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Topic: Structure of the bamanankan lexicon

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Dedication

*I dedicate the present work to Kaatu,
Kadiatou TRAORE, my mother*

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CHAPTER I: preliminaries

The present dissertation deals with theoretical linguistics. It is not mainly descriptive or applied linguistics, though some features of descriptive linguistics would be seen in the text like some analyses.

Let us sum up some general lines of the language on which the present work bears. We mean the bamanankan; one of the thirteen national languages¹ in Mali.

Bamanankan is classified to be a member of the Mande branch. It belongs to the *Niger-Congo* family (Greenberg, 1963). The Mande language group gathers nine countries in West Africa (bulletin ACALAN N°004, 2009, p.17). The term “bambara” used by the first writers, was revised by virtue of the law on national languages in 1996 and replaced by bamanankan. It is spoken in almost all the areas in Mali. Its native speakers are mostly in the south of the country. In addition, bamanankan is used by some speakers in adjoining areas to the south and west (e.g. Ivory Coast, Guinea, Burkina Faso, Senegal, the Gambia, etc.).

As far as the promotion of bamanankan is concerned in the domain of education, when we refer to the communication of Mountaga Diarra², bamanankan is used in both formal and informal education alongside with its counterpart national languages. In the formal education, it is used in three ways: the use of convergent pedagogy, which is the use of students’ mother tongue as medium of teaching in the primary school, the teaching of national languages in the general secondary education (high schools and professional schools), and the teaching of bamanankan at the university.

In the non formal education, the use of bamanankan is done through the literacy trainings. Many non governmental and non profit organizations work with the rural populations. Therefore, the use of the national language spoken in the area is compulsory.

When we come to the legal procedures for promoting bamanankan in Mali, we say that three decrees and one law are adopted for the entire national languages among which bamanankan

¹ A national language is defined in *Intergovernmental conference on language policies in Africa, final report*, UNESCO, intangible heritage section, 2006, p.29 as the following: *either lingua franca or one or more local languages decreed for nationwide use throughout a country.*

² Diarra Mountaga, *communication sur l'état des lieux de l'utilisation des langues nationales dans le système éducatif malien*, Bamako: novembre 2011, p9-10.

is part. According to the presentation, *Harmonisation des règles orthographiques: situation par pays, le cas du mali*¹, the three decrees are:

- the decree n° 85/PGRM of May 26th, 1967. It fixed the alphabet of four (4) national languages for transcription: bamanankan, Fulfulde, Songhay and tamacheq. The principles and the rules for their transcription were drawn up in September 8th of the same year.
- the second decree is the decree n° 159/PG-RM of July 19th, 1982 which gave the status of national language to ten 10 languages in which the first four are included.
- The third decree, the decree n° 93-107/ P-RM of April 16th, 1993, authorized the use of national languages in the education².
- As far as the only one law is concerned, it is the law n° 96-049 of August 23rd, 1996 which was adopted during the President Alpha Oumar Konare's regime. It fixed the number of national languages in Mali to thirteen 13 always including bamanankan.

Some institutions are created for the purpose of the promotion of the national languages in Mali since the country does not treat one language and leave the rest. Since the independence in 1960, Mali has been striving to develop its national languages. For that purpose, institutions have been set up since the first government. Then in 1968, the CNAF (Centre National d'Alphabétisation Fonctionnelle) – (National centre for functional literacy) - was created. In 1973, INAFLA (Institut National de l'Alphabétisation Fonctionnelle et de la Linguistique Appliquée) – (National institute of Functional Literacy and Applied Linguistics) – was put in charge of the literacy programs. INAFLA was changed into DNAFLA (Direction Nationale de l'Alphabétisation Fonctionnelle et de la Linguistique Appliquée – National office of Functional Literacy and for Applied Linguistics) in 1975.

Apart from those public institutions, some private and regional institutions exist. Among the private institutions, we have some associations and research groups at the higher education level. The *Benbakan Dungew* group (mother tongue adepts, see more about that group in the development), was the one which helped DNAFLA during the discussions on the grammatical rules of bamanankan language. ENSup (Ecole Normale Supérieure) – (High school Teacher Training College) - had a bamanankan research team.

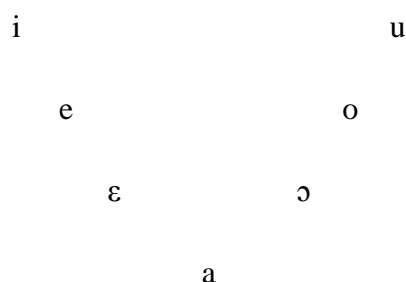
¹ Konta Mamadou, « *harmonisation des règles orthographiques : situation par pays, le cas du mali* », in Atelier d'Harmonisation des Commissions de Langues Véhiculaires Transfrontalières Fulfulde, Hausa et Mandenkan, Bamako: juillet 2010, pp 1-2.

² **Samaké Macki**, *la problématique de la terminologie scientifique en bamanankan: langue nationale du Mali*, (thèse doctorat 3^e cycle). Université Gaston Berger de Saint-Louis Sénégal : 2004

When it comes to the regional institutions, we have KARANTA Foundation whose head office is in Mali. ACALAN (Academie Africaine des langues) – African academy of languages – which is a political African institution that promotes languages in Africa has also its head office in Mali.

Speaking about the phonology of Bamanankan, its sound system is composed of 25 phonemes: seven vowels and eighteen consonants. The seven set of vowels in its vowel system (Cf handout, *the structures of African languages*, prof. Barry, p.7) is: /a/, /e/, /ɛ/, /i/, /o/, /ɔ/, /u/. As the orthography adopted the same scripts in the alphabet, it is not easy sometimes to make the difference between the letters and the phonemes.

The seven vowels are divided into three categories according to their place of articulation: three fronts (i, e, ɛ), three backs (u, ɔ, o) and one low central (a). Unlike pronouns, words do not begin with the vowels. However, some loanwords and onomatopoeias may begin with them.



Bamanankan has oral vowels which are short or long and nasal vowels. Each of the seven vowels can have their oral, long and nasal form. Here they follow:

Short vowels:

/a/ - /da/ (door)

/e/ - /te/ (tea)

/ɛ/ - /lɛ/ (pig)

/i/ - /bi/ (today)

/o/ - /so/ (house)

/ɔ/ - /fɔ/ (to say)

/u/ - /du/ (family)

Long vowels:

/a:/ - /**b**a:ra/ (baara = work)
 /e:/ - /**f**e:re/ (feere = flower)
 /ɛ:/ - /**f**ɛ:re (fɛɛɛ = solution)
 /i:/ - /**m**i:ri/ (miiri = reflexion)
 /o:/ - /**k**o:ro/ (koro = a reptile)
 /ɔ:/ - /**w**ɔ:rɔ/ (wɔɔɔ = six)
 /u:/ /**du**:ru/ (duuru = five)

Nasal vowel:

/ã/ – /tã/ (tan = to push)
 /ẽ/ – /dẽ/ (den = child)
 / ẽ̃ / - /n ẽ̃ / (nɛn = tongue)
 /ĩ/ - /nĩ/ (nin = that/this)
 /õ/ – /kõ/ (kon = leaf)
 /*ɔ/ - /*bɔ/ (bɔn = bird of prey) (*the asterisk means that we did not find the ɔ with the tilde diacritic*)
 /ũ/ – /dũ/ (dun = to eat)

The consonants are in the table:

Table 1

		Labials	Dentals	Palatals	Velars	Postvelars
Occlusives	voiced	p /p/	t /t/	c /c/	k /k/	
	unvoiced	b /b/	d /d/	j /ʃ/	g /g/	
Constrictives	voiced	f /f/	s /s/			
	unvoiced	m /m/	z /ʒ/			
Nasals			n /n/			h /h/
Laterals			l /l/			
Vibrant			r /r/			
semivowels		W /w/		y /j/		

/b/ – /**b**a/ (ba = goat)
 /c/ - /**c**a/ (ca = profession)
 /d/ – /**d**i/ (di = to give)
 /f/ – /**f**u/ (fu = zero)
 /g/ – /**g**o/ (go = taste bad)
 /h/ – /**h**ali/ (hali = even)
 /ʃ/ – /**ʃ**a/ (ja = shade)

/k/ – /**k**u/ (ku = tail)
 /l/ – /**l**a/ (la = postposition)
 /m/ – /**m**a/ (ma = postposition)
 /n/ – /**n**a/ (na = to come)
 /p/ – /**p**alā/ (palan = bucket)
 /r/ - /**r**ɔ/ (rɔ = postposition)
 /s/ – /**s**i (si = hair)
 /t/ – /**t**a/ (ta = property)
 /w/ – /**w**ari/ (wari = money)
 /j/ - /**y**ē/ (yen = there)
 /z/ – /**z**u/ (zu = yoke)

Prenasalization which consists of an oral consonant preceded by the corresponding nasal, is part of bamanankan consonant system. In the sounds like: /mbili/ (egged termite), /ncɔgɔn/ (pea), /nfiyena/ (mushroom), /ngana/ (brave), /nkalon/ (lie), /nji/ (good), /mpalan/ (bag), /nsira/ (baobab), /ntori/ (toad), it is clear that the sound /m/ or /n/ that precedes its corresponding oral consonant is a prenasalization feature. The prenasalization of /g/ and /j/ is realized with a special letter, respectively /ŋ/ and /ɲ/, in the orthography reason why in the alphabet we have 20 consonants.

The feature of tone is part of the sound system of bamanankan. Bamanankan is then a tone language. From the book *contemporary linguistics* (1997, p.38), “a language is said to have tone or be a tone language when differences in word meaning are signalled by differences in pitch”.

There are four tones in bamanankan: two lexical tones and two grammatical tones. Less works are done in this area. Researches have been rather done on the lexical tones. Because of their complexity, the grammatical tones caught very few researchers’ attention. They show the place of definite and indefinite articles to determine nouns and substantives. Only the authors (Dukure, Samaseku...) of the book *bamanan kan maben* wrote the following statement about them:

“*faranfasiya be matɔgɔ dɔrɔn de kun kan*” – *the tone for the definite occurs only on the noun*” (p.22).

Macki Samaké dealt only with the lexical tones in his thesis where he said that “*le ton est lexical en bamanankan*” – the tone is lexical in bamanankan, (pp.62-64). Lexical tones create the minimal pairs in bamanankan lexicon. He provided the two forms of the lexical tones in the following examples (p.63):

Low tones

dà (to lay down [Sic]: sorrel)

wòrò (kolanut)

sò (horse)

jàlà (belt)

high tones

dá (mouth)

wóró (thigh)

só (house)

jálá (name of a tree)

Another feature of bamanankan sound system is assimilation. Assimilation is defined in Microsoft Encarta dictionary, 2008, as “*the changing of speech sound under the influence of an adjacent sound*”. Both progressive assimilation and regressive assimilation exist. When an “l” sound follows directly an “n” sound, the “l” sound becomes “n” sound. We see that feature in /don/ (to get in) which becomes /donna/ (got in) in the past tense. The neutral feature should be /donla/, but because of the assimilation, “l” does not stand in the progressive environments of a nasal sounds.

Moreover, when a “d” sound follows immediately a nasal vowel, the “d” sound is assimilated into “n” sound:

e.g:

misigendén (herder) → /misigennén/ [“d” became “n” due to the “én” sound]

ntèbèndun (eating carp) → /ntèbènnun/ [“d” became “n” due to the “èn” sound]

The feature of geminate is not an apparent feature in bamanankan. As defined in the Cambridge *Encyclopedia of Language, second edition (CEL)* (2003, p.428), geminate is “*a sequence of identical adjacent sounds in one morpheme*”.

In the *Dictionnaire de la linguistique et des sciences du langage* (1994), the definition given to a geminate consonant is : « *une consonne géminé est une consonne plus longue qu’une consonne simple et dont l’articulation est plus énergique (ou plus intense)* » (p.213) – « a geminate consonant is a consonant longer than a simple consonant and whose articulation is more vigorous (or more intense) ».

In bamanankan, some words, mainly some onomatopoeia, arrange in pair some consonants. This fact is due to the loss of a vowel between two consonants. When this fact, called syncope, modifies the form of words like *furututu*, *seretete*, *sɔrɔtɔtɔ*, the result is respectively *furru*, *serre*, *sɔrrɔ* (Doucoure, 2010). That situation creates somehow some geminate consonant in bamanankan.

Syncope, which is “*the deletion of a word-internal vowel*” (contemporary linguistics, p.688), creates some consonant cluster. When a vowel sound is lost between two different consonants, the new form of the word will have two different consonants following each other. Then words such as *tɔnɔmi* (*to spiral*), *tulo* (*ear*), *bila* (*to let*), have their shortened form *mɔmi*, *tlo*, *bla* (Bailleul’s dictionary, 2007) after the respective loss of the vowels (ɔ, u, i).

CHAPTER II: theories and methodologies

I. Problematics

We don't rely on the lexicon potentialities in building new words for new concepts as enough as it must be in bamanankan. This fact creates the problem of using exogenous terms which are not going to be intelligible and predictable for the learners of the concepts. In fact, the problem is due to the lack of the systematic analysis of the structure of the lexicon.

II. Structure of the work

As the topic of the master thesis is *structure of the bamanankan lexicon*, contents are going to be developed in the following order.

First, the dissertation consists of five chapters. The chapters have subtitles which, in turn, have their own subtitles.

Following the introduction, the first chapter is titled : *preliminaries*. The second chapter deals with: *theories and methodologies*. It is the elements about the theories for the work. Those elements are: theoretical background, delimitation, overview of the literature, hypothesis, motivation, objective, problematic, and methodology.

The third chapter deals with: *morphology of the lexicon*. It includes subtitles that deal with derivational morphology and compounding morphology. The internal subtitles are the derivation and compounding features through five book corpus since we are in the domain of the testified lexicon.

The fourth chapter deals with: *semantics of the lexicon*. Its subtitles are the semantic of the derived words and the one of the compound words from the corpus. Some internal titles are treated there such as the meaning and the semantic relationship of the affixes, and the matrixes and semantic relationship of compounds.

In the fifth and last chapter, we deal with the: *productivity of the lexicon and the terminology works*. It encompasses the productivity of affixes and compounds in the lexicon of bamanankan. Its internal contents are the outputs of derivation and the ones of compounding in bamanankan lexicon. The conclusion follows the fourth chapter. We will supply an appendix at the end of the work. The appendix will be composed of two parts: appendix I (tables of the derived words), appendix II (Sample pages). The tables that will be in the

appendix I are suffix treatment tables from the table number 14 to number 23. The rest of the tables are in the development of the work from the number 1 to the number 13.

III. Objectives

We want to explore which are the morphological and semantic features of the lexicon of bamanankan. It is a lexicology research that we undertake to identify the lexicon potentialities for future building words for concepts.

IV. Methodology

We intend to do a text study, to determine the lexical stocks for the scientific enrichment of Bamanankan. Thus, the lexicon is the focus of the study. A corpus is a large collection of written, and sometimes spoken, examples of the usage of the language, employed in linguistics analysis. (Encarta dictionary, 2008).

We selected just five (5) books to be our corpus for this research about the lexicon of bamanankan. We limited the present work to that size of corpus because it is just to start the scanning of the built word occurrences with a small size of corpus on behalf of the whole lexical corpus. We enumerate the number of derived words in the five book corpus. We enumerate also the frequency of compounds in each book by sampling three pages randomly chosen in each book and then determine what should be the total number of compound occurrences in the book. This sampling seems to be easier for us than counting one by one the compounds in their distribution throughout the corpus. For the derived words, a sampling is not needed since we know the affixes which are identifiable by computer. As for compounds, they are not yet identifiable by the computer.

In this lexicology research, we used new technologies as the first tool. The computer has been very beneficial for us in terms of identifying and enumerating the derived word occurrences. As a matter of fact, the absolute number of the word occurrence in the text is known even if one does not need to do a text study.

We chose the Microsoft software called *Microsoft Office Word 2007* to carry out the analysis. We began by typing the text of each of the five books in a file. We then undertook the enumeration of the occurrences.

First, in enumerating the occurrence of derived words, we typed each affix in the search engine of the computer. Then we loaded the research for any occurrence of the affix in the search engine through the text. It sometimes happens that the spelling of the affix is similar to the one of another word which is not sought. The suffix *-la* for instance is homophone to *la* the postposition. The method that we use to identify only the suffix *-la* from the other *-la* is to

disqualify any occurrence of the latter. This left the occurrences with only *-la* as suffix in the whole text. For the suffix *-la*, that was not enough to distinguish exclusively one suffix *-la* to another suffix *-la* since we have more than one *-la* as suffix. In that case, we looked for the occurrence of the one first targeted by excluding the rest with recognizable symbols. Then at last we came to identify the occurrences of the affixes and automatically the number of derived words.

Second, when enumerating the occurrences of the compounds, the task was much more difficult. The computer is not equipped with the consequent software to identify their occurrences. So, we used a reading and scanning solution for each occurrence in each five books. We left that solution and went for the sampling. We sampled three random pages in each corpus and then counted the complete compound occurrences in those pages. Then we extended the numbers to the whole books by multiplication and division sometimes of the variables. Thereafter, we estimated the number of compound occurrences in the books.

Many other tools have been used in this text study, mainly documents. We used books such as dictionaries (*bambara-français, français-bambara, bamanankan daɲɛgafɛ, lexiques spécialisés manding, Encarta dictionary, Robert and Colin, Thesage*), grammar books (*sɛbenko bɛrɛ, bamanankan sariyasun*), general works (*bulletin n°004, ACALAN, la politique linguistique du Mali, Current trends in linguistics, dɔnniyakalan*).

In addition to these paper printed documents, we used electronic documents from internet such as the site *makdas* with its *Fransekan-bamanankan daɲɛsɛben lexicon*.

Table 2: *except Wagadu fo Sudan, a history work, all the rest four books are literary genres in the epic register.*

Book titles	Number of pages	Page number per 3 pages	Word absolute frequency	Year
Dɛpɛkɔrɔ ka Tonkan	271	90	47 518	2008
Genkurunin	127	42	19 499	2008
Wagadu fo Sudan	89	29	14 853	1988
Cɛmandali Babilen	40	13	8 015	1989
Ngɔninkɔrɔ bama	36	12	4 090	2000
Total	463	186	93975	

V. Review of the literature

Works on text study for lexicon began long ago; in Europe for example. We can observe that fact through the diversity of work published on that field. Works such as *morphologie dérivationnelle et structuration du lexique* (Corbin D., 1991), *le lexique : images et modèles. Du dictionnaire à la lexicology* (A. Colin, 2008), *la sémantique structurale* (Greimas A. J., 1966).

In France, we can enumerate many research centres that work on the subject. The research center ATILF and the project FRANTEXT (Lehmann, 2008, p.25-26) have collected enough lexical data exclusively for the treatment of the French language. As a matter of proof, the following citation is appropriate to our assertions:

J. Picoche et J.Cl Rolland, pour établir la nomenclature de leur *dictionnaire du français usuel* (De Boeck-Duculot, 2002), sont partis des 907 mots de fréquence supérieure à 7000 dans la liste d'Etienne Brunet, pour sélectionner 442 entrées consistant en mots lexicaux hyperfréquents et polysémiques qui conduisent, par leur relations sémantiques et morphologiques, à un lexique d 15 000 mots¹.

Lehmann and Martin-Berthet, *introduction à la lexicologie, sémantique et morphologie*, (2008 p.26).

In Mali, the bilingual dictionary Bambara-français takes into account text studies to ascertain the frequency of word occurrences before selecting the entries. This is what we can realize from the following citation, p.4: “*les mots dérivés retenus l’ont été en fonction de leur fréquence d’emploi ou de leur variation de sens par rapport à leur étymologie*” – the accepted derived words have been the ones according to their frequency or according to their meaning variation with regard to their etymology.

When establishing their electronic dictionary Wagadu (MAKDAS², 2008), a monolingual dictionary of bamanankan, Mamadou Doucouré and Issiaka Ballo selected 15000 lexical units from their data list of 25 books. The result, after sorting that word list, was the establishment of the dictionary of 13000 entries from the raw word list database.

Some of the ancient terminology works failed to follow exactly the ways the lexicon of bamanankan procedes in structuring words for notions. Among those works, we have the MAPE (Manding-Peulh lexicon) in which specialized repertory; we found the term *da*

¹ Translation: J. Picoche and J. Cl Roland, to establish the word list of their *dictionnaire du français usuel* (De Boeck-Duculot, 2002), began with the 907 words that have a frequency more than 7000 in the list of Etienne Brunet, to select 442 entries that consist of hyperfrequent and polysemic lexical items which leads, because of their semantic and morphological relationship, to the establishment of a glossary of 15000 words

² Mali Kanko ni Danbe Se (Culture and Language Promotion group)

murumuruma for the notion of what we call in English decimal number. *Da murumuruma* is a defining structure of the notion. Bamanankan has adopted the morphological matrix **determinant-base word** for such notions. Therefore, we should have *murumuruda* instead of *da murumuruma*.

Neither Bailleuil and Samaké, nor the national language institution publications talked about the meaning of the affixes as what we are aiming at in this dissertation. As a matter of proof, the fact that the suffix *-baa* is personal as opposed to *-la* does not exist in the literature of suffixes in bamanankan. The misunderstanding of this particularity of *-baa* has generated some errors in the doctoral thesis of Samaké. For the term biologist, p.117, he attributed the bamanankan equivalent *nimayadɔnbaa*. That denomination cannot stand because of the suffix *-baa*. The term biologist is a generic, impersonal term. Therefore, it would go better with the equivalent *-la* rather than *-baa*. Then, Macki's stem + *-la* would give us an equivalent *nimayadɔnna*.

Yet talking about the affixes, Denis Creissels (1991, p.113-118) wrote briefly on nine of them (-ya, -la “cela”, -ka, -li, -la “sinɔgɔla”, -baga, -lan, -ba, -nin).

The semantic distinction that he observed between *-la* and *-baa*, is supplied in the following citation:

-la « qui fait l'action de ... » (en référence à une activité habituelle), par exemple *sinògò-lá* « dormeur » (de *sinógó* « dormir »), *kíní-tóbí-lá* « cuisinière » (de *kíní* « riz » et *tóbí* « cuire ») ; en fonction des règles de transitivité des lexèmes verbaux, ce dérivatif peut être cumulé avec le précédent, comme l'illustre *tóbí-lí-la* « cuisinière » (de *tóbí* « cuire ») ;
 -bágá « qui fait l'action de... » (en référence à un acte précis), par exemple *ké-baga* « celui qui fait », de *ké* « faire » ; un tel dérivé nécessite d'être déterminé dans une relation génitive, par exemple *wo ké-baga* littéralement « le faiseur de cela » pour « celui qui a fait cela¹ ».

Recently, we have seen that the created terms do not follow the models of the language and they rather follow a ceaseless borrowing path of exogenous terms. That's why terms such as *rectangle*, *square*, *mathematics*, *lozenge* and so on are designated with French words in bamanankan, respectively *tangili*, *kare*, *matematiki*, *lozansi* in both *lexique MAPE* and *lexique*

¹ *-la* « who carries out the action of... » (referring to a usual activity), e.g. *sinògò-lá* “sleeper” (from *sinógó* « to sleep »), *kíní-tóbí-lá* “the cook” (from *kíní* « rice » and *tóbí* « to cook ») ; according to the transitivity rules of the verb lexemes, that derivative can be cumulated with the precedent as shown in *tóbí-lí-la* « the cook » (from *tóbí* « to cook ») ;

-bágá « who carries out the action of... » (referring to a precise action), e.g. *ké-baga* “the one who carries out” from *ké* “to carry out” ; such a derived word needs to be determined in a genitive relation., e.g. *wo ké-baga* which literally means “the maker of...” pertaining to “the one who carries it out”.

français-bamanankan. In *dɔnniyakan san 5^{nan} ni 6^{nan}*, the biological terms *fibula*, *periosteum*, and *bronchus* are unfortunately given respectively the French loanwords *periyositi* (p.6), *perone* (p.7), and *bɔrɔnsi* as their equivalent in bamanankan (p.20).

Bamanankan does not lack the matrixes for those notions to be designated with intelligible and endogenous lexical units. We have many examples in the literature of word formation attempts that stand aside the endogenous creation of lexical units in bamanankan.

VI. Theoretical background

Since we don't have the complete theoretical background here, we give some general lines on the discipline we are discussing. Some definitions on the theory of the notions studied in the dissertation will be seen throughout the text at the beginning of their corresponding titles or subtitles. We proceeded in that diffuse manner in order the theory on the idea and its treatment are not separated from each other, thus helping the reader remember the idea which is connected to the treatment. The framework here is composed of the theories of linguistics, the theories of lexicology, the theories of the lexicon and the theories of the lexical units.

In the first place, the discipline of this dissertation is linguistics. Linguistics is a recent science to some extent when we try to compare it to grammar or to rhetoric. In Europe, linguistics' success results from the research of Ferdinand de Saussure (Switzerland 1857–1913). His research mostly published after his death by his students permits the discipline to differentiate from its previous grammar only tradition and fixed then the basis of linguistics in the French speaking world. Among his famous works we cite *cours de linguistique générale*, Paris: payot, 1996 [1916] and *Écrit de linguistique générale*, Paris: Gallimart, 2002. The following citation from his work *cours de linguistique générale* is of great importance:

Un mot que j'improvise, comme *in-décor-able*, existe déjà en puissance dans la langue ; on retrouve tous les éléments dans les syntagmes tels que *décor-er*, *décor-ation*: *pardonn-able*, *mani-able*: *in-connu*, *in-sensé*, etc., et sa réalisation dans la parole est un fait insignifiant en comparaison de la possibilité de le former¹ (p.227).

Ferdinand de Saussure wrote this to support a notion that he calls *theoretical word* (see the source as the above citation).

¹ **Translation:** a word that I invent, like *in-décor-able*, has already potential existence in the language; we find all the elements in the syntagms such as *décor-er*, *décor-ation*: *pardon-able*, *mani-able*: *in-connu*, *in-sensé*, etc., and its realization in the speech is trivial as matter of comparison to the possibility to form it.

Apart from Saussure in Europe, many other researchers in linguistics, called linguists, worked in many disciplines. Among those, we have Joseph Harold Greenberg who worked on the typology, *language of Africa*; Jean François Champollion who worked in Egyptian hieroglyphs.

In America, linguistics got its prestige through the works of the structuralist Noam Chomsky. He worked in many diagrams to explore the structure of language, among which we have the tree diagram. Another linguist from America is Leonard Bloomfield who worked in structural linguistics.

In Africa, the recent works of Marcel Diki-kidri are of great importance. His works focus on the terminology of African languages. He made a comparison between European terminology works and the African one in his recent book titled *Le vocabulaire scientifique dans les langues africaines. Pour une approche culturelle de la terminologie* (2008). We supply some lines of his comparison in the following citation:

A la difference de la terminologie européenne qui se nourrit abondamment de l'écrit (démarche archiviste), la démarche de la terminologie africaine doit être une démarche heuristique (p.152) - (Unlike the european terminology which lives abundantly on written work (archivist approach), the approach of african terminology is to be a heuristic approach).

However, when we come to the enormous domain of linguistics, we say that its sphere encompasses plenty of sub-disciplines until today, and the term linguistics taken as generic term is criticized. As proof of that assertion, the dictionaries usually called “a dictionary of linguistics” are changing their titles into “a dictionary of language sciences”. Theorists maintain that the term “language sciences” seems to fit the whole domain since it embraces everything that we study as part of linguistics.

To begin with, we have *theoretical linguistics* which includes: cognitive linguistics, generative linguistics, phonology, morphology, semantics, lexicology and etc. Second, we have *descriptive linguistics* which includes: comparative linguistics, etymology, historical linguistics, sociolinguistics and the likes.

We have also *applied linguistics* which encompasses in one hand all subject around linguistics and language teaching and in the other hand all the related subjects to linguistics (computational linguistics, sociolinguistics language development, linguistic anthropology, neurolinguistics, and psycholinguistics).

There is to say that each of those sub-branches has developed its own sub-branches. Our concern is the lexicology and we give details about that field of linguistics.

A. Theories of lexicology

The study of the lexicon belongs to a branch of linguistics called lexicology. Lexicology is “*the study of the history and present state of a language’s vocabulary*” (CEL, p.431).

It is also defined in *la lexicologie* as the following: “*la lexicologie [...] étudie les unités lexicales d’une langue*”, Aïno Niklas-Salminen, p.5 – (lexicology studies the lexical units of a language).

For more definitions, we supply the following citation:

Dans un sens restreint, la lexicologie est considérée comme une branche de la sémantique qui a pour objet l’étude du sens des unités lexicales. Selon cette perspective, elle se confond, en grande partie avec la sémantique structurale. Dans un sens plus large et plus généralement accepté, la lexicologie s’intéresse également à la forme des unités lexicales et même aux relations qui existent entre le lexique et la syntaxe¹. (Aïno, p.5).

Alise Lehmann and Françoise Martin-Berthet (2008) analyzed lexicology in another way. They even talked about the relations of lexicology with its neighboring domain. In doing so, they gave the definition that follows to lexicology: “*la lexicologie a pour tâche d’inventorier les unités qui constituent le lexique, et de décrire les relations entre ces unités* », p.15 – the task of the lexicology is to make an inventory of the items that constitute the lexicon, and to describe the relationships between those items. According to those authors, lexicology is organized around the meaning and the form of the word. As result of that analysis, they divided lexicology into two parts: *lexical semantics* and *lexical morphology*.

They went deeper in their explanations by providing some related sub-branches to lexicology. Syntax is part of these related sub-branches. They came to know that the meaning of words cannot be understood in isolation, but only in a string of words forming a sentence. The form of the words varies depending on their environment in the sentence due to the inflection. Furthermore, the meaning of the statements is not only the meaning of the words that compose the sentence. It depends on the situation of the enunciation. Thus, the lexical semantics is part of the semantics.

Lexicology and lexicography are two neighbor domains. They mutually borrow notions from each other. Their difference lies in the object of study of each one. That object of study for lexicology is *language* whereas the one for lexicography is the *dictionary*.

¹ Translation: in a restricted sense, lexicology is considered as a branch of semantics whose object is the study of the meaning of the lexical units. In accordance with that perspective, it mostly merges with the structural semantics. In a larger sense and much more generally accepted, lexicology is interested also in the form of lexical units and even in the relationships that exist between the lexicon and syntax.

Another neighbour of lexicology is terminology (*guide de recherche en lexicographie et terminologie*, p.11). The terminology, rather being a recent field on language items, is also a counterpart of lexicology and lexicography. According to some authors, there is an inclusion relationship between lexicology and terminology in which relationship lexicology is the generic term and terminology is the specific term. The first one being the “*science that studies the lexicon or the vocabulary*” (Cf: Georges Mounin, 1974) and the latter being: “*an intellectual activity that is devoted to the scientific study of terms*” (*Guide de recherche en lexicographie et terminologie*, p.13). The inclusion relationship is clear when we can notice that one is interested in the whole description of the language and the other one is rather concerned with only the terminological items of the language. Our remark caught since here many occurrences of the word lexicon. We will deal with its explanation in the following section.

B. Theories on the lexicon

Since the focus of this dissertation is the lexicon, we need to know what is lexicon. We have two kinds of lexicon: general lexicon and the lexicon of speciality (Cf: Lehmann & Martin-Berthet, p.16). The first lexicon pertains to all lexical units of the language, or lexical statistics aiming to measure the frequency of words in a text, or a body of text. In other words, it is the method of scanning a corpus for word occurrences. The latter, which is the specialized lexicon, is dedicated to terminology.

As far as the definition of lexicon is concerned, Aïno Niklas-Salminen in *la lexicologie* gave the following one: « *le lexique désigne conventionnellement l'ensemble des mots au moyen desquels les membres d'une communauté linguistique communiquent entre eux* », p.13 – the lexicon conventionally designates all words through which medium the members of a speech community speak to each other.

The next definition is given by other theorists, Lehmann and Martin-Berthet, in *Introduction à la lexicologie, sémantique et morphologie*, p.22: “*l'ensemble des mots d'une langue constitue son lexique*” – the whole word of a language constitutes its lexicon.

Pierre Lerat, in his work *les langues spécialisées*, p.87, paraphrased the lexicon in these words: “*...le lexique n'est rien d'autre qu'une liste de mots...*” - ...the lexicon is no more than a list of words...

In each of those definitions, one thing appears: the word. In the next section, we supply some definitions of it from the same author.

C. Theories on the lexicon and its units

We have a lot of vocabularies for the notion of lexical construction. They range from language unit or item, lexical unit, terminological unit, word, to language sign, the one which is from Ferdinand de Saussure.

We provide only the definition of a word since that one is our subject matter. As a matter of definition of the *word*, Lehmann and Martin-Berthet said: “*l’unité du lexique est le mot*”, p.19 – the unit of the lexicon is the word. Aïno gave an old-fashion definition: « *le mot est un groupement de lettres, séparé, à gauche et à droite, par un blanc des autres elements du texte*”, p.14 – “the word is a body of letters, separated on the left and on the right by a blank from the other items of the text”. As we said, tha definition cannot stand at all. Language is spoken before being written. In speaking, we do not see where the blank appears. So, her definition is old-fashioned and she gave only a text-based definition of the term. In *vocabulaire systématique de la terminologie*, p.39, a comprehensible definition is given, and that follows: “*element linguistique significatif composé d’un ou de plusieurs phonemes et dont la forme graphique est généralement limitée dans un texte par deux blancs successifs*” – « meaningful language element composed of one or several phonemes and whose form generally lies in the interval of two blanks in a text ».

To identify a word, three elements exist then: its form, its meaning, and its syntactic class.

VII. Hypothesis

It is possible to know the exact number of word occurrences in a corpus. In addition, it is possible to count the number of the derived words and the compounds and find their percentage. Moreover, it is possible to figure out the number of built word occurrence from the simple word occurrence in a corpus.

VIII. Motivation

To attribute denomination to the new concepts that might emerge in the language, it is better to explore that language for its range of word formation possibilities. The denomination of concepts in any specialty compels us to explore notions of lexicology and select the productive and prolific productions, both morphologically and semantically.

Our concern is to have didactic tools in bamanankan. Linguistic features of bamanankan should be well understood at school by the students. Linguistics should then be taught in bamanankan not always in a foreign language.

Since we know that the grammatical and orthographical research carried out till now are not sufficient and need more improvement, we are motivated to enrich the bamanankan linguistic repertoire. In light of this motivation, Ferguson, cited by Gilbert Ansre in *current trend in linguistics*, coined the term modernization that he gave this definition: “*modernization mainly involves the creating or borrowing of new lexical items and their incorporation into the basic standard*”, p.682.

Another source of our motivation is the recommendations and contributions formulated during different forums and conferences. We hereby supply one of the famous contributions reported during the national forum on education:

L'utilisation des langues nationales au-delà du premier cycle de l'enseignement fondamental littéralement ouvre la participation du Mali à l'entreprise scientifique et technique mondiale, étant donné que le patrimoine mondial en science et en technologie existe aussi dans les langues nationales du Mali, mais il faut le chercher¹.

Hassimi Oumarou Maiga, *contribution au forum national sur l'éducation*, (2008, p.1).

If the scientific patrimony does exist in our national languages, it is then a good research subject to explore and find solutions from the language itself for the lexical innovation.

In the final resolution of the conference on language policy in Mali, the problematic of lexicon research was discussed and is going to be solved by the implimentation of its article 4 which recommanded - “*la mise en place auprès du département en charge des langues d'une Commission Nationale de Terminologie et de Validation des traductions*” – the setting up, in the department dealing with national languages, of a terminology commission and validation of translated texts.

- The lexicography and terminology works are emerging in bamanankan. Therefore, there is a potential need of specialists in the domain of dictionaries. Some dictionary conception projects have failed because of the lack of specialists. The staff of the bilingual dictionary *Bambara-français* is handicapped by the lack of personnel resources. This is what we implied from some of their hypothetical questions in the dictionary about the entry [ye]: [*ye = voir?], p.471. This is a question for he who can solve the problem because the editors are not sure of the meaning of the entry.

¹ **Translation** : The use of national languages beyond the first cycle of fundamental school accurately opens the participation of Mali to the world scientific and technical project, given that the world patrimony in science and in technology also exist in mali national languages but it is necessary to seek.

IX. Delimitation

We will talk about the lexicon of bamanankan through a text study limited at 5 corpora. We don't go deeper since this dissertation will be among the very first ones done in the discipline in bamanankan. The lexicon is then the subject matter but not any lexicon. We want to know the lexical constructions that stem from the two major causes of the word formation: derivation and compounding. This is the lexicon of the built words¹. Furthermore, the study targets the lexicalization process in bamanankan with the endogenous criteria.

We selected bamanankan among many other national languages in Mali. This is due to the rank that bamanankan enjoys among its counterparts. It is used more than the others and has the most important demography in terms of speakers and listeners.

We chose bamanankan to indicate a comparison not only because of its importance in Mali communication, but because it is part of a group of languages called Mandenkan that cover more of West Africa than any other language. Therefore it plays the role of a cross-border language which is used as lingua franca in many countries (see ACALAN, bulletin n°004, 2009, p.13).

The productivity used in this work is not exhaustive. It is only about the discovered cases in the corpora and dependant on the exhaustiveness of the methodology used to figure out the number of occurrences.

The derivational morphology analyzed doesn't include all the features of derivation. For instance, derivation without affixes doesn't appear in the work. Only derivation with affixes is explored.

The affixes are not exhaustively analyzed. Infixes for example, are not treated in many parts. It is the suffixes that are the target of the analysis. Though, some suffixes such as inflexion suffixes are not in the focus of this research. Prefixes are slightly studied.

Since we did not see the circumfix and the parasynthetic derivation in our inventory of grammar books, those features are not touched because they are not part of the derivation system of bamanankan yet discovered.

¹ The term "built word" is used in *Introduction à la lexicologie, sémantique et morphologie*, p.163, with the French word "mot construit" to refer to any lexical unit that stems from either derivation or compounding. It is used in relation with its contrary "mot simple" to refer to any word which is not built. We use "simple word" as equivalent of the latest in this dissertation. We use the terms in the limits of those contents even though they may have other contents.

CHAPTER III: morphology of the lexicon

Lehmann and Martin-Berthet divided lexicology into two parts and defined each division. The definition that they gave to lexical morphology is the following: “*la morphologie lexicale étudie l’organisation formelle du lexique: elle analyse la structure des mots et les relations de forme et de sens qui existent entre eux*», p.15 – the lexical morphology studies the organization of the form of the lexicon: it analyzes the structure of the words and the form and the meaning relationship that exist between them. We utilize the morphology of the bamanankan lexicon. It will be treated through two word formation processes: derivational morphology and compounding morphology.

I. Derivational morphology

According to *the Cambridge Encyclopedia of the English Language* (CEEL) “*derivational morphology studies the way in which new items of vocabulary can be built up out of combinations of elements (as in the case of in-describable)...*” p.198.

The study of the lexicon of the language is not completely independent from the meaning and the form of words. Talking about the structure of the bamanankan lexicon, we need to go through the morphology and the semantics of the lexicon. The morphology of bamanankan lexicon is studied through its word formation.

A. Inventory of the attested affixes: typology of word formation with affixes

As definition of the word affix, we supply the one from *the CEEL*, p.198. An affix is “*...the addition of meaningful, dependent elements both before and after the base form...*” The same source continues to give the definition of the prefixes, the suffixes and the infixes in this way: “*affixes which precede the base are the prefixes, those which follow it are suffixes, and affixes occurring within the base are infixes*, p.198.

Bamanankan has a relatively restricted number of affixes. But it does have the three types of affixes: prefixes, infixes and suffixes. The possibility of circumfix or parasynthesis features in it is not declared.

As for the number, it is not easy to state an exact figure. The following list is critical but we exploit it for the purpose of supplying details.

It ranges from one to nearly forty in some literacy fascicles: (5 prefixes) *g-/ŋ-/w-/y-*, *la-*, *lɔ-/nɔ-/rɔ-*, *ma-*, *sɔ-*; (2 infixes) *-n-*, *-man-*; (31 suffixes) *-ba*, *-baa/-baga*, *-bali*, *-ka*, *-la (tilela)*, *-la/-na (baarala)*, *-la/-na (jarala)*, *-la/-na (duurula)*, *-la/-ra/-na*, *-laka/-naka*, *-lama/-nama*,

-lan/-nan, -landi/-nandi, -lango/-nango, -len/-nen, -li/-ni, -lu/-nu, -ma, -man, -mandi, -mango, -nan, -nci, -nin, -ntan, -ta, -tɔ (taatɔ), -tɔ (dimitɔ), -un, -w, -ya, -zan.

That list is to give general idea about the number and the types of the affixes since we know that it is a controversial matter. We supplied it in order to draw the readers' attention to a global outlook and to a source of inspiration for future researches.

We do not rely on that display of 38 affixes to do the present work. We will do the inventory of attested affixes in bamanankan through those which are stated in four books: bambara-français dictionary, *doctoral thesis* of Samaké, *Sebenko bere*, and *bamanankan sariyasun*.

First in the Bambara-français dictionary, the inventory of the suffixes gave us 26 in all (p.8-10) which follow: *-baa/baga, -baanci/baganci, -baatɔ/bagatɔ, -bali, -ka, -la/na, -la/na, -la/na, -la/na, -la/ra/na, -lama/nama, -lan/nan, lata/nata, -len/nen, -li/ni, -ma, -man, -nan, -nci, -nin, -ntan, -ntanya, -tɔ, -tɔ/tɔla, -ta, -ya.*

Macki's thesis (p.83-84) gave us 24 affixes: prefixes and suffixes.

The three prefixes are: *la-, ma-, sɔ-*. The suffixes are 21: *-baa/baga, -baanci/baganci, -baatɔ/bagatɔ, -bali, -ka, -la/na, -la/na, -la/ra/na, -lama/nama, -lan/nan, -lata/nata, -li/ni, -len/nen, -ma, -ma, -nan, -nin, -ta, -tɔ, -tɔ, -ya.*

In *Sebenko bere*, three types of affixes are stated (p.36-37): the prefixes, the infixes and the suffixes. The prefixes are in number of two: *la-, ma-* and the infixes are three: *-man-, -g-, -n-*. When we come to the suffixes, they are 27 which follow: *-ba, -baa/baga, -bali, -ka, -kɛ, -la/na, -la/na, -la/na, -la/na, -lan/nan, -len/nen, -li/ni, -ma, -man, -nan, -nci/nti, -ndi, -ngo, -nin, -ntan, -nu, -ta, -tɔ, tɔ, -un, -w, -ya.*

In *bamanankan sariyasun*, all the three types of affixes are stated: the prefixes, the infixes and the suffixes (p.40-44): we have three prefixes (*la-, ma-, sɔ-*). The infixes are in number of two: *-n-*, and *-man-*. The suffixes are 21: *-ba, -baa/baga, -bali, -ka, -la/na, -la/na, -la/na/ra, -lama/nama, -lan/nan, -len/nen, -ma, -man, -nci, -nin, -ntan, -li/ni, -ta, -tɔ, -tɔ, -w/lu/nu, -ya.* The analysis here will not bear on what is really an affix or what is not an affix among the lists. All these are already used in some way in bamanankan classes as affixes. We try to analyze what is common in all four books and we will work on these in this dissertation. Our first comment on the lists is that the number of common prefixes is three, and the types that appear commonly are: *la-, ma-, sɔ-*.

Only two books describe infixes. The other two do not mention them. We will work on the common number in both the books in which they are stated. We have then two infixes in them: *-n-* and *-man-*.

As far as suffixes are concerned the four books list them in differing numbers. The types that appear commonly among most of the books are chosen here. Thus, the following suffixes appeared to be the most common: *-ba*, *-baa/baga*, *-baatɔ/bagatɔ*, *-bali*, *-ka*, *-la/na*, *-la/na*, *-la/na*, *-la/ra/na*, *-lama/nama*, *-lan/nan*, *-len/nen*, *-li/ni*, *-ma*, *-man*, *-nan*, *-nin*, *-ntan*, *-ta*, *-tɔ*, *-tɔ*, *-w/lu/nu*, *-ya*.

Here is the table to recap the affixes

Table 3: the affixes

Type of affixe	Affixe	example
Suffixes	<i>-baa/baga</i>	Cibaa /cibaga
	<i>-baanci/baganci</i>	Banbaanci / banbaganci
	<i>-baatɔ/bagatɔ</i>	banabaatɔ / banabagatɔ
	<i>-bali</i>	fagabali
	<i>-ka</i>	Kulaka
	<i>-la/na</i>	Baarala/todunna
	<i>-la/na</i>	Morila / buranna
	<i>-la/na</i>	Duurula / tanna
	<i>-la/na</i>	tilela
	<i>-la/ra/na</i>	Farala/taara/nana
	<i>-lama/nama</i>	Jilama / dennama
	<i>-lan/nan</i>	Cilan /munnan
	<i>-lata/nata</i>	Hakililata
	<i>-len/nen</i>	Selen/dunnen
	<i>-li/ni</i>	Feereli/seginni
	<i>-ma</i>	Tuluma
	<i>-man</i>	Finman
	<i>-nan</i>	Naaninan
	<i>-nci</i>	Nkalonnci
	<i>-nin</i>	Jirinin
	<i>-ntan</i>	Bolontan
	<i>-ntanya</i>	Sentanya
	<i>-tɔ</i>	jitɔ
<i>-tɔ/tɔla</i>	bɔyɔ /bɔtɔla	
<i>-ta</i>	Nata	
<i>-ya</i>	Denya	
Prefixes	La-	Laboli
	Ma-	mabɔ
	sɔ-	sɔbɔ
Infixes	-n-	Furance
	-man-	Cemance

1. Typology of word formation with suffixes

Noun formation with suffixes

Suffixes are the most numerous affixes in bamanankan. They can help generate many words in the lexicon of bamanankan such as nouns, verbs, adjectives.

First, any suffix beginning with the letter “l” is assimilated by the nasalization in the syllable before it. That assimilation changes the “l” into “n”, e.g: *jɛgɛdunna* – fish eater”, in which we have “na” because “*jɛgɛdun*” has a nasalized syllable that transforms “la” into “na”. A second notion in the affix study is wherever one sees *-baa*, its full pronunciation is *-baga*. The consonant loss transforms *-baga* into *-baa* resulting from the loss of “g” between two vowels. The examples are mostly from the corpus books. Those which are not from them are specific in a way that it is worth to see them as example of a rule.

-ba: we form nouns, adjectives respectively from noun, and adjective stems with it. Its specificity is that it does not change the syntactic class of the word to which it is connected.

To form nouns from noun stems

e.g: mɔgɔ + -ba = mɔgɔba (great personality)

soke + -ba = sokeba (big horse)

To form adjectives from adjective stems

e.g: (golo) bilenman + -ba = bilenmanba (very red)

(wulu) fin + -ba = finba (very black)

(Sogo) timiman + -ba = timimanba (very sweet)

-baa/baga: we form nouns from noun stems with it.

e.g: na + baa- = nabaa (someone who is coming)

taa + -baa = taabaa (someone who is going)

sigi + -baa = sigibaa (someone who is sitting)

-baato/bagato: we form nouns from verb stems

e.g: girin + -baato = girinbaato (someone who is rushing)

segen + -baato = segenbaato (someone who is tired)

sunɔgɔ + -baato = sunɔgɔbaato (someone who is sleeping)

-bali: we form nouns from verb stems

e.g: se + -bali = sebali (someone who has not arrived)

kunun + -bali = kununbali (someone who is not awoken)

sigi + -bali = sigibali (someone who does not sit down)

-ka: we form nouns from nouns or adverb stems, and from noun + adjective stems with **-ka**.

To form nouns from noun stems

e.g: Ɗɛɛkɔrɔ + -ka = Ɗɛɛkɔrɔka (Ɗɛɛkɔrɔ people)

Sabalibugu + -ka = sabalibuguka (sabalibugu people)

Moritani + -ka = moritanika (moritanian)

To form nouns from adverb stems

Yen + -ka = yenka (someone from there)

Yan + -ka = yanka (someone from here)

To form nouns from noun + adjective stems

e.g: [yɔrɔ + jan] + -ka = yɔrɔjanka (someone from very far)

this case is a bit particular because it can be part of neither noun stem nor adjective stem. The noun **yɔrɔjan doesn't exist on its own as bound. But when it comes to bind **-ka** to an adjective (jan, surun), it appears to be compulsory to bind the adjective to the noun that precedes it.*

-la/na: we form nouns from noun stems, nouns from verb stems with **-la/na**.

To form nouns from a noun stem

It goes with stems that are compound nouns. Those compound nouns are composed of a noun and a verb.

e.g : cike + -la = cikɛla (farmer)

bagɛn + -la = bagɛnna (goat herder)

yɔrɔjɔɔsi + -la = yɔrɔjɔɔsila (cleaner)

It goes also with simple words if those words in the verb class do not go with the object before themselves.

e.g: baara + -la = baarala (someone who is working)

sɛnɛ + -la = sɛnɛla (someone who is growing a farm)

To form nouns from a verb stem

Here, the rule varies according to the transitivity of the stem verb. If the stem is a transitive or a reflexive verb, **-la** does not come directly to the bare stem. The stem is to be modified by another suffix **-li** before the binding of **-la**. If the stem is an intransitive verb, **-la** comes directly to bind itself to it.

Transitive verbs

e.g: bugɔ → bugɔli + -la = bugɔlila (someone who is beating)

lamɛn → lamɛnni + -la = lamɛnnina (someone who is listening)

Reflexive verbs

e.g: jɔ → jɔli + -la = jɔlila (someone who is standing up)

ko → koli + -la = kolila (someone who is washing)

min → minni + -la = minnina (someone who is drinking)

Intransitive verbs

e.g: sunɔɔ → sunɔɔla (someone who is sleeping)

boli → bolila (someone who is running)

-la/na: we form nouns from nouns with it. Those nouns include proper names, family names, and village names.

To form nouns from a noun stem

e.g : Ncila + -la = Ncila (village name)

Zan + -la = Zanna (village name)

Kulubali + -la = Kulubalila (kulubali's)

To form nouns from an adjective stem

**this case does not appear alone. We see it when there is an adjective to qualify the proper name. That adjective is also part of the proper name (we write them as whole word: Cɛbilen...). It is the same as getting nouns from nouns because Cɛbilen is a noun.*

e.g: [Nci+fin] + la = Ncifinna (village name)

[Baa+bilen] + -la = Baabilenna (village name)

[Zan+jan]+ -la = Zanjanna (village name)

-la/na: we form only nouns from numerals with it.

To form nouns from a numeral

e.g: duuru + -la = duurula (for five)

tan + -la = tanna (for ten)

kεmε + -la = kεmεla (for one hundred)

-la/ra/na:

They all belong to a group of suffixes called inflexion. They are then inflexional elements in conjugation of intransitive verbs and verbs of sentences in passive voice. They do not change or modify the word to which they are bound from a syntactic category to a new one like the other suffixes. They are just the marks of perfect tense to show that the action is accomplished. We will leave them out in most of our analyses because they are not semantical but only flectional. About the uselessness of the inflectional affixes in a semantic analysis, we support our argument with the following citation: “*inflection does not change either the grammatical category or the type of meaning found in the word to which it applies*” (O’ Grady, 1997).

-la: for verbs ending with a syllable containing “r/l” sound

e.g: dεrε (a dεrεla)

wuli (a wulila)

-na: for verbs ending with a nasal sound

e.g: segin (u seginna)

-ra: for verbs ending without “r/l” and nasal sound

e.g: taa (an taara so)

for the case of passive voice

e.g: a ye sogo tige (active voice) = sogo tige**ra** a fε (passive voice)

he cut the meat = *the meat has been cut*

u bɔra dugu kɔnɔ (active voice) = Bɔ kε**ra** dugu kɔnɔ u fε (passive voice)

they left the village = *the village has been left*

-lama/nama:

To form nouns from a noun stem

e.g:jakuma + -lama = jakumalama (like cat)

sogo + -lama = sogolama (like animal)

bɔn + lama = bɔnnama (like prey)

ji + -lama = jilama (like water)

To form nouns from an adjective stem

e.g:kura + -lama = kuralama (new)

fitinin + -lama = fitininnama (younger)

-lan/nan: to form nouns from noun stems

To form nouns from a noun stem

To do so, a compound noun is required to be the stem. That compound noun is composed of a noun and a verb.

e.g : e.g: jibɔ + -lan = jibɔlan (tool for pulling water)

bugɔlikɛ + -lan = bugɔlikɛlan (tool for beating)

To form nouns from a verb stem

e.g: da + -lan = dalan (tool to lay down on)

munun + -lan = mununnan (spatula)

wusu + -lan = wusulan (incense)

-len/nen:

To form nouns/adjectives from a verb stem

**the derived word is given either noun or adjective category according to the context in which it appears.*

e.g : mara + -len = maralen (kept)

ta + -len = talen (taken)

kunun + -len = kununnen (swallowed)

-li/ni:

To form nouns from a verb stem

e.g: sigi + -li = sigili (sitting)

tɛmɛ + -li = tɛmeni (passing)

taa + -li = taali (departure)

-ma:

To form nouns from a noun stem

e.g: tulu + -ma = tuluma (oilish)

kisɛ + -ma = kisɛma (seedy)

na + -ma = nama (with sauce)

-man:

To form nouns from a noun stem

e.g: muso + -man = musoman (woman)

cɛ + -man = cɛman (man)

To form nouns or adjectives according to the occurrence from an adjective stem

e.g: kura + -man kuraman (new)

farin + -man = fariman (spicy)

jɛ + -man = jɛman (white)

fin + -man = finman (black)

*when the adjective is ended by a nasal vowel, we sometimes note the loss of “n” when the suffix *-man* is bound to it.

-nan:

To form nouns from a numeral stem

e.g:saba + -nan = sabanan (third)

wɔɔɔ + -nan = wɔɔɔnan (sixth)

mugan + -nan = mugannan (twentieth)

-nin:

To form nouns from a noun stem

e.g:jiri + -nin = jirinin (small tree)

gafe + -nin = gafenin (small book)

dugu + -nin = dugunin (small village)

To form nouns or adjectives according to the occurrence from an adjective stem

e.g:bilen + -nin = bilenmannin (small red)

magan + -nin = magamannin (soft)

nɔɔɔ + -nin = nɔɔɔmannin (easy)

*those adjectives should be qualifying a noun for which the suffix **-nin** stands. If a qualified noun is to take **-nin**, then **-nin** will be bound to its adjective rather than the noun itself. For example, we do not say **sabaranin** bilenman, but we say **sabara bilenmannin**.

-ntan:

To form nouns from a noun stem

e.g: mɔgɔ + -ntan = mɔgɔntan (without parent)

cɛ + -ntan = centan (without husband)

juru + -ntan = juruntan (without rope)

-ta :

To form nouns from a verb stem

e.g: dun -ta = dunta (eatable)

minɛ + -ta = mineta (for taking)

tobi + -ta = tobita (for cooking)

-tɔ:

To form nouns from a noun stem

e.g:tin + -tɔ = tintɔ (on labor)

fiyen + -tɔ = fiyentɔ (blind)

kuna + -tɔ kunatɔ (leprous)

dadimi + -tɔ = datimitɔ (with mouthake)

-tɔ:

To form nouns from a verb stem

e.g: kasi + -tɔ = kasitɔ (weeping)

taama + -tɔ = taamatɔ (walking)

jeni + -tɔ = jenitɔ (burning)

-w/lu/nu

They all belong to a group of suffixes called inflexion. Like we saw with -la/ra/na, they do not change or modify the word to which they are bound from a grammatical category to a new one like the other suffixes. They are just the plural marks for nouns (-w), for an emphatic

subject pronoun (-lu), and for demonstratives (-nu). We will leave them out in most of our analyses because they are not semantical but only flectional.

For nouns

e.g: den + -w = denw

fini + -w = finiw

for subject pronoun

e.g: **olu** (olu nana bi) (they)

for demonstratives

e.g : min + -nu = minnu (which, who)

nin + -nu = ninnu (these)

-ya:

To form nouns from a noun stem

e.g: jεgε + -ya = jεgεya (state of fish)

bagan + -ya = baganya (state of animal)

den + -ya = denya (childhood)

To form nouns from an adjective stem

e.g: kolon + -ya = kolonya (being bad)

kura +-ya = kuraya (being new)

finman + -ya = finmanya (being black)

Verb formation with suffixes

-ya

To form verbs from a noun stem:

e.g: hɔrɔn + -ya = hɔrɔnya (honour of noble)

baliku + -ya = balikuya (adulthood)

To form verbs from an adjective stem

e.g: kalan + -ya = kalaya (heat)

kunba + -ya = kunbaya (being big)

suma + -ya = sumaya (slowness)

Adjective formation with suffixes

-ba:

o form adjective from a verb stem

e.g: bana + -ba = banaba (serious disease)

2. Typology of word formation with prefixes

The prefixes are few in number. There are just three, among which two are synonyms. We can only form verbs with them. The verb which is formed is always from a verb stem.

la-:

e.g: la- + mine = lamine (answer)

la- + sɔɔ = lasɔɔ (reach)

la- + baara = labaara (work on)

ma-:

e.g: ma- + bɔ = mabɔ (take/move away)

ma- + kɔnɔ = makɔnɔ (wait)

ma- + don = madon (come nearer)

sɔ-:

e.g: sɔ- + gɛɛ = sɔgɛɛ (come nearer)

sɔ- + don = sɔdon (come nearer)

sɔ- + bɔ = sɔbɔ (move away)

3. Typology of word formation with infixes

The infixes are very restricted in number, even more than the prefixes. We have exclusively two of them. Each one produces an exclusive limited number of derived words. For this reason, we leave them out after this subtitle. They are used to form nouns either between two nouns or between two adjectives.

To form nouns between a noun and a noun

-n-: fura + -n- + cɛ = furnace (interval)

sɛgɛ + -n- + ji = sɛgenji (liquid of potassium)

-man-: cɛ + -man- + cɛ = cɛmance (middle)

The second and last derived word of -man- is formed from the duplication of the first stem which is an adjective.

Jan + -man- + jan = janmanjan (tallest)

B. The occurrence of the affixes in the corpus

Corpus study requires scanning the text for terms. It is part of the methodology of lexicon research. Scanning for terms is defined with the following sentence:

Examen minutieux de textes relatifs au domaine étudié afin d'y relever les unités terminologiques et les données nécessaires à leur traitement, généralement en vue de l'établissement d'un répertoire terminologique¹. (*Vocabulaire systématique de la terminologie*, p. 43)

In a corpus study, it is necessary to have the selection of the testified document to be the sources of the information. All the sources constitute the documentation of the work. Following that step, comes the term identification step which is the looking for the type of occurrence you need in the text. We need the affix and the compound occurrences in the present work. For this section, we deal with the affixes and leave the compound to its corresponding subtitle.

However, we do a corpus study and find the occurrences of the affixes in our five book corpus. We have a five book corpus to do this analysis: *Depekərɔ ka tonnkan*, *Genkurunin*, *Wagadu fo Sudan*, *Cemandali Babilen*, and *Ngɔninkərɔ bama*. As a result of scanning these books for suffix derived words, we obtain the following numbers in the Table 4. The words that have been subject to derivation will be shown in the **appendix I**. However, the number of those derived words might not agree with the number given in the following table because we do not include the number of repeated derived words.

¹ **Translation:** meticulous analysis of texts related to the studied domain in order to pick out the terminological units and the linked data necessary in their treatment, generally for the purpose of setting up a terminological collection.

Table 4: Number of Suffix Occurrence in the corpora

Suffixes	Gɛnkurunin	Wagadu fo Sudan	Cɛmandali Babilen	Ngɔninkɔrɔ bama	Ɖɛpɛkɔrɔ ka Tonkan
-ba	324	38	22	18	660
-baa/baga	2	6	6	3	13
-baatɔ/bagatɔ	0	1	1	0	0
-bali	2	1	1	2	14
-ka	4	2	0	0	2
-la/na (cikela)	5	8	4	0	14
-la/na (baalola)	43	19	3	0	33
-la/na (duurula)	0	0	0	0	2
-lama/nama	0	0	0	0	0
-lan/nan	6	0	1	0	5
-len/nen	149	130	68	29	377
-li/ni	26	52	10	2	75
-ma	14	15	3	1	0
-man	65	68	17	20	111
-nan	7	8	4	5	33
-nin	112	13	34	30	223
-ntan	1	1	0	4	2
-ta	9	1	3	0	12
-tɔ (dimitɔ)	5	2	1	0	2
-tɔ (wulitɔ)	19	9	13	1	44
-ya	72	142	46	38	173
Absolute frequencies	863	516	237	153	1795

Table 5: Number of Prefix Occurrences in the corpora

Prefixes	Gɛnkurunin	Wagadu fo Sudan	Cɛmandali Babilen	Ngɔninkɔrɔ bama	Ɖɛpɛkɔrɔ ka Tonkan
La-	62	90	0	10	72
Ma-	15	5	21	0	29
sɔ	0	0	0	0	0
Total	77	95	21	10	101

1. The occurrence in Gɛnkurunin

The suffixes

In Gɛnkurunin, the addition of the number of all the 21 suffixes gives us a sum of 863 suffix occurrences and as matter of course, the same number of derived words. That number is called the absolute frequency (see footnote 2, p.36, for definition of *absolute frequency*) of suffixes.

The suffix with the highest occurrence number is **-ba** with 324 derived words. **-ba** is thus the most frequent suffix in the corpus. The second most frequent suffix is **-len/nen** with 149 derived word occurrences. The third rank in high frequency goes to **-nin** which produced 112 derived words. **-nin** is followed by **-ya** with its 72 derived word occurrences. The lowest

occurrence number comes to **-ntan** which has only one derived word in the whole book. The suffix **-ntan** is then the hapax (see subtitle 2, p.36 for definition of *hapax*) in the book.

The prefixes

In Genkurunin, the addition of the number of all the 3 prefixes makes a sum of 77 prefix occurrences and as matter of course, the same number of derived words. It is then the absolute frequency of prefixes in the book.

The prefix that has the highest occurrence number is **la-** with 62 derived words. **La-** is then the most frequent prefix in the corpus. The prefix that follows **la-** in number is **ma-** with 15 derived word occurrences. The prefix **sɔ-** is missing in the corpus. It is the very infrequent prefix (see subtitle 2, p.36 for definition of *very infrequent*).

2. The occurrence in Wagadu fo Sudan

The suffixes

In *Wagadu fo Sudan*, the sum of the occurrence number of the suffixes makes 516 suffix derived words which number is the absolute frequency.

The most frequent suffix goes to **-ya** with 142 derived word occurrences. The suffix which follows the most frequent is **-len/nen** which has 130 occurrences. The lowest occurrence is once again a hapax that goes to many suffixes among which we have **-bali**. Some suffixes do not have any occurrence at all. They are then the very infrequent suffixes in the book among which, we have **-lan/nan**.

The prefixes

For the prefixes, the absolute frequency is 95. The most frequent prefix goes to **la-** with 90 derived word occurrences. The lowest occurrence is **ma-** with 5 derived words. The last prefix **sɔ-** has no occurrence at all. It is the very infrequent prefix in the book.

3. The occurrence in Cɛmandali Babilen

The suffixes

In Cɛmandali, we have 237 as absolute frequency of suffixes. The suffix which is more frequent is **-len/nen** which has 68 derived words. The suffix **-ya** follows **-len/nen** with a number of 46 derived words.

The hapax goes to **-bali** like other suffixes which have all 1 derived words. When the very infrequent suffixes are concerned, **-ka** is one of them.

The prefixes

For the prefixes, their absolute frequency is 21. The most frequent prefix is **ma-** with 21 derived word occurrences. The remaining two prefixes have no occurrence in the book. They are then the very infrequent prefixes in the book.

4. The occurrence in Ngɔninkɔrɔ bama

The suffixes

In Ngɔninkɔrɔ bama, the absolute frequency of the suffixes is 153. The suffix which is more frequent is **-ya** with 38 derived word occurrences. It is followed in number by **-nin** which has 30 occurrences. The hapax goes to many suffixes among which we have **-ma**. Some suffixes do not have any occurrence at all. We have a lot of very infrequent suffixes like **-ta**.

The prefixes

The prefixes in Ngɔninkɔrɔ bama are distributed with 10 as their absolute frequency. The most frequent prefix is **la-** with 10 derived word occurrences. The remaining two prefixes are the very infrequent prefixes in the book.

5. The occurrence in Dɛɛkɔrɔ ka Tonnkan

The suffixes

In Dɛɛkɔrɔ ka Tonnkan, we have 1795 as the absolute frequency. The most frequent suffix is **-ba** which has 660 derived words. The suffix **-len/nen** follows **-ba** with a number of 377 derivated words.

There is no hapax in Dɛɛkɔrɔ ka Tonnkan. As for the very infrequent suffixes, **-lama/nama** is among those which have 0 occurrences.

The prefixes

The prefixes in Dɛɛkɔrɔ ka Tonnkan are distributed with 101 as their absolute frequency. The most frequent prefix is **la-** with 10 derived word occurrences. The remaining two prefixes are both the very infrequent prefixes in the book.

6. Interpretation of the total numbers

Here we deal with the total sums of the occurrences in each book and the general occurrence in the five book corpus. The following tables show the figures.

Table 6: Total of Suffix and Prefix Occurrence in the books

Book titles	Suffix number	prefix number	Total of derived word
Genkurunin	863	77	940
Wagadu fo Sudan	516	95	611
Cɛmandali Babilen	237	21	258
Ngɔninkɔrɔ bama	153	10	163
Dɛɛɛkɔrɔ ka Tonnkan	1795	101	1896
Total in the five book corpus	3564	304	3868

Table 7: percentage of suffix and prefix occurrences versus full word number

Book titles	Word number	Suffix number	%	prefix number	%
Dɛɛɛkɔrɔ ka Tonnkan	47 518	863	1,816	77	0,162
Genkurunin	19 499	516	2,646	95	0,487
Wagadu fo Sudan	14 853	237	1,595	21	0,141
Cɛmandali Babilen	8 015	153	1,908	10	0,124
Ngɔninkɔrɔ bama	4 090	1795	43,887	101	2,469
Total	93 975	3564	3,792	304	0,323

Table 8: total of derived word occurrence number and its percentage

Book titles	Word number	Suffix number	prefix number	Derived word number	%
Dɛɛɛkɔrɔ ka Tonnkan	47 518	863	77	940	1,978
Genkurunin	19 499	516	95	611	3,133
Wagadu fo Sudan	14 853	237	21	258	1,737
Cɛmandali Babilen	8 015	153	10	163	2,033
Ngɔninkɔrɔ bama	4 090	1795	101	1896	46,356
Total				3868	4,115

In the five book corpus, the number of suffix occurrences is 3564. The prefix occurrences are 304. Now, affix occurrences in our five book corpus are 3 868. That number is the absolute frequency of affixes in our five book corpus. We subtract that number from the word absolute frequency 93 975. Then we get 90107 as the remainder. That remainder is the total word occurrence in the five book corpus excluding the affixes.

II. Compounding morphology

The book *Introduction à la lexicologie, sémantique et morphologie* says that “*la composition consiste à former un mot en assemblant deux ou plusieurs mots* » (p.217) – (compounding consist of forming one word by combining two or more words together).

A. Inventory of the compounds

As matter of definition, the word “compound” is defined as follows: “*a compound is a unit of vocabulary which consists of more than one lexical stem*”, the CEEL, (p.129). We chose three pages in each book of the corpus as the sample pages representing the whole book. We inventory the compounds in these three pages and extend the results from the sample pages to the whole book with a rough calculation to get the approximate number of compound occurrences in each book. The three sample pages (see in the appendix II) from the corpora have some selections with symbols.

1. Compound occurrence number in the corpora

From the inventories, we observed two kinds of compounds: the non-hyphenated compounds and the hyphenated compounds. But it is clear that most of the compounds are non-hyphenated. This is a feature of orthography and therefore we do not emphasize it.

In *Ɖɛɛkɔrɔ ka Tonnkan*, we found 11 compounds in the first sample page, 14 in the second sample page and 8 in the third. The highest occurrence of compounds is 14 in the second sample page. The median number is 11 in the first page and the lowest is 8 in the third sample page. When we add the number of the three pages, we get a number of 33 compound occurrences.

To know how many compounds occurred in the book, we multiply the number of the book pages 271 by the median number of the sample pages 11. Thus there are 2981 compound occurrences among 47 518 total words in the book.

In *Genkurunin*, the number of hyphenated compounds is 13 in the first sample page, 22 in the second and 19 in the third one. The highest occurrence belongs to the second sample page whereas the median and the lowest belong respectively to the third and the first. The addition of those figures makes 52 compounds in the sample pages (see Appendix II).

To know how many compounds occurred in the book, we multiply the total number of the book pages 127 to the median number of the sample pages 19. We then get 2413 compound occurrences among 19 499 total words in the book.

The book *Wagadu fo Sudan*, has 31 compounds occurrence in its first sample page, 21 in the second and 15 occurrences in the third page. Its highest number of occurrence is the first sample page. The medium occurrence is in the second page while the lowest is in the third one. The addition of the figures gives 67 compounds occurrence in the sample pages.

To know how many compounds occurred in the book, we multiply the total number of the book pages 89 by the average total number of the sample pages 21. We then found 1869 compound occurrences among 14 853 total words in the book.

In Cɛmandali Babilen, 34 compounds occurred in the first sample page which is also the highest occurrence among the three pages. The medium occurrence is in third page which has 24 compound occurrences whereas the lowest occurrence is in the second sample page where we found 20 occurrences. By adding the figures, we get 78 compound occurrences in the whole sample.

In total, we found 960 approximate compound occurrences in the book after a multiplication of the average number among the sample pages and the number of the pages of the book.

In the epic book Ngɔninkɔrɔ bama, we counted 21 compound occurrences in its first sample page. It is the highest occurrence. The second page has 15 occurrences which is lowest occurrences and the third page has 19 occurrences which is the middle. The addition of the three book pages makes 56 compound occurrences in the sample pages.

To know how many compounds occurred in the book, we multiply the total number of the book pages 36 to the average total number of the sample pages 19. We determined 684 compound occurrences among 4 090 total words in the book.

When we consider the written form of the compounds in all the books, we observe most compounds without hyphen though both hyphenated and non-hyphenated compounds exist in the orthography of bamanankan. Very few hyphenated compounds appear in the sample pages. Interestingly, there are no hyphenated compounds in the three sample pages of Ɗɛɛkɔrɔ ka Tonkan or in Ngɔninkɔrɔ bama, whereas we have 33 and 53 non hyphenated compounds respectively in each of them. In the other three books of the corpus, just one hyphenated occurrence appears in their sample pages. One occurrence is trivial in an environment where occurs 66, 53 and 77 non-hyphenated compounds respectively in Genkurunin, Wagadu fo Sudan and Cɛmandali Babilen. This is the proof that hyphenated words are far less numerous than the non-hyphenated ones.

Table 9: Number of Compound Occurrences in the three sample pages

Book titles	Occurrences				Written form	
	high	Median	Low	Total number	Hyphenated	Non hyphenated
Ɗɛɲɛkɔrɔ ka Tonnkan	14	11	8	33	0	33
Genkurunin	22	19	13	52	1	51
Wagadu fo Sudan	31	21	15	67	1	66
Cɛmandali Babilen	34	24	20	78	1	77
Ngɔninkɔrɔ bama	21	19	16	56	0	53

2. Frequency of the compound occurrence

In scanning a corpus for terms, there are some words that appear frequently. Some others appear less frequently than the first one. In contrast, we have some words that occur only once in the whole corpus. That latter is called the **hapax**: “*mot, forme ou expression dont on ne peut pas relever qu’un exemple dans un corpus défini*¹” – word, form or syntagm of which it is possible to find only one example in a defined corpus. The words that occur less than the most frequent one and more than the hapax is given the label **rare**: *marque de fréquence indiquant qu’un terme est peu usité ou d’un emploi peu fréquent* – frequency label indicating that a term is less used or is of a less frequent usage, (same source as hapax, p.48).

The words that occur regularly have a higher frequency. As far as this frequency of word occurrence is concerned, it is a question of absolute frequency and relative frequency. Lehmann defined both frequencies in the following citation:

La fréquence absolue est le nombre d’occurrences dans un corpus. La fréquence relative est donnée par la relation avec la fréquence dans un ensemble englobant pris comme référence. Par exemple, on peut comparer la fréquence d’un mot dans Madame Bovary avec la fréquence de ce mot dans les romans du XIX^e siècle, ou avec la fréquence de ce mot dans l’ensemble du corpus de FRANTEXT².
(Introduction à la lexicologie, sémantique et morphologie, p.26).

Sometimes there is no occurrence at all of a given word in the whole corpus. This term is called the **very infrequent term**. That case is defined as a – “*marque de fréquence indiquant qu’un terme est extrêmement rare ou non attesté hors des dictionnaires*” (*vocabulaire systématique de la terminologie*, p.48) – frequency label indicating that a term is extremely rare or is not attested except in the dictionaries.

The absolute frequency is the point of interest in this work. We look for the absolute frequency of the compound in our five book corpus.

¹ Québec, Vocabulaire systématique de la terminologie, p.42.

² **Translation:** The absolute frequency is the occurrence number in a corpus. The relative frequency is given in relationship with the frequency in a global collection taken as reference. For instance, we may compare the frequency of a word in Madame Bovary to the frequency of that word in the novels of the XIXth century, or to the frequency of that word in the collection of FRANTEXT corpus

In *Ɗɛɛkɔrɔ ka Tonnkan*, the absolute frequency of the compounds is estimated to be 2981. The compound that has the highest occurrence number is **cɛkɔrɔba** (old man) which occurred 5 times but just in the three sample pages. The hapax cannot be taken into consideration since the hapax in the three sample pages cannot stand for the whole book.

In *Genkurunin*, 2413 compounds is the absolute frequency. In its three sample pages, the compound which has the most frequent occurrence is **sokɛ** (horse) which occurs 13 times.

In *Wagadu fo Sudan*, 1869 is the absolute frequency. In its three sample pages, the most frequent compound is **Desekɔrɔ** (proper name) that occurs 7 times.

In *Cɛmandali Babilen*, the absolute frequency of compound is 960. The word that has the highest frequency in its three sample pages is **Babilen** (proper name) that occurs 14 times.

In *Ngɔninkɔrɔ bama*, the compound's absolute frequency is 684. In its three sample pages, the most frequent compound is **dugutigi** (village chief) which occurs 11 times.

Table 10: Compound absolute frequency in the corpora

Books titles	Absolute frequency	Compound absolute frequency	%
<i>Ɗɛɛkɔrɔ ka Tonnkan</i>	47 518	2981	6,273
<i>Genkurunin</i>	19 499	2413	12,374
<i>Wagadu fo Sudan</i>	14 853	1869	12,583
<i>Cɛmandali Babilen</i>	8 015	960	11,977
<i>Ngɔninkɔrɔ bama</i>	4 090	684	16,723
Total numbers in the corpora	93 975	8907	9,478

3. Syntactic category of the compounds

The syntactic category of a word is the class to which it belongs. We have several denominations for the notion: grammatical class, syntactic class or lexical class. Lehmann and Martin-Berthet wrote the following statement about the number of grammatical classes in French language:

En français, la tradition grammaticale reconnaît huit classes de mots, appelées aussi parties du discours : nom, verbe, adjectif, déterminant, pronom, adverbe, préposition, conjonction¹.

(Introduction à la lexicologie, sémantique et morphologie, Armand Colin, 2008, p.19)

For example, a word that takes *-s* in plural in English is part of the noun category. Although we have many grammatical classes in bamanankan, the examination in this part of the dissertation is limited to those which are seen in the sample pages.

¹ **Translation:** in French, grammatical tradition recognizes eight word classes, also called parts of speech: noun, verb, adjective, determiner, pronoun, adverb, preposition, conjunction.

In the book *Ɖɛɛkɔrɔ ka Tɔnnkan*, with 33 total compounds word occurrences, 31 are in the noun class. The remaining 2 are in verb class. The other classes have no occurrence in the three sample pages. This is proof that their compound occurrence is very minimal even in the entire book.

In *Ɛɛnkurunin*, with 52 total occurrences, 48 are nouns, 3 are verbs and 1 is a idéophone.

In *Wagadu fo Sudan*, with 67 total occurrences, 57 are nouns, 7 are verbs, 1 is an adverb, 1 is an adjective and 1 is a conjunction.

With 78 total occurrences in *Cɛmandali Babilen*, 72 are nouns, 2 are verbs, 2 are adverbs, 1 is adjective and 1 is conjunction.

In *Ngɔninkɔrɔ bama*, with 56 total occurrences, 48 are nouns, 7 are verbs and 1 is conjunction.

By extending the detailed account to the whole book, we can say that in each three pages of the book, we have probably each class with its respective occurrence number in the sample pages. We then divide the total number of pages in each book by 3 to get the number of three-page samples in the book. We then multiply the occurrence number of each class in the sample pages to the quotient (number got from the division).

We divide (271 pages) by (3 sample pages) which gives (90 three pages) in *Ɖɛɛkɔrɔ ka Tɔnnkan*; 127 by 3 which gives 42 in *Ɛɛnkurunin*; 89 by 3 which gives 29 in *Wagadu fo Sudan*; 40 by 3 which gives 13 in *Cɛmandali Babilen*; 36 by 3 which gives 12 in *Ngɔninkɔrɔ bama*.

Next the multiplication step follows.

For noun class, we have 31 (compound noun occurrences) times 90 (three pages) which makes 2790 compound noun occurrences in *Ɖɛɛkɔrɔ ka Tɔnnkan*; 48 times 42 which makes 2016 in *Ɛɛnkurunin*; 57 times 29 which makes 1653 in *Wagadu fo Sudan*; 72 times 13 which makes 936 in *Cɛmandali Babilen*; 48 times 12 which makes 576 in *Ngɔninkɔrɔ bama*.

For verbs, we have (2 compound verb occurrences) times (90 three pages) which makes (180 compound verb occurrences) in *Ɖɛɛkɔrɔ ka Tɔnnkan*; 3 times 42 which makes 126 in *Ɛɛnkurunin*; 7 times 29 which makes 203 in *Wagadu fo Sudan*; 2 times 13 which makes 26 in *Cɛmandali Babilen*; 7 times 12 which makes 84 in *Ngɔninkɔrɔ bama*.

For adjectives, we have 1 (compound adjective occurrence) times 29 (three pages) which makes 29 compound adjective occurrences) in Wagadu fo Sudan, and 1 times 13 which makes 13 in Cɛmandali Babilen. The other books have no compound adjective occurrences in their sample pages.

For adverbs, we have (1 compound adverb occurrence) times (29 three pages) in Wagadu fo Sudan which makes (29 compound adverb occurrences) in it, and 2 times 13 which makes (26 compound adverb occurrences) in Cɛmandali Babilen. The other books have no compound adverb occurrences in their sample pages.

For conjunctions, we have (1 compound conjunction occurrence) times (29 three pages) which makes (29 compound conjunction occurrences) in Wagadu fo Sudan; 1 times 13 which makes 13 in Cɛmandali Babilen; 1 times 12 which makes 12 in Ngɔninkɔrɔ bama. The other books have no compound conjunction occurrences in their sample pages.

For ideophones, we have (1 ideophone occurrence) times (42 three pages) which makes (42 compound ideophone occurrences) in Gɛnkurunin. The other classes have no compound ideophone occurrence in the sample pages. The table 11 below recapitulates the figures.

Table 11: Occurrence number of the compound's syntactic classes in the sample pages

Book titles	Whole number of compound occurrences	Occurrence numbers per classes					
		Nouns	Verbs	adverbs	adjectives	Conjunctions	Ideophones
Dɛɲɛkɔrɔ ka Tonkan	33	31	2	0	0	0	0
Gɛnkurunin	52	48	3	0	0	0	1
Wagadu fo Sudan	67	57	7	1	1	1	0
Cɛmandali Babilen	78	72	2	2	1	1	0
Ngɔninkɔrɔ bama	56	48	7	0	0	1	0
Total numbers in the corpora	286	256	21	3	2	3	1

Table 12: total number of the word grammatical classes of the corpora (the cells containing the hyphen mean there is no occurrence for the corresponding class and corpus)

Book titles	nouns	verbs	Adjective	adverbs	conjunctions	Ideophones
Dɛɲɛkɔrɔ ka Tonkan	2790	180	-	-	-	-
Gɛnkurunin	2016	126	-	-	-	42
Wagadu fo Sudan	1653	203	90	29	29	-
Cɛmandali Babilen	936	26	13	26	13	-
Ngɔninkɔrɔ bama	576	84	-	-	12	-
Total numbers in the corpora	7971	619	103	55	54	42

So, in our sample pages, we have discovered six grammatical classes which are: noun, verb, adjective, adverb, ideophone and conjunction. These classes might be the mostly part of the grammatical classes in bamanankan or at least might be the classes that are mostly favorable to compounding. Nouns and verbs are found in each corpus but the remaining classes are not found in every corpus.

Nouns rank first with an occurrence number of 256 from a total of 286 occurrences in the sample pages of the corpora. Their occurrence number is higher than the one of the other classes in every corpus. After nouns, verbs come in the next higher number.

4. Number of elements in compounds

We are talking about the number of morpheme that composes the compounds. The selected words in bold-italic and highlighted in our sample pages (see appendix II), will serve as examples. When we need some other features that do not exist in the sample pages, we select those from other pages in the corpora.

The number of morphemes in the compounds ranges from two up to potentially an extreme number. Here, the word morpheme stands for only one of its references: the lexical morpheme. In case we have a grammatical morpheme (affix) in a compound, we will take only the lexical morpheme part and leave the affix. For example, the word *bamananmusow* in the corpora will be taken without *-w* in the examples below. From three morpheme compounds going upward, the occurrence becomes less and less frequent until some books lack a single example in some groups. Here the titles of the books are abbreviated: *Ɗɛɛkɔɔ ka Tonŋkan* (Ɗ.T), *Ɗɛkɔɔrunin* (G.), *Wagadu fo Sudan* (W.S), *Cɛmandali Babilen* (C.B), *Ngɔninkɔɔ bama* (Ng.B).

e.g:

Two morpheme compounds

- | | | |
|------------|---|---|
| Ɗ.T | { | <p><i>cɛfini</i> = <i>cɛ</i> (man) + <i>fini</i> (cloth)</p> <p><i>kɛlɛmasa</i> = <i>kɛlɛ</i> (war) + <i>masa</i> (king)</p> <p><i>hɔrɔnmuso</i> = <i>hɔrɔn</i> (noble) + <i>muso</i> (woman)</p> |
| G. | { | <p><i>jelikuma</i> = <i>jeli</i> (griot) + <i>kuma</i> (speech)</p> <p><i>dawolo</i> = <i>da</i> (mouth) + <i>wolo</i> (skin)</p> <p><i>jiriju</i> = <i>jiri</i> (tree) + <i>ju</i> (trunk)</p> |

W.S { worodugu = woro (kola) + dugu (village/country)
 sanudaba = sanu (gold) + daba (hoe)
 keletigi = kele (war) + tigi (owner)

C.B { babilen = ba (dad) + bilen (red)
 finiko = fini (cloth) + ko (washing)
 denke = den (child) + ke (male)

Ng.B { kalanden = kalan (learning) + den (child)
 tilebin = tile (sun) + bin (fall)
 dugutigi = dugu (village) + tigi (owner)

Three morpheme compounds

D.T { kelemasaden = kele (war) + masa (king) + den (child)
 furakenebugu = fura (leave) + kene (alive) + bugu (hut)
 dugujekan (p.165) = dugu (village) + je (clear) + kan (sound)

G. { darokuma = da (mouth) + ro (in) + kuma (speech)
 kininfekere = kinin (right) + fe (by) + kere (side)
 sinjisira = sin (breast) + ji (water) + sira (road)

W.S { Sigiyoꝛoyelema = Sigi (sit) + yoꝛo (place) + yelema (change)
 koꝛonyanfan = koꝛon (east) + yan (here) + fan (direction)
 marifalakere = marifa (shotgun) + la (with) + kele (war)

C.B { noꝛkanda = no (impact) + kan (on) + da (lay)
 misigenfula (p.14) = misi (cow) + gen (herding) + fula (Fulani)
 finikominen (p.14) = fini (cloth) + ko (washing) + minen (container)

Ng.B { donsokuntigi = donso (hunter) + kun (head) + tigi (owner)
 musoꝓumanko = muso (woman) + ꝓuman (good) + ko (thing)
 filenfatiga = filen (calabash) + fa (fill) + tiga (peanut)

Four morpheme compounds

D.T { maakuntigemuru (p.10) = maa (human being) + kun (head) + tige (cut) + muru (knife)
 musokoꝛoꝛbasigiyoꝛo (p.82) = muso + koꝛoꝛba (old) + sigi (sit) + yoꝛo (place)

W.S soꝛakuntigi = so (horse) + fa (trainer/father) + kun (head) + tigi (owner)

C.B {

- dεgeminnajama = dεgε (porridge) + min (drink) + na (at) + jama (crowd)
- musokərəkunnaamu = muso + kərɔ (old) + kun (head) + naamu (plait)
- npogotigikundigi (p.13) = npogo (short) + tigi (owner) + kun + digi (plait)

Six morpheme compounds:

D.T tilesenkuncεfoli = tile (sun) + se (reach) + n (I) kun (head) + cε (middle) + foli (greeting)

B. The order in compounding

The order of the morpheme in a compound varies from language to language. In French for example, the current order is the **base word + determinant**¹. That is what we see in the word **pied-de-biche** (nail puller) in which compound, *pied* is the base word and *biche* is its determinant. In English, things do not happen in that same way. In that language, the common order of morphemes of the compound is *determinant + base word*. The word *sailboat* is an example of such order.

As far as bamanankan is concerned, the element order in its compounds is more like the English one than the French one. Words such as *jelikuma*, *dugutigi*, *nawaati* have all their determinants in the first rank before their base words in the last rank. The order is generally the same everywhere. In the following examples taken from the sample pages, details about this matter are given. The examples might be more numerous and less numerous from one section to another. This relates to the number of features to be displayed.

e.g:

Order in nouns

bamananmuso = bamanan (determinant) + muso (base word)

cεfini = cε (determinant) + fini (base word)

nparidingε = npari (determinant) + dingε (base word)

kelemasa = keλε (determinant) + masa (base word)

Baramaηolo = Barama (determinant) + ηolo (base word)

Јaaηolo = Јaa (determinant) + ηolo (base word)

¹ A determinant is defined in *vocabulaire systématique de la terminologie*, (p.40), as an element of a lexicalized syntagm that specifies the generic expressed by the base word whereas a base word is an element of a lexicalized syntagm that constitutes the generic in relation with the meaning of the complete term. In a word like *motorbike*, it is *motor* which is the determinant of *bike* which latter is the base word.

Order in verbs

kumabɔ = kun (determinant) + ma + bɔ (base word)

cɛtigɛ = cɛ (determinant) + tigɛ (base word)

ɲɛnabɔ = ɲɛ (determinant) + na + bɔ (base word)

daminɛ = da (determinant) + minɛ (base word)

ɲɛsin = ɲɛ (determinant) + sin (base word)

faamanɔɔni = faama (determinant) + nɔɔni (base word)

Order in adjectives

Farinjugu = farin (base word) + jugu (determinant)

Order in adverbs

Kojugu = ko (determinant) + jugu (base word)

Kosɛbɛ = Ko (determinant) + sɛbɛ (base word)

Order in conjunctions

Kabini = kabi (base word) + ni (determinant)

Order in ideophones

kɔlikɔli-kɔlikɔli = kɔlikɔli (base word) + - + kɔlikɔli (determinant)

C. Category of the morphemes

Since a compound is two or more words bound in one, there is sometimes question about what is the grammatical category of the elements within it. The grammatical categories of some compounds from our sample pages are analyzed to determine the categories of their elements. We limit ourselves to only two morpheme compounds.

e.g:

Noun + Noun (N + N)

Kɛlɛmasa (veteran) = Kɛlɛ + masa

Baramaŋolo (proper name) = Barama + ŋolo

Noun + verb (N + V)

Dabiri (upset) = da + biri

Tilebin (south) = tile + bin

Noun + Adjective (N + A)

Ncikərə (proper name) = Nci + kərə

Babilen (proper name) = Ba + bilen

Verb + Noun (V + N)

Teməko (relating to passing) = Temə + ko

Nawaati (coming hour) = na + waati

Adjective + Verb (A + V)

dumanfə (saying good word) = duman + fə

Adverb + conjunction (A +C)

Kabini (since) = kabi + ni

Adverb + Postposition (Ad + P)

yanninnə (here) = yannin + nə

CHAPTER IV: Semantics of the lexicon

The semantics of the lexicon of a language is all about the meaning of the lexical units in it. According to Lehmann, “*la sémantique lexical étudie l’organisation sémantique du lexique: elle analyse le sens des mots et les relations de sens qu’ils entretiennent entre eux*” – (the lexical semantics studies the semantic layout of the lexicon: it analyzes the meaning of words and the meaning relationships that they have between each other).

Such study is going to be applied to bamanankan in this part of the dissertation. That is to say, we deal with the semantic features of the lexicon now.

I. The semantics of the derived words

A. meaning in affixes

The affixes will be treated by explaining their meaning. Some features in the wordscope of derived word will be treated with some affixes. There is to say that we deal with the polysemic features of the word. The denotation and the connotations¹ of the words will be supplied. Some of the connotations might be only contextually relative to the corpus. In this part, the abbreviations such as DT, Gk, WS, CB, NgB stand respectively for the full words Dɛɲɛkɔrɔ ka Tonkan, Gɛnkurunin, Wagadu fo Sudan, Cɛmandali Babilen, Ngɔninkɔrɔ bama. The sign (=) introduces the English translations. The examples listed without sources are mine because of a lack in the corpora. We divided the affixes in each of the five books. The first group goes with the suffixes whose frequencies are enormous in each five books: **-ba**, **-len/nen**, and **-ya**. The second group includes the rest of the suffixes except **-tɔ** (wulitɔ) because that latter is a flexion feature.

1. meaning in suffixes

First group of suffixes

-ba:

Denotation: the denotation of the derived words with **-ba** is to express the bigness of the size pertaining to the amount of the stem.

e.g: sokɛba: **sokɛba** in nana ka n’i jɔ a kɛɛ fɛ, DT, p.136 = that big horse came and stopped near him.

¹ The denotation and the connotation are defined in *Introduction à la lexicologie, sémantique et morphologie*, p.36 to be: « la denotation est l’extension d’un signe, et la connotation son intension » - the denotation is the extension of a sign, and the connotation its intension.

banansunba: Jelike nana i jɔ **banansunba** in kɔrɔ, Gk, p.85 = the griot came and stopped under the big “banasun” (name of a tree).

To recognize the denotation of a **-ba** derived word from its connotation in bamanankan, you use the stem without **-ba** with a synonym of **-ba** like the adjective **belebele** or **kunbaba**. This permits you to identify the denotation from the connotation. If the substitution doesn't change the meaning of the stem with **-ba**, then **-ba** is used with its denotation. On the other hand, if the substitution does change the meaning of the stem with **-ba**, **-ba** is then used with its connotation.

Application of the substitution:

e.g: sokɛba / banansunba

sokɛ belebele in nana... // that big horse came... (no change in the meaning)

....i jɔ **banansun belebele** in kɔrɔ // ...stopped under that big “banan” tree (no change in the meaning).

Connotations: it has several connotations depending on the context. We supply some here from our corpus like when it is: used with the rank connotation, used with the degree connotation or used to express the type, the species among a whole.

Used with the rank connotations

- age rank or hierarchy order based on the age: that connotation of **-ba** is used to express the distinction between namesakes. The main feature is the old age of the body, not its bigness. The connotation is induced by the analogy of the natural bigness and smallness between a pair of person in which one is older and another younger only during the childhood. That natural analogy changes through the time, and the one called big might not be the bigger of the two but still be the older. It is then a metaphor based meaning.

e.g: Bukeyi kɔrɔba: Kala Bukeyi kɔrɔba ko Kala Bukeyi ncinin ma ko a k'a fɔ ko mɔgɔw ka don so kɔnɔ sa,... Gk, p.51 = Kala Bukeyi the older gave the order to Kala Bukeyi the youngest to tell to people to get in the room, ...

Burama kɔrɔba: Burama kɔrɔba ko: Burama ncinin! A ko naamu, Gk, p.24 = Burama the oldest said: Burama the youngest! He answered.

Application of the substitution: Bukeyi kɔrɔ belebele ko... (change in the meaning)

- **honor rank or glory from the privilege to the honor of the profession:** that connotation of **-ba** is used to express paying tribute to the honor or profession.

jeliba: jeliba mandi, masamusow k'i ka na koyi, DT, p.100 = venerable griot the great, the royal ladies do ask you to come.

maaba: ..., a seginna ka ke maaba ye, ka ke fentigi ye, WS, p.54 = he returned and earned fame, and became prosperous.

Application of the substitution: jeli belebele mandi, ... (change in the meaning)

*NB: wherever the change occurs in the meaning of the derived word through the substitution is the proof that **-ba** is used with its connotation there.*

- **knowledge rank or hierarchy based on the intellectual status:**

e.g: donso kərɔba: kuma jira donsow bæe o bæe la, donso kərɔba fara donso ncinin kan , NgB, p.9 = address the speech to him who is hunter, both master hunter and student hunter.

kalanden kərɔba: a' ye kalanden kərɔba wele!, NgB, p.16 = call the senior disciple!

Used with the degree connotation

That connotation of **-ba** is used to express the level of fulfilment of something by someone. It does not bear on the size of the body of the bearer, but his activity or behavior.

e.g: **silameɓa:** Askia Muhaməd tun ye **silameɓa** ye, WS, p.23 = Askia Mohamed was a pious Moslem.

(Kələmasa) juguba: a fa ye kələmasa **juguba** ye, DT, p.62 = his father is a fearsome warrior

Dənnikələba: Delafəsi tun ye dənnikələba ye , WS, p.49 = Delafosse was a great scientist

Some words still have their denotation in force in addition to their connotations. Their connotations are usually for expressing shared tools, community properties.

pamantonba:

denotation: big or huge heap of garbage

connotation: community heap of garbage

e.g: ... u nana se namantonba in ma, DT, p.181 = they arrived at the community heap of garbage.

Used to express the type, the species among a whole:

Dulokiba:

Denotation: any big shirt that fits loosely the body.

Connotation: type of shirt which is always big-scaled compared to the rest of the shirts that are always small-scaled, usually called "boubou".

e.g: a sinna k'a ka dulokiba korota, DT, p.263 = he directly took up his boubou,...

waraba:

connotation: a species in the cat family that we call lion.

e.g: a pinw b'i ko waraba taw, WS, 63 = his teeth resembles the lion's ones

Here, the connotation became well known than the denotation which should be:

Wara (cat family animal) + ba (big) => waraba (big cat family animal)

So, the word doesn't stand any longer for a **big cat**, but always for species of lion. In such cases, the derived word with **-ba** has a synonym. The synonym of **waraba** in bamanankan is **jara**. The same case happened to **sogoba** when that one earned the synonym **sama** (elephant)

kamalenba:

connotation: a type of adolescent young man whose hotheaded youth is rather tilted toward womanizing abilities.

e.g: So kamalenba in dandalen be k'a makono, CB, p.21 = that hotheaded young horse is readily laying down, waiting for him.

That meaning has come over to dominate the denotation of the word which should be:

kamalen (adolescent young man) + ba (big) => kamalenba (big adolescent young man)

-len/nen:

Denotation: the denotation of **-len/nen** with a stem is to express the past participle.

e.g: fagalen (killed): Denba Musakoy fagalen a balimaw fe..., WS, q.31 = Denba Musakoy being **killed** by his brothers...,

dalen (laid):

denotation: past participle

e.g: bamananke dalen be dugukolo finman n'a jeman ce..., Gk, p.5 = the bamanan is laying down between the black and the white mud under the ground.

connotations: **dalen** used with its connotation is missing in our corpora. In the following example taken from the online fransekan-bamanankan lexicon (makdas.org), it is clear that the sense of **stillborn** is one of its main connotations.

e.g: Fanta jiginna nka den kera **dalen** ye = Fanta delivered but the baby was **stillborn**

kɔrɔlen (aged):

denotation: past participle of to age, to grow old.

e.g: A fa kɔrɔlen don kosebe = his father is very aged

connotation: its connotations are numerous among which we have, the meaning custom/tradition:

e.g: bamaanna **kɔrɔlen**, WS, p.27 = the **tradition/custom** of bamanan land.

-ya:

Denotation: the denotation of **-ya** in a derived word is through two syntactic categories (noun or verb).

When the derived word with -ya is a noun, it expresses the state.

Jeliya: jeli (griot) + ya (state of)

e.g: n'an ma an hakili sigi jeliya fe, an na jeli tɔgɔ tijɛ de, Gk, p.114 = if we are not careful in the profession of griot, we will finally give a bad name to the griot.

wuludanya:

denotation: wuluden (baby dog) + ya (state of being) = a baby dog's state of being a baby dog

e.g: wuludanya be wulu in ma n'o te a tun be jine in mine sisan = being a puppy has discredited that dog unless he would catch that mouse right now

connotation: wuluden (behavior of dog) + ya (state of someone) = a person behaving in baby dog behavior. We use this meaning for insults.

e.g: o ye mun wuludanya ye de? DT, p.40 = what is this doggy behavior?

Maaya:

Denotation: maa (human being) + ya (state of) = state of being a human being

e.g: bawo nin kokorow y'an ka maaya sigisenw de ye, WS, p.7 = because these traditions are the foundations of our society.

Connotation: maa (human being) + ya (sex organ) = sex organ of the human being. We use this connotation for euphemism.

e.g: A maaya salen don = he/she is impotent

musoya:

denotation: muso (woman) + ya (state of) = woman state

e.g: musoya ye mone ye, C, p.19 = being a woman is discrediting

connotation: muso (woman) + ya (sex organ) = woman sex organ.

e.g: ka muso nani a musoya la o man ji = to insult the woman in her sex is bad.

bonya:

denotation: bon (big) + ya (state of) = state of being physically big

e.g: jama in bonya, a' kan'a ta caya fe..., CB, p.26 = this great crowd, do not rely on the large number.

connotation: bon (honor) + ya (state of) = state of having a big name

e.g: be lajelen bonya be nin ko in na de! DT, p.119 = the honor of this news goes to everybody

When the derived word with -ya is used as verb, it induces the causative:

Bilenya: bilen (red) + ya (state of) => verb to make it red = to make something red which was not yet red

e.g: dennin y'a da bilenya ka bo = the young lady makes her lips red and goes out

Sumaya: suma (cold) + ya (state of) => verb to make it cool = to make something cool which was not yet

e.g: a ye ji ke nege kalaman kan k'a sumaya = he cooled the hot iron by pouring water on it.

Second group of suffixes

The meanings for suffixes here are broadly defined. They are akin to their denotation even if for some, it has been unavoidable not to give the meaning case to case like their connotations. The examples are generally taken from the derived word tables (Appendix I) if they exist there.

-baa/baga: is personal. It stands for the active agent of the action of the verb. In other words, it stands for the specific or definite agent of the action of the stem. Sometimes, the derived word in which it takes place is distributed with an isolate noun.

Case 1: *-baa* is used in a derived noun that has a determinant noun. Usually, that derived noun with *-baa* is not bound to its determinant noun which comes the first in order.

e.g: *nibaw tijεbaa*, DT, p.234

Derived noun: *tijεbaa*

Elements with the suffix: *tijε + baa*

elements with the substitute of the suffix: *tijε + mɔɔɔ*

meaning of the stem: *tijε* (to kill)

determinant noun: *nibaw*

case 2: the derived noun has no determinant noun

e.g: *a kεra minbaa kɔɔnɔɔɔwan ye*, DT, p.91

-baatɔ/bagatɔ: is used to express the bearer of an illness. Its stem is stands for that bad state.

e.g: *a girinbaatɔ seginna k'a sɔrɔ dugu bε ka jeni halisa* (WS, q.64) = he returned back vigourisly and found the village was still burning.

Derived noun: *girinbaatɔ* (dashing he who)

Elements with the suffix: *girin + baatɔ*

Elements with the substitute of the suffix: *girin + tigi*

Meaning of the stem: *teliyako jugu degun*

Substitutes of the stem and the suffix: teliyako jugu degun (vigourous state of dashing + tigi (the bearer))

-bali: is used to express the lack of stem's meaning in somebody

e.g: n'i ye maa cesirilen tanu, cesiribali be dim'i koru (VT, 107) = when you congratulate the hard-working person, the lazy person will be angry.

Derived noun: cesiribali (not hard-working)

Elements with the suffix: cesiri + bali

Elements with the substitute of the suffix: cesiri + te mogu min na

Meaning of the stem: magan

Substitutes of the stem and the suffix : magan (hard-work) + te mogu min na (person who lacks)

-ka: is used to express the inhabitant of the place to whose name it is bound.

e.g: ...ne yere ye kalaka ye... (G, q.88) = I myself am a citizen of Kala

Derived word: kalaka (kala people)

element with the suffix: Kala + ka

elements with the substitute of the suffix: Kala + mogu/den (inhabitant)

meaning of the stem: *Kala* dugu (village)

Substitutes of the stem and the suffix : *kala* dugu + mogu/den (*kala* village + inhabitant)

-la/na (cikla): is impersonal. In other words, it stands for the generic or the non-definite agent. It has three cases.

case 1: *-la* used in a non-compound noun is the suffix that expresses the active agent of the action of its stem. Most of the time, its stem is a verb to which the suffix **-li** is bound before the suffix **-la**.

e.g: *a ye bugalila mine a ka bugali dabila*

case 2: *-la* used in a compound noun is the suffix that expresses the passive agent. The last morpheme to which it is bound is always a verb if the syntax of its non compounded form

goes with a verb whose object comes before itself. That agent might not be performing the action on the spot. It is just a noun given to him because it is potentially his job.

e.g: *jikalayala bε jidaga sigi*

case 3: -la is used in a derived noun that has a determinant noun to express either the active or the passive agent.

e.g: *dɔnkilidala*

element with the suffix: dɔnkilida + la

elements with the substitute of the suffix: dɔnkilida + mɔgɔ

meaning of the stem: dɔnkilida (singing)

-la/na: is used to express the dwelling place of a group of people named after the name of the stem.

e.g: kulubalila (residence of people named after coulibaly: coulibaly's)

Element with the suffix: kulubali + la

Elements with the substitute of the suffix: kulubali + du/so/kɛyɔrɔ

Meaning of the stem: kulubali (family name coulibaly)

-la/na: is used to express the choice of an item according to its price. It is the excluding price among other prices for the same article divided into amounts that fit the price.

e.g: kɛmɛla (for one hundred)

Element with the suffix: kɛmɛ + la

Elements with the substitute of the suffix: kɛmɛ (one hundred) + hake/kun (amount)

-lama/nama: is used to express the similarity, the characteristic of the subject to the stem. It is a generic suffix.

e.g: jilama (waterlike, liquid)

Element with the suffix: ji + lama

Elements with the substitute of the suffix: ji + siya/cogo

Meaning of the stem: ji (water)

Meaning of the suffix: -lama (-like, similar to, characteristic of)

-lan/nan: it takes the place of the object in the derived word. It plays also the role of that object. It is then used to express the meaning of the noun it replaces. That meaning is usually the tool of the action expressed by the stem.

e.g: ηῶninbῶlan

Elements with the suffix: ηῶnin + bῶ + lan

Elements with the substitute of the suffix: ηῶnin + bῶ + minɛn/fɛn

meaning of the stem: ηῶninbῶ (action of pulling out the thorn from something)

meaning of suffix: -lan (tool/instrument, factor)

meaning of the built word: a tool used to pulling out the thorn from something

morpheme order: determinant + base word (the base word is the suffix here)

NB: *In a suffix derived word, the focus is the suffix. It is the base word whereas the stem is the determinant.*

-li/ni: is used to express the action in its development length

e.g: sarali (paying)

Element with the suffix: sara + -li

Elements with the substitute of the suffix: sara + bilali sen kan

Meaning of the stem: sara (salary)

-ma: three cases

In the literature, we found these lines that support our argument from Gerard Dumestre (1995) who wrote the following observations on the suffix *-ma*: « *la derivation en -ma : « la derivation en -ma est fréquente en bambara, et fournit des nominaux, généralement dépendants, dont le sens est « qualificatif » [« pourvu de », « qui a forme de », “qui contient »]* » (p.18) - (the derivation with *-ma* is frequent in bambara, and generally provides dependent nouns, whose meaning is « qualifying » [« be endowed with”, “having the shape of”, “ that contains”].

Case 1: is used to express that the subject noun of the derived word is covered or smeared with the substance or product of its stem. Its stem requires a subject noun then.

e.g: a bolo tuluma don (his hand is oily)

Element with the suffix: tulu + -ma

Elements with the substitute of the suffix: tulu + a nῶrῶnkῶlen don a la

Meaning of the stem: tulu (oil)

Meaning of the suffix: -ma (-y)

Case 2: is used to express that the subject of the stem is made of the stem's stuff

e.g: manama (with plastic stuff)

Element with the suffix: mana + -ma

Elements with the substitute of the suffix: mana + ni a ye

Meaning of the stem: mana (plastic)

Meaning of the suffix: -ma (in the stem stuff)

Case 3: is used to express that the subject of the stem has the stem

e.g: tɔgɔma (that has a name)

Element with the suffix: tɔgɔ + -ma

Elements with the substitute of the suffix: tɔgɔ + a b'a la

Meaning of the stem: tɔgɔ (name)

Meaning of the suffix: -ma (existing for it)

-man: is used to express the choice pertaining to the qualifier (virtue, colour, speed...) by excluding the rest of the elements among a variety of reality in which each element has its own quality or its own degree of quality. It is mostly used in the superlative.

e.g: jɛman (the white one)

Element with the suffix: jɛ + -man

Elements with the substitute of the suffix: jɛ + min ka

Meaning of the stem: jɛ (white)

Meaning of the suffix: -man (relating to)

-nan: it is used to express the arrival order of something. Its stem is a number which follows in order a preceding number and which followed by another number.

e.g: duurunan (fifth)

Element with the suffix: duuru + -nan

Elements with the substitute of the suffix: duuru + nakoxyèn

Meaning of the stem: duuru (five)

Meaning of the suffix: -nan (rank/order)

-nin: is used to express the state of the relatively little size of the stem of which it is fixed.

e.g: dugunin (small village)

Element with the suffix: dugu + -nin

Elements with the substitute of the suffix: dugu + fitinin/dɔgɔman

Meaning of the stem: dugu (village)

Meaning of the suffix: -nin (small)

-ntan: is used to express the lack of its stem for the subject.

e.g: sɔninntan (without nail)

Element with the suffix: sɔnnin + -ntan

Elements with the substitute of the suffix: sɔnin + sɔrɔbali/gansan/lankolon

Meaning of the stem: sɔnin (nail)

Meaning of the suffix: -ntan (-less, lacking)

-ta: is used to express the duty of carrying out the action of the stem.

e.g: nata

Element with the suffix: na + -ta

Elements with the substitute of the suffix: na + ka kan ni (stem) ye

Meaning of the stem: na (to come)

Meaning of the suffix: -ta (to be realized, performed)

-tɔ: is used to express the body state of someone being short of something, in the natural language, but deficiency in the specialized language.

e.g: kɔnɔbolitɔ (person with diarrhea)

Element with the suffix: kɔnɔboli + -tɔ

Elements with the substitute of the suffix: kɔnɔboli + dɛsɛ/ntanya/bana

Meaning of the stem: kɔnɔboli (diarrhea)

Meaning of the suffix: -tɔ (the sickly person / the unsatisfied body state person)

2. meaning in prefixes

The prefixes that will be treated here are only two: **la-** and **ma-**. Since **sɔ-** is synonym to **ma-**, we will leave it out. When a term is formed with one or the other between **la-** and **ma-**, that term is automatically predictable in causative uses.

Among the literatures on the prefix **ma-** and **la-**, Valentin Vydrine in collaboration with Adama D. Coulibaly (1995) treated their derived words as part of the group of reflexive verbs. They supplied the number of **ma-** and **la-** derived verbs in their analysis. The following lines are collected from their work *Verbes réfléchis Bambara* (p.17): « des 2775 verbes de notre liste (dont 73 à préfixe **ma-** et 655 à préfixe **la-**), 667, donc 24%, sont reflexivatantum ou ont une (ou plus d'une) dérivation réfléchie » - « Among the 2775 verbs in our list (in which 73

have the prefix **ma-** and 655 have the prefix **la-**), 667, which is 24%, are 'reflexivatantum' or have one (or more than one) reflexive derivation".

la-: the prefix **la-** is usually used to express the causative. We cannot give the exhaustive list of its meanings but we supply some provided in the selected examples. There is only denotation for **lamuruti**, **lana** and **latuubi** whereas there is only connotation for **lamine**.

lamuruti: la (causative) + muruti (to rebel)

denotation :

e.g: Karunga ye Jawaraw lamuruti, WS, (p.35) = Karunga pushed the Jawara people to rebel

lana: la (causative) + na (to come)

e.g: o kɔ a y'a fa lana dugu kɔnɔ, WS, (p.66) = afterward, he made his father come in the village

latuubi: la (causative) + tuubi (to convert)

e.g: Samori tun y'a fɔ a ka kelɛtigiw ye u ka maaw latuubi, WS, (p. 68) = Samori had ordered to his commanders to convert people.

Lamine (to answer):

e.g: kelemansaba in y'a lamine, Gk, p.22 = that great warrior answered it

Prefix and element: la- + mine

Prefix substitute and element: sababu + mine

Meaning of element: to obtain

Meaning of prefix: cause

ma-: is used in general to express the attenuation of the stem verb to which it is bound. The stem used alone expresses a complete action whereas when it is used with the prefix **ma-** the action is slightly done. In our examples, only **majigin** has a denotation and a connotation.

Mabɔ (to move apart):

e.g: E k'i sen mabɔ dɛ, Gk, (p.40) = please move your leg apart

majigin:

denotation: to push down half way

e.g: a ye bərə majigin bari bolo tun t'a sərə = he pulled the bag down a bit because it was far to touch it.

connotation: to submit to

e.g: ...nk'a tun t'a yere majigin maa si ye , WS, (p.63) = ...but he never used to be submissive to anybody.

B. Semantic relationships of the affixes

In a language words are in relationship to each other. The connection may exist between words of the same rank like the relation between *jabaala* (host family) and *jatigila* (host family). The connection may exist also between words not of the same rank like the relation between *bagan* (animal) and *saga* (sheep).

The relation between *jabaala* and *jatigila* is called the equivalence relationship because neither one can engulf the other one. Since *jabaala* and *jatigila* have the same rank, they are **synonyms** to one another.

The relation between *bagan* and *saga* is called the hierarchy relationship because one can engulf the other one. As *bagan* includes *saga*, that first word is called the **hypernym** of the latter which is inversely the **hyponym** of the first. Both above relationships are called semantic relationships between lexical units of the language. There are also the rest of the relations, such as the opposition in the same rank relationship. That opposition relation is about words that have opposite meaning to one another like *balo* (life) and *saya* (death) firstly, and secondly, words that are hyponyms of the same hypernym like the relation existing between both *saga* and *ba* and *bagan*.

The relation between *balo* and *saya* is called antonymy. They are antonyms one to another.

The relation between *saga* and *ba* which links them to *bagan* is called cohyponymy. *Saga* and *ba* are both cohyponyms of the same hypernym *bagan*.

Other authors might call hypernym and hyponym generic and specific. But this doesn't change the content of them. They are all semantic marks to be taken into consideration in a lexicology work.

We are listing what Bamanankan contains for semantic relationship of affixes.

1. Hierarchy and the inclusion of words

Hypernym and hyponym

In *Vocabulaire systématique de la terminologie*, hypernym, called generic, is defined as “*marque sémantique identifiant un terme qui englobe sous un même genre plusieurs espèces différentes* », (p.51) – (semantic label that identifies a term which include under the same rank many different species).

A hyponym, called specific in the same book, is also defined as « *marque sémantique attribuée à un terme qui désigne une notion parmi d'autres ayant avec elle des traits communs. L'ensemble de ces spécifiques est contenu dans le générique* » - semantic label attributed to a term designating a notion among others having features in common with it.

Here are some examples of derived words between which there exists the relation of hierarchy.

-lama (-like: similar to, resembling or characteristic of): the derived word with –lama is hypernym to the stem of that derived word used without the suffix.

e.g: jilama (liquid) > ji (water), waralama (felinelike) > wara (feline), jirilama (treelike) > jiri (tree).

Other suffixes, not among our selected affixes, but mentioned in the first 38 list of affixe, are very inclusive in terms of hierarchy. Among them we have: *-laka*.

-laka (species of, member of): the derived word with –laka is hypernym to its stem which word is mostly the name of the well known species in a category.

e.g: kənɔlaka (species of bird's family > kənɔ (bird), basalaka (species of agama's family) > basa (agama).

In the examples, *kənɔlaka* fits well with the notion of the class of aves and *basalaka* fits with the notion of the class of reptilian in bamanankan.

Those suffixes will be useful in the classification and categorization in sciences mainly in biology with its enormous hierarchy denominations.

Part-whole

Some nouns describe the entire body of the reality they stand for. Some others describe a restricted amount in the body of the reality. When the restricted amount of a body has a name and the entire body from which that restricted amount comes is the name of the restricted amount and the name of the entire body are in part-whole semantic relationship. The tail of

the cow cannot be the cow but is part of the animal though, inversely, the cow is not the tail but is the body logically carrying the tail.

Part-whole in relationship appears generally for the subjects that are countable. The same concept is called by the name *meronym-holonym*. The following citation of Lehmann gives additional details about the matter:

La relation partie-tout est une relation hiérarchique qui existe entre un couple de termes dont l'un dénote une partie et l'autre dénote le tout (relatif à cette partie): guidon/bicyclette, poignée/valise, bras/corps, ongle/doigt, porte/maison, voile/bateau. Guidon est une partie de bicyclette ou méronyme (« nom de la partie ») de bicyclette ; inversement, bicyclette désigne le tout ou l'holonyme (« nom du tout ») de guidon¹. (Introduction à la lexicologie, sémantique et morphologie, p.81)

Since the examples of part-whole relationship are rare in derivation, we will include the same examples in the compounds subtitle.

2. Equivalence and opposition relationships

Synonyms

The CEEL provides the definition of synonyms: “*synonyms are two lexemes which have the same meaning*”, (p.164). As far as the synonyms are concerned with derived words, it is due to the synonymy of the affixes. Only the feature of synonymy exists in the prefixes. Some suffixes can form a derived word which is synonym to a simple word in the old stock of the language. For instance, **jula** (tradesman) developed a derived word with **-ya** (**julaya**) which is a synonym to the single word **jago** (tradesman).

Synonymy between prefixes

Only two prefixes are synonyms: **ma-** and **so-**

e.g: madon = sodon (to come nearer)

¹**Translation:** the part-whole relation is a hierarchy relationship that exists between a couple of terms from which one denotes a part and the other denotes the whole (pertaining to that part): handlebar/bicycle, handle/suitcase, arm/body, nail/finger, door/home, sail/boat. The handlebar is part of the bicycle or meronym (“name of the part”) of bicycle; inversely, bicycle designates the whole or the holonym (“name of the whole”) of handlebar.

Antonyms

The CEEL, (p.165), defines antonyms: “*antonyms are lexemes which are opposite in meaning*”. Antonymy exists only in suffixes. Here they follow: **-ba** and **-nin**; *-bali* and **-ta** - **-len/nen** – **-tɔ**; **-ma** and **-ntan**

e.g:

-ba and -nin: Bukeyi kərɔ**ba** (Bukeyi the older) ≠ Bukeyi nc**inin** (Bukeyi the younger), Burama kərɔ**ba** (Burama the older) ≠ Burama nc**inin** (Burama the younger), cɛ**ba** (big man) ≠ cɛ**nin** (small man).

-bali is antonym to three 3 distinct suffixes: **-len**, **-ta**, **-tɔ**. Its antonymy with each of them is depending on a given tense: **-len/nen** (accomplished), **-ta** (future), **-tɔ** (progressive)

-bali and its accomplished antonym

-bali and -len/nen: fɔ**bali** ≠ fɔ**len**, laban**bali** ≠ laban**nen**, se**bali** ≠ se**len**

-bali and its future antonym

-bali and -ta: fɔ**bali** ≠ fɔ**ta**, laban**bali** ≠ laban**ta**, se**bali** ≠ se**ta**

-bali and its progressive antonym

-bali and -tɔ: fɔ**bali** ≠ fɔ**tɔ**, laban**bali** ≠ laban**tɔ**, se**bali** ≠ se**tɔ**

-ma and -ntan: tɔgɔ**ma** ≠ tɔgɔ**ntan**, bolom**a** ≠ bolom**ntan**, hakilim**a** ≠ hakilim**ntan**

Cohyponyms

For more details about this relationship, we add that in the relationship hypernym-hyponym, several hyponyms are in relationship with the hypernym. Each of those hyponyms is cohyponym to its fellow with which it shares the same hypernym. According to J. Rey-Debove, “*la cohyponymie est [...] une relation sémantique triangulaire*” cited by Alise Lehman in *introduction à la lexicologie, sémantique et morphologie*, p.92 – the cohyponymy is a three-way semantic relationship. In bamanankan for instance, the word **bagan** (domestic animal usually) is hypernym to **fali** (donkey) which latter has more than five cohyponyms: **misi** (cow), **ba** (goat), **saga** (sheep), **wulu** (dog), **so** (horse). Unfortunately, the phenomenon does not appear in derivation with many examples. Thus, we will see the examples when treating the compounds with the same subtitle.

II. The semantics of the compounds

A. The matrixes in the compounds

The analysis will be about the semantic relationship between the morphemes in a compound. In other terms, we use the fundamental models. Those models are used as matrixes to word formations. The following citation gives support to what is the matrix:

La denomination utilise le système de la langue pour forger les étiquettes voulues. Toute langue a en elle des « matrices lexicogénique ou terminogéniques » servant de moules pour la création de nouveaux termes. Pour toute création, il s'agit bien entendu de respecter ce qu'on appelle communement le « génie de langue », c'est-à-dire les modèles permanents et habituels¹. (ACCP, *guide de recherche en lexicographie et terminologie*, 1985, p.63).

Then, we see that the matrixes are all about the semantic relations between the elements of the compound and which we can use as ready-made model to satisfy new terminology needs.

The same source as the above citation listed some main matrixes, (p.63), in compounding which are the followings:

A contains B model, like in french word *carte-programme*

A is also B model, like in french *wagon-citerne*

A is equipped with B model, like in french *auto-chenille*

A serves as B model, like in french *marteau-pilon*

A is used to make B model, like in french *caméra-photo*

A is designated to B model, like in french *siege-avion*

A is made of B model, like in (*gold bracelet*) or in french *pneu nylon*

A is obtained by means of B model, like in french *communication-radio*

As we know that the matrixes are not absolutely universal but that they are dependant on the structure of each language, the analysis of some bamanankan compounds from the corpora will tell us which model of matrixes they bear. Then, the matrixes found in them will be detailed as part of the feature of bamanankan. Each word taken as example will be analyzed into elements; elements used in a sentence to discover the model and the matrix which made them a compound word.

¹ **Translation:** The denomination uses the system of the language to create the required labels. Every language has within itself some "lexicogenic or terminogenic matrixes" serving as matrixes for the creation of new terms. For any creation, of course there is to respect what we call commonly "the spirit of the language", that is, the permanent and usual models.

1. Compound nouns

Noun + Noun compound nouns

Sanudaba: is composed of sanu (gold) and daba (hoe). By using the elements in a sentence, e.g: *daba dilanna sanu na* = the hoe is made of gold.

One can guess the semantic connection between them. It is then clear that the syntactic model used in forming *sanudaba* is subject + object of the verb whereas the matrix used is *A is made of B*.

The *A is made of B* matrix implies the diversity of the same object made of different material. Then, as a matter of distinction, the denomination of shoe which is *sabara* in bamanankan compounds with the name of the stuffs of which it is usually made:

Sabara { manasabara = plastic shoe
 { golosabara = leather shoe
 { jirisabara = wooden shoe

That process of denominating concepts is useful and always ready to designate any new concept - similar to an existing one but with different manufacturing material - that might appear in human experience.

Hərən muso:

Elements: hərən + muso

Sentence: *muso in ye hərən ye* = this woman is dignified

Model: subject + object

Matrix: **A** is the focus of **B**

Verb + Noun/pronoun compound nouns

Təməko:

Elements: təmə + ko

Sentence: a **təməna sipɛ (ko)** saba = he passed by three times

Model: verb + adverbial phrase of frequency

Matrix: **A** is the action of the frequency of **B**

Sipəgən:

Elements: si + pəgən (pronoun)

Sentence: u bɛ si pəgən fɛ = they sleep together

Model: verb + adverb of manner

Matrix: **A** is the action of **B**

2. Compound verbs

The examples here are only Noun + Verb compound verbs.

faamanɔɔni: is composed of faama and ɔɔni. Those elements will make a sentence like ka dɛgɛ ɔɔni i ko faamadɛgɛ = to prepare the porridge like the lord's porridge. The model used in the compound is then the adverbial phrase of manner + verb. It bears the matrix *A is the making manner of B*

cɛtigɛ:

Elements: cɛ + tigɛ

Sentence: ka bere **tigɛ cɛmancɛ** la fla ye = to cut the stick into two at the middle

Model used: adverbial phrase of place + verb

Matrix used: **A** is the place bearing the action of **B**

Dabiri:

Elements: da + biri

Sentence: a ye filen biri a da kan = he/she sets down the calabash on its rim

Model: object + verb

Matrix: A is bearing the action of B

B. Semantic relationship of the compounds

We now supply the examples about hypernymy and hyponymy, having already given the theory.

1. Hierarchy and the inclusion of words

Some of our supplied examples might be simple words instead of being exclusively compounds. This fact is due to the lack of the exact matching of the compound sometimes in the corpora. And therefore, we use a simple word to pair the relation.

Hypernym and hyponym

We begin with the same example given in the explanation with the word *bagan*. First, we supply an example both in English and French. We use the symbol (>) to indicate that the word before it is the hypernym of the word that follows it.

French examples:

e.g: *rapace* (bird of prey) > *aigle* (eagle); *avion* (plane) > *hélicoptère* (helicopter); *arbre* (tree) > *manguier* (mango tree)

English examples:

e.g: fish > carp; fruit > banana; cloth > shirt

Bamanankan examples:

e.g: *marifa* (shotgun) > *łsi* (type of gun); *ji* (water) > *sanji* (rain); *dumuni* (food) > *basi* (couscous); *baara* (work) > *senε* (farming); *nafolo* (wealth) > *wari* (money).

Part-whole

Part-whole relationship is very abundant in compounding. As said in the derivation part, we deal with examples here. The symbol (<) is used to say that the the word before it is a part of the word that comes after it.

e.g:

part: kanfiri, Gk, (p.38)

whole: kan

Kanfiri (top part of the horse neck closer to the thorax) < kan (neck)

Kanfiri: the name given to a part of the entire body of the reality neck.

Kan: the name given to the entire body of the reality it stands for.

Part: dawolo, DT, (p.112)

Whole: da

Dawolo (lip) < da (mouth)

Part: ntɔrɔn, DT, (p.132)

Whole: sen

Ntɔrɔn (hoof) < sen (leg)

2. Equivalence and opposition relationship

Synonyms

Synonymy exists most of the time between words that use both derivation and compounding at once. This is what we can see in the example given above jabaala and jatigila since the first is made of derivation and the second is made of both derivation and compounding. Then, the example that we supply will not be exclusively for compounding since the language mixes both of them. The example will be used in sentences from a corpus.

e.g:

kisε = nεgεden

Kungo kolon ye kisεw taakan lamine, DT, (p.243) = the hollowed bush echoed the sound of the fleeing rifles.

Moriw ye nεgεden kelen dilan a ye, Gk, (p.48) = the marabout forged one rifle for him

bobara = jukunan (buttock)

...fo ka taa soka ntɔrɔn gun soka bobara la, Gk, (p.58) = ...until the hoof of the horse touched its buttock.

A y'i munumunu k'i tɔrɔ a jukunan kan, DT, (p.178) = he revolved on himself and finally fell on his buttock.

gadanin = baarakeden (domestic)

Gadaninw taara: jeliba mandi, masamusow k'i ka na koyi, DT, (p.100) = the domestics came: venerable griot the great, the royal ladies do ask you to come

Baarakeden be soli ka wuli don o don = the domestic wakes up early everyday

sigi = tɔrɔ (to sit down)

Nje taar'a sigi dɔyi, NgB, (p.32) = Nje went and sat down restfully

A y'i munumunu k'i tɔrɔ a jukunan kan, DT, (p.178) = he revolved on himself before his buttock sat on the ground.

Antonyms

Antonymy is a common feature in compounding. We supply some from our corpora. Some antonyms here might be context dependant. But since we use them in sentences from the same corpus, their relationship will be easy to guess.

denpuman, DT, (p.54) ≠ denjugu, DT, (p.17)

denpuman (child prodigy): n'i b'a fε muso ka denpuman wolo i ka du kɔnɔ, ... = if you want your wife to give birth to a child prodigy in your family,...

denjugu (bad child): ne ni denjugu tε nɔgɔn ye = I do not meet a bad child

musojuguden, DT, (p.28) ≠ musoɟumanden, DT, (p.28)

musojuguden (child born of bad woman)

e.g: ...dijε ka gɛlɛn musojuguden de ma , DT, (p.28)

musoɟumanden (child born of good mother)

e.g: Dijε badaa, dijε man gɛlɛn musoɟumanden ma dε..., DT, (p.28)

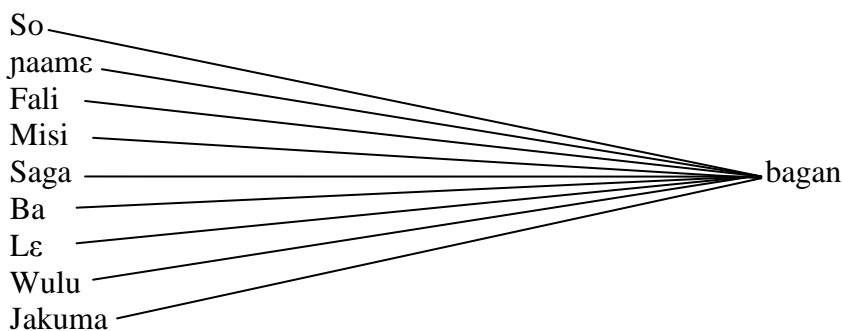
Cohyponyms

Cohyponyms are also numerous in compounding. We used only one case in the derivation subtitle. Here we will supply more in bamanankan. The only hyponyms used to pair the hypernyms subtitle will be repeated with their complete fellow hyponyms. We supply the diagram of one example to make the three-way relationship understandable.

Example 1: So and his cohyponyms:

The hyponym **so** (horse) in relationship with the hypernym **bagan** (domestic animal) has the following cohyponyms: **fali** (donkey) – **misi** (cow) – **ɟaamε** (camel) – **ba** (goat) – **saga** (sheep) – **lε** (pig) – **wulu** (dog) – **jakuma** (cat).

The relationship between the words is shown in this diagram.



Example 2: manɔgɔ and his cohyponyms

Manɔgɔ (silurid) is cohyponym to **ntɛbɛn (carp)**, **sajɛgɛ (snakefish)**, **wulujɛgɛ (dogfish)**, **saalen (threadfin)** in relationship with their unique hypernym **jɛgɛ (fish)**.

Example 3: Duloki and his cohyponyms

Duloki (shirt) is cohyponym to **kulusi (pant)**, **birifini (blanket)**, **npogi (shorts)**, **npogo (old-fashion shorts)** in relationship with their unique hypernym **fini (cloth)**.

Example 4: Lɔsi and his cohyponyms

Lɔsi (type of gun) is cohyponym to **sojari (type of gun)**, **garidifin (type of gun)**, **bonkanju (type of gun)** in relationship with their unique hypernym **marifa (shotgun)**.

Example 5: Baji and his cohyponyms

Baji (river water) is hyponym to **kɔji (backwater)**, **kɔlɔnɔji (well water)**, **sanɔji (rain)**, **daji (saliva)**, **koliɔji (toilet water)**, **dalaji (lake water)** in relationship with their unique hypernym **ji (water)**.

CHAPTER V: productivity of the lexicon and the terminology works

The productive models that we have seen so far, served in the first terminology works to develop intelligible denominations.

I. The output of derivation in bamanankan lexicon

A. Early attempts at denominating concepts

We mean by early attempts at denominating concepts, the very first works done by illiterate bamanan people to adopt new notions in their language by attributing a denomination to those notions. Those attempts have their witnesses in the vocabulary stemming from the contact of bamanan people with the colonizers and their new tools.

The attempts were done in quite an informal way, but they were targeted and always based on the productivity of the language. The following words are among some attempts with derivation process. We compare how structuring of those denominations matches with the features that we discovered in our corpus study such as: element composing the word, model/syntactic matrix used, semantic matrix used, and morpheme order used.

e.g 1:

dannikɛlan (seeder)

elements: danni (sowing) + kɛ (action verb: to do) + -lan (suffix: instrumental)

sentence: Danni bɛ kɛ minen na = we sow with the tool

model used: subject + verb + object (replaced by the suffix *-lan*)

matrix used: *A is done by B*

morpheme order used: *determinant + base word*

e.g 2:

dalaminɛna (interpreter)

elements: da (mouth: speech) + laminɛ (to answer: to interpret) + -na (suffix: agentive)

sentence: dalaminɛni bɛ kɛ mɔgɔ fɛ = someone does the speech interpretation.

model used: subject + verb + object

matrix used: *A is done by B*

morpheme order used: *determinant + base word*

B. Recent attempts at denominating concepts

The recent attempts are the terminology works formally carried out during organized lexicon workshops. They are mostly from the independence date to now. As we are dealing with the

science notions, the denominations coined by the group *Benbakan dungew*¹ are the mostly used ones. So, derived words like *cilan*, *ninan*, *jilan*, *katalan*, *latigelan*, *kololan sima* are adopted as lexical construction for some notions. We analyze the words:

e.g:

ninan: (oxygen)

Elements: ni (soul) + -lan (factor)

Word formation process used: suffix derivation

Using domain: chemistry, biology, physics

Origin word that motivated its creation: any word with the same matrixes (e.g: *kolan* – anvil)

Other terms whose creations are motivated by it: *katalan* (potassium), *jilan* (hydrogen), *kololan* (calcium), *latigelan* (computer), *cilan* (ruler).

II. The output of compounding in bamanankan lexicon

A. Early attempts

The following built words stem from the cleverness of our grandfathers who created those fitting words for their discovered tools during the contact of the colonizers. They did not go to school. But amazingly we can see that they were even good at matching denomination with their language principles than we who go at school and are unable to find a word for the notion *rectangle* in bamanankan. Instead, we adopted a French borrowed word. A borrowed word is not intelligible at all. We supply the information such as the translation, the elements, the order of the elements, the matrix and sometimes the similar denomination to the term. We selected three examples among the list to be given in details: *misidaba*, *takala*, *negeso*, *negedaga*, *sisikurun*, *negejuru*, *pɔpɔnin*, *sɔgɔli*, *pankurun*, *tubabuse*, *jinejaba*, *waribulu*.

e.g 1:

Misidaba: (plough)

Elements: misi (cow) + daba (hoe)

Element order: determinant + base word

Matrix: A is destined to B

¹ Benbakan dungew (mother tongue adepts) has been for a long time, a group of activists and committed militants for the promotion of Mali national languages. The group was composed of researchers from many disciplines and all the members were devoted in terminology research among which members, we have the physicist Mamadou Doucouré who is the author of the translation of the relativity of Albert Einstein in bamanankan.

History: before the arrival of colonizers, the bamanan people worked in their farm with their handmade tools like the hoe. When colonization broke up, the plough was introduced in the domain of farming. As the pulling of this new tool was to be done by animal (cows), they readily attributed the term *misidaba* to this new tool.

e.g 2:

Takala (match):

Elements: ta (fire) + kala (stick)

Element order: determinant + base word

Matrix: A is the purpose of B

History: before the influx of western tools, the bamanan people used a stone called the flint for their fire purposes. After, the influx brought a new gadget for the same purpose which was a small box containing smaller sticks with flammable substance on one end. They manifestly gave this characteristic denomination.

e.g 3:

Nεgεso (bicycle):

Elements: nεgε (iron) + so (mount)

Element order: determinant + base word

Matrix: A is the stuff of B

Other similar denomination: nεgεdaga (pot)

History: before the influx of colonizers, the main transportation means was the horse. When colonization broke up, the bicycle was introduced in the domain of transportation. They then attributed the denomination *nεgεso* pertaining to the object whose purpose is the same as the horse. Stylistically, it is a metaphor motivated denomination.

B. Recent attempts

The recent attempts are the carbon copies of the previous ones to some extent. The matrixes used by the ancestors are still being seen in targeted built words today. Most of the following created words are from the terminology works done by the group Bεnbakan Dungew except farasu (MAPE) and bayεlemasi (unrevealed source). The words are: *nimadɔn*, *jatedɔn*, *farasu*, *bayεlemasi*.

e.g 1: *nimadɔn* (biology)

Elements: nima (living creature) + dɔn (knowledge)

Word formation process used: compounding

Using domain: biology

Origin word that motivated its creation: any word with the same matrixes (e.g: jidɔn – knowing how to swim, sodɔn – knowing how to race horse)

Other terms that have the same creation motivation: jatedɔn (mathematics), bangudɔn (physics), kunkandɔn (relativity), sɔrɔdɔn (economics), kandɔn (linguistics).

Specificity of the base word (dɔn): dɔn is a perfect model that fits the gap of what we call the science elements. It can be used as the calque of “-logy, -ics, -y” for science disciplines. It forms with its determinant, which is corresponding to the concept, the hypernym of high inclusive disciplines such as biology, chemistry, linguistics, mathematics, and physics. It is potentially predictable with the suffix *-la* to form an agent noun for the discipline.

Samaké in his doctoral thesis gave the followings points on the particularity of *dɔn*: “*dɔnniya (ou dɔn) signifie en bamanankan le savoir, le savoir-faire, la connaissance, la science. Il rend bien les suffixes -logie, -gogie dans les constructions savantes en français... »*, (p.129) – dɔnniya (or dɔn) means in bamanankan the learning, the expertise, the knowledge, the science. It interpretes worthwhile suffixes -logie, -gogie science element building in French...

e.g 2: farasu (chalk)

Elements: fara (rock, stone) + su (dead, decayed)

Element order: base word + determinant

Word formation process used: compounding

Using domain: school

Word that motivated its creation: any word with the same matrixes (e.g: densu – passive)

Other terms that have the same creation motivation: warisu (counterfeit, disposable coin), jɔsu (millet not sowed but naturally germinated in a field),

Specificity of the base word (su): the first particularity of *su* is its position in the compound. We are accustomed to the order *determinant + base word* in noun + noun compounding. But here the opposite sense happened. Another compound like it, with paradoxical order is *kɔnɔnhɔrɔn*. In the production, it expresses the fossilized quality of a reality. This is a good

feature useful in the context of opposite relationship between two similar objects in which one is correct whereas the other is unusual or disqualified by its decaying state.

e.g 3: bayelɛmasi (genetically modified organism)

Elements: bayelɛma (modified) + si (seed)

Element order: determinant + base word

Specificity in the formation: the determinant in that formation is a past participle adjective. The free occurrence order should be *si bayelɛmanen*. The adjective, by changing its place from the postposition to the anteposition around *si*, it dropped its *-nen* element.

Word formation process used: compounding

Using domain: biology

C. Testing some biochemistry concepts with compounding potentialities

Since we are certain of the availability of matrixes in any language that fit with notions, the notion of sugar in biochemistry potentially fits with a matrix in the bamanankan lexicon.

The notion of sugar, a generic term given to the chemical compounds, belongs to the group of carbohydrates (*Encyclopédie Encarta, 2008, sucre, molécule de glucose*). It has many inner-notions which latter have two possible denominations (*a name or designation given to a class, group or type, Encarta dictionary, 2008*) most of the time: their atom number based denomination and their basis substance based denomination. Both of the denomination motivations fit some corresponding matrixes in bamanankan. Their atom number based denominations go alongside with a chemical formula (e.g: C₁₂ H₂₂ O₁₁ for the saccharose). That latter has also a denomination formation matrix that matches a potential matrix in bamanankan. We do some attempts at attributing terms to some of the concepts with compounding motivation. We provide the motivation matrix of each term built to show the the different ways of attributing terms to concepts.

The specific terms in relationship to the notion of sugar are: maltose (C₁₂H₂₂O₁₁), saccharose (C₁₂H₂₂O₁₁), cellulose, and lactose (C₁₂H₂₂O₁₁) in the group of twelve-carbon atom sugars called disaccharides; glucose/dextrose or grape sugar (C₆H₁₂O₆), fructose/levulose or fruit sugar (C₆H₁₂O₆), and galactose or brain sugar (C₆H₁₂O₆) in the first group of six-carbon atom sugars called hexose, and xylose in the group of five-carbon atom sugars called pentose/ribose. Both hexose and pentose are in the group of monosaccharides. From our

analysis of the matrixes in bamanankan, the attempt at denominating those notions necessitates knowing basis for the motivation of their respective matrixes among which motivations, we have: *the source of their substances, the number of carbon atoms in their molecule, their uses (purposes)*. In the sources, many matrixes are possible due to the fact that the source can derive from many substances (e.g: many plants). In their purposes, several matrixes may also stand for the same notion due to the multiplicity of the purposes in the world for the same thing. The uses of cellulose, for instance varies: glue, dye, fabrics, films, panes of glass, soaps, sheets of paper, and many synthetic products.

Knowing all those variables on the matrix motivation, we conclude that the matrixes such as *A is the basis substance /the source of B, A is the destination / target user of B, A is the product of B, or A is the exclusive atom number per molecule of B* are the matrixes for the notion. Subsequently, the development of those matrixes into their respective lexical units has been:

For the twelve-carbon atom sugars:

Maltose ($C_{12}H_{22}O_{11}$) = Mugusukaro / densukaro (A is the basis substance of B / A is the destination/target user of B);

Let us begin by saying that there exists a denomination for the generic term *sugar* which is *sukaro* in bamanankan. This is a relieving factor in the sense that we don't need to look for a denomination for it and it will automatically be the base word in the denomination of its inner notions. However, its related specifics or hyponyms are to be designated.

The conclusion is that two possible motivations are available for it. The first motivaton is pertaining to the substance in which the maltose is found thus the denomination attempt *mugusukaro* (starch sugar), and the second motivation is pertaining to the purpose of the maltose thus the denomination *densukaro* (child sugar).

Saccharose ($C_{12}H_{22}O_{11}$) = forobasukaro (A is the destination / the target user of B);

Since the saccharose is most widely used among the group, the others being sometimes used in medication or for restricted particular purpose, we attempt the denomination *forobasukaro* (popular, public sugar).

Cellulose = jirijisukaro (A is the source of B);

Since cellulose has plenty uses, we preferred its source matrix rather than its purpose one. In doing so, we coined the denomination *jirijisukaro* (sap sugar) as it draws exclusively from plant cells.

Lactose ($C_{12}H_{22}O_{11}$) = *nɔnɔsukaro* (A is the basis substance of B);

The substance from which the lactose is drawn is commonly and regularly used by people. We subsequently preferred the matrix *A is the basis substance of B* in the denomination attempts of the lactose. We found *nɔnɔsukaro* (*nɔnɔ*: milk + *sukaro*: sugar = milk sugar). Other matrixes might be possible for lactose, but the one used here seems to be the most common.

For the six-carbon atom sugars:

Hexose = *wɔɔɔɔlasukaro* (A is the exclusive atom number per molecule of B).

We are faced by a matrix in which the denominaton motivation is relative to the atom number per molecule of the sugar. That case is going to be treated as follows:

The suffix **-la** (*duurula*) has a semantic feature fitting the notion of exclusive number in an amount of article in the market. We are about to extend that scope to the molecule of the chemical substances and then exclusively identify them by their included number of atom. The result of that adaptation attempt is going to be the model *ordinal + the suffix of one unit price = -la + base word*. As result, the denomination *wɔɔɔɔlasukaro* (*sugar for six cents*) becomes now [*six (a substance: atom) sugar*]. As far as those number based denominations are concerned in chemistry, there is a matrix or model at our disposal to be applied to them.

When we come to the formula itself, the matrix is to be found first. We are faced with a denomination which is not akin to lexical units. It is more like symbol than term. For a case like the formula, there is a need to look for the possible features subject to matrixes in it. Thereafter, we find the matrixes for the available features. As an example of a formula, we use one of the disaccharides: ($C_{12}H_{22}O_{11}$). We have the following inner notions in that complex and compact symbol:

1. C_{12} is pertaining to 12 atoms of carbon per molecule;
2. H_{22} is pertaining to 22 atoms of hydrogen per molecule;
3. O_{11} is pertaining to 11 atoms of oxygen per molecule;
4. Within each of those smaller notions, the notion of suffix in mathematics lies.

We go for a possible matrix for each of the four inner notions of the formula. We start with a possible matrix for suffix. The potential matrix for any notion of suffix can be found in the

model of part-whole relationship. Here, in C_{12} , the body is (C) and the member is the number 12 called suffix. The part-whole relationship is apparent in it. The relevant matrix would be then A (C here) *is the whole of B*. B being under A , the lexical unit *senkanna* from the compounding process (*sen: foot, kannna: on = near the foot*) is potentially the denomination of the suffix in bamanankan. The rest are:

- 1- denomination of carbon + $senkanna_{12}$ would be (*finnan¹ senkanna 12 / 12 ma*);
- 2- denomination of hydrogen + $senkanna_{22}$ would be (*jilan senkanna 12 / 12 ma*);
- 3- denomination of oxygen + $senkanna_{11}$ would be (*ninan senkanna 12 / 12 ma*);

So, to deliver the full denomination of the formula, we have:

$C_{12}H_{22}O_{11}$ = (finnan senkanna 12 ma, jilan senkanna 22 ma, ninan senkanna 11 ma).

The word *senkanna* can be omitted later in the interpretation when the students have basic notions. Consequently, we will have at that stage: finnan 12 (ma), jilan 22 (ma), ninan 11 (ma). The parentheses on *ma* are here to say that its interpretation is optional.

A predictable feature of the denomination *senkanna* is the clear possibility of attributing a denomination to the opposite notion *suffix* which is *exponent*. Even if an exponent is not part of our formula, its relationship with the notion suffix compels us to have a look at it. In an antonymy relationship, the denomination *senkanna* is antonym to *tenkanna*. *Tenkanna* would fit the notion exponent potentially, (A^{12} = A tenkanna 12 / 12 ma) for instance.

Glucose/dextrose ($C_6H_{12}O_6$) = *npekusukaro / dogisukaro* (A is the basis substance of B / A is the purpose of B);

The finding is that two possible motivations are available for it. The first motivation pertains to the substance in which the glucose is found hence the denomination attempt *npekusukaro* (grape sugar), and the second motivation is pertaining to the purpose of the glucose, hence the denomination *dogisukaro* (tanning sugar).

Fructose/levulose ($C_6H_{12}O_6$) = *jirinɔɔɔnsukaro / dulɔdonsukaro* (A is the basis substance of B / A is the product of B);

The observation is that two possible motivations are available for fructose. The first motivation is pertaining to the substance in which the fructose is found hence the

¹ The terms finnan (carbon), jilan (hydrogen), and ninan are all from the denomination attempts of the group Benbakan dungew.

denomination attempt *jirinᄇᄇᄇsukaro* (fruit sugar), and the second motivation is pertaining to the action of the fructose on the beer under fermentation hence the denomination *dulᄇᄇᄇsukaro* (alcohol fermenting sugar).

As far as the galactose (C₆H₁₂O₆) is concerned, we leave out its analysis. Galactose, also called brain sugar, is a simple sugar which is a constituent of the lactose.

For the five-carbon atom sugars:

Pentose/ribose = siduurusukaro (A is the exclusive atom number per molecule of B);

Xylose or wood sugar (*theSage's English Dictionary and Thesaurus*): (C₅H₁₀O₅) = jirifarasukaro (A is the special part in the plant where we find the basis substance of B);

The suggestion here is the same as the one in hexose. Hexose and pentose are both number based motivation denominations. We apply the same model to them. The model **ordinal + the suffix of one unit price (-la) + base word** fits the notion of *pentose*. Consequently, we find the bamanankan denomination ***duurulasukaro*** (*five carbon atom sugar*).

The section about the semantic matrixes gave many other models that are applicable for future denomination attempts. Using those matrixes will not only be a source of a predictable process of denomination, but also will be a source of endogenous development of the lexicon of bamanankan.

Conclusion

Throughout the dissertation, our ambition to explore both morphological and semantic features of the bamanankan lexicon carried out to be discovered. When you go through the third chapter, you can see analyses done on the morphological features such as the derivational and compounding morphology. The inventory of the affixes and the sampling of three pages in the corpus for scanning the compounds give a huge credibility to our objectives.

The fourth chapter revealed the semantic features of the lexicon. Our research permits us to figure out the semantic of the derived words through the display of the meanings in the affixes, and their semantic relationships. The semantic of the compounds is also treated in the same chapter through the matrixes the compounds bear, and their relationship.

In the fifth chapter, we figured out that the lexical potentialities of the bamanankan are worthy enough to enrich bamanankan during the future attempts at attributing terms to concepts. We have seen the output of derivation in the bamanankan lexicon and the output of compounding in it by supplying examples both from the previous and the recent attempts at attributing names to concepts.

All these results show that we have reached our objectives of how to build words for concepts with the bamanankan word formation procedures.

Our conclusion deals also with the outcome of the hypothesis which follows:

To begin with the answer of the hypothesis of the work, with a five book corpus of 563 pages in bamanankan, 93 975 word occurrences are produced. In that number, 3868 are derived words which is 4,115%, and 8907 are compounds which is 9,478%. The number of total derived words 3868 plus the number of total compounds 8907 makes 12 775 occurrences. That number is the occurrence number of the treated built words in the five book corpus which is 3,594%. In other words, with 93 975 word occurrences, 12 775 are built words. By doing a subtraction of the number of built word occurrences from the total word occurrences, we get a remainder of 81200 words. That number is the simple word occurrence number in the five book corpus which is 86,405%. To summarize all the figures, in a five book corpus of 563 pages, there are 12 775 built word productions in a total of 93 975 word occurrences. Those outputs of our analyses are the confirmation of the hypothesis in the present work.

Table 13: full word occurrence and the percentage of built words and simple words

Full occurrence	Treated built words	Percentage of built words	Simple words	Percentage of simple words
93 975	12 775	$12\,775 \times 100 / 93\,975 = 3,594$	81200	$81200 \times 100 / 93\,975 = 86,405$

We end our conclusion with two interesting citations from two linguistic worlds. The first one is from the French linguistic world and it follows:

Les mots simples et les éléments affixaux qui sont à la base du lexique alimentent un ensemble de modèles de dérivation et de composition qui font partie du savoir lexical des locuteurs, les rendant capables d'interpréter des mots inconnus conformes à ces schémas ou de construire des mots nouveaux interprétables¹. (Martin-Berthet, *introduction à la lexicologie, sémantique et morphologie*, p.162).

The second citation which is from the English linguistic world is more similar to the first one, and it is the following:

...Countless [...] words can be constructed and comprehended by the application of quite general rules to more basic words. For example, any speaker of English who knows the verb *fax* recognizes *faxed* as its past tense form, and can construct and interpret words such as *faxable* (for things that can be faxed) and *fax machine* (for device that sends and receives faxes). (*Contemporary linguistics*, p.117)

Since we are in a world of unending notions, the lexical potentialities of one's language should be exhaustively and systematically analyzed for emerging terminology works. Such analyses will prevent us to leave the productive resources of the lexicon and go for borrowing unadapted models that are not in the language stocks of the target people.

¹ **Translation:** the simple words and affix elements that are the basis of the lexicon provide a whole of derivation and compounding models that are part of the lexical knowledge of the locutors, enabling them to interpret unknown words similar to those diagrams or to build new interpretable words.

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Appendixes

Appendix I: Tables of the derived words

1. Suffix derived words

Table 14: *Depekorɔ ka Tonnkan*

Suffix	Derived words
-ba	Denniba/Deniba, Buwɔkɔrɔba, Karamɔgɔba, nisɔndiyaba, Ɖɛpinisoba, ɲemɔgɔsoba, maakuntigemuruba, Denke kɔrɔba, bulonba, Cɛkɔrɔba, Kulu janba, kenɛba, sirikuba, basiba, Fɛrɛkenɛba, Wolojɛba, Warandaba, bilenmanba, jeliba, Ɔnkekɔrɔba/Ɔnkekɛkɔrɔba, (Jiri) finba, ɲumanba, Jelikeɛkɔrɔba/jelicekɔrɔba, dukɛnɛba, kunbaba, Suba, Kɔmaaba, woloba, (Kɛlɛmasa) juguba, musokɔrɔba, (Kɔrɔmuso) kɔrɔba, geɛba, Npɛriba/npariba Npɔkiba, gasiba, falɛnba, mamusokɔrɔba, tabaleba, Siraba, dankunba, kafiriba, sirakunba, sokeba, Kunba, Daba, dingɛba, sokɛnɛba, (Kankala) janba Janmanjanba, dugujɛkɔnɔba, Kɔlɔnba, doniba, ɲamantonba, faamaba, Funtunba, Dulokiba, Kuncɛba, Jalajɛba, (Muso) bilenba, (Den) bilennenba, sobɔlɔba, cɛbakɔrɔba, Dontamaba, Disiba, Jɛnɛkoloba
-baa/baga	Dɔnbaa, subaa, laharataabaa, nasiribaa, donbaa, kebaa, tɛjɛbaa / bayɛlɛmabaga, dilanbaga, tɛjɛbaga
-baatɔ/bagatɔ	-
-bali	Sinibɔbali, seginsobali, cɛsiribali, malobali, sigibali, suturabali, wulibali
-ka	Ɖɛpekorɔka, Ncekolonbaka
-la/na	Maanabɔla, nkalontigɛla, denjuguwolola, cifɔla, ɲagarandɔnkilidala, korojala, tigasila, kumalankolonfɔla, gankangosila, maafaala
-la/na	Kulubalila, cela, Ncekolonbala, jabaala, buranna, Tonnkana
-la/na (sabala)	Kɛmɛla
-lama/nama	-
-lan/nan	Wusulan, bɔgɔlan, kɔnɔgwannan
-len/nen	Sulen, kɛlen, jalen, salen, digilen, kurulen, fusayalen, wololen, balolen, furulen, dafalen, sirilen, tulɔlen, dabilalen, nalen, jɛlen, susulen, kɔrɔbalen, bɔlen, cɛsirilen, birilen, falɛn, kɔgɔlen, kaarilen, taalen, yelen, sirilen, fililen, tilalen, dabɔlen, kwalen, bilalen, kɔrɔbalen, dɛsɛlen, kuncilen, kɔrɔlen, jɛlen, golobalen, dabirilen, selen, waalen, wajibiyalen, kɔrɔtalen / sinsinnen, sebennen, temenen, tɛjɛnen, minɛnen, dɔnnen, kunsinnen, bannen, sannen, donnen, dulonnen, dunnen, siyɛnnen, majiginnen, kumanen, dilannen, jiginnen, gerennen, ɲiginnen, finnen, tɔnɔminen, bilennen, donnen, ɲininen, bɔnnen
-li/ni	Kɔrɔbɔli, tanuli, kɛli, nɔgɔyali, faali, bɔli, yeli, sonyali, taali, ɲininkali, bolokoli, sarali, sirili, dantigɛli, digili, kalanni, tɛjɛni, jɛnsenni, ɲinini, dilanni, binnkanni, nenini, siyɛnni, donni, tɔnni, nini, munni, yɛlenni, jɛnini
-ma	-
-man	Ɖuman, cɛɲuman, duman, caman, denɲuman, kɔɲuman, jɛman, finman, goman, juguman, kɔrɔman, cɛman, musoman
-nan	Filanan, sabanan, naaninan, duurunan, wɔɔrɔnan, wolonfilanan
-nin	Sebennin, kelennin, yɔrɔnin, misɛnmannin, baranin, furakɛnɛbugunin, denkenin, cogonin, fɛɛfɛlenin, jenin, filennin, dennin, disanin, jɛmannin, musomannin, sumanin, misennin, siranin, ntufannin, jugunin, fɔlɔnin, ɲɛjikunkurunnin, npogotiginin, dimɔgɔnin, berenin, nkabanin, ntominin, nkabasunnin, bara misennin, kunkolonin, nunkurunnin, bɛɛlenin, kamalennin,

	sadennin, kerenin, jakumanin, kalojenin, bɔfilenin
-ntan	Kɔrɔntan, denntan
-ta	Nata, keta, furuta
-tɔ (dimitɔ)	Hɔrɔntɔ, karatɔ
-tɔ	Ketɔ, natɔ, dabɔtɔ, dontɔ, taatɔ, datɔ, bɔtɔ, satɔ, setɔ, bolitɔ, bintɔ, kɔrɔtatɔ, siratigetɔ
-ya	Kandɔnniya, denjuguya, bataradenya, fugaridenya, surunya, daliluya, musoɔnumandenyaa, denbaya, teliya, hakiliɔnumanya, wuludenyaa (2 acceptions), faranfasiya, ɔnaniya, lankolonya, herebɛmusoninya, girinya, baramusoya, halalaya, ɔnamaadenya, kunnadiya, maloya, faya, denya, falaya, jatigiɔnumansaya, goniya, fasaya, basaya, yatimeya, baanaya, kogoya, dalafiɔneya, tasumadenya, kulubaliya.

Table 15: *Genkurunin*

Suffix	Derived words
-ba	Gundoba, kabakurunba, daba, ganfaaba, banansunba, koba, denmuso bilenba, duba, ɔnamansununkunba, soke finba, jiriba, sabaraba, gangaraba, Bukeyi kɔrɔba, kunkoloba, ɔnekankonba, jiriba, burama kɔrɔba, kelemansaba, garankecekɔrɔba, garankemusokɔrɔba, kala biɔneba, jekeneba, ko dumanba, sikaraba, sagamɔneba
-baa/baga	Bolibaa, bayelembaaa
-baatɔ/bagatɔ	-
-bali	Fɔbali, loɔɔɔnininbali
-ka	Kalaka
-la/na	Dɔnkilidala, kangaridala, garidela, ɔngarandɔnkilidala
-la/na	Marabala, Tentela, Dakajala, Moribala, Basamala, Dugabala, jabaala, Genkuruna
-la/na (sabala)	-
-lama/nama	-
-lan/nan	Dalan, nkɔnifɔlan, bɔɔɔlan, maabugɔlan
-len/nen	Dalen, sigilen, lajelen, suulilen, selen, tugulen, jɔlen, kelen, kɔrɔtɔlen, koorilen, tilalen, dabirilen, bɔlen, maralen, kelen, deselen, nalen, bolilen, wulilen, birilen, turulen, salen, janyalen, feerebɔlen, taalen, dadonnen, bɔnnen, bilennen, ɔnininen, ɔnesinnen, donnen, finnen, temenen, kumanen, dilannen, dulonnen, sinnen bannen, sumanen, gannen, jamannen, dunnen, munumununen, fujeninen, menennen, bananen, neninen, nɔnkɔmanen
-li/ni	Lininkali, tali, sɔrɔli, kɔlɔsili, dannii, kanjiginni, dɔnni, dumuni, mineni, ɔninini
-ma	Tɔɔɔma/tɔɔma
-man	Finman, jɛman, caman, cɛman, duman, juguman, musoman, ɔuman
-nan	Filanan, seeginnan, sabanan
-nin	Genkurunin, denmisennin, bilakoronin, burama ncinin, herebɛmusonin, ncinin, ncininnin, gadanin, kunin, Bukeyi ncinin, bolomisennin, duguranin, cɛmannin, bɔrenin, cɛnin, nkɔɔninflennin, senkɔnin, kunkurunin, tɔnin, dɔɔnin, kɔɔɔwulunin, musokɔrɔnin, damadɔnin

-ntan	Soninntan
-ta	Keta, donta, nata
-tɔ (dimitɔ)	Dimogotɔ, falatɔ, fɛɛretɔ
-tɔ	Bolitɔ, bɔtɔ, taatɔ, natɔ, segintɔ, datɔ, furutɔ, satɔ
-ya	Saya, dannaya, hɔrɔnya, mansaya, firiya, diya, seginbaliya, janya, teliya, silamɛya, sumaya, hakimaya, kelemansaya, malobaliya, cɛya, limaniya, sennateliya, suya, mɔgɔsɛbɛya, diyagoya, datigiya, ŋaniya, jahiliya, cogoya, kalaya, nɔgɔya, caya, jeliya, suguya, kɔrɔya, bilɛnya, musoya,

Table 16: *Wagadu fo Sudan*

Suffix	Derived words
-ba	Jamanaba, silameba, ŋumanba, marakaduguba, dɔnnikelaba, maaba, fanba, waraba, fɛnba, galoduguba, kɛnɛba, dɔgɔduguba, tataba, kogoba, keleba, sirakɔrɔba, fiŋɛba
-baa/baga	Sigibaa, demɛbaa, tabaa, sigibaga
-baatɔ/bagatɔ	Girinbaatɔ
-bali	Labanbali
-ka	Gemuka, Kamaralaka
-la/na	Dɔnnikela, larabudɔnnikela, sebɛnnikela, senekela, cikɛla, dɔnkilidala, nkusundɔnkilidala
-la/na	Farajɛla, arabula, turela, farafinna, beenna
-la/na (sabala)	-
-lama/nama	-
-lan/nan	-
-len/nen	Kɔrɔlen, bangelen, dɛselen, kafolen, falen, ŋenabɔlen, sigilen, kɛlen, selen, salen, taalen, dalen (den dalen wolɔla), diyalen, fagalɛn, goyalɛn, jɔlen (bin dɔ tɔgɔ don), tilalɛn, nalɛn, cayalɛn, wololɛn, labilalɛn, jɛlen, dafalɛn, bɔlen, fɔlen, bɔɔsilɛn, ŋɛbɔlen, faralɛn, maralɛn, cilɛn, tugulɛn / dɔnnen, lamininɛn, bonyalɛn, bannen, doninɛn, sɔnnen, tɛmɛnɛn, ŋaaminɛn, daminɛn, tiŋɛnɛn, sirannɛn, bennɛn, diminɛn, sɛgennɛn, seginnɛn, jeninɛn, sɛmɛnɛn, labennɛn, tonnɛn
-li/ni	Sɛgɛsɛgɛli, faali, sigili, yɛlɛmali, basigili, kɛlɛli, yiriwali, lablali, bilali, marali, kɔlɔsili, sɔsɔli, tilali, feereli, cili / kununni, bangeni, dunni, mɔnni, ŋinini, tiŋɛni, binkanni, ladonni, tɔŋɔni, nenini,
-ma	Dawulama, tlema, naloma, balima (...), sigiŋɔgɔnma, furuŋɔgɔnma, hakimima, feerema tɔɔma
-man	Ŋuman, caman, koŋuman, juguman
-nan	Filanan, sabanan, naaninan
-nin	Sankaranin, dɔgɔnin, npogotiginin, banin, dugunin
-ntan	Kungo jirintan

-ta	Fota
-to (dimito)	Bololatigetɔ, jito
-to	Seginto, taato, tɛmɛto, nato
-ya	Maaya, geleya, cogoya, adamadenya, ladɔnniya, silameya, donsoya, nɔgɔya, dɔnniya, nafolotigiya, caya, faamaya, cɛfarinya, diyagoya, dɔgɔya, keneya, keneya, kɔniya, fadenya, diya, domaya, bonya, masakeya, jɔnya, wajibiya, benbaliya, sonya, yeremahɔrɔnya, denmisenya, kelɛtigiya, nɛmaaya, faamuya, finya, siginɔgɔnya, furunɔgɔnya, masurunya, tɔnɔgɔnya, fusaya, julaya, kelekuntigiya, misisonya, keledenya, teriya, mandiya, numanya, maanumanya, fonisireya, farinya, sumaya, goya, sebaaya,

Table 17: *Cɛmandali Babilen*

Suffixes	Derived words
-ba	Duguba, balikukalansoba, kamalenba, fulaba, maganfinba, jonba, wulanba, misiba, galoba
-baa/baga	Magenbaga, sangacibaga, sebaga, bolibaga
-baato/bagato	Seginbaato
-bali	Sebali
-ka	-
-la/na	Baarakela do nkilidala, f o likela
-la/na	Cɛla
-la/na (sabala)	-
-lama/nama	-
-lan/nan	Doninbolan
-len/nen	Sigilen, nalen, bolen, folen, dogodalen, dalen, sirilen, lajelen, jolen, ferelen, taalen, tigelen, cilen, dandalen, tulolen, sumalen, seenelen, jigilatigelen, kolonsolen, cesirilen, wulilen, yelemalen, kelen, selen fagalen, fununnen, dadonnen, bonyanen, fasannen, donnen.
-li/ni	Nali, kunnadali, gosili, foli / tanni, magenni, fonini, gunni
-ma	Sogoma, nenama
-man	Goman, puman, caman, jeman, finman,
-nan	Filanan
-nin	Sinin, wulanin, sisandanin, bulonnin, musonin ncinin, dubalennin, danmanin, nturanin, paaranin, sisannin, filennin, baaranin
-ntan	-
-ta	Nata
-to (dimito)	Jito
-to	Taato, senfato, nato, tilato, seginbaato, sobolito, boto
-ya	Terejuguya, masakelenya, koroya, siya, jeya, fusaya, musoya, ciya, bonya, yebaliya, surunya, lasumaya, hronmusoya, nimogoninya

Table 18: *Ngɔninkɔɔ bama*

Suffix	Derived words
-ba	Gwatigi kɔɔba, donso kɔɔba, kalanden kɔɔba, nugu juguba, jalasunba, muruba
-baa/baga	Subaa
-baato/bagato	-
-bali	Kununbali
-ka	-
-la/na	-
-la/na	-
-la/na (sabala)	-
-lama/nama	-
-lan/nan	-
-len/nen	Lajelen, sumalen, kwalen, wulilen, sigilen, dogolen, jɔlen, kasilen, jɛlen, taalen, nugulen, kelen, fɔlen, nalen, fogonnen
-li/ni	Wulili
-ma	Jɛnama
-man	Juguman, juman, duman, teliman
-nan	Filanan, sabanan
-nin	Wuladanin, jalannin, jumannin, jinin, Njenin
-ntan	Fantan, bantan
-ta	-
-to (dimito)	-
-to	Boto
-ya	Dwaya, sumaya, juguya, jeya, caya, ɛɛɛya, farinya, ladiya, mandiya surunya, fiɛya

2. Prefix derived words

Table 19: Gɛnkurunin

prefixes	Derived words
La-	Laban, laje, lamine, labila, laben, lakali, laben, latije, lase, lase, lapini
Ma-	Mafile, magen, mabo, makono, maje
sɔ-	-

Table 20: Wagadu fo Sudan

prefixes	Derived words
La-	Latige, labanko, lakalicogo, lawuli, lakununni, lakali, ladonniya, lakalikun, laban (tɔgɔ), lamin, laban, laben, labila, lamini, lamuruti, laje, lana, labla, lamini, latuubi, latije, labo, lafiɲebo, lasegin
Ma-	Masoro, masurunya, majigin, makono, magen
sɔ-	-

Table 21: Cɛmandali Babilen

prefixes	Derived words
La-	-
Ma-	Magen, magenbaga, magenni, makono
sɔ-	-

Table 22: Ngɔninkoro bama

prefixes	Derived words
La-	Laje, ladiya, laben, lamini
Ma-	-
sɔ-	-

Table 23: Dɛpɛkoro ka Tonnkan

prefixes	Derived words
La-	Laban, laje, lamine, lamaga, laben, lawuli, lasama, lafasa, labo, lamɛn, latigebaa, lase, lasa, lawoloma, lasigi, laben (tɔgɔ), labenko, lawoloma, layɛɛn, lakali, latige
Ma-	-
sɔ-	-

Appendix II: Sample pages

The sample pages from the corpora have some selections with symbols. The bold-italic words are the compound words. If the bold-italic is highlighted with green colour, it is a non hyphenated compound word. The hyphenated compound words are in bold and highlighted with cyan colour. If the selected word has (*) symbol, we have a noun. The symbol (\$) shows the verbs whereas the symbol (&) shows the conjunctions. The symbol (£) shows the adjectives whereas symbol (#) shows the adverb. The symbol (§) shows a kind of adverb called “**idéophones**” in the *bambara-français dictionary*¹, p.11.

1. The inventory of **Dɛpɛkɔɔ ka Tonnkan**

Sample page 1: E ba, n’i ye jamana in **bamananmusow*** bɛɛ fara ɲɔɲɔn kan, e ba kan ɲi ka tɛmɛ o baw bɛɛ lajelen kan. O y’e wolo. E kelennin pe de bɛ o bolo. E dɔɲɔninw, diɲɛ bɛɛ bɛ siran olu ɲɛ. U ma mɔɲɔ faga de, nka duguje o duguje, u na yelen sow san fɛ, marifa b’u bolo, o ye **kelemasadenw*** ka sɔɔɔɔ kɔɔ ye. E file nin ye, kabin’i ye **cefini*** saba ta don min, i ma yelen so kɔ rɔ fɔlɔ. E file nin ye, kabin’i ye **cefini*** saba ta don min, i ma marifa da sin mɔɲɔ la k’o faga yalasa i ja na geleya maaninfin faali la. O ye **kelemasadenw*** ka laada kɔɔ ye ? Aa, n den! Aa, n den ! A bɛɛ n’a ta, i kɛra misi tulo ye dɛ! E dɔɲɔninw kɛra misi biɲɛ ye, e kɛra misi tulo ye. Mɔɲɔw bɛ siran e dɔɲɔninw ɲɛ ka tɛmɛ e kan. Tuu! **Fɛnjugu*** file! Nka ne bɛ kelen f’i ye, i k’i hakili ɲɔ o fɛ. Fɛn min ye i ko **denjuguya***, n’i kɛra **denjugu*** ye, i kana na ne fo bilen dɛ! Ne kɔni ka **sɔɲɔmafɛfoli*** ni n ka **tilɛsenkuncɛfoli*** ni n ka **wulafɛfoli***, ne yafar’i ma, i tɛ k’a ye! Den in wulila. A dwaninw yelela a la dɔɲɔnin (**Nɛpɛkɔɔ ka Tonnkan p13, 217 words**).

Sample page2: ...koyi! N’a ko a’ ka taa kɔ kɔ, a’ ye taa kɔ kɔ. N’a ko a’ ka taa ba kɔ, a’ ye taa ba kɔ fɛ. I ka mineni wa? A bi ka d’i la, a sini ka d’i la, wa cɛnin bɛ kɛ **kelemasa*** ye dɛ! A y’i daden. **Cɛkɔɔɔba*** ko: « N den, i ye nin mɛn? Ne m’a fɔ i ye! E, n den, anw tɛ **fɛnlankolon*** dilan mɛnɛ. Nin dilanni ɲɔn hake, n’a fɔr’i ye, e yɛrɛ b’a dɔn min don. Siriku dalen file nin ye, n’a ka d’i ye, cɛ kɛmɛ, i bɛ taa npogo don u bɛɛ la hali marifa tulo, u t’a yɔɔɔ dɔn k’a tige. N den, **fɛnlankolon***, anw t’o mara an ka dufa kɔɔ mɛnɛ. I bɛ nin **kumabɔ**§, sirikuba in, ani **yɛfɛgedɛn*** **kunkolo***, kolon kɛmɛ, i bɛ na n’o ye, n b’a **kumabɔ**§ k’a d’i ma. Sini, a tɛ ne tɔɲɔ fɔ, a b’e de tɔɲɔ fɔ, wa yɛrɛ tɛ bila. N’i ye fanga sɔɔɔ, n bɛ taa n ka **denbaya*** nɔ fɛ ka na, sabu i ye n minɛ de.» A ko **cɛkɔɔɔba***, u bil’i kun an ka taa, n bɛ yɔɔɔ min na, an ka se yen. **Cɛkɔɔɔba*** y’u bil’a kun. U taara. U nana se **furakɛnɛbugunin*** ma. A ko **cɛkɔɔɔba***, yan ye ne ka so ye. **Cɛkɔɔɔba*** in siranna. A ko o tuma, e ye jine... (**Dɛpɛkɔɔ ka Tonnkan p32, 229 words**).

Sample page3: Bulon wolonwula mɔɲɔ bɛɛ ka wuli k’i ɲɔ a nɔ fɛ. A tora k’a ta jɛmannin na k’a laban fin na. Jaa, ni fini birila muso kun na, n’a yelela, dan t’o la dɛ, fo n’a ɲin susulen tɛ dɛ! Jabi saba bɛ yen, muso ka kan k’a hakili t’o la: i sen jabi, i hakili t’o la; kana farati gɛsɛ la; i ɲin jukunan, kana farat’a la, a kana jɛ! Nɛ kalo, kana to ka farati a la de, i jija kalo ka dafa, walahi, i bɛ kɛ mɔɲɔ mandi ye! Nka, **hɔɔɔnmuso*** mana to ka tɛmɛ i la siɲɛ fila, n’i m’a kasa ni **cɛbakɔɔɔ*** kasa bɔ ɲɔɲɔn na, o tuma muso tɛ dɛ! Kɔ n’o tɛ, **hɔɔɔnmuso*** mana **tɛmɛko*** fila k’i kɛrɛ fɛ, f’i ka kasa dɔ sam’a nɔ fɛ; an kan tɛ ni kasa goman ye dɛ, kasa duman kɔni. **Hɔɔɔnmuso***, n’i m’i ɲin tereke k’i da kasa tige, i b’i **siɲɔɲɔn*** tɔɔɔ, sabu a kun cankaninen de bɛ si. Nin **hɛrɛbɛmɛsonin*** in tun ka ɲi sa! A ko: « Muso tɔw, a tɛ wuli an ka taa so kɔɔ sa, ne ka bi **tilɛsenkuncɛbaro*** kɔni diyara, a’ ye tɔ an ka taa sa!» ɛɛ, n’ale ye min fɔ, o de bɛ kɛ. « Faama, wa i ka baro banna, anw taara koyi! » (**Dɛpɛkɔɔ ka Tonnkan, p80, 218 words**).

2. The inventory of **Gɛnkurunin**

Sample page1: **Bamanankɛw*** ni marifa cɛ juguw b’a la k’u jɛgen. Yiriba bɛ tɛmɛ, Kolobo Burama bɛ ka tɛmɛ, **baramuso*** bilen wɔɔɔɔ bɛ ka tɛmɛ, gosi kɛmɛ wolonwula bɛ ka tɛmɛ, f’u ser’a ka **woloje*** ma. U nan’u sigi tuma min na, a ko: - **Jelike***, kuma ni kolobo ye, k’u k’u da den. – O tuma, fa de bɛ Kolobo la n’u t’u da den, o ye **jelike*** kan ye. Mun kɔɔn e t’i **darɔkuma*** fɔ, e ɲɔɲɔn bɛ kolobo bi wa? **Bamananmuso*** n’e ɲɔɲɔn da **fininkolon*** na. Maa o maa file yan, a bɛɛ lajelen nan’i kelen kama. ɔ, a’ ma kuma mɛn? Dɔ ka kuma sa bani, min man’i yɛrɛ sɔɔɔ, o y’i yɛrɛ ka **kunko*** ɲininen ye. Burama k’a k’a’ da den dɛ! Bamanan da denna. U y’u sigi **ɲɛmajɔ*** kɔɔ i n’a fɔ **dolenfilila***. A ko: Jeliba ! Jeliba ko naamu. Ni bamannan da denna, i yɛrɛ ka bɔ kɛnɛ nɔ, **jelikuma*** tɛ yen bi. Jeliba taar’i sigi. A ko: n tɔɲɔma Burama kɔɔba! **Kelemansaba*** in y’a lamɛnɛ. Surɔ, ne ni n ka jeliw kelela. (**Gɛnkurunin, p22, 119 words**).

¹ Bailleul Charles, *dictionnaire bambara-français, Bamako: editions donniya, 2007*

Sample page2: ...kuma, maa te kuma de. Ce duuru be k'u sigi, a bee lajelen **dawolo*** be ka yereyere. Nege jolen b'u kun na sa dere, marifa man ni. Burama ko: ne m'a fo aw ni tile wa? Maa ma kuma. Kala Bukeyi koroba kan be: - He-he, ne ka ce npari wa? Burama sinna ka marifa jukunan sigi a disi ro; a ye sira **cejugu** mafila **nparikala** la. Tali, yoro min, a ye **nparikala*** **cetige**\$ fila ye, **negeden*** jigina **nparidinge*** ba in kono, **nparikala*** **cetigera**\$! Kunkurun **sebebinna**\$ dinge da la, kunkurun do tora Kala Bukeyi koroba bolo. Kala Bukeyi koroba sinna k'a **kininfekere*** file, ka t'a soro **soke*** fin jolen be, **soke*** in ntaron **dabirilen*** be dugu mo, a sen finnen den-den-den. A ye **soke*** in disi laje, ka t'a soro **soke*** in disi be den-den-den; ka **soke*** in **sanfela*** laje, ka t'a soro **soke*** in kan sigilen. Burama fana y'i da **soke*** **kanfiri*** kan, cali, a y'i cun dugu ma; a sinna ka karafe yelema, ka karafe da dugu ma, ka marifa da o kan, **soke*** y'i kun suulilen to. (**Genkurunin, p38, 182 words**).

Sample page3: ...yoro jan na, a file **soforoda*** la i koroba yan, a ye **jiriju*** fila mine waati min, a sinna k'i cun ten, ka **balimasira*** ni **sinjisira*** **negeden*** ta k'a bila marifa kono. O y'a soro a ye ganfaaba foni, ka **kunkolo*** in bila a kono, k'a ni kirike siri **soke*** la **kolikoli-kolikoli**\$, ka marifa soro k'i jo. A be fama waati min, a y'i to ka **sokew*** nato ye, gangan wulilen be, i n'a fo **sokew*** ntaron ka bo u **nunfilew*** fe, a bee cemannin. A sinna k'a pan ka bo nsereba ko fe k'i waa. **Bamanandew*** y'a don ko nin ye Kolobo Burama jolen ye. O don, jeliw b'a fo cogo min, **bamananden*** dow ye **soke*** boli fo ka taa **soke*** ntaron gun **soke*** **bobara*** la, nk'o si m'u kiisi saya mo! A y'a sama u ni jongo ce waati min, saw bann'a kinin n'a numan fe; u taara jongo min'a ko fe. Kala Bukeyi ncinin! A ko, un. A diyar'e **koroke*** de la anw ye, cenin ye **soke*** min bon an ni jongo ce, mogo si t'a hake don. Nin be ke cogo di? W'a b'an ni Kala fan ce sisan sa, anw... (**Genkurunin, p58, 195 words**).

3. The inventory of Wagadu fo Sudan

Sample page1: **Sigiyoroyelema*** in **daminena**\$ Somonow de fe. San keme 13 nan ye Somonow soro **Kulukoro***. **Cikelaw*** ka **sigiyoroyelema*** kera san keme 13nan n'a 17nan ni jongo ce. Kalajan Kulubali sigili Segu kere fe, o ker'o yelemali in de sen fe.

Bamananw sigira k'a ta Segu fo jene. **Kabini**& 1754 san, Bamananw ka **sigiyoroyelema*** ye sira were ta: u y'u **nesin**\$ **tlebin*** ma. I b'a soro **Baramanolo*** ni **Aanolo*** tun ye **tlebin*** sira mine tow ne.

Rafenel ma son Delafosi ka fota ma. Ale ka jate la, Segu sigibaa folow tun ye Bosow de ye. Bamananw nana far'u kan; u bora **Worodugu*** ni koron ce, **cikelaw*** tun don. U **nawaati*** ni Soninkew **natuma*** benna, olu bora kepeka fe de, **jagokelaw*** tun don. Soninkew tun ka ko **nenablen**\$ ka teme sigibaa tow ta kan. O de y'a to olu ye fanga ta ka jamana kow **nenabo**\$. Somonow nana o ko ka jamana do sigi **Kulukoro***. O jamana sigili ni Fulaw ka taama te jongo ne sira la; Fulaw ka taama laban kera Segu jamana ni Karata jamana sigili ye. Segu Kulubaliw bora **Baramanolo*** de la.

Kalajan sigira fanga na 1652 san fo 1682 san. Ale tun y'i sigi **Marakaduguba***, o tun be Segu ni **woyojigin*** ce.

Kalajan Kulubali n'a ka maaw bora jene ka na sigi Somonow ni Marakaw Fulaw ce la k'i yere ke olu ka faama ye.

Kalajan tlala ka **kerfeduguw*** keke k'olu mara. A kera **Jamanatigi*** ye.

Danfasari bora **Marakaduguba*** 1682 san bawo a **balimake*** Nontenen tun ye fanga ta yen. Danfasari taar'i sigi **Segukoro*** k'a **yeremajamana*** ke yen.

Suma min ye Danfasari **denke*** ye, o ye fanga ta 1697 san fo 1712 san. Ale sera k'a ka fanga sigi **Bamanandugu*** bee kan, dugu minu tun be Segu ni Baraweli ni Garo lamini kono. (**Wagadu fo Sudan, p28, 297 words**).

Sample page2: **Desekoro*** a kelen faama ye, a ye jolo Jara denw to keke do la ka Namina ci bogobogo. **Fadenkele*** diyalen Monson na, a ye maa ci ka taa **Desekoro*** ma k'a ka fen kelen sugandi nin fenw na; **sanudaba***, garan ani karafe.

N'a ye **sanudaba*** sugandi, o koroba ye k'a be keke dabila, k'i **nesin**\$ sene ma. N'a ye garan sugandi, o koroba ye k'a sonna Segu faama ye.

N'a ye karafe sugandi, o koroba ye keke ye. **Desekoro*** ye karafe de sugandi. O de la sa, Monson y'i kun da Gemu kan. Keke ma diya **Desekoro*** la, o ye dugu bla ka t'i dogo **Tango-Tango*** Jafunu kuluw la. O kera 1896 san na. Segu faama y'a gen ka do yen, ka taa daga sig'a da la Gidimaka, Galanbu jamana **koronyanfan*** fe. Daga in menna sen na; Monson ye suman jini Ali fe, Ulad Nbarekiw ka faama. Kongo tun be Monson ka maaw la, Ali y'i ban ka suman d'a ma. Monson wulila n'a ka maaw ye k'u **kunda**\$ Jara kan, Jawaraw ka **faamadugu***. Monson taalen ko, **Desekoro*** seginna karata ka t'i sigi Joda. Gemu koni kera tomon ye.

Desekoro* ye jon 2.500 mine yen julaw la k'olu ke **keladenw*** ye. 1796 san, Bundi Almami tun ye Yelemane keke k'a nafolo bee ce. **Desekoro*** y'i **nesin*** Khaso ma ka dugu 3 mine yen. A sara sira la a taato Jara.

Muso Kurabo (1799 san fo 11808 san)

K'a to fanga na, Khaso kow bee tun naaminen don. Denba Segal salen, a denw tun b'a fe kao jamana tla. U ma se, nka u ye Khaso fanga yɔɔyɔɔ. Denba Musakɔy fagalen a balimaw fe, o ye jamana to naami ka t'a fe. Kunba Sisa Friya min tun ye Sero faama ye, o y'a nini Muso Kurabo fe a ka kow **nenabo*** Khaso kɔɔ. **Masasike*** ye Kɔɔakari mine ka khasonkaw nɔni ka taa Senegali ba **numanfɛbolo*** kan. A y'a ka **sofakuntigi*** do sigi fanga na Kɔɔakari, ... (**Wagadu fo Sudan, p31, 336 words**).

Sample page3: Samori fɔɔla dugu lamini ni tata ye, o ko a y'a fa lana dugu kɔɔ. a ye cew ta k'a ka **kelebolo*** bugun. A tun b'a ka **keleden*** ladon **konumanɛ**: a fa ka misiw bee taara **kelebolo*** in ladonni na. Samori ni Manakɔɔ Kamara blala nɔɔn na. O y'a ka **kelebolo*** bla ka taa Samori kele Jala. Sofa 50 dɔɔɔn de dun be Samori balo ; nka jala tun sigilen be kulu de kun na, k'a lamini ni tata ye. Manakɔɔ ka maaw be ka kulu yelen ; u ka ca ba n'a si ye. Fɛɛɛ fosi dun te kele lo ni Samori te min dɔɔ. Yanni su ce, kele banna ka sɔɔ hali ma kelen ma jogin Samori ka cew la.

O kele diyalen Samori la, a bɔra Jala ka na sigi Sanankɔɔ ; o tun ye duguba ye, w'a beennakaw de be yen fana. A ka **kelebolo*** bonyana yen **kosebe#**; a ye **sofaw*** kalan **marifalakele*** la, silameya mana diya min ye, a b'o tuubi. 1862 san na, Samori ye Kɔɔan jamana bee kele. San o san do be fara a ko fanga kan. A ma dugu si toɔɔ k'a ser'i la n'i sɔɔn'a ye. a ni Manakɔɔ yere labanna ka ben: jamana **nemaa*** ye Manakɔɔ ye, **keletigi*** ye Samori. Nka bee y'a dɔn ko fanga tigi ye Samori de ye; Manakɔɔ ta ye musalaha ye.

Kɔɔan jamana bee b'a bolo sa; a to ye Sisew ni Beretew ye, a ma tu olu la fɔɔ. Sere Birema Sise ni Sabadugukaw be nɔɔn na ; a hakili te Samori la. Beretew fana be kele la Gundo, olu hakili te Samori la.

Samori y'a yere ke Sere Birema demebaa ye, ka dugu dɔw kele k'o nafolo tla di Sere Birama ma. A mana kele o kele ke, nafolo tla be ci ka taa di Madina Sere Birama ma. O dar'a la, u jera ka Beretew kele k'olu ka fanga tije. O kele bannen, siga si te Samori ni Sere Birema yere ka kele la blen. Samori ma sɔn kele ma fɔɔ; a ka **keledenw*** tun segennen don; a y'i **kɔdon**§ ka taa **Worodugu***. Sere Birema y'a nini ka Samori ka **kelebolo*** segennen in to lase. (**Wagadu fo Sudan, p66, 365 words**).

4. The inventory of Cɛmandali Babilen

Sample page1: **Dumanfo*** ye nata ye

A be kan Cɛmandali **Ncikoro*** wele sisan danin in na, a be Cɛmandali. A b'a **dɔɔke*** **Babilen*** wele, A be Cɛmandali. Cɛmandali **Ncikoro*** n'a dɔɔnin **Babilen***, Cɛmandali **Ncikoro*** de yi sigi Cɛmandali so silameya keme wolonwula ni debe ce ra, a ko ale de ye Cɛmandali ntura ye. A dɔɔnin ye **Babilen*** ye. **Babilen*** ko a ma ko: "N kɔɔ **Ncikoro***, e ka kise sa. Nka, i b'i dade kuma dɔw ma. Sani e ka fen o fen ke, o b'a sɔɔ , i y'a fɔ. Hɔɔn, n'i ye kuma fɔ, k'a sɔɔ, i m'a ke, a kera juru ye." Cɛmandali **Ncikoro*** ko a ma, a ko: "N dɔɔ **Babilen***, **sinji*** ye kara de ye. N'a y'o je, **bamananden*** te se k'a fɔ ne ma ko ne ye **datigi*** ye. Nka, an bee fa, n'o ye Fatama ye, o sigilen be. O de y'a to, e ye se ka nin kuma in fɔ ne ye." A dɔɔ **Babilen*** ko a ma, a ko: "N kɔɔ **Ncikoro***, i ni ne ye kɔɔ ni kɔɔ de ye. Kɔɔ ka jan nɔɔn ye de, nka, u man timi nɔɔn ye. I ka kɔɔ ni ye kɔni, nka, I man fisa ni n ye." Kuma in balanna **korɔke*** ni **dɔɔke*** ce tuma min na, o tuma na, a kera u ce funun ye. Cɛmandali **Ncikoro*** dun, **datigi*** tun don, nka, a ka farin. Sabu, sow mana nɔɔn sɔɔ nɔɔn na tanni, a be ce ganan don farida la joona mɔɔ bee ne na. Nka, **datigi*** don. A ni dɔɔ in fununnen nɔɔn na tuma min na, a ko: "N dɔɔ **Babilen***, ni e ko ne **datigi*** de ye, ne be yan wo, n te yan wo, fen te se ka tije Cɛmandali yan... Ala ye se k'i to a ka **masakelenya*** la don do, a be na don do jira an na, o b'a sɔɔ, ne Cɛmandali **Ncikoro*** te **yanninno***. O mana ke, few be **negeden*** sɔɔn an fe **dukene*** na yan." **Dɔɔke*** ko a ma, a ko: "N kɔɔ **Ncikoro***, an k'an sigi k'o don kɔɔ." U tora **funun-funun*** na, u te se nɔɔn ma, u te nɔɔn toɔ fɔ, k'a sababu ke kuma in ye. U tora o sigi de la, **Masinafulaw*** ye so fila yelen, ko ka n'a fɔ Cɛmandali **dugutigi*** ye, a... (**Cɛmandali Babilen p9, 385 words**).

Sample page2: A ko: "Naamu." A ko: "Kabini e ye ne wolo don min, kɔɔ b'i yere fisaya ko o ko ma, e y'a ye, ne y'o ke?" a ko: "Baba." A ko: "Naamu." A ko: "n kɔɔ **Ncikoro*** ye **datigi*** de ye. A taato ye kuma min fɔ n ye, n b'o de jira a la. A ko, n'an ja sera ka sigi **soboli*** **jatige*** fe, k'an ka Bema ka bon ni bulonni **kannabo***. N b'a jira a la de, a k'a dɔn, **soboli*** na don ye bi ye, an b'a **kannabo**§ k'a ben o ma. N be baara min ke ko fe, a be na a sɔɔ, n n'yo ke. Nin ka kan'i dugu bo a no na. Keme wolonwula ni debe taalen file, dɔn ka di kuma caman ye, fɔ man di o ye, o keme wolonwula ni debe, kabini u taara, u jɔlen don, u te se ka mago fana dila. Nka, mɔɔ ye min ye, i yere da kan'a fɔ. Ni n tora ka jigin sisan, k'a fɔ, magen taara **datigi*** don. A mana na don min, a ben'a fɔ: N dɔɔ **Babilen***, sow y'aw temen yɔɔ kun na, o de ye nin ye wa, n'u jɔra ka nɔɔn to? N t'a fe, a k'o de don ye. N to man ca, n tilato file. a taa don, Bema min fana ko a ka taa, n b'a jira a fana na de, a k'a dɔn ko kɔɔw ka jan nɔɔn ye de, u man timi nɔɔn ye. N be baara min ke cew la kungo la, n b'a ke o jɔlen ne na. N'a y'o je, i dusu kana bo a no na, Baba. Taa i sigi i no na." A ko: "Baasi te." Fatama seginna ka taa i sigi. Fatama taara ka t'i min na, Fatama **denke*** fɔɔ **nokanda*** tilara bɔɔ ce la tuma min na, a nan'i jɔ a musonin ncinin na, Mama jeman na,

a ko: "Mama jeman." Mama ko: "Naamu" a ko; "I be dabali ke, I ka n **koliji*** bila." Mama jeman ko a ma, a ko: "Ce **farinjugu**£, n'I ye **sanji*** ye ka wulu bugu, a b'a tigi de makɔɔ. N'a y'o je, a sen ka di o ma **kojugu**#. N'I y'a ye, **kabini**& magen taara, Siga be kuma si bee kan ka fo, n'a be k'e tɔɔɔ, a be ka anw tɔɔɔ. I tun k'anw bila, anw ka taa nin **finiko*** in na, an b'o fisaya nin kuma ninnu ye". "Ee", a ko: "Musoya ye mɔne ye." A ko: "Mama jeman, n kɔɔ **Ncikɔɔ***, an'a muso Siga, e m'a dɔn, u bee be **jelikuma*** de fo? Ni **hɔɔnkuma*** te, olu ka kuma... (Cɛmandali Babilen p19, 440 words).

Sample page3 : Ni ko ma ke, ko te dɔn

U tora u be na, u tora u be na, u tora u be na, u tor'u be na, u tora u be na. O y'a sɔɔɔ, **degeminnajama*** in nalen, **kolobokalabakan*** kɔ, kuma si t'u da. **Dugutigi*** n'u te kuma ɔɔɔn fe. a b'u neni su ni tile bee, u ko: "An mago te e la, e kun cilen don." U b'o sigi la tuma min na, **dugutigi*** ko: "N'a y'a sɔɔɔ, Fatama **denke*** fɔɔ **nɔkanda*** taalen be, ne kamana ma tige Cɛmandali misiw la. N b'a bisigi, u be na. Sabu, a muso denw te, a yere denw don." U be dɔn ko la tuma min na, Cɛmandali **Babilen*** ni Cɛmandali misiba in, u sera fuga da la. So keme ni so biwolonwula, o kolonsolen be misiw rɔ, **ɔɔnkamalen*** cesirilen be u nɔ fe. a ko: "A y'aw lamine." U y'u jɔ. A ni **dafila*** **boke*** ni jeme ni garina, a y'i **kunfa**£ **sokala*** la. A nana **dafila*** da fo kogo jan kan, a y'a fan fila kuma **minke**#, minnu ja wulilen be, i komi ne yere cogo, olu golobara k'u bugu u musow kan: "kɔri i ma n ka marifa bila yɔɔ jan na?" Fulaw taalen be misiw mantɔ, u yelemalen file an yerew kan. Ce kolon bee n'a muso donna ɔɔɔɔn na. Galoba ma bonya a ye. Dɔw ko: "sani a' k'a ke nin **girin-girin*** in ye, ka dugu fan bee don ɔɔɔɔn na, aw t'a dɔn **Babilen*** taa **furadanma***, a ma na, a' te mɔɔɔ bila ka karanga da yelen k'a laje?" U ko: "o fana ye tije ye." Mɔɔɔ yelenna **karangada*** fe, k'i kun da kogo jan na. a ne be Fatama **denke*** fɔɔ **nɔkanda*** la, a ni jube ni **dafila*** **boke***. A tigi jiginna, a ko: "**Kabako*** kera." U ko: mun kera? A ko: "I k'a dɔn, Cɛmandali misiw nana **Babilen*** bolo. Bisimilahi aramini arahimi." (Cɛmandali Babilen p37, 322 words).

5. The inventory of Ngɔninkɔɔ bama

Sample page1: **Dugutigi*** ka kene, **somaaw*** kene? A ko: Gasi te, juguman te. A ko: U ma aw la dunun kerɛkerɛn. A' ye **namadunun*** sumaya. Wa kuma be n da. He...! U ye dunun sumaya. A ko: **donsokuntigi*** yo! Gasi te, juguman te. Bama be ne fe yen Ngɔninkɔɔ, A ye **npogotigininw*** dwaya, A ye bilakoroninw dwaya. A ye n ka musow dwaya. Dugu maaw ye n bila n ka n'a f'i ye. N'i ye bama in kele, U b'i sɔn **furumusɔ*** ye, K'i sɔn ba debe kelen na, O y'i bonya dɔ ye. A ko: kuma jira donsow bee o bee la, Donso kɔɔɔba fara donso ncinin kan, **dugutigi*** **nakan*** fɔ bee o bee ye, u ye kuma bila ɔɔɔɔn kɔɔ. Ee...! **Kuntigi*** sumalen sumana. Ee...! **Kuntigi*** sumalen sumana. **Donsokɔ*** dɔ nan'i **kantɔ**£, a ko: karamɔɔ yo! Karamɔɔ ko: Naamu! A ko: Ne yere t'i juguya, N'i y'an ka marifaw kɔ kuru tun, A ka se **taakun*** na. o ye mele bama kelen ye, N'an ma t'o ni dije fara? **Donsokaramɔɔ*** nan'i **kantɔ**£, a ko: Gasi te, juguman te, **Kalanden*** tena foyi faa ni **kamiden*** jalannin te. **Kalanden*** nan'i **kantɔ**£, a ko: Karamɔɔ yo! I be hake to n ye! **Musokɔ*** be ko min na, o ye **kodagelen*** ye. (Ngɔninkɔɔ bama p9, 210 words).

Sample page2: **Donsokaramɔɔ*** nan'i **kantɔ**£, a ko: **Dugutigi*** yo! **Dugutigi*** ko: Naamu! A ko: I be si dere, Ni sinin dugu puman jera, sani ka **selifana*** jeya, An be **bamakele*** laje Ngɔninkɔɔ. **Dugutigi*** sir'o la. Ni donon fɔɔ kulera, **dugutigi*** y'i seri coyi. **Dugutigi*** nalen kɔ, hee... **tilebin*** donsow wulila gari fila tankɔn tigi o y'a sɔɔɔ... Ce, Ngɔninkɔɔ bama ye subaa ye. O ye subaa kwalen ye. A ye donsow nadon bee o bee dɔn. Hee... nin donsow wulilen, Ngɔninkɔɔ bama y'i yelema, A kera sungurun numannin ye; A ye dege dɔ suma k'a caya, A ye **kolonkalaninw*** girin. Tile b'i nɛnɛya, Tile b'i nɛnɛya, A ye dege fin ka **filenje*** fa layi, ka dege **faamanɔɔn**£; A y'i masiri, A kera gelenkete. A ye **tilebin*** sira doni. Donsow be **ɔɔninsun*** dɔ kɔɔ. Hee...! Donsow. **Musonumanko*** ye ko jugu ye! Donsow m'a dɔn ko jugu kera. (Ngɔninkɔɔ bama p10, 144 words).

Sample page3: A ko: jula **ɔɔmɔɔ***, sabali! I ma Ngɔninkɔɔ bama **komen*** wa? N'u taara dankan na, Fali ti ye, Sanko **falidunan*** nɛntanci. Jula **ɔɔmɔɔ*** nan'i **kantɔ**£, A ko: a' y'u siri gelegele, An be si yan. Ni sini dugu jera, An ma dugu min ye, An na ji min here la, U ye faliw siri gelegele. Hee...! Ngɔninkɔɔ **dugutigi*** wulila. **Dugutigi*** donna so in kɔɔ, A nana ni **filenfatika*** dɔ ye, A ko: jula **ɔɔmɔɔ*** yo! Nin di **denmisɛnw*** ma, A' ka nin jeni, Sanni **tilefana*** be ke **mɔfen*** ye teliman na. U ye tiga jeni k'a nimi f'u fara. Hee...! **Dunanladon*** de nwan ko duman te! Jula **ɔɔmɔɔ*** nan'i **kantɔ**£, A ko: **Dugutigi*** yo! **Dugutigi*** ko naamu! A ko: N bɔɔa kɔɔɔn na, Hee...! Nka a ni yan ce ye tle saba taama ye. Donso kelen be yen, Kɔɔɔn na, Ko **Sirakɔɔ*** Nje, Wa taa Njenin wele! **Kabini**& ala ye Njenin da,... (Ngɔninkɔɔ bama p23, 153 words).