td>hrínbá</td>
<td>wait, take care</td>
<td>hrínbé</td>
<td>wait yonder</td>
</tr>
</tbody>
</table>

Table 17 - Irregular Verbs

Example Set 1 for an irregular verb: húwó, hwí: 'finish', hwé: 'finish yonder'

(223) húwó tùmàn 'Finish work.'
     finish.IMPV work
(224) bú-ní:-húwó tùmàn 'He will finish work.'
     3sg-FUT-finish.IPFV work
(225) bú-hwí: tùmàn 'He finished work.'
     3sg-finish.PFV work
(226) bú-hwí: tùmàn 'Let him finish work.'
     3sg.IRR-finish.PFV work
(227) hwé: tùmàn 'Finish work yonder.'
     finish.DIST.IMPV work
(228) bú-ní:-hwé: tùmàn 'He will finish work yonder.'
     3sg-FUT-finish.DIST work
(229) bú-hwé: tùmàn 'He finished work yonder.'
     3sg-finish.DIST work
(230) bú-hwé: tùmàn 'Let him finish work yonder.'
     3sg.IRR-finish.DIST work

Example Set 2 for an irregular verb: ḏʒáɡá, ḏʒá: 'go', ḏʒá: 'come'

(231) ḏʒáɡá 'Go.'
     go.IMPV
(232) bú-ní:-ďʒáɡá 'He will go.'
     3sg-FUT-go.IPFV
(233) bú-tá-ďʒá: 'He went.'
     3sg-PST-go.PFV
(234) bú-ďʒá: 'Let him go.'
     3sg.IRR-go.PFV
(235) ḏʒá: 'Come'
     go.DIST.IMPV
(236) bú-ní:-ďʒá: 'He will come.'
     3sg-FUT-go.DIST
(237) bú-tá-ďʒá: 'He came.'
     3sg-PST-go.DIST
(238) bú-ďʒá: 'Let him come.'
     3sg.IRR-go.DIST
3.1.7. Contrasting Tone Patterns in Perfective Forms

These example sets of two verbs, already introduced in Tables 12 and 17 respectively, demonstrate contrast between the tone pattern on a realis statement and on an irrealis statement using the same verb form. (239) to (246) are found in MacDonell (2020: recording sessions M11 and M12).

In each set, the first pair of examples involves the standard perfective form and the second pair involves the distal form. The situations described by both verbs involve directional motion, so that the distal form of each verb describes motion from a distant location and towards the speaker (or other centre of reference), as indicated by the appropriate form of 'come' in the free translation.

Example Set 1 for a Class B verb: kwâfê 'go back', kúfê 'come back'

(239) à-kwâfê wâbâ 'They went back to their place.'
3sg-return.PFV place.their
(240) á-kwâfê 'Let them go back.'
3sg.IRR-return.PFV
(241) à-kúfê wâbâ 'They came back to their place.'
3sg-return.DIST place.their
(242) á-kúfê 'Let them come back.'
3sg.IRR-return.DIST

Example Set 2 for an irregular verb: gíjé 'go home', gi: 'come home'

(243) à-gíjé nà-rître-bùnà 'They went home on foot.'
3sg-go.home.PFV PREP-CM7-foot
(244) á-gíjé 'Let them go home.'
3sg.IRR-go.home.PFV
(245) à-gi: nà-rître-bùnà 'They came home on foot.'
3sg-go.home.DIST PREP-CM7-foot
(246) á-gi: 'Let them come home.'
3sg.IRR-go.home.DIST

While the subject pronominal in each realis statement carries a Low tone, the subject pronominal in each irrealis statement carries a High tone. It is notable also that the verb phrase components, including the verb root itself, follow a tone pattern that is different for the irrealis statement than it is for the realis statement. Our hypothesis is that generalisations about tone pattern can be made for each verb class and each type of verb root (imperfective, perfective, and distal). Developing such generalisations is a topic for further research.

3.2. Imperatives

As has already been shown in the tables for each verb class in Grammar 3.1. Verb Classes, the simple imperative is expressed by the Vroot-a form with High tone on every syllable, except when the verb word is three or more syllables, in which case the High tone is on all
but the last syllable. (247) to (265) are found in MacDonell (2020: recording sessions N1–N3).

(247) páná
give.IMPV
'Give!'  
(248) páná bè 59
give.IMPV AG1.3sg.OBJ
'Give (to) him/her!'
(249) páná bè jùwà
give.IMPV AG1.3sg.OBJ money
'Give him money!'
(250) páná bè gwáfè
give.IMPV AG1.3sg.OBJ ram
'Give him a ram!'
(251) páná bè tàqfjá
give.IMPV AG1.3sg.OBJ cap
'Give him a cap!'

If jussive and hortative statements (with 3rd person and 1st person subjects respectively) are accepted as expressions of imperative mood, there is at least one type of imperative associated with each of the three forms of the verb: imperfective, perfective, and distal. This has already been shown for one of the irregular verbs in Grammar 3.1.6, Irregular Verbs, but an appropriate subset of those examples is repeated here. (252) and (254) are simple imperatives, with implied 2nd person singular subjects.60 (253) and (255) are jussives, both with the 3rd person pronominal irrealis suffix bù- 'let him/her'. All four examples are characterised as irrealis by beginning with High tone.

(252) dʒáqá
go.IMPV
'Go!'
(253) bú-dʒá:
3sg.IRR-go.PFV
'Let him go!'

59 The object pronoun bu: could also be used in this position.

60 As explained in Grammar 2.3.2, 2nd Person Pronominals as Object Prefixes, a second person plural imperative is expressed by adding the particle má after the simple imperative form of the verb. 3rd person and 1st person imperatives (i.e. jussives and hortatives) using the Vroot-a form are difficult to elicit. However, the association of this form with imperfective might suggest trying to elicit habitual or progressive situations such as 'Let him go to the market every day' or 'Let me be singing when he comes'. Further research concerning this gap is needed.
(254) Ḗ̑gə́:  'Come!'  
go.DIST.IMPV

(255) bǔ-Ḏə́:  'Let him come.'  
3sg.IRR-go.DIST

Another imperative construction that uses the perfective form (Vroot-i) is when the verb takes a 1ˢᵗ person singular object. In this construction, the object pronominal prefix, low-toned, immediately precedes the Vroot-i form with High tones.⁶¹ (258) is in a minimal tone triple with (259) and (260), both of which use m- as a 1ˢᵗ person singular subject pronoun.

(256) Ṯ̑-gwápí  'Scratch me!'  
1sg.OBJ-scratch.PFV
(257) Ṯ̑-pájí  'Slap me!'  
1sg.OBJ-slap.PFV
(258) Ṯ̑-páñí  'Give (to) me!'  
1sg.OBJ-give.PFV
(259) Ṯ̑-páñí  'I gave.'  
1sg.give.PFV
(260) Ṯ̑-páñí  'Let me give.'  
1sg.IRR-give.PFV

As previously discussed, an imperative construction involving the perfective form preceded by a subject pronoun prefix or pronoun with High tone (or NP with High tone on the initial syllable⁶²) gives a subjunctive meaning.⁶³ In addition to (261) to (265), further examples can be found in the data in Grammar 3.1. Verb Classes.

(261) bǔ-Ḏə́  kàsùwà  'Let him go to market.'  
3sg.IRR-go.PFV market

---

⁶¹ It would be good to check how this construction extends to the jussive and hortative use of the perfective form. This could be checked by studying narrative and hortatory discourse and also by eliciting sentences with both subject and object pronouns such as 'Let him give me money!'

⁶² Compare:

sù-kújá  sù-ʔwíf  'The chickens died.'  
CM8-chicken  AG8-die.PFV
sù-kújá  sù-ʔwíf  'Let the chickens die.'  
CM8.IRR-chicken  AG8-die.PFV

⁶³ Forms of the subjunctive that are an extension of the simple imperative are jussive (3ʳᵈ person) and hortative (1ˢᵗ person). A very similar form is used in Pangu for irrealis statements such as 'Had the boy been there, then ...' (contrafactual).
Part II – Grammar

(262) tɔ-ré jàmì 'Let us eat food.'

1pl.IRR.eat.PFV food

(263) á-kɔtʃì rwàga 'Let them cross the river.'

3pl.IRR.cross.PFV river

(264) țìnà ndà: 'You should greet your household.'

2sg.IRR.greet.PFV house 2sg.POSS

(265) Màídàwà hìn tɔ-jó: tà-kɔtɔnì 'Maidawa said we should go and climb.'

Màídàwà say.PFV 1pl.IRR.go.PFV 1pl.climb.PFV

3.3. Verbal Nouns

Every form of the verb root, whether imperfective, perfective, or distal, can give rise to a verbal noun. Any verbal noun functions syntactically as a noun, not a verb. Morphologically, a verbal noun can show its membership in a noun class. (266) to (277) are found in MacDonell (2020: recording sessions O1–O3).

The first type of verbal noun (glossed VN1) resembles the distal verb in form, but with Low tone on all syllables.

The examples below show that this type of verbal noun can be subject of a verb (266), object of a verb (267), or object of a preposition (268) and (269). It may also take a class marker, though this is not often realised. For this type of verbal noun, the class marker is always ụ- or i-, the former presumably giving some indication of singularity and the latter of plurality of action.

(266) (ụ-)hàgàrì zùmà: 'Frying is good.'

CM3.fry.VN1 is.good

(267) ụ-ìnhà: (i)-kindʒè 'I have digging (to be done).'

1sg-have (CM5)-dig.VN1

(268) ụ-ìnhà: nà-kindʒè 'I am digging (lit. at digging).'

1sg.be.LOC PREP-dig.VN1

(269) ụ-ìnhà: nà-hàgàrì nà hà-gàpà 'I am frying yams (lit. at frying of yams).'

1sg.be.LOC PREP-fry.VN1 ASC CM7-yam

(268) and (269) demonstrate a construction found in many Kainji languages for making a statement referring to an action in progress, which conveys progressive aspect. (269) shows that, with a transitive action, the object is associated with the verbal noun as head in a single noun phrase.

---

64 Subjunctives for 2nd person singular subject are of this form: ụ-Verb.PFV. However, this form cannot be used to obtain immediate action, rather something to be done later, e.g. 'When you arrive, you should fetch water.' The same pattern applies for subjunctives of 2nd person plural: ị-Verb.PFV. The tone on these forms does not follow the general rule for presenting an irrealis statement, for reasons which have not yet been explored.
A second type of verbal noun resembles the imperfective (Vroot-a) in form and is prefixed by the class marker ə̃̀tə-. This type of verbal noun can be used as subject of a clause, shown in (271) to (273), or as object, shown in (274).

(270) tə-ràtə́: təmá:tə́rə́ zùmá:-tʃi 'The drying of the tomatoes is bad.'
CM10-dry.out.VN2 tomato be.good-NEG

(271) tə-gùbògó tə-zùmá: 'Jumping is good.'
CM10-jump.VN2 AG10-be.good

(272) tə-tárági mənì tə-dárítʃi 'Fetching water is difficult.'
CM10-fetch.DIST.VN2 water AG10-be.difficult.PFV

(273) tə-tá ŋ-ɾábi tə-zùmá: 'Doing sleep is good.'
CM10-shoot.VN2 CM7-sleep AG10-be.good

(274) ə̃̀tə-ɾə́ba: tə-ndə́ hàgàri 'They have frying to be done.'
3pl-have CM10-do.VN2 fry.VN1

(272) and (273) show that this type of verbal noun can retain some characteristics of a verb. In (272), tə-tárági seems to have mənì 'water' as its object.65 Similarly in (273), the verbal noun tə-tá 'doing' has ŋ-ɾábi 'sleep' as its object.

This Class 10 verbal noun is frequently the object of verbs such as ɾibi ('want'), hwì́ ('finish') and əɾi ('be able to') (see Grammar 3.5.3. Auxiliary Verb Prefixes).

(275) ŋ-ɾibi tə-hàgàrə́ ŋ-gàpà 'I want to fry yams'
1sg-want CM10-fry.VN2 CM7-yam

In examples such as (275), the word order can always be changed. Perhaps this is in order to bring the object into focus but it also suggests that the object is optional (and indeed the object can be omitted).

(276) ŋ-ɾibi ŋ-gàpà tə-hàgàrə́ 'I want to fry yams.'
1sg-want CM7-yam CM-fry.VN2

A third type of verbal noun resembles the perfective (Vroot-i) in form, but with High tone on all syllables. In (277), it is associated in a noun phrase with a head noun it modifies.

(277) ŋ-gàpà ná ŋ-hàgàrì 'fried yams'
CM7-yam ASC AG7-fry.VN3

3.4. The Verb Phrase and Suffixes on the Verb Root

A summary of the verb phrase ordering of morphemes is shown in Table 18. Bolded elements are required, all other elements are optional.

---

65 Compare (272) with the 'object' of the VN1-type in (269). It is linked by the ASC morpheme within a noun phrase.
Table 18 - The Verb Phrase

The prefixes are discussed in Grammar 3.5. Prefixes on the Verb Root. The benefactive marker (a suprajfix on the verb root) and the suffixes are discussed in the following subsections. In addition to the verb suffixes -a and -i, a number of other morphemes can be affixed to the verb root.

3.4.1. Benefactive Marker

Benefactive marking on a verb is usually realised in the lengthening of the verb root’s vowel, including its tone. Benefactive marking indicates that the action of the verb is done for (the benefit of) someone else, other than the verb’s subject. The solely suprasegmental effect of the benefactive marker on the root is the reason for calling it a suprajfix rather than a suffix. Exceptions to this suprajfix marking on the root have been observed and are noted in this chapter.

<table>
<thead>
<tr>
<th>-a Imperative</th>
<th>Basic Gloss</th>
<th>-a IMPV + Benefactive</th>
<th>-i Irrealis</th>
<th>-i IRR + Benefactive</th>
<th>Distal IMPV</th>
<th>Distal IMPV + Benefactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>gjáš-á</td>
<td>throw!</td>
<td>gjáš-á</td>
<td>á-gjáš-á</td>
<td>á-gjáš-á</td>
<td>gjáš-á</td>
<td>gjáš-á</td>
</tr>
<tr>
<td>čáp-á *</td>
<td>carry!</td>
<td>čáp-á</td>
<td>á-čáp-á</td>
<td>á-čáp-á</td>
<td>čáp-á</td>
<td>čáp-á</td>
</tr>
<tr>
<td>kús-á</td>
<td>break!</td>
<td>kús-á</td>
<td>á-kús-á</td>
<td>á-kús-á</td>
<td>kús-á</td>
<td>kús-á</td>
</tr>
</tbody>
</table>

Table 19 - Benefactive Marking

(278) to (292) in this section are found in MacDonell (2020: recording sessions P1 and P3–P5).

66 The pronominal subject agreement prefix is listed as required since it is much more common than other affixes. It is optional only when the subject is specified by a full noun phrase immediately prior to the verb, or in the simple imperative.

67 This never co-occurs with benefactive marking.

68 i.e. the last root-internal vowel if it is polysyllabic

69 Monosyllabic verbs show a variety of strategies for benefactive marking, most commonly the addition of a CV suffix accompanied by the lengthening of the vowel before the consonant if it's not already long. Two examples, så ‘keep’ becomes saja ‘keep for some one’ and nda ‘do’ becomes ndaka ‘do for s.o.’
Examples of Benefactive Marker as Suprafix:

(278) ʃáp-á  
    carry-IMPV  'Carry!'

(279) ʃáp-á̲ bwà  
    carry.BEN-IMPV AG1.OBJ  'Carry for him!'

(280) ʃáp-í̲ bwà  
    carry.BEN.DIST-IMPV AG1.OBJ  'Carry for him!' (distant)

(281) á-ʃáp-í  
    3sg.IRR-carry-PFV  'Let them carry.'

(282) á-ʃá:p-í̲  
    bé  'Let them carry for him.'

(283) á-ʃáp-í̲  
    3sg.IRR-carry-DIST  'Let them carry.' (distant)

(284) á-ʃá:p-í̲  
    bé  'Let them carry for him.' (distant)

For Class Ax verbs, the Benefactive marker is the suffix -aːg (or -əːg if verb root vowel is close), with tone spreading from the last syllable of the verb root. The Benefactive replaces the "X-morpheme" suffix.70

<table>
<thead>
<tr>
<th>-a Imperative</th>
<th>Basic Gloss</th>
<th>-a IMPV + Benefactive</th>
<th>-i Irrealis</th>
<th>-i IRR + Benefactive</th>
<th>Distal IMPV</th>
<th>Distal IMPV + Benefactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>bás-ån-å̲ *</td>
<td>beat!</td>
<td>bás-åg-å̲</td>
<td>bás-ån-í</td>
<td>bás-åg-í</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20 - Benefactive Marking on Class Ax Verbs

Examples of Benefactive Marker on Class Ax Verbs as Suffix:

(285) bás-ån-å̲  
    á-ʃ téjèn  
    beat-X-IMPV CM7-floor  'Beat the floor!'

(286) bás-åg-å̲ bwà  
    á-ʃ téjèn  
    beat-BEN-IMPV AG1.OBJ CM7-floor  'Beat the floor for him!'

(287) bás-ån-í̲  
    á-ʃ téjèn  
    beat-X-DIST.IMPV CM7.floor  'Beat the floor!' (distant)

(288) bás-åg-í̲ bwà  
    á-ʃ téjèn  
    beat-BEN-DIST AG1.OBJ CM7-floor  'beat the floor for him!' (distant)

70 This suggests the X-morpheme has a meaning that is mutually exclusive with benefactive. One hypothesis is it refers to the person doing the action as himself benefitting from the action, which would be the default understanding.
(289) á-bòs̀-̀n-ì bé 'Let them beat him.'
   3sg.IRR-beat-X-PFV AG1.OBJ
(290) á-bòs̀-̀g-í bwá 'Let them beat for him.'
   3sg.IRR-beat-BEN-PFV AG1.OBJ
(291) á-bòs̀-̀n-ì bé 'Let them beat him.' (distant)
   3sg.IRR-beat-X-DIST AG1.OBJ
(292) á-bòs̀-̀g-í bwá 'Let them beat for him.' (distant)
   3sg.IRR-beat-BEN-DIST AG1.OBJ

3.4.2. Pluractional Marker ag

This suffix is highly productive in that it can be added to most verbs in all three verb forms, as illustrated in the examples of this section. Pluractional marking indicates that the verb action is done repeatedly (iteration), or done by various agents or done on many objects (distribution).

This is arguably a derivational suffix rather than an inflectional suffix. Along with benefactive marking, the pluractional marker follows the universal tendency that "derivational affixes occur nearer to the [verb] root than inflectional ones" (Nurse 2008: 310).

The usual pluractional suffix is -ag, with vowel quality and tone varying according to the verb form. In the first column of Table 21, the imperative form of three verbs is given. In the remaining columns of data, three pluractional forms are shown, alternating with non-pluractional forms for comparison. Glosses are given more fully after the table for the verbs marked with an asterisk, and (293) to (316) are found in MacDonell (2020: recording sessions Q1–Q3).

<table>
<thead>
<tr>
<th>-a Imperative</th>
<th>Basic Gloss</th>
<th>-a IMPV + Pluractional</th>
<th>-i Irrealis</th>
<th>-i IRR + Pluractional</th>
<th>Distal IMPV</th>
<th>Distal IMPV + Pluractional</th>
</tr>
</thead>
<tbody>
<tr>
<td>pās-á *</td>
<td>slap!</td>
<td>pās-ág-á</td>
<td>á-pāf-í</td>
<td>á-pās-ág-í</td>
<td>pāf-í</td>
<td>pās-ág-í</td>
</tr>
<tr>
<td>jāp-á *</td>
<td>carry!</td>
<td>jāp-ág-á</td>
<td>á-jāf-í</td>
<td>á-jāp-ág-í</td>
<td>jāf-í</td>
<td>jāp-ág-í</td>
</tr>
<tr>
<td>gjās-á</td>
<td>throw!</td>
<td>gjās-ág-á</td>
<td>á-gjāf-í</td>
<td>á-gjās-ág-í</td>
<td>gjāf-í</td>
<td>gjās-ág-í</td>
</tr>
</tbody>
</table>

Table 21 - Pluractional Marking

71 The pluractional suffix also has allomorphs -aw and -aj, realised if the last vowel in the root is a lengthened nasalised vowel or a nasalised vowel with a contour tone. In other cases yet to be fully studied, pluractional marking is realised as lengthened vowel or Falling tone applied to the final verb suffix.

72 In this description of Pangu the final verb suffix has already been noted as the place where aspect categories such as perfective and imperfective are marked. Grammar 3.5. Prefixes on the Verb Root goes on to describe other tense and aspect distinctions which are shown as prefixes of the verb root. So the derivational suffixes currently under consideration are marked nearer to the verb root than the inflectional affixes of aspect and tense.
Examples of the Pluractional Suffix on Various Verb Forms:

(293) pásá
    slap.IMPV
    ‘Slap!’

(294) pás-ág-à
    slap-PLUR-IMPV
    ‘Slap (many times).’

(295) páf-í
    slap-IMPV.DIST
    ‘Slap (distant).’

(296) pás-ág-í
    slap-PLUR-DIST.IMPV
    ‘Slap (distant, many times).’

(297) á-páf-í
    3pl.IRR-slap-PFV
    ‘Let them slap.’

(298) á-pás-ág-í
    3pl.IRR-slap-PLUR-PFV
    ‘Let them slap (many times).’

(299) á-páf-í
    3pl.IRR-slap-DIST
    ‘Let them slap (distant).’

(300) á-pás-ág-í
    3pl.IRR-slap-PLUR-DIST
    ‘Let them slap (distant, many times).’

(301) fáp-á
    carry-IMPV
    ‘Carry!’

(302) fáp-ág-à
    carry-PLUR-IMPV
    ‘Carry (plurally).’

(303) fáp-í
    carry-DIST.IMPV
    ‘Carry (distant).’

(304) fáp-ág-í
    carry-PLUR-DIST.IMPV
    ‘Carry (distant, plurally).’

(305) á-fáp-í
    3pl.IRR-carry-PFV
    ‘Let them carry.’

(306) á-fáp-ág-í
    3pl.IRR-carry-PLUR-PFV
    ‘Let them carry (plurally).’

(307) á-fáp-í
    3pl.IRR-carry-DIST
    ‘Let them carry (distant).’

(308) á-fáp-ág-í
    pl.IRR-carry-PLUR-DIST
    ‘Let them carry (distant, plurally).’

For Class Ax verbs, the Pluractional morpheme precedes the X-morpheme.

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73 Free translation of pluractional meaning is given parenthetically as ‘many times’ or ‘plurally’, with the understanding that precise meaning varies somewhat according to the verb and its discourse context.
Part II – Grammar

Examples of Plurational Suffix on a Verb of Class Ax:

(309) bás-án-á bwà 'Beat him!'
  beat-X-IMPV 3s.OBJ

(310) bás-ág-án-á bwà 'Beat him (many times).'
  beat-PLUR-X-IMPV 3s.OBJ

(311) bás-án-í bwà 'Beat him (distant).'
  beat-X-DIST.IMPV 3s.OBJ

(312) bás-ág-án-í bwà 'Beat him (distant, many times).'
  beat-PLUR-X-DIST.IMPV 3s.OBJ

(313) á-bás-ən-i bwà 'Let them beat him.'
  3p.IRR-beat-X-PFV 3s.OBJ

(314) á-bás-ág-ən-í bwà 'Let them beat him (many times).'
  3p.IRR-beat-PLUR-X-PFV 3s.OBJ

(315) á-bás-án-í bwà 'Let them beat him (distant).'
  3p.IRR-beat-X-DIST 3s.OBJ

(316) á-bás-ág-án-í bwà 'Let them beat him (distant, many times).'
  3p.IRR-beat-PLUR-X-DIST 3s.OBJ

3.4.3. Plurational Benefactive Marking

The Plurational and Benefactive markers can both appear on a single verb ('to do plurally for someone'). Under normal circumstances the long vowel of the Benefactive suprafix appears on the verb root and the Plurational morpheme is suffixed to the root.

<table>
<thead>
<tr>
<th>-a IMPV</th>
<th>Basic Gloss</th>
<th>-a IMPV + Plurational</th>
<th>-i Irrealis</th>
<th>-i IRR + PLUR</th>
<th>Distal IMPV</th>
<th>Distal IMPV + PLUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>gíás-á</td>
<td>throw!</td>
<td>gíás-ág-á</td>
<td>gíás-á</td>
<td>gíás-ág-á</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dáb-á</td>
<td>* get!</td>
<td>dáb-ág-á</td>
<td>dáb-á</td>
<td>dáb-ág-á</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 23 - Plurational Benefactive Marking

(317) to (322) are found in MacDonell (2020: recording sessions Q4 and Q5).

Examples of Benefactive and Plurational Suffix Interaction:

(317) dábá  'Get!'
  get.IMPV

(318) dáb-ág-á  'Get! (plurally)'
  get-PLUR-IMPV
For Class Ax verbs, an alternative construction similar to Benefactive (in having two object arguments) has been observed for Class Ax verbs. This construction has been observed in contrast with the Pluractional Benefactive, and has the suffix -an immediately following the pluractional suffix -ag.

The semantic distinction between the two similar constructions has been difficult to establish. It is influenced by the verb being used (i.e. not all Ax-class verbs permit both constructions). (321) and (322) illustrate the distinctions in meaning and form:

**Examples of Contrast Between Two-Object Constructions:**

(321) ñ̩́-nǐ-kind-àg-ó Múśá ñ̩́-gàpá 'I will dig yams for Musa.'
1sg-FUT.BEN-dig.BEN-PLUR-IPFV Musa CM7-yam (for his benefit)

(322) ñ̩́-nǐ-kind-àn-ó Múśá ñ̩́-gàpá 'I will dig yams in place of Musa.'
1sg-FUT-dig-PLUR-X-IPFV Musa CM7-yam (on his behalf)

### 3.4.4. Negative Marker

Verbs having final -i suffix (that is, in the perfective form) can be negated by suffixing of the -tʃi negative morpheme in post-final position (see Table 18 - The Verb Phrase). Thus the negative morpheme will always follow the -i verb suffix, though if the perfective form has a final suffix other than -i, the negative morpheme will tend to match the vowel and so can be realised as -tʃɛ or -tʃə. All tones on the verb root and its final vowel suffix become High, though the negative morpheme itself is usually Low.

(323) to (340) are found in MacDonell (2020: recording sessions R1 and R2).

(323) ñ̩́-tibí 1sg-hear.PFV 'I understand."

(324) ñ̩́-tibí-tʃi 1sg-hear.PFV-NEG 'I don't understand.'

(325) bù-hàŋgé gámbá 3sg-feel.PFV happiness 'He is happy.'

(326) bù-hàŋgé-tʃé gámbá 3sg-feel.PFV-NEG happiness 'He is not happy.'

(327) ñ̩́-zwàré (móní) 1sg-bathe.PFV water 'I bathed myself.'

(328) ñ̩́-zwàré-tʃé 1sg-bathe.PFV-NEG 'I didn’t bath myself.'

(329) ñ̩́-dʒɔː: kàsuwà 1sg-go.PFV market 'I went to the market.'
(330) ñ-dʒó-tʃè kàsùwà 'I didn’t go to the market.'
1sg.-go.PFV-NEG market

(331) à-tá-kwànè wà hùndárà 'They killed a dog yesterday.'
3pl-PST-kill.PFV dog yesterday

(332) à-tá-kwàn-tʃè wà hùndárà 'They didn’t kill a dog yesterday.'
3pl-PST-kill.PFV-NEG dog yesterday

Verb roots ending in the -a suffix (i.e. imperf ective forms) use different strategies for negation depending on the tense/aspect prefix of the verb phrase. The immediate future prefix ni- becomes dʒa-. The remote future dʒa- becomes dʒa-tʃi- and the habitual t-a- becomes ətʃi-. Negation of Remote Past t-a- is shown by changes to the verb root itself74 and suffixing of a negative morpheme in a way reminiscent of perfective. Each pair of positive and negative statements can be compared with one another to note changes in tone pattern through the verb phrase.

(333) bù-nì-dʒáɡá kàsùwà 'S/he will (soon) go to market.'
3sg.-FUT-go.PFV market

(334) bù-dʒá-dʒáɡá kàsùwà 'S/he will not (soon) go to market.'
3sg.-FUT.-NEG-go.PFV market

(335) bù-dʒá-tʃi-dʒáɡá kàsùwà 'S/he will go to market.' (Remote Future)
3sg.-RM.-FUT-go.PFV market

(336) bù-dʒá-tʃi-ːp-ʒáɡá kàsùwà 'S/he will not go to market.' (Remote Future)
3sg.-RM.-FUT.-NEG-go.PFV market

(337) à-tá-kùná wà 'They had killed a dog.' (Remote Past)
3pl-PST-kill.IPFW-NEG dog

(338) à-tá-kwàn-tʃè wà 'They hadn’t killed a dog.' (Remote Past)
3pl-PST-kill.IPFW-NEG dog

(339) màdáwá tá-ré ñ-dʒósfípà kójá hwèn Maidawa PST-eat.IPFW CM7-fish every day
'Maidawa eats fish every day.'

(340) màdáwá sʃí-ré ñ-dʒósfípà kójá hwèn Maidawa usually.not-eat.IPFW CM7-fish every day 'Maidawa does not eat fish every day.'

3.4.5. Causatives

The morpheme -hina (also realised as -hina or -hina) may have originated as a Class A verb in Pangu, but it functions now as a post-final suffix on any of the three forms of another verb. Best described as a causative suffix, it transforms the action of an intransitive verb (the verb it is suffixed to) into a transitive action. What was the subject of the intransitive verb becomes the object of the corresponding transitive verb (the verb word ending with –hina) and its subject is the cause of the transitive action. (341) to (346) all start with a verb in the

74 These are not yet well understood, based only on one pair of examples of Remote Past in this set.
simple imperative form, with the second person singular as subject. Examples in this data set are found in MacDonell (2020: recording session P2).

(341) tʃá:n-hí:ná:n bé mé 'Make him happy!'
be.white.IMPV-CAUS 3sg.OBJ inside

(342) gúrú-hí:ná:n bé mé 'Make him angry!'
be.angry.IMPV-CAUS 3sg.OBJ inside

(343) f 가능성-hí:ná:n 'Lose (it)!'
be.lost.IMPV-CAUS

(344) ɡíjá-hí:ná:n 'Take (it) home!'
go.home.IMPV-CAUS

(345) tʃí:n-hí:ná:n 'Lower (it) down!'
be.lower.IMPV-CAUS

(346) ɡá:n-hí:ná:n 'Move (it) over!'
movement/shift-CAUS

3.5. Prefixes on the Verb Root

In a Pangu verb phrase, the verb root may be preceded by prefixes indicating properties such as tense, aspect, and auxiliary. It has been observed that these are all bound to the verb root and follow the subject pronoun prefix when it is overt.75 There may also be an object prefix occurring just before the verb root and after these tense-aspect-auxiliary slots. This pattern of Pangu verbal prefixes (Table 24) is similar to that found in the well-documented Bantu verbal word template (Nurse 2008: 42–43).

<table>
<thead>
<tr>
<th>Subject Pronominal Prefix</th>
<th>Slot 1 (optional)</th>
<th>Slot 2 (optional)</th>
<th>Slot 3 (optional)</th>
<th>Object Prefix (optional)</th>
<th>Vroot + Final Verb Suffix</th>
<th>Post-final Slot (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(usually overt, indicating 1st or 2nd person or agreement with 3rd person subject's noun class)</td>
<td>tá-tà</td>
<td>hín/ hín-ni-</td>
<td>ná-mán-só-</td>
<td>hí- / ñ- (1sg.OBJ) vowel length on last prefix preceding Vroot (2sg.OBJ) mà- (REFL)</td>
<td>Verb-a (IPFV) Verb-i (PFV) Verb-Distal</td>
<td>-só</td>
</tr>
</tbody>
</table>

*Table 24 - Verbal Prefixes*

The use of these verbal prefixes is not fully understood and uncertainties remain over the semantics of particular verb phrase constructions. What is presented in this section is a

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75 Known exceptions to an overt subject prefix are the simple imperative and situations where a full noun phrase is the subject.
suggestion as to what might be going on in the language. Verb roots can be preceded by up to three of these morphemes and so three "slots" or positions are proposed. An instance of one of these morphemes filling the post-final slot has been observed, so that information is also shown in Table 24.

### 3.5.1. Verbal Prefix Slots

(347) to (367) are found in MacDonell (2020: recording sessions S1, S2 and S2b). For each of the three slots, comments are made on meanings conveyed by some of the morphemes which occupy that slot.

**Slot 1 = Overt Tense (shift in deictic centre to past time)**

tá is a widely used morpheme in Pangu, used also as a focus marker (see Grammar 4.6. Clauses Constructed with Focus Copula ṭá) and as an independent verb 'shoot' (used idiomatically in (273), which is found in Grammar 3.3. Verbal Nouns). In its use as a verbal prefix, however, it appears to be an indicator of Past tense.

The verbal prefix tá- is frequently used with the verb form Vroot-i, which has been identified as the perfective form. For a cognitive verb such as ndbí 'see', there is a clear meaning difference between (347) and (348) when stated in isolation. (347), with the bare perfective form, is given a present-tense interpretation in English and (348) with tá- is given a past-tense interpretation. However, the meaning difference between the (349) and (350), using the perfective form hə́gə̀rí 'fry' both with and without the prefix tá-, is not so clear. With this verb (and verbs of action or motion in general), both sentences refer to past activity.76

<table>
<thead>
<tr>
<th>(347) bù-ndbí bē:</th>
<th>'He sees a child.'</th>
</tr>
</thead>
<tbody>
<tr>
<td>3sg-see.PFV child</td>
<td></td>
</tr>
<tr>
<td>(348) bù-tá-ndbí bē:</td>
<td>'He saw a child.'</td>
</tr>
<tr>
<td>3sg-PST-see.PFV child</td>
<td></td>
</tr>
<tr>
<td>(349) bù-hə́gə̀rí ŋ-gàpà</td>
<td>'He fried yams.' (recently)</td>
</tr>
<tr>
<td>3sg-fry.PFV CM7-yam</td>
<td></td>
</tr>
<tr>
<td>(350) bù-tá-hə́gə̀rí ŋ-gàpà</td>
<td>'He fried yams.' (not-so-recent)</td>
</tr>
<tr>
<td>3sg-PST-fry.PFV CM7-yam</td>
<td></td>
</tr>
</tbody>
</table>

However, when an active verb root such as Pangu hagár- 'fry' takes the -a suffix instead of the -i but with the tá- prefix still present, the meaning appears to be habitual. An imperfective marker is frequently (though not always) associated with habitual meaning cross-

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76 It is best to look at Pangu narrative discourse to research the distinction intended when dynamic verbs are used in perfective form with and without the prefix tá-. Paterson (2015: 220) has explored a similar question using narratives in st-Ma’in, another Kainji language.
linguistically. So the use of the overt past tense marker tá- may serve only to ensure that the regular pattern of frying associated with habitual is interpreted as starting up in the past. Though the English simple present is used in the free translation, it still includes the implication that the patterned behaviour began in the past, not at the present moment.

(351) bù-tá-hàngárá  n̂-gàpà
3sg-PST-fry.IPV CM7-yam

'He fries yams (habitually).'

tá may also be used in combination with a tense/aspect marker in Slot 2. Its effect is to shift the deictic "now" to the past. In (352), the near future represented in the nì- of Slot 2 is presented (due to the presence of tá- in Slot 1) as a near future relative to the past time specified (in context) by the speaker.

(352) bù-tá-nì-hàngárá  n̂-gàpà
3sg-PST-FUT-fry.IPV CM7-yam

'He was (soon) going to fry yams.'

tà (using Low tone) is believed to mark Remote Past tense (e.g. some months ago, last year). However, in such constructions, the verb root takes the imperfective final verb suffix -a.

(353) bù-tá-hàngárá  n̂-gàpà
3sg-RM.PST-fryIPV CM7-yam

'He fried yams (long time ago).'

If tá and tà are regarded as 'non-future', then zero morpheme in Slot 1 can allow for the future tense markers in Slot 2 as discussed below.

**Slot 2 = Tense/Aspect**

In many verb phrase constructions there are three morphemes that can occupy this slot and all carry the property of a future event. At present, they are understood as follows:

nì: Progressive or Immediate Future

hìn    Near Future

dʒó    Remote Future

---

77 In general, an imperfective aspect indicates "the way in which the internal time structure of a situation is viewed" (Crystal 2008: 237). Habitual aspect presents a sequence of an action or situation as happening periodically off-and-on through time. Since this calls attention to the internal time structure of the action or situation, habitual is typically presented as an imperfective aspect and not a perfective one.

78 The tone on this morpheme (and its vowel length) appears to vary with context. It has at times been observed as Rising. (369) and (370) in Grammar 3.5.2. Reflexive Marker mà show both Rising tone and phonetic vowel length. The question of whether this is one morpheme or two is a matter for further study.
Part II – Grammar

(354) bù-dʒó-hàɡàrá  ɲ-gàpà.
    3sg-RM.FUT-fryIPFV    CM7-yam

'He will fry yams (tomorrow or later).'

Slot 3 = Aspect/Auxiliary

The morphemes má and ná (more common in future constructions) are both believed to signify Progressive aspect.

(355) bwá má-hàɡàrá  ɲ-gàpà  à-ʔsjó  bù  wútjé
    3sg.INDE  PROG-fry.IPFV  CM7-yam  CM4-wife.3sg.INAL  AG4.INDE  arrive.DIST

'(When) he was frying yams, his wife came.' 79

(356) bù-dʒà-ná-hàɡárá-á  ɲ-gàpà
    3sg-RM.FUT-PROG-fry-IPFV  CM7-yam

'He will be frying yams.'

In this slot a variety of Auxiliaries can function, such as hó ('already'), gùrà ('again'), etc. These auxiliaries and others are discussed in Grammar 3.5.3. Auxiliary Verb Prefixes. The morpheme só seems to represent Completive aspect, and in certain constructions occurs in the post-final verb slot.

Verb Slot

As has been discussed in Grammar 3.1. on verb classes, the verb root can take the imperfective, the perfective, or the distal form and a variety of tone patterns.

Examples

Below are some more examples of verb phrase constructions. Almost all of these examples are declarative and use the imperfective (Vroot-a) form. English translations should be regarded as tentative.

(357) bù-tá- ná-hàɡàrá  ɲ-gàpà  'He was frying yams (long time ago).'  
    3sg-RM.PST-PROG-fry.IPFV  CM7-yam

(358) bù-tá-níi-ná-hàɡàrá  ɲ-gàpà  'He was going to be frying yams (soon).'</ná-hàɡàrá  ɲ-gàpà  'He was going to be frying yams (soon).'
    3sg-PST-FUT-PROG-fry.IPFV  CM7-yam

(359) bù-tá-ná-só-hàɡàrá  ɲ-gàpà  'He used to be frying yams (regularly but no more).'
    3sg-RM.PST-PROG-COMPL-fry.IPFV  CM7-yam

(360) bù-tá-hàɡàrí-só  ɲ-gàpà  'He used to fry yams (sometimes but no more).'
    3sg-PST-fry.PFV-COMPL  CM7-yam

(361) bù-hó-hàɡàrá  ɲ-gàpà  'He has already fried yams (just now).'
    3sg-already-fry.IPFV  CM7-yam

79 It is possible that the má prefix is only used in subordinate clauses.
3.5.2. Reflexive Marker *må*

In any verb phrase where the subject and object of the verb are the same referent (person), the Reflexive marker *må*- can be used. The subject pronominal prefix is in its normal position at the start of the verb phrase, but the Reflexive marker is the last prefix before the verb root and so there is no need for any object pronoun following the verb. This is the same immediately pre-verb slot in which the 1<sup>st</sup>- and 2<sup>nd</sup>-person object pronouns are marked. (See (256) to (260) in Grammar 3.2. Imperatives and Table 24 - Verbal Prefixes.)

(368) ṭǐ-må-ndā̀  nǐ-ndājá  'I see myself in a mirror.'

1sg-REFL-see.PFV  PREP.CM1-mirror

(369) ń-nī-må-pàsá  'I will (soon) slap myself.'

1sg-FUT-REFL-slap.PFV

(370) bù-nī-må-pàsá  'He will (soon) slap himself.'

3sg-FUT-REFL-slap.PFV

3.5.3. Auxiliary Verb Prefixes

In discussing the prefix slots of the verb phrase (Grammar 3.5.1. Verbal Prefix Slots), it has already been noted that many of the tense/aspect prefixes closely resemble monosyllabic Pangu verbs. One example is the remote future prefix *dʒ̥*- appearing in Slot 2. This is similar to the full verb 'go' (-i form). While recognising the likely origin of tense/aspect markers as full verbs that have been grammaticalised, it is usually preferable to identify them by accurate grammatical glosses rather than by glosses of the verbs they originated from.

The tradition when describing Niger-Congo languages and, more specifically, Bantu languages has been to use the term Auxiliary in referring to a verb that is used in the middle of the verb
structure to modify or support the Main verb which appears at the end of it. For example, Nurse (2008: 62) refers as follows to the verb structure ("syntagma") which Bantu inherited from early Niger-Congo:

Proto-Niger-Congo and early Niger-Congo had a syntagma SP AUX OP V Other, where SP stands for subject pronoun, AUX for a string of morphemes (words, particles, auxiliaries, adverbs) representing mood, aspect, negation, and other categories, OP for object pronoun, and V for ... root-extension-final vowel. All five components of the syntagma are discrete.

(371) to (373) are found in MacDonell (2020: recording session S4b).

Two examples of Pangu auxiliaries are hó- 'already (do)' and ə̃́tʃì- 'usually not (do)'. In (371), the auxiliary hó- modifies the meaning of the main verb hàɡàrə 'fry'. In (372), the negative auxiliary ə̃́tʃì- modifies the meaning of the main verb kàtànə 'climb'. (373) is the positive counterpart to (372), using the tense prefix tá-.

(371) bù-tá-hàɡàrə ñ-ɡàpà 'He already fried yams (recent past).'
3sg-PST-already-fry.IPFV CM7-yam

(372) ɡàn ə̃́tʃì-kàtànə: màʃjìn 'I never ride a motorbike.'
1sg.INDE usually.not-climb.IPFV.CM2 motorbike

(373) ń-tá-kàtànə: màʃjìn 'I usually ride a motorbike.'
1sg-PST-climb.IPFV.CM2 motorbike

It is suspected that the auxiliary hó ('already') may be derived from the verb húwά / hwǐ: ('finish').

3.5.4. Copular Verbs

As is common cross-linguistically, Pangu handles predications of existence, description, location and possession by the use of copular verbs.80 These copulas, which can be positive or negative, can all take subject agreement prefixes as verbs do, but are much more limited than verbs in taking any other affixes.

(374) to (379) in this section are found in MacDonell (2020: recording session S5).

The equative copula $ʃi$, glossed be.DESC, is used for predications of description.

(374) ń-$ʃi$ bù-tù ná: ŋendʒè 'I am a white (lit. red) man.'
1sg-be.DESC CM1-man ASC.AG1 red

80At the beginning of a chapter entitled Predicate nominals and related constructions, Thomas Payne states this as a universal: "Every language has clauses that express proper inclusion, equation, attribution, location, existence, and possession..." (1997: 111–128). The chapter defines and gives examples of these constructions, and shows they "often employ a copula." (1997: 116)
The copula nè; glossed be.LOC or 'be there', and the corresponding negative copula zá 'be not there'\(^81\) both follow a subject noun phrase and predicate its existence or possession (or lack of it). These copulas also can precede prepositional phrases, thereby making predications of location.

\[(375) \text{à-wá nè: } \begin{array}{ll} \text{CM4-dog} & \text{be.LOC} \end{array} \quad \text{'There is a dog.'} \]

\[(376) \text{à-wá zá } \begin{array}{ll} \text{CM4-dog} & \text{be.not.LOC} \end{array} \quad \text{'There is no dog.'} \]

\[(377) \text{mákárántá má-nè: } \begin{array}{ll} \text{AG9-school} & \text{be.LOC today} \end{array} \quad \text{bóré 'There is school today.'} \]

\[(378) \text{ń-zá bù-?ò } \begin{array}{ll} \text{CM1-wife} \end{array} \quad \text{'I don't have a wife.'} \]

\[(379) \text{múrsá nè: } \begin{array}{ll} \text{Musa be.LOC beside PREP-river} \end{array} \quad \text{dókó nó-rwàgà 'Musa is close to the river.'} \]

3.6. Adverbs

Adverbs commonly appear in an adjunct position after the verb phrase is completed. Ideophones frequently function as adverbs in an end-of-clause position. (380) to (384) are found in MacDonell (2020: recording session T).

\[(380) \text{jáptájága: } \begin{array}{ll} \text{CM2.calabash} \end{array} \quad \text{dòógò } \begin{array}{ll} \text{slowly} \end{array} \quad \text{sàn 'Raise the calabash slowly.'} \]

\[(381) \text{jáptájága: } \begin{array}{ll} \text{calabash} \end{array} \quad \text{dòógò jùkù: } \begin{array}{ll} \text{gently} \end{array} \quad \text{'Raise the calabash gently.'} \]

\[(382) \text{ősógónó màntùn kí } \begin{array}{ll} \text{repair} \end{array} \quad \text{car } \begin{array}{ll} \text{well} \end{array} \quad \text{'Repair the car well.'} \]

\[(383) \text{bù-?ò nó-bú-tú: } \begin{array}{ll} \text{CM1-woman} & \text{PREP-CM1-man.AG1} \end{array} \quad \text{úqármí ñí-ndà tò-hànì dòndó } \begin{array}{ll} \text{male} \end{array} \quad \text{FUT-do.IPFV CM7-travelling together} \quad \text{'The woman and the man walk together.'} \]

Often the verb is modified, not by a single word, but by a prepositional phrase or an adverbial clause.

\(^81\) zá also serves as the negative for the copula qìhà:`to have'.

\(^82\) The surface tone pattern for this clause, represented by the tone letters ˦˦˦˦˧˧˧, indicates there is an automatic downstep in the pitch of dòógò`calabash'. This is due to the reduction of its class marker bì- (CM2) to the usual lengthening of the preceding syllable vowel (here the formerly high-tone vowel of the final syllable of the verb). The adverb sàm in this case goes back to the same level of pitch as the verb. These distinctions are not currently represented in the orthography, and this is an area requiring further research.
3.7. Expressing Non-Declarative Modalities

When the mood or modality of propositions is categorised, we describe the manner in which they assert or deny "the possibility, impossibility, contingency, or necessity of their content" (Merriam-Webster 1993: s.v. modality). When a proposition asserts something as a simple fact, it is grammatically categorised as "declarative" in its mood and the situation it represents as being "realsis". Propositions representing an action or state in some other manner (e.g. "as contingent or possible or viewed emotionally (as with doubt or desire)") are categorised as being "subjunctive" (Merriam-Webster 1993: s.v. subjunctive) in mood and the situations they represent as being "irrealis".

At the beginning of this chapter on the Pangu verb phrase, we explored a basic contrast between the tone pattern on a statement about a realis situation and the pattern on a statement about an irrealis situation using the same verb form (see Grammar 3.1.7. Contrasting Tone Patterns in Perfective Forms). This section explores how a few other non-declarative modalities are expressed in Pangu. Some, but not all, of them show the simple pattern of a verb phrase that begins with a High tone. (385) and (386) are found in MacDonell (2020: recording session U).

An adverb can be used, whether after the verb phrase or fronted as in (385).

(385) ɡə̃́ɡə̃́ɡə̃́ɡə̃́n ɗʒąɡá kásùwà 'I must go to the market.'

(386) expresses uncertainty about a future event using an auxiliary verb prefix.84

(386) bù-ɡə̃́tʃi-ɗʒà: bərè 'Maybe he will come today.'

A further modality, a two-clause construction, is described in Grammar 4.1.4. A Two-Clause Construction Using Proclitic ku.

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83 The phrase 'I must go to the market' was earlier elicited in this form, which is probably less marked in placing the ideophone or adverb after the verb:

nì-ɗʒà: kásùwà ɡə̃́ɡə̃́ 'I must go to market.'

1sg-go.PFV market must

84 It is unclear how an earlier form elicited for this phrase should be analysed. Possibly the first word is a full main verb, with the rest of the predication as its object complement:

ɡə̃́tʃi bwà nì-ɗʒà: bərè 'Maybe he will come today.'

maybe 3sg.INDE FUT-go.DIST today
4. Observations on Single-Clause and Multi-Clause Syntax

Now that the syntax of the verb phrase has been described, some exploration of clause syntax is in order. First, strategies for combining two (or more) simple clauses with conjunctions or by juxtaposition are explored, then the clause structures for comparatives, for negations, and for interrogatives, and finally focus clause constructions are investigated.

Examples for Section 4.1 are found in MacDonell (2020: recording sessions V1 and V2). Examples for Sections 4.2, 4.3, 4.4 and 4.5 are found in MacDonell (2020: recording sessions W, X, Y and Z respectively).

4.1. Conjunctions

4.1.1. Noun Phrase Conjunction

As has already been shown (see Grammar 2.8. Preposition Morpheme na), the Preposition morpheme is used as a conjunction between noun phrases.

(387) jákúbú ná-ísá à-dʒá: kàsùwà 'Yakubu and Isah went to market.'

Yakubu PREP-Isah 3pl-go.PFV market

4.1.2. Verb Phrase Conjunction

Although it does not have serial verb constructions, Pangu does make use of an additive conjunction mà 'also' between clauses which all share the same subject and object participants. Note in (388) how each verb after the first is reduced to its bare minimum (without subject prefix, tense prefix and object pronoun) due to these common participants.

(388) ŋ-ŋi-ʃí-rán wůn, mà ?jàpàgà má hàgàrà mà rè

1sg-FUT-slaughter.IPFV AG3.OBJ also cut.IPFV also fry.IPFV also eat.IPFV

'I will slaughter it, cut (it), fry (it), (and) eat (it).'

4.1.3. Other Conjunctions

Clauses of equal status can be juxtaposed without the need of a conjunction word. (389) indicates (using phonetic brackets) some phonetic effects of juxtaposition on the word at the end of the first clause, marega 'alcohol'.

(389) ŋ-swò màrégà, gèn ré jàmí [màrégà]

1sg-drink.PFV alcohol 1sg.INDE eat.PFV food

'I drank alcohol (and) I ate food.'

(390) ŋ-tà-swà-sò màrégà, ŋ-ʃíjí-swà nínà

1sg-PST-drink.PFV-COMPL alcohol 1sg-never-drink.IPFV now

'I used to drink alcohol (but) I never drink now.'

Subordinating conjunctions that are commonly used are as follows:

wana 'because' introduces a Cause adjunct.
Part II – Grammar

(391) bù-ní-mà-kúmbó wàná hûkûrûkù màçón
3sg-FUT-REFL-fan.IPFV because heat be.much.PLUR.PFV

'He fans himself because heat is too much'

The particle *ku-* 'if' or 'when' seems to be a proclitic, its vowel dependent on the class marker or agreement marker that follows it. It introduces a conditional clause or a time clause.85

(392) kà-jîrè kèn-tʃèn, ɲ-dʒà-ː-dʒàɡá kàsùwà
if.CM4-fall.PFV-not 1sg-RM.FUT-go.IPFV market

'If it is not raining, I will go to the market.'

(393) kùr-hwìː páná: ɬàn
if.2sg-finish.PFV give.IMPV.CM1 someone

'When you finish, give to someone.'

(394) kì-kàrábì hànq-áɡ-ɔ-tʃà sò, tɔ-kùnà wù:n
if.CM5-sheep feel/hear-PLUR-PFV-NEG well 1pl.kill.PLUR AG5.OBJ

'If the sheep are sick, we will kill them.'

4.1.4. A Two-Clause Construction Using Proclitic *ku*

A particular verb phrase construction is used to express deontic modality (English 'should'). This involves the copula as a verb with *bù-* as its subject pronominal prefix. This is verified in (396) and (397), which show the copula can take the negating suffix *-tʃí*. The following verb is then prefixed by the particle *kù-* which can be taken as identical to the proclitic discussed in Grammar 4.1.3. Other Conjunctions. This particle is shown there to introduce an irrealis verb phrase and is glossed 'if'. Its vowel length in (395), (396) and (397) indicates the presence of the reduced form of the 3sg pronominal prefix *bù-* which indexes a subject in Noun Class 1.

(395) bù-ʃì kùr-ré ʃámí 'He should eat food.'
3sg-be.DESC if.3sg-eat.PFV food

(396) bù-ʃì-tʃí kùr-ːntənì 'He should not touch.'
3sg-be.DESC-NEG if.3sg-touch.PFV

(397) bù-ʃì-tʃí kùr-hûrí nìːnà 'He should not have gone now.'
3sg-be.DESC-NEG if.3sg-pass.PFV now

85 These are irrealis clauses. Realis clauses will be preceded by *nà*. 
4.2. Comparative Clauses

Contrast

Many comparative clauses are constructed using the transitive verb *huri* 'pass'. The first Noun Phrase will be the subject of comparison, followed by the verb and then either a NP or Prepositional Phrase, with the final NP being the domain of comparison.

(398) tákádà ná fiří hůří ná fiěndʒé òtò
book ASC black pass.PFV ASC red bigness
'The black book is bigger than the red one.'

(399) tákádà ná fiěndʒé jì ná ndʒékè
book ASC red be ASC small
'The red book is the smallest.'

(400) nânà hůří nónndéré òtò
this pass that (particular) big
'This one is bigger than that one.'

(401) múšá hůři jàkúbù ḥğišwán
Musa pass Yakubu long
'Musa is taller than Yakubu'

Similarity

The word *haku* probably derives from Hausa *hákà* ('like'). In (402) and (403) it is acting as a predicative preposition. Its final vowel is sensitive to the class of its object.

(402) múšá giḏiģí hâkù īsá:
Musa run.PFV like.CM1 Isah
'Musa ran like Isah.'

(403) bù-kéngé mánnìn hâkà: dʒɔ̃̀gi:ɔ̀pà
3sg-do.continuously.PFV water like.CM2 fish
'He swam like a fish.'

Resemblance

The following examples use the noun *mpiɹwa* ('resemblance/appearance') followed by a Prepositional Phrase.

(404) hàsàn ṭ̀bà: ṭ̀pírwá nù-hùséːnì
Hasan have resemblance PREP-Hussaini
'Hasan looks like Hussaini.'

(405) ʔínà ná íbráhím ṭ̀bà: ṭ̀pírwá nà-nà pǐtà:
house ASC Ibrahim have resemblance PREP-ASC Peter
'Ibrahim’s house looks the same as Peter’s.'
4.3. Negation of Clauses with Standard Verbs

Past negative [tʃi]

Negation of verbs in the perfective form (Vroot-i) is by use of the suffix -tʃi in the post-final verb slot (already discussed with examples given in Grammar 3.4.4. Negative Marker).

Future negative [dʒáː]

This particle precedes the verb and appears to be used for negation in the future tense.

(406) ñ̩́-dʒáː-ːdʒáː: báré 'I will come today.'
1sg-RM.FUT-go.DIST today

(407) ñ̩́-dʒáː-ːdʒáː: báré 'I will not come today.'
1sg-FUT.NEG-go.DIST today

(408) ñ̩́-dʒáː-ːʃɛn kórí 'I will not buy anything.'
1sg-FUT.NEG-buy.DIST nothing

Imperative negative [tə]

This particle (shown as a negative auxiliary prefix) precedes the verb in the simple imperative form. To pluralise the imperative, the 2pl má can be inserted after the verb.

(409) tə-ɡűbó 'Don't jump.'
IMPV.NEG-jump.IPFV

(410) tə-ːrɛ 'Don't eat.'
IMPV.NEG-cat.IPFV

(411) tə-ːɡáɡə 'Don't cry.'
IMPV.NEG-cry.IPFV

(412) tə-náː-ːɡáɡə 'Don't continue crying.'
IMPV.NEG-PROG-cry.IPFV

4.4. Negation of Clauses with Copular Verbs

4.4.1. Predications of Description

The copula ŋi ('be', glossed in interlinear examples as be.DESC or just be) can be negated either by the addition of the suffix -tʃi, or by a change of tone to Falling tone over a long vowel, ŋi: It can be hypothesised that the Falling tone on the condensed morpheme is a result of a contraction of ŋi-tʃi with the HL tones of the two syllables being applied to the single long-vowelled syllable resulting from removal of the word-medial consonant.

(413) ŋi-ːŋi bũtũ: náː ndʒékę 'I am a small man.'
1sg-be.DESC CM1.man.AG1 ASC.AG1 small

(414) ŋi-ːŋi-tʃi bũtũ: náː ndʒékę 'I am not a small man.'
1sg-be.DESC-NEG CM1.man.AG1 ASC.AG1 small
or:

(415) ǹ-ńî: bûtù: ná: ndʒèkè 'I am not a small man.'
   1sg.be.DESC.NEG CM1.man.AG1 ASC.AG1 small
(416) ǹ-ńî bà: 'I am a child.'
   1sg.be.DESC son
(417) ǹ-ńî-tjì bà: 'I am not a child.'
   1sg.be.DESC-NEG son

or:

(418) ǹ-ńî: bà: 'I am not a child.'
   1sg.be.DESC-NEG son

4.4.2. Predications of Existence, Location and Possession

To negate predications concerning the existence or location of certain referents (normally identified as subject NP), or to negate a predication concerning the possession of certain referents (normally identified as object NP, with the possessor as subject NP), the negative copula ńá can be used. It is presented as a negative form of the copula ne: (be.LOC) for the former type of predication and as a negative form of the verb mba: 'have' for the latter type (see also Grammar 3.5.4. Copular Verbs).

(419) gón ńá jùwà 'I have no money.'
   1sg.INDE be.LOC.NEG money
(420) à-jùwà ńá 'There is no money.'
   CM4-money be.LOC.NEG
(421) ṛwàgà ńá mànì 'There is no water in the river.'
   water be.LOC.NEG
(422) mà-kàrántá mà-źá bàrè wànà ń-ṳ́fàrmì ń-źá
   CM9-school AG9-be.LOC.NEG today because CM7-teacher AG7-be.LOC.NEG
   'There was no school today because there were no teachers.'

4.5. Clauses in Interrogative Mood

Interrogative words are listed in Grammar 1.8. Question Words. The following are typical examples of interrogative clauses. (423) to (427) are queries concerning arguments such as subject or object. (428) to (431) contain adjuncts such as location and time. These queries are known as content questions.

(423) l-bò gà: hìn 'What did you say?'
   CM5-what 2s.INDE say.PFV
(424) l-bò gà: ndà 'What are you doing?'
   CM5-what 2s.INDE do.IPFV
(425) jùwà hàmbà 'How much (is) money?'
   money how.much
The interrogative pronouns can be placed before the verb with or without the use of the focus marker tá, which is further studied in Grammar 4.6. Clauses Constructed with Focus Copula tá. (423) and (424) have the pronoun fronted without the use of tá, and (427) has it fronted with tá. (428) has a fronted location adverbial with no use of tá, and (429) and (430) have an unfronted interrogative of location/manner 'be how' acting as a predicator.

**Yes/No questions**

Declarative statements can be made into interrogatives simply by the use of raised intonation that extends from the beginning through to the end of the statement. It really involves a change to a higher pitch register: the pattern of Highs and Lows remains the same for both declarative and interrogative statements, as shown by the diacritics in comparison to the tone letters.86

In (434) and (435), the yes/no question using the verb ndaja 'see' is understood as a request for information about his location.

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86 As well as intonation, a question (or interrogative) morpheme nû may be used in sentence final position:

bu-hingé ru- dài nû
2sg-feel CM6-thirst YNQ
'Do you feel thirsty?"
(435) ŋ-ndɔ̀ bugwàmà 1↓↓↓ 'Do I see (the) chief?' (lit.) i.e. 'Where is the chief?'
1sg-see.PFV CM1-chief

4.6. Clauses Constructed with Focus Copula tá

The particle tá has been observed functioning as a focus marker when following a noun phrase. This particle should be understood as a copular verb. The noun phrase it follows is its subject, and the copula is preceded by a subject agreement prefix where required. (436) is an example of a focus construction where both the focus copula and the active verb ɗʒə ‘go’ are marked for agreement with their subject m-mwan ‘children’:

(436) ŋ-wàmàn ŋ-tá ŋ-tá-dʒə: kàsùwà hùndàrà
CM7-children AG7-be.FOC AG7-PST-go.PFV market yesterday

'It's children (who) went to the market yesterday.'

This is a typical cleft construction, used for narrow focus (here on the subject argument m-wàmàn ‘children’) as discussed in Grammar 4.6.2. Combined Clauses with tá. Grammar 4.6.1. Simple Clauses with tá as Sole Predicator is background to that discussion, showing how the tá focus copula is used in simple clauses.

4.6.1. Simple Clauses with tá as Sole Predicator

The focus morpheme tá will usually be used in response to the question 'What is this/that?' It also often occurs in content questions, marking the question word as the clause argument in focus, though Grammar 4.5. Clauses in Interrogative Mood shows this is not mandatory. The first three examples use boldface to show the argument in focus. Later examples, showing the response for items from various noun classes, drop this extra marking.

(437) l-mbá tá nánna? 'What is this?'
CM5-what be.FOC this

(438) kópt tá 'It’s a cup.'
cup be.FOC

(439) ù-kújá tá 'It’s a chicken.'
CM3-chicken be.FOC

(440) ù-bùn tá 'It is an elephant.'
CM3-elephant be.FOC

(441) ù-hù:rùn tá 'It is a dove.'
CM3-dove be.FOC

(442) à-nà tá 'It is a scorpion.'
CM4a-scorpion be.FOC

(443) à-pútù tá 'It is dust.'
CM4b-dust be.FOC

(444) l-kà:sù tá 'It is a seed.'
CM5-seed be.FOC

(445) bàrəʃíná tá 'It is a mat.'
mat be.FOC
The focus copula frequently sounds like its pitch is raised from the usual High tone to an extra-high level. It can be observed by listening to recordings of the above data (MacDonell 2020: recording session ZL2) that this raised pitch occurs whenever the syllable preceding the copula is High tone.\(^7\)

### 4.6.2. Combined Clauses with \( t\á \)

A Pangu sentence with normal unmarked focus (called predicate focus) can be restated as a new sentence identified as a cleft construction. In this construction an item is put into narrow focus by moving it to sentence-initial position. The focus copula \( t\á \) follows, then a mandatory independent pronoun becomes subject of the new clause formed as the complement of the focus copula. (451) is an example of a cleft construction, preceded by the sentence with predicate focus for comparison.

Normal (with predicate focus):

\[
\begin{array}{lll}
(450) & bù-jàpí & kándàgà \\
& 3sg.-carry.PFV & shoes \\
'He took shoes.'
\end{array}
\]

Object in narrow focus:

\[
\begin{array}{llll}
(451) & kándàgà & tá & bwà & jàpí \\
& shoes & be.FOC & 3sg.INDE & carry.PFV \\
'It is shoes he took.'
\end{array}
\]

With ditransitive verbs, any of the participants (including question words) can be brought into narrow focus using a cleft construction. Except for when the subject is the argument in focus, the noun phrase is fronted from its usual position after the verb. This is illustrated in (452) to (458) for which recordings can be found in MacDonell (2020: recording session ZL1).

---

\(^7\) It is hypothesised that a floating high tone is associated with the subject agreement prefix slot that immediately precedes the copula. Sometimes this slot is filled by an agreement marker, as in (447) to (449). The slot is usually empty, as shown in (437) to (446). Whether the subject prefix slot is filled or not, a high tone on the last syllable preceding it triggers a change of register that results in an extra-high pitch on the focus copula \( t\á \).
Normal (predicate focus):

(452) múːsá  pəní  ísáː  kóːpì  
musa  give.PFV  Isah  cup  
'Musa gave Isah a cup.'

Subject focus:

(453) ìjá:  tá  pəní  ísáː  kóːpì  
who?  be.FOC  give.PFV  Isah  cup  
'Who is it (who) gave Isah a cup?'

(454) múːsátá  pəní  ísáː  kóːpì  
Musa  be.FOC  give.PFV  Isah  cup  
'It is Musa (who) gave Isah a cup.'

Direct Object focus:

(455) ɪ-ːmbá  tá  múːsá:  bwà  pəní  ísáː  
CM5-what?  be.FOC  Musa  3s.INDE  give.PFV  Isah  
'What did Musa give to Isah?'

(456) kóːpì  tá  bwà  pəní  ísáː:  
cup  be.FOC  3sg.INDE  give.PFV  Isah  
'It is a cup he gave to Isah.'

Indirect Object focus:

(457) (kù)-ːjá:  tá  múːsá  bwà  pəní  kóːpì  
(to)-who  be.FOC  Musa  3sg.INDE  give.PFV  cup  
'To whom is it that Musa gave a cup?'

(458) (kù)-ːísá:  tá  bwà  pəní  kóːpì  
(to)-Isah  FOC  3sg.INDE  give.PFV  cup  
'It is to Isah he gave a cup.'

Note that the HH tone pattern on the verb pəní 'give' in the complement clause of these cleft constructions (including the questions) is different from the LH tone pattern in the sentence with predicate focus.

In Pangu a cleft construction can also be used to bring a prepositional phrase into focus. Note again that the tones on the complement verb in the cleft construction (narrow focus) are all High, but the tone pattern on the same verb in the predication with unmarked (predicate) focus is LLLH.

Predicate focus:

(459) ʃ-mwáːn  ʃ-ɡiːdɡ-əɡ-í  nà-háːnì  
CM7-children  AG7-run-PLUR-PFV  PREP-time  
'The children ran quickly.'
Narrow focus:

(460) nə-hóni tá m̩-mwán m̩bà gídíg-ág-í
   PREP-time be.FOC CM7-children AG7.INDE run-PLUR-PFV

'It is quickly (that) the children ran.'
5. **Summary - Themes & Further Research**

This chapter draws together some distinctives or themes encountered in describing Pangu grammar. It also notes major points identified as needing further linguistic research.

5.1. **Themes**

➢ Every Pangu noun belongs to a particular class, though class membership is not always morphologically marked.

   o Pangu has twelve noun classes: six for singular nouns, four for plural nouns, and two for mass (e.g. liquids) or abstract nouns.

   o Some erosion of the noun class system is evident. The use of a class-marking prefix is optional on nouns from five of the twelve classes and on the agreement targets of these same nouns. Nouns from the other seven classes require both a class-marking prefix and agreement markers on all their targets.

➢ The Pangu verb phrase (a.k.a. verbal template or word) is Bantu-like in its structure.

   o For every full-fledged Pangu verb (i.e. excluding copulas), the combination of verb root and final vowel suffix is classified as one of three forms - imperfective, perfective, or distal.

   o Derivational suffixes studied in this grammar include pluractional, benefactive, and the yet-to-be-understood X-morpheme. The benefactive is usually not a suffix but a suprafixed involving vowel lengthening in the root.

   o Prefixes of the verb root in the verb phrase include subject agreement, tense/aspect markers, auxiliaries, negatives and object agreement.

➢ Contrasting vowel length can make grammatical distinctions.

   o The noun class prefixes bî- and bù- (as well as their agreement markers) are often realised in segmentally reduced form as lengthening on the final vowel of the morpheme immediately preceding the noun (or its agreement target). Examples are furnished in Grammar **2.2. Noun Class Agreement**.

   o The 2sg and 2pl object pronominal is always marked in the verb phrase by a lengthening of the subject agreement prefix vowel. Examples are in Grammar **2.3. Personal Pronominals**.

   o The reduced (and most common) form of benefactive marking is a suprafixed involving lengthening the vowel of the verb root. Examples are in Grammar **3.4.1. Benefactive Marker**.
➢ Tonal contrasts are used to make grammatical distinctions.

  o High and Low tone are used to distinguish between 2nd singular and 3rd singular subject pronominal prefixes. Examples are in Grammar 2.3.1. 2nd Person Pronominals as Subject Prefixes).

  o High and Low tone on the subject pronominal prefix is a consistent distinction between realis and irrealis statements both using the perfective form of the verb. Examples are in Grammar 3.1.7. Contrasting Tone Patterns in Perfective Forms).

5.2. Questions for Further Research

➢ There are questions involving segmental and tonal contrasts in the basic verb forms:

  o What is the contrast, if any, between a distal form marked as perfective and one marked as imperfective? If there is a contrast, can one of the two be considered unmarked?

➢ There are questions involving the use of tone:

  o What accounts for changes from the expected tone pattern on certain agreement prefixes within an associative noun phrase? See (148) to (152) in Grammar 2.7.1. Used in an Associative Noun Phrase.

  o How can the phenomenon of an extra-high pitch be accounted for? This has been observed in two contexts. The first seems to involve spreading of high pitch within a noun phrase. See (68) in Grammar 2.2. Noun Class Agreement. The second context involves the focus copula. See (437) to (449) in Grammar 4.6.1. Simple Clauses with tā as Sole Predicator.

  o What generalisations, if any, can be sustained for tone patterns associated with each verb class and each type of verb root (imperfective, perfective, and distal)? See observations given in the discussion of each verb class throughout Grammar 3.1. Verb Classes.

➢ There are questions best addressed using discourse analysis:

  o When class-marking prefixes are optional, as they are for seven noun classes, what is the relevance of their presence or absence? Is their presence a signal of topicality? See (11) to (14) in Grammar 2.1.1. Erosion of Noun Class System.

  o What accounts for the varying realisations of the 3rd person singular pronoun when referring to a human subject? See discussion in Grammar 2.3.3. Comment on Some 3rd Person Singular Pronominals.

  o In what pragmatic contexts are demonstrative pronouns and independent personal pronouns used in narrative discourse and non-narrative discourse? See examples of demonstratives in Grammar 2.2. Noun Class Agreement and Grammar 2.6.3.
Use of Demonstratives, and of independent pronouns in Grammar 2.3. Personal Pronominals and Grammar 4.6.2. Combined Clauses with tá.

- What is the function of the X-morpheme which occurs in a limited set of verbs? What accounts for its replacement by the benefactive suffix in certain contexts? See Grammar 3.1.2. Class Ax Verbs.

- What accounts for the differences in negating the perfective and the imperfective forms of a verb? See (323) to (340) in Grammar 3.4.4. Negative Marker.

- The verbal prefix tá- has been glossed as an indicator of past tense on elicited examples involving both perfective and imperfective forms. How extensively is this overt tense-marking morpheme used in narrative discourse? See Grammar 3.5.1. Verbal Prefix Slots.
Appendix 1 – Testing Nasalisation

The original authors of this paper, as they were learning the Pangu language in 2003-04, became aware that nasalisation of vowels was a widespread phenomenon. In order to overcome their considerable difficulty detecting the presence or absence of nasalisation, and to seek an understanding of nasal spread within Pangu words, the following test was conducted.

Words containing possible nasal consonants and nasalised vowels were compiled into a list, and a selection of these was chosen for recording. Each word was recorded onto two channels. The right hand channel was used to record the output from the mouth using standard microphone placement techniques. The left channel however, was used to record the output of sound through the nose. This was achieved by inserting a tube up the nose of the willing language helper, and attaching the other end to a microphone, sealed off from external noise. When the velic passage was open the microphone could record the sound at full amplitude, but when closed would cause considerable attenuation of the sound. A USB mixer allowed the computer to record both channels simultaneously (using Cool Edit software).

This method allowed the observation of oral output and nasal output next to each other, allowing nasalisation to be analysed. The following example [ŋɡapa] 'yams' clearly shows the syllabic nasal quality of [ŋ] (its intensity and duration) and the absence of nasalisation on [ɡapa].

![Waveforms](image)

The waveforms indicate the amplitude of the signal. It can be clearly seen that through the duration of [ŋ] the nasal channel is measuring a very strong signal, and thus indicates the presence of nasalisation. For the remainder of the word, the signal on the nasal channel is very weak, but the oral channel shows a signal, thus showing that the two [a] vowels are not nasalised.
Results

Using the graphs as shown above for each wordlist item, the wordlist was analysed and where a phone could be reliably analysed as nasal it was highlighted in red (dark shading). Where there appeared to be ambiguity, or only partial nasalisation the phone was highlighted in green (lighter shading). The results of this test are as follows (nasalisation and tone diacritics have not been included; vowel length may not always be indicated correctly; any noun class prefix has been separated from the root with a hyphen).

<table>
<thead>
<tr>
<th>Pangu</th>
<th>English</th>
<th>Spread? (R to L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>gumna</td>
<td>cut/sore'</td>
<td></td>
</tr>
<tr>
<td>gwama</td>
<td>chief/king'</td>
<td></td>
</tr>
<tr>
<td>kumna</td>
<td>old woman'</td>
<td></td>
</tr>
<tr>
<td>kwana</td>
<td>type of animal</td>
<td></td>
</tr>
<tr>
<td>tsruma</td>
<td>metal'</td>
<td>Yes</td>
</tr>
<tr>
<td>tuma</td>
<td>'farm'</td>
<td></td>
</tr>
<tr>
<td>nasa</td>
<td>'water'</td>
<td></td>
</tr>
<tr>
<td>buna</td>
<td>type of tool</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'food'</td>
<td></td>
</tr>
<tr>
<td>matimi</td>
<td>'spit'</td>
<td></td>
</tr>
<tr>
<td>buja</td>
<td>'leg'</td>
<td></td>
</tr>
<tr>
<td>kwana</td>
<td>'smoking pipe'</td>
<td></td>
</tr>
<tr>
<td>nja</td>
<td>'scorpion'</td>
<td></td>
</tr>
<tr>
<td>'tina</td>
<td>'cow'</td>
<td></td>
</tr>
<tr>
<td>'twana</td>
<td>'clothes'</td>
<td></td>
</tr>
<tr>
<td>nanacon</td>
<td>'centipede'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'four'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'bird'</td>
<td></td>
</tr>
<tr>
<td>wuriwur</td>
<td>type of fly</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'eating pot'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'two'</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pangu</th>
<th>English</th>
<th>Spread? (R to L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dumna</td>
<td>'vulture'</td>
<td></td>
</tr>
<tr>
<td>dwa</td>
<td>'animal'</td>
<td></td>
</tr>
<tr>
<td>bitora</td>
<td>'pimple'</td>
<td></td>
</tr>
<tr>
<td>afitma</td>
<td>'mucus'</td>
<td></td>
</tr>
<tr>
<td>kuma</td>
<td>'dung beetle'</td>
<td></td>
</tr>
<tr>
<td>ngase</td>
<td>'root'</td>
<td></td>
</tr>
<tr>
<td>ngasoga</td>
<td>'black ant'</td>
<td></td>
</tr>
<tr>
<td>handji</td>
<td>'rip'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'buffalo'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'one'</td>
<td></td>
</tr>
<tr>
<td>tahedga</td>
<td>'hair'</td>
<td></td>
</tr>
<tr>
<td>mahasi</td>
<td>'blood'</td>
<td></td>
</tr>
<tr>
<td>hundar</td>
<td>'yesterday'</td>
<td></td>
</tr>
<tr>
<td>kumasi</td>
<td>'cow'</td>
<td></td>
</tr>
<tr>
<td>huta</td>
<td>'shade'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>type of bird</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'tooth'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'maggi'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'house fly'</td>
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</tr>
<tr>
<td>kinaasa</td>
<td>'shoes'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'meat'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'two'</td>
<td></td>
</tr>
<tr>
<td>[a]</td>
<td>'two'</td>
<td></td>
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</table>

123
<table>
<thead>
<tr>
<th><strong>Pangu</strong></th>
<th><strong>English</strong></th>
<th><strong>Spread?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>[atʃuː]</td>
<td>'worms'</td>
<td>Yes</td>
</tr>
<tr>
<td>[huruː]</td>
<td>'dove'</td>
<td>Yes</td>
</tr>
<tr>
<td>[aːmadu]</td>
<td>'hills'</td>
<td></td>
</tr>
<tr>
<td>[biːmi]</td>
<td>type of animal</td>
<td></td>
</tr>
<tr>
<td>[suzu]</td>
<td>'rabbit'</td>
<td></td>
</tr>
<tr>
<td>[bindaja]</td>
<td>'mirror'</td>
<td></td>
</tr>
<tr>
<td>[kambo]</td>
<td>'charm'</td>
<td></td>
</tr>
<tr>
<td>[suker]</td>
<td>'fowls'</td>
<td>Yes</td>
</tr>
<tr>
<td>[kumburu]</td>
<td>'fruit stone'</td>
<td>counter-example</td>
</tr>
<tr>
<td>[kundo]</td>
<td>'spider'</td>
<td></td>
</tr>
<tr>
<td>[gambo]</td>
<td>'black scorpion'</td>
<td></td>
</tr>
<tr>
<td>[maru]</td>
<td>'fat on cow'</td>
<td></td>
</tr>
<tr>
<td>[mu]</td>
<td>'ring'</td>
<td></td>
</tr>
<tr>
<td>[dʒoɾɔɾɛ]</td>
<td>'slime'</td>
<td>Yes</td>
</tr>
<tr>
<td>[h]</td>
<td>'tendon'</td>
<td></td>
</tr>
<tr>
<td>[hu]</td>
<td>'mouth'</td>
<td></td>
</tr>
<tr>
<td>[numu]</td>
<td>'bathing area'</td>
<td></td>
</tr>
<tr>
<td>[pinda]</td>
<td>'moon'</td>
<td></td>
</tr>
<tr>
<td>[rinda]</td>
<td>'scar'</td>
<td></td>
</tr>
<tr>
<td>[jeɾu]</td>
<td>'tongue'</td>
<td></td>
</tr>
<tr>
<td>[bɾuɾu]</td>
<td>'knees'</td>
<td>Yes</td>
</tr>
<tr>
<td>[bɾəɾi]</td>
<td>'rainbow'</td>
<td>Yes</td>
</tr>
<tr>
<td>[as]</td>
<td>'pots'</td>
<td></td>
</tr>
<tr>
<td>[s]</td>
<td>'corn stalk'</td>
<td></td>
</tr>
<tr>
<td>[səɾwa]</td>
<td>'mosquitoes'</td>
<td>Yes</td>
</tr>
<tr>
<td>[makakaɾɔda]</td>
<td>'tree sap'</td>
<td></td>
</tr>
<tr>
<td>[ʔandʒɔ]</td>
<td>crayfish</td>
<td></td>
</tr>
<tr>
<td>[jəɾəbo]</td>
<td>'lip'</td>
<td></td>
</tr>
<tr>
<td>[moɾ]</td>
<td>'mushroom'</td>
<td></td>
</tr>
<tr>
<td>[maɾaɾaɾa]</td>
<td>type of bird</td>
<td></td>
</tr>
<tr>
<td>[marigɔ]</td>
<td>'oil'</td>
<td></td>
</tr>
<tr>
<td>[məɾɡwəɾɛ]</td>
<td>'back of head'</td>
<td></td>
</tr>
<tr>
<td>[məjəsoɾɔ]</td>
<td>milk/breast</td>
<td></td>
</tr>
<tr>
<td>[makjɛɾi]</td>
<td>type of bird</td>
<td>Yes</td>
</tr>
<tr>
<td>[biʃiɾu]</td>
<td>'ant'</td>
<td></td>
</tr>
<tr>
<td>[bindajɛ]</td>
<td>'small pot'</td>
<td></td>
</tr>
</tbody>
</table>
Observations

When analysing the data it was observed that nasal consonants gave more nasal output than nasalised vowels. Also, open [a] vowels commonly gave less nasal output. A brief look at the data reveals that the most common ambiguous nasalisation is associated with [a]. Both these observations may be related to the degree of closure in the mouth. Presumably, when the mouth is closed the sound is forced out through the nose giving higher output. However, as the mouth is opened wider, such as with [a], the oral route provides less resistance to the passage of the sound, and consequently less sound passes through the nasal cavity.

Words containing nasal consonants (not pre-nasal) predictably have nasalisation on vowels both before and after. Nasalisation before the nasal consonant often starts slightly after the beginning of the vowel, especially with [a] vowels. The example [bami] clearly shows this.

Many of the nasalised vowels in our sample can be accounted for as an anticipation of a nasal or a voiced prenasalised plosive in the onset of the next syllable. For example [sũnda] 'meat'.
A number of the words in our selection contain no nasal or prenasalised consonants yet still have one or more syllables with nasalised vowels. In Phonology 6.2.5. Nasal Spread, this has been explained as a spread of nasalisation from a syllable, usually root-final, through an onset which is a sonorant to the vowel of the next syllable on the left. There are nineteen examples of this nasal spread marked in the final column of the data sample, and two counter-examples. An example is the word [kəɾi]. Note that the word-medial sonorant [ɾ] is also nasalised:
A word may have a nasalised vowel in its final syllable and lack nasalised vowels in previous syllables. This is clearly observed in the word [gahĩ] 'a type of mushroom'. The leftward spread of nasalisation is blocked in this case by the fricative [h].

Conclusions

This testing confirms that nasalised vowels occur in otherwise non-nasal environments. From this analysis it seems clear that nasalisation spreads from right to left within Pangu noun roots. This spreading can start from nasalised vowels, or from nasal consonants. The right-to-left spread is blocked, however, by word-medial onsets which are not sonorants.

In addition to the leftward spread of nasalisation through sonorants, it has also been observed that vowels are nasalised before nasal consonants and prenasalised consonants. This nasalisation is considered predictable, and can be explained as anticipatory nasalisation. It is therefore not phonemic.

Class Markers:

The test above did not include many class markers. The evidence from the data containing class markers suggests that nasalisation does not spread rightward from class markers but may spread leftward from a nasalised root-initial vowel.

To test this several words of the [bi] class were tested with their plural forms marked by a syllabic nasal class marker. It was assumed that if nasalisation was spreading rightward onto the root from class markers, then an unnasalised root in the singular form would become nasalised in the plural form. The results were as follows, again nasalised syllables are highlighted.
This further test shows that the addition of a nasal class marker causes no nasalisation changes to the root.

It has also been observed that some class markers are nasalised. Class markers occurring before a nasal consonant (including prenasalised consonants) follow the rules of anticipatory nasalisation so that they become nasalised; for example [bĩndaja] 'mirror' and [bĩndaʃi] 'small pot'.

In addition to these predictable examples, some class markers are nasalised preceding syllables containing nasalised vowels. For example, [ājǐʃi] 'housefly', and [tǐjǐndə̃] 'traditional maggi'. These are further examples of right-to-left spread of vowel nasalisation: nasalisation spreads from the root to the class marker because the intervening consonant is an approximant, which is a type of sonorant.
## Appendix 2 – Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG</td>
<td>Agreement marker (<em>subsequent number relates to class marker numbering</em> – see Grammar 2.2. <em>Noun Class Agreement</em>)</td>
</tr>
<tr>
<td>AG.INCL</td>
<td>Subject agreement marker of 1st person Inclusive pronoun</td>
</tr>
<tr>
<td>ASC</td>
<td>Associative marker</td>
</tr>
<tr>
<td>BEN</td>
<td>Benefactive</td>
</tr>
<tr>
<td>CAUS</td>
<td>Causative suffix</td>
</tr>
<tr>
<td>CM</td>
<td>Noun Class Marker (<em>subsequent number relates to class marker numbering</em> – see Grammar 2.1. <em>Class Markers</em>)</td>
</tr>
<tr>
<td>COMPL</td>
<td>Compleitive</td>
</tr>
<tr>
<td>CONJ</td>
<td>Conjunction</td>
</tr>
<tr>
<td>DESC</td>
<td>Descriptive (type of copula)</td>
</tr>
<tr>
<td>DIM</td>
<td>Diminutive form</td>
</tr>
<tr>
<td>DIST</td>
<td>Distance form (Ventive)</td>
</tr>
<tr>
<td>DO</td>
<td>Direct Object</td>
</tr>
<tr>
<td>FOC</td>
<td>Focus marker</td>
</tr>
<tr>
<td>FUT</td>
<td>Immediate Future</td>
</tr>
<tr>
<td>H</td>
<td>High tone</td>
</tr>
<tr>
<td>IMPV</td>
<td>Imperative</td>
</tr>
<tr>
<td>INAL</td>
<td>Inalienably possessed</td>
</tr>
<tr>
<td>INCE</td>
<td>Inceptive</td>
</tr>
<tr>
<td>INDE</td>
<td>Independent Pronoun</td>
</tr>
<tr>
<td>IPFV</td>
<td>Imperfective</td>
</tr>
<tr>
<td>IO</td>
<td>Indirect Object</td>
</tr>
<tr>
<td>IRR</td>
<td>Irrealis</td>
</tr>
<tr>
<td>L</td>
<td>Low tone</td>
</tr>
<tr>
<td>LOC</td>
<td>Locative</td>
</tr>
<tr>
<td>MOD</td>
<td>Modal</td>
</tr>
<tr>
<td>N</td>
<td>Noun</td>
</tr>
<tr>
<td>NEG</td>
<td>Negative marker</td>
</tr>
<tr>
<td>NP</td>
<td>Noun Phrase</td>
</tr>
<tr>
<td>NUM</td>
<td>Numeral quantifier</td>
</tr>
<tr>
<td>OBJ</td>
<td>Object pronoun</td>
</tr>
<tr>
<td>PFV</td>
<td>Perfective</td>
</tr>
<tr>
<td>PLUR</td>
<td>Plurational (verb suffix indicating iterative or distributive action)</td>
</tr>
<tr>
<td>POSS</td>
<td>Possessive pronoun</td>
</tr>
<tr>
<td>PREP</td>
<td>Preposition morpheme (general locative meaning)</td>
</tr>
<tr>
<td>PROG</td>
<td>Progressive aspect</td>
</tr>
<tr>
<td>PST</td>
<td>Past tense</td>
</tr>
<tr>
<td>Q</td>
<td>Question/interrogative marker</td>
</tr>
<tr>
<td>REFL</td>
<td>Reflexive marker</td>
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</table>
### Abbreviations for Part I – Phonology:

- **C**: consonant
- **G**: glide (semi-vowel)
- **N**: nasal consonant
- **N̩**: syllabic nasal consonant
- **V**: vowel

### Abbreviations for Personal Pronouns:

- **1sg**: 1st person singular pronoun
- **2sg**: 2nd person singular pronoun
- **3sg**: 3rd person singular pronoun (may be glossed in subject agreement paradigm as AG#)
- **1pl**: 1st person plural exclusive pronoun
- **1pl.INCL**: 1st person plural inclusive pronoun
- **2pl**: 2nd person plural pronoun
- **3pl**: 3rd person plural pronoun (may be glossed in subject agreement paradigm as AG#)

Note: Unless gloss is extended by a second abbreviation such as .INDE or .OBJ or .POSS, these are assumed to be subject pronouns.
References


