Jeffrey Heath, Abbie Hantgan

A Grammar of Bangime

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Jeffrey Heath, Abbie Hantgan

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Acknowledgements and dedication

Stefan Elders was the first member of our project to undertake serious work on Bangime, in 2006–7. This was cut off by his tragic death in the field in February 2007, after a brief illness. This work is dedicated to his memory.

The authors' involvement with the Bangande, especially the people of Bounou, has lasted more than ten years and has been unusually intensive and eventful. Elder's death was as much of a psychological blow to them as it was to us. They generously provided accomodations especially to Elders and Hantgan, who spent months at a time with them. Hantgan's early work was primarily with Ali Karambe and Tiga Baade; Tiga had also worked extensively with Elders. The chief of Bounou, So Dicko, was unfailingly supportive, and went so far as to join us along with his son Adama Dicko #2 in Bobo Dioulasso, Burkina Faso, to work with Hantgan for several months in 2012–13 after the security situation in Mali deteriorated. Another young man, Adama Dicko #1, became Heath's primary assistant. He turned out to have a remarkable intuitive sense of Bangime tone distinctions. He was able to repeat words and phrases over and over with the same clearly articulated tones, until the linguist was sure of how to transcribe them.

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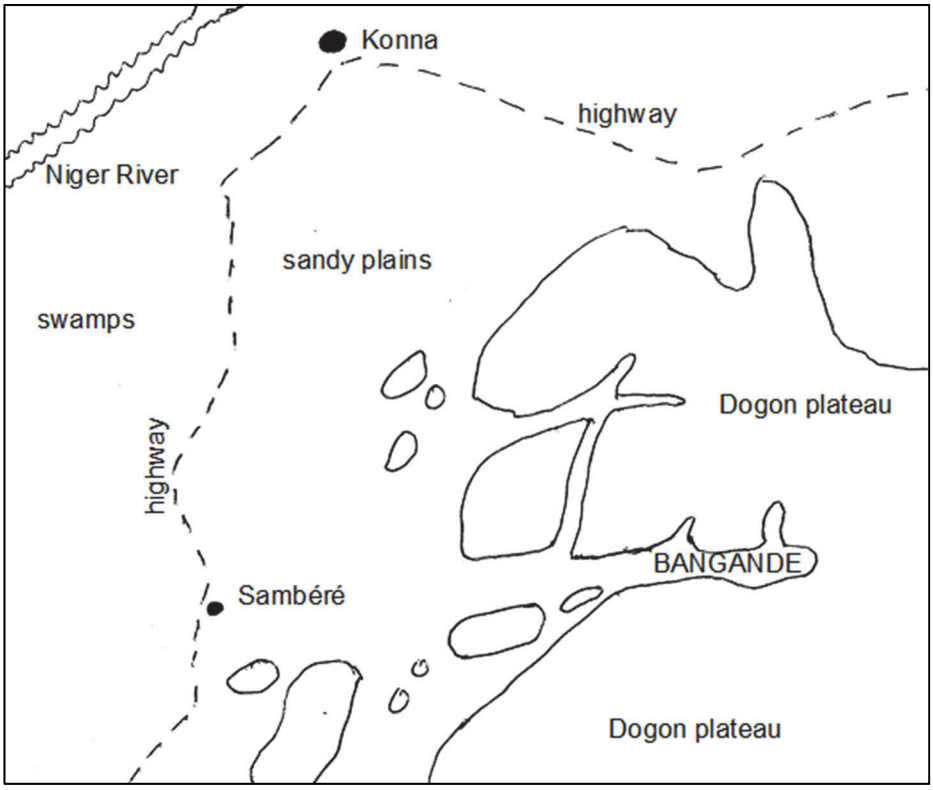
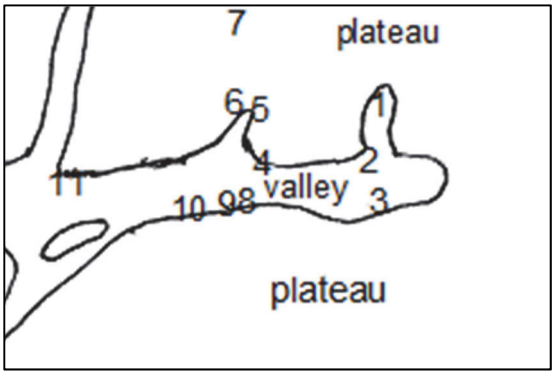
Maps



Map 1

The Bangande valley that cuts into the rocky Dogon plateau. Other rounded objects are small rocky inselbergs separated from the plateau. Sambéré and Konna along the highway (broken line) have the weekly markets that many Bangande attend. The highway links Mopti-Sévaré (to the southwest) with Douentza and points north and east, ending at Gao. The area west of the highway from Sambéré to Konna is flooded in the rainy season.



Map 2

Bangande and neighboring Bozo-Jenaama (Marka-Jalla) villages in the Bangande valley. The villages are predominantly on the lower slopes of the rocky slopes that go down from the plateau to the valley.

Bangime-speaking:	1. Bara
	2. Bounou
	3. Dieni
	4. Digari (Digarou)
	5. Niana (Nani)
	6. Due
	7. Dogo
Jenaama-speaking	8. Madougou
	9. Bolimba
	10. Namagué
	11. Kargué

See also the interactive geography page on the “villages” tab in the project website http:\\www.dogonlanguages.org (Bangande are scarlet-red circles) or use the direct link: http://dogonlanguages.org/geography.cfm

Photos

Fig. 1: “Tellem” constructions on cliffside (horizontally across middle of photo)

Fig.. 2: Bounou village

Fig. 3: Women and children of Bounou.

Fig. 4: Dogo (Doro) village

1 Introduction

1.1 Bangime language and Bangande people

Bangime is the name of the language, and Bangande (which includes plural *-ndɛ*) denotes the ethnicity. Bangime is an apparent language isolate spoken in a cluster of villages including Bounou in a cul-de-sac valley (and a couple of offshoot valleys) cutting into the western edge of the Dogon high plateau in eastern Mali. It has no demonstrable genetic relatives in West Africa. It was tentatively classified as a Dogon language within Niger-Congo in early surveys that had to make do with very skimpy Bangime data, such as Williamson & Blench (2000) and the 15th edition of *Ethnologue* (Gordon 2005). It is mentioned under various names in early surveys of Dogon languages, see § 1.3.1 below. It was first correctly called Bangeri mɛ in Calame-Griaule (1956: 66) and Bangeri-mɛ in the SIL survey (Hochstetler, Durieux & Durieux-Boon 2004: 28). The "ri" syllable is now uncommon in the language name as used by its own speakers. There are many nouns that have similar variants with and without a final rhotic syllable, see Final *rv*-Truncation (§ 3.5.5).

Hantgan points out that "baŋga" is a Dogon term meaning 'secret'. She describes (2013: 37–38) a "deep Bangime" speaking register that is designed to be opaque to outsiders.

Now that we have better data, Bangime is no longer considered to be Dogon linguistically, or even demonstrably related to Niger-Congo. All recent references to it, beginning with the 16th edition of *Ethnologue* (Lewis 2009), classify it as an isolate. Nevertheless, the Bangande consider themselves to be Dogon culturally.

1.2 Environment

1.2.1 Villages and population

Bangime is spoken in several villages in a long, narrow cul-de-sac valley that cuts into the Dogon plateau from the west and is surrounded by cliffs and rocky slopes leading up to a flat plateau. The valley is fertile and most of the cultivated fields are in it, but it is partially flooded in the rainy season. Villages are located on the lower reaches of the rocky slopes. See maps 1 and 2 and photos 1 to 4. See also the "villages" page in www.dogonlanguages.org.

The villages are listed in (1). The coordinates are in N. latitude and W. longitude degrees, minutes, and decimal fractions (.001 to .999) of minutes.

(1)

official name	Bangime name	N latitude	W longitude
Bara	*bàrà*	14 48.304	03 45.469

village on lower slope and base of mountain; surnames Babadji, Yaloukouyé (*jàlkújè*); farming and light herding; Tellem constructions half-way up cliffs, still used to store millet.

Bounou	*būùⁿ*	14 47.909ⁿ	03 45.609

village on lower slopes of mountain; consists of three main quarters called *būŋgàw* (including the chief's home), *ŋìjɛ̀w* (including the imam's home), and *kɔ̄mbɛ̀*; surnames Dicko, Bade, Bakoro, Coulibaly, Traore, Yaloukouyé [jàlkújè]; some bilingual Tiranige- and Bangime-speaking blacksmiths (Samassekou surname) living in *tūmbārì* subsection of *ŋìjɛ̀w*, originally from Keti; manufacture of borassus palm-frond baskets; farming and light herding; gardening (tobacco, tomato, mango).

Dieni	*jíjé*	14 47.140	03 45.753

village on slope and at base of mountain; surnames Bade, Babadji; farming and light herding; borassus-frond baskets.

Digari (Digarou)	*dīgārù*	14 47.603	03 46.835

village on flat shelf in slope of mountain; surnames Bade, Karambe; farming and light herding; gardening in plains (tomato, chili pepper, tobacco, mango).

Dogo (Doro)	*dɔ́rɔ́*	14 49.362	03 46.835

village on lower slope of mountain over a narrow valley that branches off of the valley to Bounou; verdant valley with borassus palms and vitex; surnames Katile, Bore, Bamani, Guindo; farming and herding; extensive gardening (tobacco etc.).

Due	*dùɥɛ̀*	14 48.346	03.46.827

village on lower slope of mountain across a narrow valley from Niana; surnames Traore, Bakoro, Ongoiba; gardens in valley shared with Niana (mango, tomato, tobacco, onion, African eggplant, gourd).

Niana (Nana)	*ɲàrⁿà*	14 48.239	03 46.758

village on lower slope of mountain across a narrow valley from Due; surnames Traore, Bakoro, Ongoiba; gardens in valley shared with Due (mango, tomato, tobacco, onion, African eggplant, gourd).

Previous population estimates for Bangande have been as follows: 900 from the 1987 census (cited by Hochstetler et al. 2004: 28); approximately 2000–3000 including previously uncensused villages (Blench 2005/2012). We assume a growth rate of

2.5 % per annum, which is typical of Dogon country and is supported by the large number of young children observed in each village. We also factor in modest population loss due to permanent out-migration of some young adults. As of 2017 we estimate 3500 Bangime-speaking persons currently living in or near the Bangande zone or spending part of each year there.

1.2.2 Lifestyle and religion

Like their neighbors (Dogon and Bozo), the Bangande engage in farming, supplemented by small-scale herding (sheep, goats, and cattle). There is a single rainy season from approximately June to September, peaking from mid-July to late August. The primary rainy-season crop is millet (*Cenchrus spicatus*). Sorghum is planted in the more well-watered sections of millet fields. Other cereals grown in smaller quantities are sorghum, rice, and fonio (*Digitaria exilis*). Fonio was formerly a major cereal in the zone, but its cultivation has been in secular decline. Non-cereal rainy-season crops are cowpea (*Vigna unguiculata*), peanut, groundnut (*Vigna subterranea*), roselle (*Hibiscus sabdariffa*), and sesame.

The narrow valleys where the Bangande live trap rainwater during the main farming season. Some low-lying spots are inundated well into the dry season. These and other post-rainy-season water sources allow for small-scale off-season gardening: onion, tobacco, and vegetables. These are cash crops. Fruits include mango and zaban (*Saba senegalensis*).

The two weekly markets that are most important for Bangande are those at Sambéré (Sunday) and Konna (Thursday). Both are located on the main highway from Mopti-Sévaré northeast to Douentza, Hombori, and Gao. On market days, numerous donkey-carts and an occasional van transport Bangande to the markets and back. Young people often walk from Bounou to Sambéré (about 2–3 hours).

The staple food is millet cakes (local French *tô*), served with a leaf sauce, usually baobab-leaf. Rice has recently become popular among those who can afford it.

The villages are nominally Muslim. The community prayers on Fridays, and gatherings on the two major Muslim holy days, are well-attended. However, traditional animist religion subsists in various forms under the surface.

1.2.3 Neighboring languages and bilingualism

Neighboring languages are Tiranige (locally also called Duleri, Dogon family), Jenaama (locally also called Marka, Bozo family), and Fulfulde (Atlantic).

Tiranige-speaking villages occur both on the high plateau to the east, and hugging the base of the cliffs to the north. Bangande people often walk up and over the hills to reach the Tiranige-speaking village of Boui. There is some intermarriage

between Bangande and Tiranige-speaking people. However, Bangime-Tiranige bilingualism is not widespread, being acquired by individuals due to their specific family and work circumstances. There is a family of Tiranige blacksmiths in Bounou.

Jenaama Bozo is spoken by so-called Marka-Jalla people in Bolimba, Madougou, and Namagué villages which occupy the southern part of the valley across from Digar, and Kargué village at the opening of the valley into the plains. Jenaama extends out, in discontinuous pockets, to Konna and the Niger River. Although Bangande and Marka-Jalla are immediate neighbors, there is no intermarriage between them (part of the broader Dogon-Bozo "cousinhood" relationship), and almost no Bangime-Jenaama bilingualism.

Fulfulde is spoken both by true Fulbe and by their former slaves the Rimaïbé in several villages and hamlets in the plains west of the Bangande valley. Fulfulde is also the lingua franca in the area and is used in weekly markets at Sambere and Konna. Fulfulde is the regular medium of communication between Bangande, Dogon, and Bozo. Bangande-Fulbe intermarriage is rare, though it is not strictly tabooed in the same way as Bangande-Bozo intermarriage. There is considerable friction between agriculturalists (Bangande, Dogon, and others) and true Fulbe cattle herders, and intermarriage with Rimaïbé would run into caste issues.

Individuals who have spent time in southern Mali know some Bambara (Mande family). Only a handful of Bangande speak any French.

Children who grow up in any of the Bangande villages learn Bangime first and use it as their home language, while acquiring second-language competence in Fulfulde by their teenage years. The near-term vitality of the language is guaranteed by its physical isolation and especially by the absence of intermarriage with the most visible non-Bangande villages, those of the Jenaama-speaking Bozo.

1.2.4 Bangande origins: archeology and ethnohistory

Appendices to Hantgan (2013: 367–475) present several texts narrated by the chief of Bounou and others. According to the texts and other information collected by Hantgan, the Bangande claim to have originated with the Dogon in southern Mali, and to have initially settled with others at Kani-Gogouna, now a Tommo-So (Dogon) speaking village on the eastern part of the plateau, location N 14.56 x W 03.39 (degrees and decimal fractions).

This account closely resembles many Dogon ethnohistories and even that of the Songhay of Kikara, all of whom claim an origin in the Mande empire (southern Mali and northern Guinea), with similar narratives about how they discovered the ritual secrets of the incumbent populations and used this knowledge to defeat them. In the Kikara case, there is no way to reconcile the linguistic evidence with a southern origin, since the major Songhay populations are to the north and east, along the

Niger River in Mali and the Republic of Niger, and since Songhay languages have no discernible genetic relationship to any Niger-Congo group. Similarly, the gulf between Bangime and Dogon languages makes it difficult to confirm a Dogon-style northward-migration origin for the Bangande.

If the Dogon, who now occupy the entirety of the Dogon (or Bandiagara) plateau and the plains to its north and east, came from the south, the Bangande might be the last vestige of a once vast ethnolinguistic network that was later submerged by Dogon. It is possible that the closest linguistic relatives of Bangime were once to the north. Archeologists have observed Saharan features in West African artifacts, consistent with a secular north-to-south migration direction over 10,000 years. They have correlated this with paleoclimatological and paleobiological evidence that the Sahara was once fertile and highly livable, at a time when much of central Mali, west of the plateau, was an inhospitable and disease-ridden swamp and rainforest (Casey 2013: 605). Subsequent aridification in the Sahara, the opening up of savanna in Central Mali, improved agricultural and fishing techniques, and the introduction of metallurgy, have clearly favored southward migrations. But the original ethnolinguistic network of the Sahara is unrecoverable, due both to emigration and to the later spread of desert-adapted Berbers and Arabs from the east.

While the nearby lakes region and Niger Delta were formerly uninhabitable, the Dogon plateau itself, rising far above the plains at its base, has been continuously occupied for many thousands of years. The archeological project at Ounjougou has uncovered pottery datable to 9400 BC (Huysecom et al. 2009), apparently the most ancient ceramics yet discovered in Africa. Locations on the Dogon plateau and along its cliffs, wherever year-round water sources are available, are likely to have been inhabited without interruption, allowing for periodic moves by local populations, abandoning one site for another one nearby.

That the Bangande have been in their current location for a long period is suggested not only by their unique language but also by the natural isolation provided by their environment, in a particularly deep but narrow cul-de-sac valley flanked by cliffs of various heights. This geography has provided both safety from raiders and agricultural fertility (rainwater flows down from the plateau and collects in the valley). Blench (2005: 3) comments that "their distinctive names for crops suggest that they were farmers prior to the expansion of Dogon in their area."

The Bangande-speaking village of Bara is at the very end of the cul-de-sac valley and is said to be older than Bounou itself. There are "Tellem" constructions halfway up the cliffs at Bara, see Photo 1, indicating that human habitation there is quite old. Tellem is the general name given to pre-Dogon inhabitants of what is now the Dogon plateau. Clusters of remarkable constructions, typically attributed to the Tellem, occur in scattered locations in Dogon country, primarily on the eastern cliffs of the Dogon plateau. They were the focus of a remarkable expedition led by Dutch architect Herman Haan (see Bedaux 1972), and those on the eastern cliffs have been important tourist attractions ever since.

Bara has the only cliffside Tellem constructions (photo 1) on the western escarpment that we know of, but there is also one outlier in montane Songhay country (high above the village of Gana near Kikara). Because of the tiny size of these constructions, the Tellem are assumed by some Dogon to have been of diminutive stature, and some believe (improbably) that the well-known pygmies of Central Africa are Tellem who fled from Mali when the Dogon arrived. However, it is likely that the constructions on the cliffs were used for storage and burials rather than as living quarters.

If the Tellem were a culturally homogeneous pre-Dogon people, and if the Bangande are the last surviving pre-Dogon ethnicity in the area, one might deduce that the Tellem throughout Dogon country once spoke a Bangime-like language. However, there is no obvious connection between current Bangande architecture or material culture and anything attributable to the Tellem sites, and little evidence of a Bangime-like substratum in Dogon (especially eastern Dogon).

Blench (2017), however, has proposed that both the Dogon and the Bangande show signs of sharing an ancient linguistic substratum, of Nilo-Saharan type although not identifiable with any specific extant Nilo-Saharan group. If correct, this would not rule out the hypothesis that the Bangande preceded the Dogon, which seems to be entailed by Blench's remarks quoted above about their pre-Dogon crop terminology. However, it would be compatible with a migratory origin of the Bangande in the pre-Dogon period. In this case, Blench's Nilo-Saharan substratum might represent a pre-Bangande Tellem population.

Hantgan's texts make reference to Fulbe slave-snatchers who captured children to be sold during the heyday of the Atlantic slave trade. Fulbe cavalry continued to be feared into the nineteenth century, and they were a major reason why Dogon and others continued to live in well-defended villages on the slopes of, or on top of, the cliffs. The trans-Saharan slave trade, much of it passing through Djenné and Timbuktu, would have similarly favored defensive positions going back to the late Middle Ages.

Although slavery is no longer officially practiced in Mali, Bangande continue to distinguish noble (freeborn) and slave castes, in addition to specialized occupational castes including blacksmiths. There are even some linguistic differences between noble and slave Bangime speech. The ancestors of the slaves may have escaped from Fulbe slave-snatchers and may have been of multiple ethnicities (Hantgan 2013: 40).

An alternative hypothesis is that Fulbe at one point enslaved all of the Bangande (Hantgan 2013: 42). Possible evidence for this is that the chief's clan goes by the (sur-)name Dicko. This is a well-known Fulfulde clan name, and slaves of Fulbe normally adopt the name of their masters. However, there are other possible explanations for this fact. Dicko is also widely used among Tiranige-speaking Dogon to the north and east, whose origins are also difficult to determine, so the issue is not confined to Bangande.

Hantgan's ideas about the early history of the Bangande have been featured in a widely read science journal (Bradley 2014).

Another angle on the history of the Bangande will come from the analysis of DNA from saliva samples collected in 2016 in nine villages representing four ethnicities (Bangande, Dogon, Fulbe, and montane Songhay) by geneticist Hiba Babiker of MPI-SSH (Jena, Germany). Analysis of these samples will transform our understanding of the human-genetic relationships among these ethnicities. Similar genetic work in central Burkina Faso (Barbieri et al. 2012) has clarified the relationships among various Gur and Mande groups.

This genetic work, and recently initiated fieldwork on the cliffs dialect of Jenaama Bozo as spoken in the villages near the mouth of the Bangande valley, may lead to interesting conclusions about Bangande-Bozo relationships. Although intermarriage is currently forbidden between them, as part of the larger Bozo-Dogon "cousinhood" relationship, it is unclear how far into the past this can be pushed. The Bozo people who speak the cliffs dialect of Jenaama are known to have been ethnic Soninké who were linguistically Bozo-ized. There are intriguing similarities in phonology and tone patterns between Bangime and cliffs Jenaama. One hypothesis worth exploring is that cliffs Jenaama reflects language shift from Bangime to Bozo (perhaps mediated by Soninké). Further study of the relationship between cliffs and riverine Jenaama might clarify this situation.

1.3 Previous and contemporary study of Bangime

1.3.1 Previous work

Most previous work on the language has focused on its position in Dogon classifications. Bertho (1953) was the first author in the literature to mention the language, under the name "Dyɛni" or "Yɛni" (actually the name of a village). He briefly stated how the language differs from that of surrounding Mande and Fula varieties. Calame-Griaule (1956) mentioned "Bangeri mɛ" in her overviews of the Dogon languages. She pointed out the significant disparities between Dogon and Bangime. She called for study of the history of the Bangande, given its potential importance in understanding the original of the Dogon langauges as a whole. Plungian & Tembine (1994) included the language as "Elebo" in their survey of Dogon languages.

Published word lists from this period include 80 items in Bertho (1953: 433–434) and 100 words in Hochstetler, Durieux & Durieux-Boon (2004: 99–105). A fuller description of all of this early work is in Hantgan (2013: 11–17).

The first significant on-site work consisted of a report from a two-day visit by Roger Blench (2005), which includes a more substantial vocabulary. Blench has made a practice of identifying African endangered languages and encouraging

fieldwork on them all over Africa, as in this case, and we acknowledge our debt to him.

1.3.2 Our fieldwork

Hantgan did fieldwork in annual sessions from 2008 through 2013. In addition to elicited lexicon and paradigms, she recorded narratives, songs, and natural conversation. Living in Bounou and adjacent villages for up to six months at a time, she also practiced participant-observation. Her work with Bangime consultants continued when the Dogon-Bangime project relocated to Bobo Dioulasso, Burkina Faso, in 2012. Hantgan's work led to a dissertation on Bangime grammar including transcribed texts (Hantgan 2013), and supplementary documents including a draft dictionary (Hantgan MS 2014) that are currently available on the project website www.dogonlanguages.org . She also carried out ethnographic studies focused on ethnohistory of Bangande origins.

After Hantgan accepted a three-year postdoc position at SOAS in January 2014, Heath continued fieldwork on Bangime with a different assistant, chiefly back at our Mali base in Sevare, including lexicon, grammar (especially tonology), and newly recorded texts. His previous short visits to Bounou had focused on flora-fauna terminology and identifications.

This volume tries to present Bangime grammar as a coherent system. This approach is justified by the considerable intricacy of the grammar and especially of the tonology. The latter is as rich and complex as any known tonological system. Far from being a jumble of unrelated processes that bump into each other chaotically, it has an almost crystalline inner plan based on the intersection of semantics with tonal inversion, a plan that becomes visible only after a long engagement with the data. Bangime deserves attention from linguists not only because of its status as an isolate, but also because of what it is.

1.3.3 Multimedia supplements and online resources

This grammar is supplemented by online materials: text transcriptions, audio recordings of those texts, lexical spreadsheet, flora-fauna vocabulary, and documentary videos. Most of this material is freely available at the project website which is permanently archived at the Max Planck Society, and/or at Heath's repositories in Deep Blue (documents) and Deep Blue Data (including audio and video) which are managed by the University of Michigan Libraries. The key url's are currenly these:

Deep Blue (documents): https://deepblue.lib.umich.edu/documents
Deep Blue Data: https://deepblue.lib.umich.edu/data
Dogon project: http://dogonlanguages.org
Bangime page: http://dogonlanguages.org/bangime.cfm

In Deep Blue (documents and data), search for "Bangime."

The Bangime corpus compiled by Hantgan is housed at the SOAS Endangered Language Archive https://elar.soas.ac.uk/Collection/MPI250903. It contains 1229 recordings consisting of 13 hours of spoken data, a portion of which approximately 41 minutes) has been annotated with interlinearization and time-aligned in ELAN by utterance, with accompanying metadata.

For links to additional text transcriptions and audio files, see the comments at the beginning of the Texts section following the grammar proper.

Documentary videos: On the home page of the Dogon site, click on the "videos" tab at the top. Among the many documentaries there, those filmed at Bounou are "Tabaski at Bounou" and "Rice harvest and threshing," Several of the other videos about practical activities were filmed in nearby Dogon or Fulbe villages and are applicable, *pari passu*, to the Bangande.

Geography: On the home page of the Dogon site, click on the "villages" tab at the top. This brings up an interactive mapping page for Dogon, Bangime, and nearby ethnicities. Select "Bangime" in the "language (group)" pull-down men. Click on specific village names for additional information, or click on the button to the right of the village name to find it on the map. The Bangande area on the map has scarlet red circles (not triangles) on the west (left) edge of the escarpment, next to some white circles (Jenaama Bozo). Zoom in to see how the villages fit into narrow valleys in the plateau.

Flora-fauna: On the home page of the Dogon site, click on the "flora-fauna" tab at the top. In the "language" box, type Bangime. This will pull up many Bangime lexical items. Click on the "concept" next to it to open a page with species identification, images, and terms for the species in other languages. The site http://tsammalex.clld.org has similar material for Dogon flora-fauna and may have a Bangime page in the future.

Our highly praised project website was created, and is administered, by Steven Moran with assistance from Robert Forkel.

Stefan Elders' field notebooks from 2005–2006, with glosses and comments mainly in Dutch, are on the Bangime page of the Dogon project website.

2 Sketch

2.1 [x Y] segments

Bangime utterances consist in large part of arrangements of binary segments of the form [x Y]. Here Y is a noun, verb, verbal auxiliary, or postposition. x is a proclitic of the segmental shape *a*, *ŋ*, or ∅ (zero). The proclitic marks pronominal subject for verbs and auxiliaries, pronominal complement for postpositions, and either definiteness or reduced forms of pronominal possessors for nouns. Subject proclitics can be repeated, occurring on both a main verb and its auxiliary. The productivity of the [x Y] pattern across stem-classes, and the reduction of x to a maximum of three distinct forms (subject to further mergers, see below), are distinctive features of Bangime morphosyntax. Proclitic pronominals in other languages of the zone (western Dogon, Songhay, Bozo) occur in complete person-number series with at least six catgories (1Sg, 1Pl, etc.) and usually do not repeat.

We use "ŋ" for a nasal proclitic that assimilates position to a following consonant. x belongs morphosyntactically with Y, and this is reflected in our syntactic bracketing. However, unless x is utterance-initial, in most cases (for *ŋ* in various functions, and often for definite *ā*) it gets its tone by spreading from the left; see Rightward Tone-Spreading (§ 3.7.5). Consider the textual excerpt (2), where the "x" proclitics are bolded in the interlinear. The notation [04b 00:14] means text 04b at the 00:14 minute/second mark.

(2) *mɛ̀ɛ̀* *[à* *gò-m̀-bògòɛ̄ɛ̄]*
but [**Def** man-Link-big.Dimin]
[ŋ̄ *kārā]* *[ŋ̄* *dēgē]* *[ŋ̄* *kɛ̀]*
[**3Sg** find] [**3SgPoss** head] [**3Sg** Prf]
'but the old man had found himself again' [04b 00:14]
[for reduced 3SgPoss *ŋ* see § 4.2.2.3]

The subject NP 'the old man' begins with a definite proclitic *ā*. The remainder of the clause consists of the verb 'find/get' preceded by a subject-agreement proclitic *ŋ*, a reflexive NP 'head' with a reduced possessive determiner *ŋ*, and a clause-final perfect marker *kɛ̀* with another subject-agreement proclitic *ŋ*. The initial *mɛ̀ɛ̀* 'but' (French *mais*) does not interact phonologically with the following material.

The [x Y] structure occurs within nouns and NPs as well. In fact, the compound noun *gò-m̀-bògòɛ̄ɛ̄* 'man' in (2) contains a linker *-ŋ̀-* that can be compared to the "x" morphemes elsewhere in the clause. This nasal linker occurs in many noun-noun compounds (§ 8.1.1), and between NPs and some postpositions (chapter 11), but only rarely in noun-adjective combinations. The linker is very common with demonstra-

tive *(ŋ-)kāẁ*) (§ 9.6.1). *ŋ̀kíí-pàà*^{n} 'all' (§ 9.7.2) has invariable initial nasal, which is therefore not transparently segmentable.

The pronominal proclitics are subject to frequent degradation (full or partial categorial neutralization). The maximal differentiation into three basic forms is illustrated in (3a). 1Sg is *ŋ*+H, occasionally just ∅+H, in either case with floating H-tone realized on the following word. 2Sg is variably *à* or *à*+H. 3Sg is *ŋ* ~ ∅ with the *ŋ* variant functioning as a linker (hence absent in clause-initial position). In (3b) we see partial merger attributable to phonetic zeroing of *ŋ* and/or *a*, resulting in just a binary split, sometimes just presence/absence of floating H. Full neutralization (3c) occurs in verbs that are preceded by another verb or by a conjugated auxiliary, so even here there is no unrecoverable loss.

(3)

	1Sg	2Sg	3Sg	
a.	three-way distinction			
	ŋ+H	*à* (+H)	∅	perfective (positive)
	ŋ+H	*à* (+H)	*ŋ*	perfective after auxiliary *kóó*
	ŋ+H	*à*	∅	imperfective auxiliary *dà*
	ŋ+H	*à*	*ŋ* ~ ∅	postposition
	ŋ+H	*à*+H	*ŋ*	perfect auxiliary *kɛ̀*
	ŋ+H	*a*+H	*ŋ*	verb after subjunctive (same subject)
	∅+H	*à*	∅	future auxiliary *nàw*
	∅+H	*à*	∅	resultative *wāj̀*
b.	binary distinction			
	2Sg=3Sg			
	∅	+H	+H	verb after imperfective *dà*
	1Sg=3Sg			
	∅	*à*	∅	perfective auxiliary *kóó*
	ŋ+H	*a*+H	*ŋ*+H	verb after subjunctive (different subject)
	1Sg=2Sg			
	+H	+H	∅	subjunctive *hà*
c.	complete merger			
	∅	∅	∅	motion verb as second verb
	ŋ ~ ∅	*ŋ* ~ ∅	*ŋ* ~ ∅	transitive verb as second verb

Plural pronouns, like nonpronominal NPs, are external to the [x Y] structure. However, a preposed 2Pl pronoun *āā* usually requires a "2Sg" proclitic, and preposed 1Pl *nɛ̄(ɛ̄)* and 3Pl *nī(ī)* as well as nonpronominal NPs may require a "3Sg" proclitic. Because of allomorphy, this can result in an apparent four-way distinction, in either of two ways. First, 1Pl *nɛ̄(ɛ̄)* and 3Pl *nī(ī)*, which begin with nasals, favor the *ŋ* variant

of the redundant "3Sg" proclitic, which may "contrast" with the true 3Sg ∅, for example in perfective positives. Second, in constructions where 2Sg *à* has a floating H-tone, this floating tone is absent where 2Pl *āā* is followed by a redundant "2Sg" *à*.

The phonetic degradations and redundant "singular" proclitics pose problems for interlinear glossing. Our practice is summarized in (4)

(4) We put full pronominal glosses (1Sg, 1Pl, 2Sg, 2Pl, 3Sg, 3Pl) under the proclitic in spite of partial or full morphological syncretisms.

In (5), where the final verb 'go' is not overtly conjugated for pronominal subject, we add "3Sg" to co-index its covert subject with the clause-initial 3Sg.

(5) *[∅ gòmbè] [∅ máá dɛ̀gɛ̀] [∅ wóré]*
[3Sg leave.Pfv1] [1Sg Poss hit.VblN] [3Sg go.Ipfv]
'He/She has left off (=ceased) hitting me.'

In (6a–b), the proclitics glossed 3Pl (bolded in interlinears) are really 3Sg morphologically, so by glossing them as 3Pl we link them anaphorically to an antecedent 3Pl pronoun or plural NP.

(6) a. *nīī [ŋ̄ sōrē] sīīⁿ [ŋ̄ kì]*
3Pl [**3Pl** know] Recip [**3Pl** KI]
'They know each other.' [04a 09:00]
[for *kì* see § 11.1.8]

b. *[à jìbɛ̀-ndɛ́] [∅ kóó] [ŋ́ ʃààkā] [∅ wā̀]*
[Def person-Pl] [**3Pl** Pfv] [**3Pl** disperse] [**3Pl** Rslt]
'The people dispersed.' [04a 07:37]

Although this glossing practice is morphologically misleading, it does allow readers to keep track of the subject category in constructions with multiple conjugated verbs and auxiliaries.

2.2 Grammatical tonology

Bangime nouns, adjectives, and numerals have lexical tone **melodies** such as /L/, /M/, /H/, and /HL/. When words that have such melodies are combined into phrases and clauses, they are subject to **tone sandhi** rules, generally assimilations and dissimilations that apply at boundaries. There is also a rich system of **terracing**, by which two or more words are joined into a string with a single level pitch. Underneath tone sandhi and terracing is a deeper system of **tonal ablaut**, in the form of

tone overlays like {H} that replace (but are partly predictable from) lexical melodies. Nouns are especially subject to such overlays, which are controlled by prenominal determiners (definite, possessor), see § 5.1. The productive tone ablaut rule for nouns is an inversion (flip-flop): lexical melodies beginning with L are replaced by {H}, lexical melodies beginning with H or M are replaced by {L}. Adjectives, numerals, and demonstratives that follow the noun are usually unaffected by tonal ablaut.

In most cases, tone overlays are morphophonologically "deep" processes that then feed into the more surface-y tone sandhi processes. However, there are two interesting cases where a lexical melody is subject to two successive tone overlays (double ablaut), and where a tone sandhi process applies between the two overlays. This derivation can be described as a tonal-ablaut sandwich (§ 5.3.1).

Transparent stem-wide tone overlays are most obvious with nouns. However, verb stems are also subject to various tone overlays. Verbs have a primary ablaut rule consisting of inversion from lexical /M/ to {L} and from lexical /L/ to {M}, supplemented by some secondary ablaut processes of a more limited scope; see the summary in § 13.5. This raises the possibility that ablaut inversions for nouns and verbs are two manifestations of a single abstract process. Verbs are also affected by floating H-tones that dock on the left edge of verbs, converting e.g. bisyllabic *CvCv* from M.M to H.H and from L.L to H.L, see Floating-H Docking (§ 3.7.6.1).

Bangime tonology compares to that of other languages of the zone as follows. Bangime has three tone levels (L, M, H) versus two in Dogon, montane Songhay, and reportedly in Bambara. Tonal distinctions are absent in Fulfulde, and have been lost in Malian riverine Songhay (Timbuktu, Gao). Until very recently we thought that the Bangime three-level system was an outlier in a zone of two-level systems, and that one had to go much farther south (extreme southern Mali, SW Burkina Faso, Côte d'Ivoire, Guinea) to find the nearest three-level systems. However, very recent preliminary fieldwork by Heath on Jenaama Bozo (cliffs dialect, immediate neighbors of Bangime) shows that this language also has three tone levels. Whether this is true of other Bozo varieties is not yet clear.

Lexical tone melodies occur in all of the tonal languages of the zone (Bangime, Dogon, Jenaama Bozo, montane Songhay, Bambara). The two-level tone systems of Dogon, montane Songhay, and Bambara sharply limit the set of possible melodies. In most Dogon languages, moreover, the "lexical" melodies of verbs are predictable for stems that begin with an obstruent (voiced obstruents require an initial L). In some southwestern Dogon languages, not far from Bangime, verbs have no lexical melodies, their surface tones being entirely determined by the inflectional category. Bangime distinguishes /H/, /M/, and /L/, plus some contoured melodies, for nouns, and at least two tonal types for verbs.

Tone sandhi processes (assimilations, dissimilations, spreading) applying mainly at word boundaries are fairly well-developed in montane Songhay and in Jenaama Bozo. They are largely absent from Dogon. Bangime has highly productive

tone-sandhi processes. Its system of multi-word terracing has no known parallels in the other languages.

Tonal ablaut is well-developed in Dogon, but it operates in a very un-Bangime-like way. In Dogon NPs, certain modifiers including adjectives and demonstratives control stem-wide tone overlays such as {L} or {HL} on the noun and on any intervening modifiers. The lexical melody is completely erased by such overlays (Heath & McPherson 2013). Tonal ablaut in Dogon verbs is more variable, but usually involves overlays either on the entire stem (erasing the lexical melody) or a portion of it (allowing some of the lexical melody to remain). The closest parallels to Bangime tonal ablaut are in Jenaama Bozo. However, systematic tonal inversion (low to nonlow, nonlow to low) appears to be a Bangime specialty.

In summary, Bangime has the most complex tonal system in the zone, combining three levels, several stem-level melodies for both verbs and nouns, a rich system of tone sandhi, a tonal ablaut system featuring inversion of melodic tones in both verbs and nouns, and a distinctive system of terracing.

2.3 Nouns and NPs

Derivational nominal morphology (excluding compounds) consists essentially of diminutive marking (final *ɛ̀ɛ̀* or *ɛ̀*). Diminutives, whether productive (i.e. formed from nouns that also occur in nondiminutive form) or lexicalized, have special morphophonological and tonal features and are treated separately in chapter 6.

Inflectional nominal morphology consists of plural marking (§ 5.2). The primary plural suffix is *-ndɛ*, whose tone polarizes to the final tone of the noun (§ 3.7.8.1): *bùrⁿà-ndɛ́* 'sticks', *párí-ndɛ̀* 'arrows'.

Noun-noun compounding is productive (chapter 8). There is often, but not always, a linker *-ŋ-* between the initial and the final, as in *tàŋà-ŋ̀-gúʤɛ̄* '*Chloris* (grass)', literally "ear-Link-grass." Noun-adjective and noun-numeral combinations usually have no linker: *bùrⁿà bɔ́rⁿú* '(a) big stick', *bùrⁿā ʒìndò* 'two sticks'.

A noun may be preceded by a determiner, either definite *ā* as in *ā pārī* 'the arrow' or a possessor as in *∅ màā párì* 'his/her arrow' (§ 9.2). The presence of a preceding determiner induces tonal changes on the noun, by a combination of tonal ablaut (overlays) and M-terracing (M-tone of *ā* spreads rightward into the noun).

Demonstrative *(ŋ-)kāẁ*, on the other hand, follows nouns, which must be determined (usually definite). Its tonal interactions with definite nouns are based on the BDO of the noun, not the often M-terraced surface form of the unmodified definite noun. After an L-tone at this level, *(ŋ-)kāẁ* undergoes Tone Polarization (§ 3.7.8). Example: *párí* 'arrow', BDO *pàrì*, M-terraced definite singular *ā pārì*, but with demonstrative *à pàrì ŋ̀-káw* 'this/that arrow' with 'this/that' (§ 9.6), see § 5.3.3 for the morphophonology.

There is no structural case-marking for NP subjects and objects. Dative, instrumental, and spatial relations are expressed by postpositions. Dative *wàj* has no nasal linker, but locative *ŋ-kò* begins with a nasal (in most combinations) that is likely a frozen linker: *[[ā būrⁿā] wàj]* 'to the stick (dative)', *[[ā būrⁿā] ŋ̄-kò]* 'in the stick'.

2.4 Main clauses and constituent order

Subject NPs occur clause-initially (except for clause-initial particles like 'but' and 'well'). Nonpronominal NPs other than the subject follow at least one verbal or inflectional [x Y] segment (§ 2.1). For example, 'his wife' as direct object follows a simple verb (7a). It also directly follows imperfective *dà* (7c) and negative *bé* (7c), while the verb appears to the right of the object. However, the verb remains adjacent to perfective *kóó* (7b) and to subjunctive *hà* (7e), so the object NP must follow the verb in those cases. There is normally no overt subject in imperatives, but the object is still postverbal (7f).

(7) a. *séédù [∅ jāà] [∅ màà púj́ɛ́] ŋúj̀*
Seydou [3Sg see.Pfv1] [**3Sg Poss wife**] there
'Seydou saw his wife there.'

b. *séédù [∅ kóó] [ŋ́ jāà] [∅ màà púj́ɛ́] ŋúj̀*
Seydou [3Sg Pfv] [3Sg see.Pfv1] [**3Sg Poss wife**] there
'Seydou saw his wife there.'

c. *séédù [∅ dà] [∅ màà púj́ɛ́] [ŋ́ jì-jɛ̀] ŋúj̀*
Seydou [3Sg Ipfv] [**3Sg Poss wife**] [3Sg see.Ipfv] there
'Seydou sees his wife there.'

d. *séédù [∅ bé] [∅ màà púj́ɛ́] [ŋ́ jì-jɛ̀] ŋúj̀*
Seydou [3Sg Neg] [**3Sg Poss wife**] [3Sg see.Ipfv] there
'Seydou will not see his wife there.'

e. *séédù hà [ŋ̀ jì-jɛ̀] [∅ màà púj́ɛ́] ŋúj̀*
Seydou Sbjn [3Sg see.Deon] [**3Sg Poss wife**] there
'Seydou should see his wife there.'

f. *[∅ jī-jɛ̀] [àà púj́ɛ́] ŋúj̀*
[2Sg see.Imprt] [**2SgPoss wife**] there
'See-2Sg your wife there!'

2.5 Anaphora

Reflexive objects can take the form of simple pronoun objects, but some plural pronominal categories require an apparent 3Sg object in this construction (§ 20.1.1).

(8) a. *nì* *[∅* *kóó]* *[ŋ́* *dɛ̄gɛ̄]* *mīî*
3Pl [3Sg Pfv] [3Sg hit.Pfv1] 3SgO
'They hit themselves.'

b. *[à* *kwá=]* *[á* *dɛ́gɛ́]* *à*
[2Sg Pfv] [2Sg hit.Pfv1] 2SgO
'You-Sg hit yourself.'

Or a morphologically modified possessed form of 'head' (§ 20.1.4) can be used (9).

(9) a. *nì* *[∅* *kóó]* *[ŋ́* *dɛ̄gɛ̄]* *[ŋ̄* *dɛ̄gɛ̀]*
3Pl [3Sg Pfv] [3Sg hit.Pfv1] [3PlPoss head]
'They hit themselves.'

b. *[à* *kwá=]* *[á* *dɛ́gɛ́]* *[à* *dɛ́gɛ́]*
[2Sg Pfv] [2Sg hit.Pfv1] [2SgPoss head]
'You-Sg hit yourself.'

For reciprocal object, the reciprocal (pro)noun *sīî*^{n} is used; see § 20.4 and (6a) in § 2.1.

There are no logophorics (§ 20.3).

2.6 Focalization and relativization

Focalization of a constituent is expressed by a) fronting (vacuously for subjects), b) adding special subject-focus markers after a focalized subject (*má* for imperfective, *mì* for perfective), and c) restricting the form of verbs and the presence of certain inflectional particles. For details on focalization, including interrogatives, see chapter 16.

The relative marker is *mɛ̄*, plural *mɛ̀-nɛ́*. It is added at the end of the head NP, which remains in its regular position inside the relative clause. The head NP is therefore not extracted in the fashion of a focalized constituent. Restrictions on the form of verbs and the presence of inflectional particles are like those for focalization. See chapter 17.

2.7 Interclausal syntax

For complex syntactic constructions, including those expressed as clauses with chained verbs, see chapter 19. Conditional antecedents have clause-initial *sé* 'if'. Counterfactuals also have clause-final past particle *hīŋgà* in antecedents and sometimes in consequents (§ 18.4.1), and/or a particle *tɔ̀ɔ̀ⁿ* ~ *tàmà* at the boundary between the two clauses.

3 Phonology

3.1 General

Bangime has seven vowel qualities and some twenty consonants. There is relatively little segmental phonology, probably because there is very limited affixal morphology. There are three tone levels (H, M, L). Much of the productive phonology is tone sandhi, essentially assimilations and dissimilations at word/stem boundaries. Much of the "morphology" consists of tonal ablaut. Tonal terracing can be analysed as a kind of tone sandhi, but it is also subject to morphosyntactic conditions, which links it to tonal ablaut.

3.2 Internal phonological structure of stems and words

3.2.1 Syllables

Except for a few borrowed nouns, stems begin with consonants. This includes all known verb stems. Stems and words end in vowels or in semivowels *w*, *j* or in their nasalized counterparts.

3.2.2 Monosyllabic *Cv* versus *Cvv*

Cvv stems have easily audible vowel length when the tone is contoured <HL> or <LH>. With a monotone (L or H), vowel length is not clearly articulated in monosyllabics, especially for high vowels.

2Pl *āā* has a clear long vowel in many contexts (not involving *vv*-Contraction). The other nonsingular pronouns usually appear as *nɛ̄* (1Pl 'we') and *nī* (3Pl 'they'), but they are sometimes heard with long vowels and/or with geminated initial nasal: *nɛ̄ɛ̄* ~ *nnɛ̄ɛ̄*, *nīī* ~ *nnīī* (prepausal *nɛ̄ɛ̀* etc).

A number of nouns and verbs have a form *Cii* or *Cuu*, sometimes alongside other forms. When monotonal, these long high-vowel forms tend to shorten the vowel phonetically, especially in prepausal position, as in the noun *kú(ú)*^{n} 'egg' and the possessed noun *∅ màà tú(ú)*^{n} 'his/her thorn'. The underlying vowel length is heard in nonprepausal contexts, in suffixed plural *kúú*^{n}*-ndɛ̀* 'eggs', and in contour-toned *∅ màà kúù*^{n} 'his/her egg'. Similarly, the verb 'come' has inflected forms *nù(ù)* and *nó(ó)* which are often heard with short vowels prepausally.

One noun, *kɛ́* 'thing', is consistently short-voweled.

3.3 Consonants

3.3.1 Inventory of consonants

In (10), parentheses indicate marginal status as phonemes (allophonic status) or limitation to unintegrated loanwords, onomatopoeias, and the like.

(10) Consonants

	1	2	3	4	5	6	7	8	9
labial	*p*	*b*	*m*	*(f)*			*w*	*w^n*	
alveolar	*t*	*d*	*n*	*s*	*(z)*	*l*	*ɾ*	*$ɾ^n$*	
alveopalatal	*(tʃ)*	*dʒ*	*ɲ*	*(ʃ)*	*ʒ*		*j*	*j^n*	
" (rounded)							*ɥ*		
velar	*k*	*g*	*ŋ*						
laryngeal									*h*

key to columns: 1. aspirated voiceless stops/affricates; 2. voiced stops/affricates; 3. nasals, 4. voiceless fricatives (including sibilants); 5. voiced fricatives (including sibilants); 6. laterals; 7. nonnasal sonorants (approximants and tap); 8. nasalized approximants and tap; 9. laryngeal.

We use IPA except that we write the tap as simple "r" except in phonetic notation. Because *v* as voiced labial fricative is virtually nonexistent, we use "v" as a vowel variable in formulae like *Cv́Cv̀*. The lower-case permits tone markings which are difficult typographically for capital *V*.

3.3.2 Word-final consonants

Only semivowels other than *ɥ*, i.e. from the set {*w* *w^n* *j* *j^n* }, can occur finally. Nearly all examples are monosyllabic words.

Nouns include *dèw* 'river', *pɔ̀w^n* 'meal', and *dèj* 'grain' among several others. The only nonmonosyllabic nouns known to us are *píjèw* 'hornbill' (bird, onomatopoeic) and the perhaps etymologically composite *tájkòj* 'breakfast'.

In verbal morphology, final semivowels occur in (etymologically apocopated) perfective-2 forms for some verb classes: *Cv-w^n* and *Cv-j^n* (§ 13.4.4.6, § 13.4.4.8), and *Cv-w* (§ 13.4.5.1–2). Perfective-2 *nìì* 'gave' (§ 13.4.6.2) might likewise be analysed as *nì-j*. Other forms of 'give' end in *w^n* (e.g. perfective-1 *nāẁ^{n}*).

3.3.3 Intervocalic medial consonants

Most unclustered intervocalic consonants, whether stem-internal or suffixal, are sonorants (oral and nasalized semivowels, nasals other than *ɲ*, and liquids). Medial *ɲ* is attested in the French loanword *gàɲì* 'win' and is likely treated as a geminate. *h* appears to be limited to initial position.

The morphophonemic alternations in verbal inflection between *Cvm-bv* and *Cv-wⁿv*, and between *Cvn-dv* and *Cv-rⁿv* (§ 13.4.4.6–10), suggest that original intervocalic *{m n} were lenited to {*wⁿ rⁿ*}. Among voiced stops, *g* is common initially and intervocalically, while {*b d dʒ*} are common initially but rare intervocalically (except in Fulfulbe borrowings), so original intervocalic *{b d dʒ} may also have lenited to {*w r j*}; a handful of alternations like *tí-bì ~ tì-wɔ̀* 'fall' (§ 13.4.5.2) may be vestiges of this. Voiceless stops are also rare intervocalically except in borrowings.

3.3.4 Sibilants

s tends to palatalize partially before *i* or *j*, and in the neighborhood of *ɥ* (with or without an intervening *u*, which when next to *ɥ* is phonetically rounded, as in *sūɥì* 'stuttering'). However, it is possible to distinguish the minimal pairs *sííⁿ* 'shadow' versus *ʃííⁿ* 'ground squirrel', and *sīī* 'ethnicity, type' versus *ʃīī* 'sewing (verbal noun)'. In most cases of sibilant before *i*, careful elicitation shows the sibilant to be *s*. In addition to the forms already cited, *ʃi* was verified in the verbs *ʃìì-rì* 'sew' and *ʃììwɔ̀* 'burn; roast', and *ʃìwⁿɔ̀* 'sneeze' (and related nominals), and in the noun *ʃīndʑɛ̀* 'sorghum'.

There are a few cases of clearcut *ʃ* before vowels other than *i*, viz. *ʃààkà* 'disperse' and agentive suffix *-ʃɛ̀ɛ̀ⁿ*.

Also before *i*, *ʒ* often alternates with *j* as in *ʒìndò ~ jìndò* 'two', but consistent *ʒ* also occurs in a few words like *ʒììⁿʒáwⁿɛ̀ɛ̀* '*Hibiscus* bush'. There is dialectal variation between *j* and *ʒ* in *jìbɛ̀ ~ ʒìbɛ̀* 'person'.

3.3.5 Front rounded approximant *ɥ*

ɥ is pronounced like *j* plus lip-rounding. The rounding overlaps with the approximation but it can extend slightly beyond it, so that it sometimes sounds like [jʷ]. It occurs initially, in one initial *Cɥ* cluster, and intervocalically. Examples are in (11).

(11) a. initial *ɥ*

ɥìjɛ̀ (~ ɥùjɛ̀)	'go up'
ɥìjɛ̀	'moon'
ɥīījɛ̀	'water'

	ɥījɛ̀	‘day/night transition’ (in collocations)
	ɥɔ̀wⁿ	‘rain (n)’
	ɥɔ̄m-bɔ̀	‘(rain) fall’
	ɥàà	‘buy’
	ɥàà	‘price’
	ɥɛ̀ɛ̀rí	‘(drinking) glass’
b.	initial *Cɥ*	
	sɥīī	‘meal (grain-based)’
c.	intervocalic *ɥ*	
	gūɥɛ̄ndì	‘separate (them)’
	ʤùɥè	‘dream (n)’
	ʤùɥè	‘néré tree’
	ʤúɥɛ́	‘earth, country, mud’
	sùɥè	‘go down’
	súɥɛ́	‘(female) breast’
	sūɥì	‘stuttering’
	tùɥè	‘carry on head’
	tùɥɛ̀	‘ashes’
	kūɥɛ̀	‘calabash’
	sùɥɛ̀	‘chicken’

The cases of initial *ɥ* and *Cɥ* are in general not reducible. The possible exception is *ɥàà*, for which /jwàà/ might be considered as an analysis. For the shape *Cwaa*, see (15c) below. The intervocalic cases in (11c) all involve preceding *u* and a following front rounded vowel, raising the possibility that intervocalic *ɥ* could be an allophone of one or the other of the semivowels {*j w*}. However, stems like *ɲùwɛ̀* ‘fat (n)’ and *púɟɛ́* ‘wife’ show that all three of {*j w ɥ*} can occur in this vocalic environment. Download “Bangime glide audio tour” (pdf with audio) on the project site, or in Deep Blue.

3.3.6 Medial *CC* clusters

Homorganic nasal plus voiced stop clusters are common (*mb*, *nd*, etc.).

(12)		
	bɔ̀mbɔ̀rɔ̀	‘hat’
	bààndà	‘fatigue’
	gàndʤà	‘grass (*Brachiaria*)’
	kàràŋgò	‘hourglass-shaped tomtom’
	pɔ̀ŋgùndà	‘neem tree (*Azadirachta*)’

The nominal plural *-ndɛ* (§ 5.2.1) follows nouns, which can end in a vowel or in a semivowel. In the latter case we get triple clusters as in *tāj-ndɛ̀* 'straw baskets' and *nɔ̀wⁿ-ndɛ́* 'mouths'.

Other medial clusters are uncommon, occurring in loanwords, frozen compounds, and words of unknown origin.

(13) a. not clearly treated as compounds

kèŋkèlìbàà	'shrub (*Vepris*)' (< Bambara)
gòmpáá	'savanna monitor lizard'
fìrkó	'turban' (< Fulfulde)
dɔ̀lbɔ́	'herb spp. (*Senna* spp.)'
tájkòj	'breakfast'

b. treated as compounds

bār-kè	'blessedness, spiritual power' (< Arabic)
kár-kíjɛ́ɛ̀	'tree (*Ficus sur*)'
téw-kúmà	'crowned crane'
nìī-ŋ̄-kwɛ̄ɛ̀ⁿ	'finger'

3.3.7 Initial *CC* clusters

Initial nasal-stop clusters occur in a handful of noun stems.

(14)

ŋgàló	'city'
ŋgùdàà	'baggy pants' (*pantalon bouffant*)
mbùùdú	'currency unit'

A semivowel may follow an initial consonant. *Cw* is predominant, but *Cj* and *Cɥ* are attested once each. We have no examples of *Cwu* or *Cji* with homorganic semivowel-vowel sequence.

(15) C plus semivowel

a. *Cj* cluster

sjɛ̀ɛ̀ⁿ	'power, force'

b. *Cɥ* cluster

sɥīì	'grain-based meal' (contrast *sūɥì* 'stuttering')

c. *Cw* cluster

dwàà	'tree'
twāà	'arrive'
swáá-kɛ̀	'mortar (for pounding)'
kwāà	'fig sp. (*F. platyphylla*)'
kwāà	'neck'
kwáárì	'tree (*Sarcocephalus*)'
gwìì	'age, long life'
kwíí^{n}	'tree sp. (*Celtis*)'
kwɛ́ɛ́r^{n}ɛ̀	'giant millipede'
kwóómbɛ̀	'beetle, bug'
kwóó-(^{n})-jíjíí	'liana (*Tinospora*)'
ŋwáár^{n}ì	'southern python'

3.4 Vowels

The inventory of vowels is (16). Long nasalized vowels are fairly common: *hɔ̀ɔ̀^{n}* topic marker, *pàà^{n}* 'all'. Short nasalized vowels occur phonetically but can often be analysed as nasalized allophones of oral vowels when adjacent to nasalized semivowels or *r^{n}*.

(16)

oral		nasalized	
short	long	short	long
u	*u:*	*u^{n}*	*u:^{n}*
o	*o:*	*o^{n}*	*o:^{n}*
ɔ	*ɔ:*	*ɔ^{n}*	*ɔ:^{n}*
a	*a:*	*a^{n}*	*a:^{n}*
ɛ	*ɛ:*	*ɛ^{n}*	*ɛ:^{n}*
e	*e:*	*e^{n}*	*e:^{n}*
i	*i:*	*i^{n}*	*i:^{n}*

{*ɛ ɔ*} are -ATR, {*e o*} are +ATR. Noncomposite stems that contain such mid-height vowels generally respect ATR harmony. This rule is stringent for verbs. However, nouns may add diminutive ending *ɛ̀(ɛ̀)* regardless of stem vocalism.

The sequences *iji* and *uwu* monophthongize to phonetic [i:] and [u:], respectively. In some cases it is difficult to determine which phonemic representation is called for.

3.5 Segmental phonological rules

3.5.1 Nasal Assimilation

What we write *ŋ* (in citation forms of morphemes) is an underspecified nasal that assimilates position to a following consonant. This is the case with the linker *ŋ* in compounds and other nominal combinations, and with the "x" morpheme *ŋ* that functions as pronominal-subject or other marker before verbs.

3.5.2 Final-Semivowel Deletion

Semivowels occur stem- and word-finally after nonhigh vowels, primarily in monosyllabic words. *w* and *w*^{n} are very common in all stem and particle classes. *j* and *j*^{n} are less common, and *ɥ* and *ɥ*^{n} are unattested. There is no audible distinction between *Cii* and *Cij* or between *Cuu* and *Cuw*, and we use the long-vowel transcription in these cases. The known examples of final semivowels are in (17).

(17) a. final *j* and *j*^{n}

adjectives

dèj	'sweet'
tɔ̀j^{n}	'small'

nouns and noun-like adverbs

dèj	'grain'
tā̀j	'straw basket'
tḕj	'pit of wild prune (*Sclerocarya*)'
tój	'testicle'
sɔ́gɔ́j	'courage'
tájkòj	'breakfast'
mū̀j	'today'

verb stem

[none]

truncated monosyllabic perfective-2 of verbs, see (341b), 347)

dɛ̀-j^{n}	'cooked in pot' (< *dɛ̄n-dɛ̀*)
tɛ̀-j^{n}	'bit' or 'measured' (< *tām-bà*)
kɛ̀-j^{n}	'spun (cotton)' (< *kɛ̄r*^{n}*ɛ̀*)

other

kój	clause-final emphatic particle
wā̀j	resultative or inceptive auxiliary
wàj	dative (postposition)

b. final *w* and *wⁿ*

adjectives

kíw	‘difficult’
gáwⁿ	‘good’

nouns

bɔ̀w	‘father’
dèw	‘river’
nɔ̀wⁿ	‘mouth’ or ‘noise’
ŋàwⁿ	‘meat’
pɔ̀wⁿ	‘meal’
sɔ̀wⁿ	‘boubou’
ɥɔ̀wⁿ	‘rain (n)’
bɔ́wⁿ	‘porridge’
tɔ́wⁿ	‘money’
píjèw	‘hornbill’

verb stem

nāẁⁿ	‘give’

truncated monosyllabic perfective-2 of verbs, see (347a, 354, 356)

tì-w	‘fell’ (< *tī-wɔ̀*)
pì-w	‘sowed’ (< *pī-jɛ̀*)
bī-ẁⁿ	‘(day) broke’ (< *bīn-dà*)
mà-wⁿ	‘became firm’ (< *mān-dà*)
kɔ̀-wⁿ	‘snapped, broke’ (< *kɔ̄n-dɔ̀*)
ɲā-ẁⁿ	‘picked up, took’ (< *ɲà-rⁿà*)
gɔ̀-wⁿ	‘laid (egg)’ (< *gɔ̄m-bɔ̀*)
jà-w (~ *jàà*)	‘died’ (< *jā-wɔ̀*)
dɛ̀-wⁿ	‘became full’ (< *dām-bà*)
nà-w (uncommon)	‘came up’ (< *nā-wɔ̀*)

other

kāẁ	‘this/that’ (demonstrative)
jàw	‘chez, at the place of’ (postposition)
nɔ̀wⁿ	‘(reply) to’ (postposition)
pàw	‘all, each’ or ‘only’
nàw	future auxiliary

Final semivowels are audible prepausally. However, the combinations {*aw aj ɔw ɛj ej*} and their nasalized counterparts may delete the semivowel when the word is phrased with a following word. In the case of nouns, the deletion also occurs before plural suffix *-ndɛ*. For example, demonstrative *kāẁ* occurs in *kà má* (subject-focus) and in *kà gáⁿ* ‘this/that is good’, and adjective *gáwⁿ* ‘good’ has plural *gá-ndɛ̀* (arguably *gáⁿ-ndɛ̀*). Final Semivowel-Deletion does not apply to {*uj oj iw*} with polarized disharmonic segments.