

Global Yoruba Lexical Database v. 1.0

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0.0. DEDICATION

This work is dedicated to the following:

To Mark Liberman, for his extraordinary vision;

To late Kenneth Hale, who showed me the awesomeness of the lexicon;

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To Iyabode Awoyale, wife and friend; and

To late Omo-oba Adepeola Awoyale, mother.

To the Omnipotent, the Omnipresent and the Omniscient God must always be the power, the honor, the majesty and the glory!

0.1. ACKNOWLEDGEMENTS

/Ohun itijú ni, k'á fi aráayé sílè, k'á máa gbé orí-iyìn fún ará-òrun/ 'It is a matter of shame to have to bypass the living, and begin to commend the efforts of the ancestors'.

But for the vision and commitment of Mark Liberman, Director, Linguistic Data Consortium, University of Pennsylvania, it is inconceivable that this kind of dictionary project would ever be completed. Similar undertakings in the birthplace of the Yoruba language were always bedeviled by shortage of funds and unending changes in government policies. Otherwise, why should this type of database be prepared outside of Nigeria?

I drew tremendous inspiration from far too many people than I can ever list, either through direct contact or through their works. Oduduwà, the founder of the Yoruba nation, would always be grateful to them for their support. I am grateful that I can stand on their shoulders.

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0.2. PERSONAL REFLECTIONS

While my entry into full-time Yoruba lexicography was a complete accident of history, my preparation for it appeared to be like a pre-ordained path. My initial limited goal was to prepare a dictionary of Yoruba ideophones, based on my research program of many years. It was the search for a research outlet for this, which led me to Mark Liberman in 1996. It was then agreed to broaden the scope to include a database for a small dictionary of the entire language.

Prior to this, I had found my name being included in every group that participated in the lexical expansion of the Yoruba language starting from the beginning of the 1980s. Yoruba Metalanguage I (1984), Yoruba Metalanguage II (1990), Vocabulary of Primary Science and Mathematics (1987), Quadrilingual Glossary of Legislative Terms (English, Hausa, Igbo and Yoruba) (1991), Core Curriculum for Primary Science (1990), Yoruba Monolingual Dictionary (on-going). Because of this unique continuity advantage, I became an eyewitness to and a participant in the history of every data in the listed works. And since these works have been published almost exclusively with government funds, they have become public property. I can therefore ascertain that they represent genuine collective efforts of Yoruba scholars and should be good enough for incorporation into the database. The incorporation of these works into the database would rescue them from the inevitable obscurity that time and technological advancement could bring upon them in the computer age. I therefore see myself as a humble ambassador and banner-carrier of the Yoruba civilization and of my fellow scholars who have been working arduously to advance Yoruba scholarship and globalize the Yoruba language.

It was with this sense of history that we embarked on the project to prepare a lexical database for an electronic dictionary of the Yoruba language. When we started, I did not know what this would require, but offhand, I said I could write a Yoruba dictionary of about

100,000 word entries. It turned out that that goal would take almost everything in me to achieve.

I had occasions to abandon the project, throw in the towel and go home. The Nigerian political situation of the late 1990s became worse and the dictionary project picked up some nationalistic implications; my mother had died in Nigeria; my home university wanted me back, or else; other pressing family issues arose, caused by my prolonged absence. It looked like the goal would never be realized. Then, I grabbed the bull by the horn, and decided to go ahead with the project nevertheless. This document, which is a fragment of what a full Yoruba dictionary ought to be, is the outcome of my modest efforts. The preparation of this database was driven by three major perspectives: academic, nationalistic and spiritual. Having studied, taught, examined and written on the Yoruba language since the early 1970s, I had to ask myself what I would like to see in a scholarly dictionary of the Yoruba language. What would a learner-teacher of the Yoruba language want to see in a Yoruba dictionary? Then as I was using some of the material to teach second-language learners of Yoruba at the University of Pennsylvania, many more issues relating to the needs of such categories of users crept into the project. It also became clear that the entire dictionary project can be rendered useless if the issues of alphabetization and spelling in a language with extensive prefixation, and of segmental elision and word contraction are not carefully attended to. How would a second language learner look up words whose underlying forms in which the meanings reside, can be radically different from their orthographical forms? What would make the database extremely rich and most user-friendly? And finally, out of nowhere came the challenge of using the database for machine translation.

On the nationalistic side is the desire to raise the Yoruba language to the level of the languages of developed nations.

Spiritually, putting in all of my best is the only way to satisfy my spiritual quest. There must have been a divine purpose to it that the opportunity came to me in the first place.

1.0. THE YORUBA LANGUAGE

The Yoruba language is a Benue-Kwa language of the larger Niger-Congo family of languages, of the Yoruboid branch. It is natively spoken in south-western Nigeria, Benin and Togo countries of Africa by well over 30 million people. It is a tone language. It is considered largely an isolating language with an SVO syntax. It is extremely rich in serial verbs and ideophones. It has become a language of liturgy and music in many countries of South America

1.1. LEXICOGRAPHIC PHILOSOPHY

The central idea that drives the compilation of the database is to produce a database that will become central to the needs of global Yoruba. This means that wherever words of Yoruba origin can be found on the globe, such words should qualify as potential entries in the database. This also means that a database with this kind of vision and ambition will always be a work in progress, since it is going to be impossible to harvest exhaustively all the data from such diverse sources or locations, and bring it together at one point in time. As new data becomes available, the database can be updated. Only about half of the ideophones in our files have been included in this version of the work; the balance will come in subsequent editions of the project. Our overall goal is to produce one of the largest databases on an African language. The table below represents the present spread of global Yoruba:

1.2. YORUBA AROUND THE GLOBE

1.2.0. GLOBAL YORUBA:

- ANAGO/YORUBA: Nigeria
- ANAGO/NAGO: Benin Republic
- AKU: Sierra Leone

YORUBA

- AKU/OKU: British Guyana
- ANAGO/LUCUMI: Cuba
- GULLAH: Georgia, South Carolina (USA)
- YORUBA: Oyotunji Village, South Carolina (USA)
- ANAGO/NAGO: Trinidad
- ANAGO/NAGO: Jamaica
- ANAGO/NAGO: Brazil
- ANAGO/NAGO: Argentina
- ANAGO/NAGO/FON: Haiti
- YORUBA: Worldwide

This spread of global Yoruba has come about through two principal reasons. First, the Yoruba people were among the slaves shipped across the Atlantic Ocean to the Americas. Remnants of Yoruba people managed to survive in Cuba, Argentina, Brazil, Jamaica, British Guyana, United States, etc. with their religion and culture. Some were among the returnees in Liberia and Sierra Leone in West Africa. Secondly, there are Yoruba people who, for economic or other reasons, have migrated from the ancestral home of the Yoruba people in Nigeria, Benin Republic and Togo, to Europe, United States, Canada, Australia, etc. The consequence is that while what we can regard as continental Yoruba language is the mother tongue of over 30 million people in Nigeria, Benin Republic and Togo, diaspora Yoruba language in countries such as Cuba, Argentina, Brazil, Jamaica, British Guyana, United States, Liberia and Sierra Leone has survived only in liturgy, songs, names, etc.

1.2.1. CONTINENTAL VERSUS DIASPORA YORUBA

Given the ever-increasing importance that the Yoruba language is beginning to assume worldwide, it is becoming increasingly difficult to limit the compilation of a database for Yoruba to the Yoruba language spoken only in Nigeria. Yoruba language is also the mother tongue of thousands of people in Benin and Togo Republics. We refer to the Yoruba spoken in the contiguous belt stretching from south-western Nigeria to Togo as the continental Yoruba. On the other hand, some versions of the Yoruba language have become the language of liturgy and music in such countries as Cuba, Brazil, Argentina, Trinidad, Jamaica, certain parts of the United States and Canada. In response to these external needs, our database has been extended to Anago-Lucumi (Cuba), Gullah (South Carolina State), and Anago (Trinidad and Brazil). There is abundant evidence that remnants of Yoruba origin have survived in Freetown in Sierra Leone, and Monrovia in Liberia, where many Yoruba words have been mixed up with Krio language. In addition, many people in these communities still bear Yoruba names officially. We refer to this latter group as the diaspora Yoruba.

2.0. PROGRAM AND YORUBA FONT

The present electronic database has been constructed using Toolbox version 5.0 for Windows (Oct. 2000), produced by the Summer Institute of Linguistics. In the words of the producer, “the Linguist's Toolbox is a computer program that helps field researchers to integrate various kinds of text data: lexical, cultural, grammatical, etc. It has flexible options for selecting, sorting, and displaying data. It is especially useful for helping researchers build a dictionary as they use it to analyze and interlinearize text.” Although Yoruba Unicode font designed by Tavultesoft was adapted by the University of Pennsylvania Linguistic Data Consortium to pre-compose all the unique Yoruba characters for data entry, the final representation was done with the MS Arial Unicode font. Tahoma and Lucinda Grande on the Macintosh OSX will also display the Yoruba characters.

3.0. COMPONENTS OF THE OVER-ALL DATABASE WITH FIELDS AND MARKERS

Based on the data that is presently available to us, there are five major parts to the over-all database covering (a) YORUBA-ENGLISH; (b) ENGLISH-YORUBA; (c) GULLAH-ENGLISH-YORUBA; (d) LUCUMI-SPANISH-ENGLISH-YORUBA; and (e) TRINIDAD-YORUBA-ENGLISH-YORUBA. Each component of the over-all database has its own set of fields and markers. The ideal situation would have been to have a comprehensive set of fields and markers for the over-all database; however, this will not be possible with the present state of our knowledge. It is hoped that in future, the work will include Anago-Portuguese-English-Yoruba from Brazil and Krio-English-Yoruba from Sierra Leone.

3.1. YORUBA-->ENGLISH DATABASE

The most detailed set of fields and markers however, are in the Yoruba(English component. These are:

\c	comments for 'abbr.:', '<', 'dialect',
\cf	cross-reference
\d	English definition of Yoruba headword
\eg	examples in Yoruba
\gl	English gloss of an example
\id	index number
\o	morphemic composition of head word
\p	part of speech
\s	synonym
\sd	sub-definition
\sp	sub-part-of-speech
\sw	sub-word
\v	variant
\w	word
\x	todo
\xr	remnant

3.2. ENGLISH-->YORUBA DATABASE

\id	index number
\ENGL	English head word
\p	part of speech
\YORU	Yoruba definition of English head word
\o	morphemic composition of equivalent Yoruba word

3.3. GULLAH-->ENGLISH-->YORUBA DATABASE

\id	index number
\ENGL	English head word
\p	part of speech
\YORU	Yoruba definition of English head word
\o	morphemic composition of equivalent Yoruba word

3.4. LUCUMI-->SPANISH-->ENGLISH-->YORUBA DATABASE:

\id	index number
\LUK	Lucumi head word
\SPA	Spanish equivalent of Lucumi head word
\ENG	English equivalent of Lucumi head word
\YOR	Yoruba equivalent of Lucumi head word

3.5. TRINIDADYORUBA-->ENGLISH-->YORUBA DATABASE:

\id	index number
\try	TrinidadYoruba head word
\eng	English equivalent of TrinidadYoruba head word
\yor	Yoruba equivalent of TrinidadYoruba head word

4.0. GRAMMATICAL NOTES ON THE YORUBA LANGUAGE

4.1. PRONUNCIATION

It is hoped that the final electronic version will include pronunciation of the head words. The print version will include some pronunciation table.

4.2. ORTHOGRAPHY

This database is based on the present orthography that is used in the school system in Nigeria, in official or formal publication, and in the media.

4.2.1. TONE MARKING

Since the language has discrete tones, therefore all the tones, with the exception of the mid tone, are marked on all the relevant syllables.

4.2.2. ELISION OR ASSIMILATION AND CONTRACTION

Given the very productive application of the two processes of elision of segments either within a word or at word boundaries, with serious inevitable consequences for pronunciation, we have made provision in the database for both the full and short forms of affected words. Except in monosyllabic words, all complex words are entered as a headword in the form that is closest to its pronunciation. Another field is created for the morphemic decomposition to show its underlying form.

4.2.3. USE OF APOSTROPHE

The use of apostrophe to mark points of elision in a complex word either inside a head word or in the text of its word entry, has been reduced to the barest minimum. The cases where we have been compelled to indicate elision are where elision and contraction have reduced an underlying complex form to a surface monosyllabic form, as in /l'ó/ (ni + ó) 'is the one that he/she/it', /t'ó/ (<tí + ó) 'that/which/who', /ş'ó/ (<şé + ó) 'did he/she/it', etc. Such 'complex' monosyllabic forms should be distinguished from genuine monosyllabic verbs or prepositions.

4.2.4. HYPHENATION

Unless it becomes absolutely necessary, the use of hyphenation has been restricted to showing the morphemic composition of a complex or compound word

4.2.5. DOTTED LINE

Under morphemic composition of a serial verb string, hyphenation has been used to separate the constituent verbs, as /mú..wá/ 'bring'.

4.2.6. ABBREVIATIONS (abbr.)

The following is the set of general abbreviations used for Yoruba monolingual settings, and many of these would be found all over the database.

AJ	Àpèjúwe (Adjective)
APAJ	Àpólà Àpèjúwe (Adjectival Phrase)
AP	Àpọńlé (Adverb)
APAP	Àpólà Àpọńlé (Adverbial Phrase)
AT	Atókùn (Preposition)
APAT	Àpólà Atókùn (Prepositional Phrase)
OR	Ọrọ-orúkọ (Noun)
APOR	Àpólà Ọrọ-orúkọ (Noun Phrase)
IS	Ọrọ-ìṣe (Verb)
APIS	Àpólà Ọrọ-ìṣe (Verb Phrase)
Abbr.	Abbreviation
MT (I)	(Yoruba) Metalanguage (I)
MT (II)	(Yoruba) Metalanguage (II)
QGLT	Quadrilingual Glossary of Legislative Terminologies
VPSM	Vocabulary of Primary Science and Mathematics

4.3. VOWELS

4.3.1. ORAL VOWELS

There are seven oral vowels: [a], [e], [ɛ], [i], [o] [ɔ] and [u]. There is no long and short vowel distinction. Vowel elongation is indicated by doubling or tripling the vowels, with each vowel carrying its own tone either as level tones, or as rising or falling tone formation. The distribution of the oral vowels is shown in the table below:

TABLE I

	Oral	Oral	Oral
	Front	Central	Back
High	i		u
High-mid	e		o
Low-mid	ɛ		ɔ
Low			
		a	

4.3.2. NASAL VOWELS

There are between 4 and 5 nasal vowels: an, ɛn, in, ɔn, un. [an] and [ɔn] are allophonic in the speech of most speakers depending on dialectal location. Nasal vowels are distinguished from their oral counterparts in the orthography by adding an /-n/ to an oral vowel. This added /-n/ is visible only to the reading eye by convention; it is not to be pronounced as a distinct /n/ segment. Such nasal

vowels are pronounced with a simultaneous opening of both the oral and nasal cavities. The table below shows the distribution of the nasal vowels:

TABLE II

	Nasal	Nasal	Nasal
	Front	Central	Back
High	in		un
High- mid			
Low-mid	ɛ̃n		õn
Low			
		an	

Both [an] and [õn] are retained in the orthography, the latter being restricted to the environment after labial consonants such as /b/, /gb/, /f/, /w/. After the letter [m-], the nasal vowel [õn] is written as [o].

4.2.3. SYLLABIC NASAL

Syllabic nasals /m/ and /n/ are usually separated by a hyphen when they carry a mid tone, which tone is usually left unmarked. In all other cases, the tones they carry will confer on them a syllabic status. Except where it becomes necessary in the database, we have allowed the tones to determine whether or not to use hyphenation to separate syllabic nasals. We have found that an indiscriminate use of hyphens is not only cumbersome, but it is also a distraction to the eyes.

4.3. CONSONANTS

Yoruba language has 18 consonants: [b], [d], [f], [g], [gb], [h], [j], [k], [l], [m], [n], [p], [r], [s], [ʃ], [t], [w], and [y]. Standard Yoruba has no voiceless bilabial plosive [p]. Rather, it has the voiceless labio-velar [kp], which is the counterpart of voiced labio-velar [gb]. However, since there is no [p] – [kp] contrast, [p] has been adopted in the orthography to represent [kp]. Therefore, all instances of [p] in the database stand for [kp] in reality. On the other hand, there is a phonemic contrast between [g] and [gb], so the orthography has retained both. Furthermore, in hindsight, the old orthography with its digraph [sh] for the sh-sound would have simplified the Yoruba keyboard instead of the present orthography’s use of dotted [ʃ], thus making this sound to become a special character for the keyboard. We have painfully and sadly retained the dotted [ʃ] in this database, given its wide acceptance and widespread use of [ʃ] in Yoruba contemporary writings.

The table below illustrates the distribution of the consonants.

TABLE III

		Bilabia	Labio-	Alveo	Post-	Palat	Velar	Labio-	Glott
		l	dental	lar	alveolar	al		velar	tal
Stop	Voices			t			k	/kp/ p	
Stop	Voiced	b		d		j	g	gb	
Nasal		m		n					

Fricative			f	s	ʃ				h
Approximant						y		w	
Flap				r					
Lateral				l					

4.4. TONES

The current standard orthography is essentially tone-driven. There are three discrete tones: low, mid and high. Only low (marked with a grave sign) and high (marked with an acute sign) tones are marked on top of the vowel, while the mid tone is left unmarked. No initial vowel of a Yoruba word can carry a high tone, except if it is a borrowed word. Following the current orthography, neither circumflex, formerly used for ‘falling tone’, nor caron, formerly used for ‘rising tone’, is used in the database. All instances of seeming contour tones are written as double or more vowels, regardless of whether the vowels are oral or nasal. For example, the word for ‘nine’ which ends with a nasal vowel is written as *mésàn-án*, whereas the word for ‘fifteen’ with three identical medial vowels is written as ‘*mẹ̀ẹ̀ẹ̀dógún*’. Therefore, in this database, every relevant tone is marked because this will be the reference work. In continuous writing however, the degree to which tone marking is observed can be left to either the formality or informality of the writing as well as to the discretion of the author. There will be more tone marking in a project report than in a newspaper article.

5.0. THE NATURE OF WORD IN YORUBA

Yoruba language is isolating in its verb system but agglutinative in the noun system. What this means is that majority of the verbs are monosyllabic and monomorphemic, which is probably the basis for the serialization of the verbs at the next level of conceptualization up. On the other hand, majority of the nouns are polysyllabic and polymorphemic, drawing extensively from the combinations of the monosyllabic/monomorphemic verbs as stems. The overall consequence of this kind of architecture is an enriched nominalization system that has produced the open-ended Yoruba proper names in their thousands. In order to do proper justice to the word in a Yoruba dictionary therefore, we believe that a potential headword must include not only simplex but also complex and compound words. Where we conceive such formations to be 'words', we write them as 'indivisible headwords' in the database.

5.0.1. SIMPLEX WORD

By simplex word we mean a word that is monomorphemic, regardless of the number of syllables it may contain. This is fairly straightforward for the purpose of dictionary-making. A dictionary will contain all the simplex words of the language.

5.0.2. COMPLEX WORD

A complex word in Yoruba is produced by a contraction of two or more morphemes usually from different word classes. The normal procedure is for a vowel and/or tone to drop at the morpheme boundary, followed by contraction which erases or neutralizes the existing morpheme boundary. For example, *kọrin* 'sing (a song)' is a complex word derived from /*kọ-orin*/ through the deletion of the vowel [o] followed by contraction of the resultant form to yield /*kọrin*/. The nature of the language is such that /*kọrin*/ will have to be listed as a head word in a Yoruba dictionary, separately from *kọ* and *orin*.

5.0.3. COMPOUND WORD

A compound word consists of two or more morphemes from the same word class. A compound word in Yoruba may exist in three forms. First, if it is a noun, the two components may be separated by a hyphen, as in *ojú-irin* 'rail track', with each component retaining its full pronunciation and/or spelling. In the case of verbs, a compound may be treated with or without hyphenation, as in *gbàlà* 'rescue'. Secondly, a compounded noun may undergo vowel and tone deletion, as in *etíkun* 'coast, beach'. Both *etí-òkun* and *etíkun* have the same meaning and they are freely interchangeable in usage. Thirdly, a compounded noun may undergo assimilation as in *ojúurin*. Both *ojú-irin* and *ojúurin* have the same meaning and are freely interchangeable in usage.

5.1. HEAD WORD IN THE 'STANDARD' AS OPPOSED TO 'DIALECTAL' FORM

Through the influence of formal education, the media, official publications, Christian and Islamic publications, etc. what has come to be known as 'standard Yoruba' in Nigeria has been based on what was spoken originally around Ibadan and *Ọ̀yọ́* districts of old, but certainly with contribution from the pool of other dialects such as *Àkókó*, *Àkúrẹ̀*, *Ànàgó*, *Àwóri*, *Ègùn*, *Èkìtì*, *Èkó/Èyọ̀*, *Ègbá*, *Ègbádò*, *Ònko*, *Ìbọ̀lọ̀*, *Ìbùnú*, *Ifẹ̀*, *Ìgbómìnà*, *Ìjẹ̀bú*, *Ìjẹ̀sà*, *Ìjùmú*, *Ìkálẹ̀*, *Ìlàjẹ̀*, *Ìlorin*, *Mòbà-Èkìtì*, *Onódó*, *Owé*, *Ọ̀wọ̀*, *Ọ̀wọ̀rọ̀*, *Ọ̀yọ̀*, *Yàgbà*. Our database has been constructed on the form of Yoruba to be found on the radio and television, newspapers, schools and colleges, popular literature, academic and government publications, etc.

6.0. PARTS OF SPEECH

The following are the parts of speech \p\ and their abbreviations in the database:

N	noun
V	verb
Prep	preposition
Ideo	ideophone
Adv	adverb
Adj	adjective
Conj	conjunction
Disj	disjunction
Art	article
Excl	exclamation
F	focus
Comp	complementizer

6.1. VERBS

In this database, English definitions of the Yoruba verbs in their citation are given in their 'root' senses, which is closer to the imperative sense. The verb /lɔ/ is rendered as 'go' and not 'to go' or 'went'. All basic verbs in the language, which are mostly monosyllabic, are bare; there are no infinitive forms, no present or past tense endings. Tense and aspectual meanings are conveyed by discrete auxiliary elements. Abraham (1958), on the other hand, recorded the verb meanings in their citation in the past tense, which makes the definitions a bit awkward.

6.1.1. SERIAL VERBS

In this language, verbs can be serialized to form complex verb senses. Therefore, in order to demonstrate the productiveness of the serialization process in forming larger verb complex senses, each basic verb is recorded in at least three situations: (i) as an independent verb; (ii) as V1 in a verb-verb combination; and (iii) as V2 in a verb-verb combination. A situation of V3 is conceivable but not productive; and it is not pursued aggressively. Dotted lines have been used under the field of 'morphemic decomposition' for instances of verb combinations or verb pairing to create complex verbal head words. However, where verb combinations are inside a complex nominalization, hyphens have been used instead to demarcate the constituent morphemes. The decision to treat serial verbs as potential head word entries in the database is based on their availability to serve as potential stems for the productive process of prefixal nominalization.

Secondly, object nouns can be incorporated with the verb, leading to both morphological and phonological consequences (cf. Oyelaran (1972)). If the object noun begins with a vowel, vowel elision can occur between the final vowel of the verb and the initial vowel of the noun (cf. Bamgbose (1966)) to create some fusion.

The database has been constructed in a fairly systematic manner, so as to provide the proper basis for both the basic and non-basic words of the language. The cost of this is some degree of redundancy in the manner in which simple and complex words are entered

as head words. For example, a typical verb has at least three chances of being part of head word: (i) as a head word in its own right; (ii) as the first verb (V1) when it pairs with another verb in a serial verb combination; and (iii) as the second verb (V2) when another verb pairs with it in a serial verb combination. This kind of foundation has to be laid to give an accurate account of the agglutinative nature of Yoruba nominalization.

6.2. PREPOSITIONS

The words we refer to as prepositions form a very tiny closed class because there is but a very thin line between the verbs and the prepositions in the language. Many times, prepositional meanings are expressed by a combination of such quasi-prepositions and body-part nouns.

6.3. NOUNS

Nouns form an open-ended class and generally are vowel-initial in their basic forms, except nouns that are either borrowed or are derived from ideophones. When a noun starts with a vowel, such a vowel cannot carry a high, unless the noun is a borrowed word whose initial vowel is originally on a high pitch. While nouns can be derived from verbs, a verb cannot be created directly out of a noun by back formation as it is in English.

6.4. IDEOPHONES

In this database, the words we refer to as ideophones are put in a separate word class for a number of reasons. First they can be heavily polysyllabic in contrast to the non-ideophonic vocabulary which is more isomorphic. Second, the ideophones are more productive and more creative in their reduplicative patterns than the non-ideophonic vocabulary (cf. Awoyale (1988)). Third, ideophones, being predicative in nature like the verbs, can undergo some type of prefixation that is peculiar to verbs, but at the same time can behave like nouns by undergoing some prefixation pattern that is peculiar to nouns (cf. Awoyale (1985)). Fourth, the constituent word structures of ideophones use the consonant, vowel and tone patterning in a way that is more suggestive than in the non-ideophonic word structure.

After cataloguing thousands of ideophones over a period of some thirty years, we have come to believe that the ideophones are going to be the next biggest challenge to linguistic theories in the 21st century. Both the composition of their unusual polysyllabic structures and the complex nature of their associated meanings are difficult issues that do not yet attract the attention of contemporary linguistic theories. While it is easy to define the meaning of a monosyllabic verb, or a basic noun, it is not easy to define the meaning of a simple ideophone because the ideophone presents a multi-dimensional view of reality. In this database, we have attempted to build as much detailed information as possible into the meaning of an ideophone to demonstrate both its usage and the multi-dimensional view of reality.

One cannot but be struck by how creatively the ideophones use reduplication. On the one hand, while partial reduplication can be used in ideophones to express extentiveness as well as intensity; on the other hand, full reduplication of ideophones can be used to express repetition, individualness, contrastiveness, everywhere-ness, intensiveness, etc., as these will be found in the database/

Our original plan was to publish a separate dictionary of Yoruba ideophones. We have decided to include the ideophones in this database for two main reasons. First, publishing the ideophones as a separate dictionary will further isolate them from the rest of the vocabulary of the language and make them appear to be peripheral. In actual fact, our investigation over the years has shown that the ideophones form an integral part of the Yoruba lexicon. Secondly, by including them in this database, we will be in a position to study their uniqueness in relation to the rest of the vocabulary. The ideophones that we have included in the present database are a small portion of the data in our files. The cataloguing is still in progress.

7.0. ENGLISH DEFINITIONS

While every effort is made in the database to be as precise and faithful as we possibly can in the English definitions of the headwords, certain lengthy definitions are inevitable. We strive very hard to give meaning to every Yoruba word. There are three major parts of speech whose English definitions require some explanation.

(a) Verbs

English definitions of the Yoruba verbs in their citation are given in their 'root' senses, which is closer to the imperative sense. All basic verbs in the language, which are mostly monosyllabic, are bare; there are no infinitive forms, no present or past tense endings. Tense and aspectual meanings are conveyed by discrete auxiliary elements. Abraham (1958), on the other hand, recorded the verb meanings in their citation in the past tense, which makes the definitions a bit awkward.

(b) Nouns

The English definitions of nouns have been stripped of their possible determiners such as 'the', 'a', 'an', 'some', etc. for two main reasons. First, number is not grammaticalized in Yoruba, rather, plurality is carried by distinct morphemes, which usually come after the head noun. Secondly, the presence of determiners in the definitions in the Yoruba English format would create serious problems for the electronic reversal of the definitions to the English(Yoruba format. In fact, their presence would actually impede an accurate alphabetization of such English head words.

(c) Ideophones

It is much easier to define the meaning of a monosyllabic verb, or a basic noun, than it is to define the meaning of a simple ideophone because an ideophone does not just present a uni-dimensional view of reality; rather it attempts to present a multi-dimensional view of reality. In this database, we have

attempted to build as much detailed information as possible into the meaning of an ideophone to demonstrate both its usage and its multi-dimensional view of reality.

8.0. EXAMPLES OF USAGE

Given that the Yoruba language cannot yet boast of extensive written literature that dates back to centuries as in the case of the English language, examples of usage in the works of 'masters' of written literature are hard to find. What the language does have are thousands of proverbs, folktales, riddles and idioms which we have found to be extremely useful examples of usage in compiling the database. For cultural reasons, the design of the database is encyclopedic. Apart from definitions of words, the Yoruba-English component has incorporated existing Yoruba dictionaries and new words, thousands of plant names (Verger (1995), Gill (1992), Gbile (1984), Abraham (1958), Iwu (1993)), hundreds of proverbs and riddles (Ajibola (1947), Delano (1966), Adesua (1978), Abraham (1958)), Owomoyela (1988, 2000), many idioms (Fabunmi (1972)), proper and place names, as example sentences, clauses and phrases, among others. Proverbs and idioms in this type of enterprise are intriguing for two interesting reasons. First, they provide ready-made utterances that are largely anonymous. Secondly, because they are anonymous, they belong to everybody who speaks the language. Consequently, examples of usage and meaning based on proverbs and idioms already enjoy automatic acceptance without much further explanation on appropriateness and interpretation. A lexicographer dealing with data from a language that cannot boast of extensive written form dated into the distant past, whether standard or non-standard, is definitely on a much surer ground using proverbs and idioms as examples than he would be if he were to be creating his own examples. Furthermore, such examples would become handy as parallel texts that can be easily interlinearized.

9.0. WORD FORMATION PROCESSES

9.1. PREFIXATION

Prefixation is the dominant word formation process in Yoruba. There is a set of prefixes for verbs, and another set for the nouns. There are prefixes for converting verbs to

nominals. Yoruba language has many prefixes such as à-, a-, è-, e-, ẹ-, ẹ-, ì-, í-, ò-, o-, ọ-, o-, Cí-. These operate on the verbs. There is a prefix which works with nouns to indicate possession, property or making of the particular noun. For example when the prefix /oní-/ attaches to a basic noun, as in /onílé/, it can mean 'house owner', 'landlord', 'home seller', 'something that is characterized by a house', etc. There are no suffixes. The ideophones actively participate in both types of prefixation.

9.2. COMPOUNDING

When nouns are compounded, one of two things may happen: (a) vowel assimilation of the adjacent vowels at the morpheme boundary may or may not occur. For example, the two words ọmọ 'child' and àlè 'concubine' can compound to give either ọmọ-àlè 'illegitimate child' (without assimilation), or ọmaálè 'incorrigible person' (with assimilation). (b) one of the two vowels at the morpheme boundary may or may not elide. For example the two words ẹran 'animal' and oko 'farm, bush' can compound to give either ẹran-oko 'bush animal' (without elision), or ẹranko 'any animal, wild animal, or stupid person' with vowel elision leading to contraction.

Compounding of verbs on the either hand involves neither assimilation nor elision. Verb compounding may make the constituent verbs inseparable. For example tẹlẹ 'follow or go after' does not have the same meaning as each of tẹ 'step on' and lé 'be on top'. In the database therefore, we enter tẹlẹ separately from either of tẹ and lé. Because the configuration of verb compounding does not lend itself to free commutability of the component parts, it is entered differently from the serial verbs.

9.3. INCORPORATION: OBJECT NOUN INCORPORATION

By object noun incorporation we mean a process whereby the object noun of a verb or preposition has become blended with the predicate stem. Such blending usually involves vowel elision followed by contraction. For example, the incorporation of ohun 'thing' with jẹ 'eat' gives jẹun 'eat or have a meal'. The noun /ilẹ/ has been incorporated in /tilẹ/ (<ti-ilẹ) 'even; previously'.

9.4. REDUPLICATION

Reduplication is an extremely productive word formation process in the language. There are two types of reduplication in the Yoruba language – full or partial reduplication (cf. Awoyale (1988)). Full reduplication of nouns can give the meanings of extentiveness or degree. For example ọmọ-ọmọ ‘grandchild, descendant’; ilé-ilé ‘every house/home’; etc. Verb phrase can be reduplicated to create the meaning of agency. For example, paná-paná (kill-fire-kile-fire) means ‘fire fighter’.

Partial reduplication occurs where a part of the stem is copied to be positioned either before the stem or after the stem. Examples are /ojoojúmọ/ ‘every day’; /àràárò/ ‘every morning’ where the copying is to the front of the stem. The dominant partial reduplication of nouns is to copy to the front of the stem. On the other hand, the dominant partial reduplication of ideophones is to copy to the end of the stem. For example, fééřéřé and fééřéřé which both mean ‘very mildly’.

9.4.1. PARTIAL REDUPLICATION

Partial reduplication or copying can be either regressive or progressive depending on the word class of the relevant stem. It is regressive when it converts a verb stem to a gerund as in /lọ/ ‘go’ and /lílọ/ [>lí-lọ] ‘going’. This pattern of partial reduplication is very predictable. The i-vowel is permanent, and it attaches to a copy of the initial consonant of the verb stem. Given that the pattern is predictable, it will have to be decided whether to list the reduplicated form under the relevant verb or as a separate head entry. If the reduplicated form is listed under the relevant verb, there will be no serious consequences for the macrostructure of the database. However, if the reduplicated form is treated as a separate head entry, the over-all alphabetization of the head words will be affected. On the one hand, not listing the reduplicated form will be economical and cost-effective for the macrostructure but may become invisible to a user or a machine. To list it may make it visible to a user or a machine but redundant to the human mind. Because of their huge numbers, we have used our discretion in our database to list or not list such predictable forms. We usually list them as headwords where an idiomatic meaning is expressed.

Progressive partial assimilation on the other hand, applies to a variety of stems from the class of words that we refer to as ideophones as in the following polysyllabic stems as in *fèéré* (*fèéré-fé* or *fèérééré* 'of a mild situation or condition' These forms pose no serious consequences for the macrostructure of a database since the reduplicant comes after the base form. A lexicographer would have to decide whether to list the reduplicated form under the base or as a separate head entry. In our database, each such reduplicated form is listed separately with cross-reference to each other, so that we will be able to define it accurately.

9.4.2. FULL REDUPLICATION

Full reduplication applies extensively in the language across word classes and such application has generally been progressive. Such an application may or may not involve identical tonal patterning between the base form and its reduplicant. The progressive nature of the application does not make the resultant forms pose any serious problem for the macrostructure of the database. For dictionary-making purposes a decision has to be made whether or not a reduplicated form is to be handled as a separate word entry or as a part of the base form. In our database, a full reduplicated form is treated as a separate word entry from the base form. The reason is that full reduplication in non-ideophonic forms can yield a different word class, as in */jɛun/* 'eat' */jɛun-jɛun/* 'eater', */nínú/* 'inside' */nínú-nínú/* 'far inside', */lòòótọ/* 'in truth' */lòòótọ-lòòótọ/* 'verily, truly'

Among the ideophones, the reduplicant may or may not retain the original tonal patterning of the base form. In our database we have similarly treated the reduplicated form as a separate entry with cross-references to other related forms as appropriate, as in the following:

\w *rèkètè*

\p *ideo*

\d of a weighty entity being short and extended

\cf rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀; rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀; rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀; rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀-rẹ̀kẹ̀tẹ̀;
rẹ̀kẹ̀tẹ̀tẹ̀; ọ̀rẹ̀kẹ̀tẹ̀; arẹ̀kẹ̀tẹ̀

\o rẹ̀kẹ̀tẹ̀

10.0. NUMERALS

Yoruba numerals can be divided into cardinals, quantitatives and positionals. The cardinals occur in two patterns of absolute and sequential counting. While the quantitative numerals largely use initial /m-/ , the positional numerals can be reduced to a /k-initial/ after the elision of an initial vowel. The table below illustrates these numerals in their categories. We have confined ourselves in the database to numerals that actually occur in regular usage, as opposed to creating them artificially to make them suitable for modern mathematical needs.

	Cardinal 1 (Absolute)	Cardinal 2 (Sequential Counting)	Quantitative Entities	Positional/Ordinal (Prefixes controlled by vowel harmony)
01	oókan	ení	kan	ìkíní; èkíní; kíńí
02.	eéjì	èjì	méjì	ìkẹ̀jì; èkẹ̀jì; kejì
03.	ẹ̀ẹ̀ta	ẹ̀ta	mẹ̀ta	ìkẹ̀ta; èkẹ̀ta; kẹ̀ta
04.	ẹ̀ẹ̀rin	ẹ̀rin	mẹ̀rin	ìkẹ̀rin; èkẹ̀rin; kẹ̀rin
05.	aárùn-ún	àrùn/ẹ̀rùn	márùn-ún	ìkárùn-ún; èkárùn-ún; kárùn-ún
06.	ẹ̀ẹ̀fà	ẹ̀fà	mẹ̀fà	ìkẹ̀fà; èkẹ̀fà; kẹ̀fà

07.	eéje	èje	méje	ìkéje; èkéje; kéje
08.	eéjọ	èjọ	méjọ	ìkéjọ; èkéjọ; kéjọ
09.	eésàn-án	èsán	mésàn-án	ìkésàn-án; èkésàn-án; késàn-án
10.	eẹwàá	ẹwá	mẹwàá	ìkẹwàá; èkẹwàá; kẹwàá
11.	ọọkànlá	ọkànlá	mọkànlá	ìkọkànlá; ọkọkànlá; kọkànlá
12.	eéjilá	èjilá	méjilá	ìkéjilá; èkéjilá; kéjilá
13.	eẹtálá	ètálá	mẹtálá	ìkètálá; èkètálá; kètálá
14.	eẹrìnlá	ẹrìnlá	mẹrìnlá	ìkẹrìnlá; èkẹrìnlá; kẹrìnlá
15.	eẹdòógún	àrùndínlógún	mẹẹdógún, márùndínlógún	ìkárùndínlógún; ọkárùndínlógún; kàárùndínlógún
16.	eẹrìndínlógún	ẹrìndínlógún	mẹrìndínlógún	ìkẹrìndínlógún; èkẹrìndínlógún; kẹrìndínlógún
17.	eẹtádínlógún	ètádínlógún	mẹtádínlógún	ìkètádínlógún; èkètádínlógún; kètádínlógún
18.	eéjídínlógún	èjídínlógún	méjídínlógún	ìkéjídínlógún; èkéjídínlógún; kejídínlógún
19.	ọọkàndínlógún	ọkàndínlógún	mọkàndínlógún	ìkọkàndínlógún; ọkàndínlógún; kọkàndínlógún
20.	ogún	ogún	ogún	ogún
21.	ọọkànlélogún	ọkànlélogún	mọkànlélogún	ìkọkànlélogún; ọkànlélogún; kọkànlélogún
22.	eéjilélogún	èjilélogún	méjilélogún	ìkéjilélogún; èkéjilélogún; kejilélogún
23.	eẹtálélogún	ètálélogún	mẹtálélogún	ìkètálélogún; èkètálélogún; kètálélogún

24	ẹẹ̀rìnlélogún	ẹ̀rìnlélogún	mẹ̀rìnlélogún	ìkẹ̀rìnlélogún; ẹ̀kẹ̀rìnlélogún; kẹ̀rìnlélogún
25	aárùn- úndínlogbọ̀n	àrùndínlogbọ̀n	márùn- úndínlogbọ̀n mẹ̀ẹ̀dọ̀gbọ̀n	ìkárùndínlogbọ̀n; ọ̀kárùndínlogbọ̀n; kàárùndínlogbọ̀n
26	ẹẹ̀rìndínlogbọ̀n	ẹ̀rìndínlogbọ̀n	mẹ̀rìndínlogbọ̀n	ìkẹ̀rìndínlogbọ̀n; ẹ̀kẹ̀rìndínlogbọ̀n; kẹ̀rìndínlogbọ̀n
27	ẹẹ̀tádínlogbọ̀n	ẹ̀tádínlogbọ̀n	mẹ̀tádínlogbọ̀n	ìkẹ̀tádínlogbọ̀n; ẹ̀kẹ̀tádínlogbọ̀n; kẹ̀tádínlogbọ̀n
28	eéjídínlogbọ̀n	ẹ̀jídínlogbọ̀n	mẹ̀jídínlogbọ̀n	ìkẹ̀jídínlogbọ̀n; ẹ̀kẹ̀jídínlogbọ̀n; kẹ̀jídínlogbọ̀n
29	oókàndínlogbọ̀n	ọ̀kàndínlogbọ̀n	mọ̀kàndínlogbọ̀n	ìkọ̀kàndínlogbọ̀n; ọ̀kọ̀kàndínlogbọ̀n; kọ̀kàndínlogbọ̀n
30	ogbọ̀n	ogbọ̀n	ogbọ̀n	ogbọ̀n

11.0. NAMES

The database has included thousands of names in Yoruba. These are names of plants, places, people and divine beings.

11.1. YORUBA PERSONAL NAMES

Yoruba personal names fall into four categories: (a) names for unique babies such as twins, triplets, etc.; (2) names for àbíkú or re-incarnated babies; (3) oríkì or praise names, which are gender-sensitive; and (4) open or general names. While each class of the names for unique babies such as twins, triplets, etc., names for àbíkú or re-incarnated babies and oríkì or praise names, forms a closed class of names, for a number of reasons, the open or

general names can be easily recreated to suite individual preferences. Our database contains samples of each class.

Yoruba personal names have posed two very serious problems for dictionary-making: (i) their open-endedness in formation; (ii) resistance to orthographic modernization. Three major word-formation processes converge to produce the open-ended proper names in the language: prefixation, noun-compounding, and sentence compounding. The interesting point is that these three word-formation processes also apply regularly and productively in the language, but in this present context, they have enhanced the open-endedness and abundant creativity of the proper names. Babalola (2000)'s monumental 20,000-compilation of Yoruba personal names is a tip of the iceberg in the endless formation of Yoruba proper names.

The questions for dictionary-making are two-fold: (i) whether or not a general dictionary of Yoruba should include the personal names; and (ii), if it should, to what degree. The inclusion of Yoruba personal names in a general dictionary of the language is unavoidable. Apart from these names being derived similarly like the other thousands of nouns, many of them have become names of traditional chieftaincy titles, place names, families, wards, street names, names of institutions, etc. The extent to which these names are included in a dictionary will depend on the amount of space available and the overall discretion of the lexicographer. Our database has included thousands of them.

Secondly, Yoruba proper names have been known to be resistant to orthographic modernization. This resistance occurs in two vital areas. Despite the fact that the Yoruba orthography is generally tone-driven, yet because many of the names are written without the tones, many names have passed into public records in their wrong spellings. It has become almost impossible to effect the corrections, most especially because the changes would affect bearers' lives most profoundly. Many names are written in violation of their grammar and meaning. They cannot be read or pronounced as they are written. Tonal glides in many names have disappeared from their written forms, and even educated bearers of such names have accepted the fact that their names would always be written officially in the wrong way. In our database however, we have allowed consistency to determine that such

names should be entered in their correct spellings, while the wrong spelling, for the sake of official records, would show up under the variant field, as in the following:

\w Oyèédélé

\p n

\d chieftaincy title has reached the home

\c personal proper name

\o oyè-é-dé-ilé

\v Oyè, Yèédélé, Délé, Oyedele

11.2. YORUBA PLACE NAMES

The database contains hundreds of place names all across Yoruba land. Such names may be towns, streets, rivers, mountains, institutions, etc.

11.3. YORUBA PLANT NAMES

The database has hundreds of names of plants, herbs, leaves, etc. Wherever it is possible, their Latinate names have been entered to make their identification clearer. Our database has incorporated all the existing terms in the printed literature as well as hundreds of others gleaned from published works such as Gbile (1984), Verger (1995).

11.4. YORUBA BIRDS AND ANIMALS

The database has hundreds of names of insects, worms, birds and animals. Wherever it is possible, their Latinate names have been entered to make their identification clearer.

12.0. METALANGUAGE AND BORROWING

12.1. YORUBA METALANGUAGE DEVELOPMENT

With the rise of Yoruba as a formal discipline in the Nigerian universities in the latter part of the 20th century, the need arose to engage in a massive expansion of the lexicon of the language to teach not only Yoruba itself but also other academic subjects such as mathematics, science, technology, engineering, medicine, literature, education, social sciences, etc. While on the one hand, NLC (1981/1987) and NERDC (1992) represent direct government-funded lexical expansion projects, Bamgboṣe (1984) and Awobuluyi (1990) were the results of organizational efforts to expand the words of the language to meet classroom needs. There have been other private efforts such as Ọḍẹtayo (1993) and Fakinlẹde (2003) which specifically focused on science and engineering.

Yet, anyone who has attempted to use Yoruba to teach or discuss mathematics, pure science, politics, medicine, technology, computer science, etc. would quickly realize the enormity of the problem of doing so in Yoruba. This is despite the fact that the Yoruba academy conceded that it would be proper to resort to borrowing as a last resort whenever it becomes impossible to come up with an accurate Yoruba word. For example, 'mathematics' is not the same thing as 'ìṣirò' which has been reserved for 'arithmetic'; so, mathematics' has been borrowed as 'matimátìkì'.

12.2. BORROWING

Modern Yoruba has borrowed extensively from the three languages of English, Hausa and Arabic. It seems to be the case that much of the borrowing from Arabic came through the Hausa language based on both Islam and a long standing trading relation between the Yoruba and Hausa peoples for many centuries. Whatever is borrowed into the language from whatever source has to adapt to the phonological structure of the language, most especially its open syllable structure and the tone.

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