

**SOCIOLINGUISTIC SURVEY
OF THE
DUKA (HUN-SAARE) PEOPLE**

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ABSTRACT

This paper documents a sociolinguistic survey of the Duka people, carried out in 1991 and 1992. The purpose of this survey was to assess the present linguistic and sociolinguistic situation among the Duka people. The assessment was intended to determine whether there is need for literature in the Duka language, to characterize a prospective language program, and to rate the priority of a Duka language program. This survey contains word lists for Rijau, Darangi, Tungan Bunu, Iri, Dukku, and Giro.

1. INTRODUCTION

1.1 Preface

Within a seven-month period from May to November of 1991, three survey trips were made among the Duka people of northern Niger State, in Nigeria. Three linguists sponsored by U.M.C.A.¹ were involved in the Duka surveys: Clark Regnier, Stephen Dettweiler, and Sonia Dettweiler. The late Clark Regnier was the only survey team member with prior language survey experience, and was leading and training the rest of the team. For each of the three survey trips, we travelled with a Hausa interpreter and guide. On the first trip (May 9 to 30, 1991) Mr. Isaiah Sambo accompanied us. On the second trip (July 1 to 22, 1991) Mr. Ishaya Hanya accompanied us. On the third trip (October 30 to November 23, 1991) Mr. David Ishaya was our interpreter for the first ten days and Mr. Isaiah Sambo for the remainder of the time. While surveying the Reshe people of Kebbi State, we took two days (March 27 and 28, 1992) to collect and verify a word list from Duka settlements near Giro, Kebbi State. Mr. Barnabas Bulus, a Duka man from Yelwa, was our interpreter for this short session.

1.2 Purpose

This paper documents a sociolinguistic survey of the Duka people. From 1964 to 1979, U.M.S.² missionaries Esther Cressman and Donna Skitch, along with Duka coworkers, developed a written form of the Duka language and translated some New Testament portions into Duka. Other Duka literature also became available through their work (see appendix A).

The purpose of this survey was to assess the present linguistic and sociolinguistic situation among the Duka people. Our assessment was intended:

- (1) to determine whether the need for literature in the Duka language continues,
- (2) to characterize a prospective language program among the Duka people in a way that will be useful in allocating language personnel, and
- (3) to rate the priority of a Duka language program.

1.3 Background

The linguistic, anthropological, and missions research of others regarding the Duka language and people provided background information for our survey work. Temple (1922) briefly describes some of the customs and beliefs of the Duka people. He identifies the Duka people as “akin to the Kamberri [Kambari]” and goes so far as to claim that the Duka language “has much in common with Kamberri, and is mutually comprehensible to both peoples” (1922:96). By eliciting and comparing 142-item word lists in Dakarkari (Lela), Duka, Kambari, and Kamuku, Rowlands (1962) shows that the Duka language is in fact much more closely related to Dakarkari than to Kambari.

¹United Missionary Church of Africa.

²The United Missionary Society. U.M.S. encouraged the organization of U.M.C.A. as a church under Nigerian leadership during the 1950s, and the mission’s work has been under the auspices of U.M.C.A. since 1978.

The affinity and similarity of culture between the Kambari and the Duka people is attested to by anthropologist Frank Salamone (1974:40).

Gunn and Conant speak of three subgroups of the Dukawa (Duka people), identified according to where they live. These subgroups are:

- (1) the “main body of Dukawa,” located “in the western and northern part of Rijau District, Kontagora Emirate...”,
- (2) a “much smaller group,” located “in the eastern part of the same District, and extending into Sakaba District of the Zuru Federation”, and
- (3) a “still smaller” group, located “to the west, in Shanga District of Yauri Emirate” (1960:49–50).

The second group, according to Gunn and Conant, appear to have assimilated towards their nearest neighbours, the Dakarkari, and the third group towards the neighbouring Shangawa. They identify the following as “centres of Dukawa concentration”: Rijau, Dukku, Iri, Sindiri, Ifoki, and Danrengi.³

Besides Rowlands’ list (1962:73–77), several word lists in the Duka language have been collected. Professor Carl Hoffmann of the University of Ibadan collected a word list from Duka individuals at Dugge and Shambo; he contributed this to the Benue-Congo Comparative Word List (Williamson and Shimizu, eds., 1968–1973). A 100-item Duka word list was collected by linguist Paul Dancy (1972). U.M.S. missionaries Cressman and Skitch contributed a 75-item word list along with a list of 128 phrases and clauses and a few notes on Duka phonology and grammar (1974) to the West African Language Data Sheets, Volume 2 (Kropp-Dakubu, ed. 1980). A. H. Amfani (1990) collected the 100-item Swadesh word list in the Duka language and compared it with its close linguistic relatives: Lela (Dakarkari), Banga (Lyase), and the Fakai cluster (also known as Puku-Geeri-Keri-Wipsi cluster).

Following Williamson (1989) and Gerhardt (1989), the Duka language is classified as Niger-Congo, Benue-Congo, Kainji, Western, Group 7, Duka. Figure 1 shows this classification in tree diagram form. Alternate names for the language (Grimes, ed. 1992:329) are Dukanchi or Dukanci (the Hausa name) and Ethun (the autonym). Alternate names for the people are Dukawa or Dukwa (the Hausa name) and Hune (the autonym).⁴

The languages most closely affiliated linguistically to Duka are Lela (Dakarkari), the Fakai cluster (Puku-Geeri-Keri-Wipsi cluster), and Banga (Lyase or Gwamhi-Wuri). Blench, in his attempt (based on isoglosses) to subclassify the Western Kainji language group (1988:4), implies that Duka may be more closely related to the Fakai cluster and Banga than to Lela. Our study of lexical similarity among word lists from these languages will test this hypothesis concerning the internal structure of Western Kainji, group 7 (Gerhardt’s classification - see figure 1). The geographic neighbours of the Duka people are: to the west, the Shanga and the Reshe; to the south, the Kambari; to the east, the Lela and the Kamuku; to the north, the Lela, the Fakai cluster, and the Banga.

³At this point, Gunn and Conant indicate some uncertainty as to whether these places *continue* to be Duka towns and villages, because of the “process of dispersal” undergone by the Dukawa and neighbouring peoples during the colonial era. (1960:50)

⁴“Duka” is adapted from the Hausa names for the people (“Dukawa”) and the language (“Dukanci”). This report follows the precedent set by Cressman and Skitch (and also the *Ethnologue*), using the name “Duka” to refer to both the people and the language. Two possible meanings have been suggested for the Hausa name “Dukawa.” (1) it means “people of Dukku,” naming the people after one of their population centres, or (2) it means “leatherworkers,” since *duku* is a Hausa word for ‘leather’ (Salamone 1974:3–4). So the people and language are called by the Hausa names in informal contexts involving outsiders, by the abbreviated name “Duka” (or the Hausa names) in publications for the academic world, and by their own autonyms (discussed later in this report) in insider contexts.

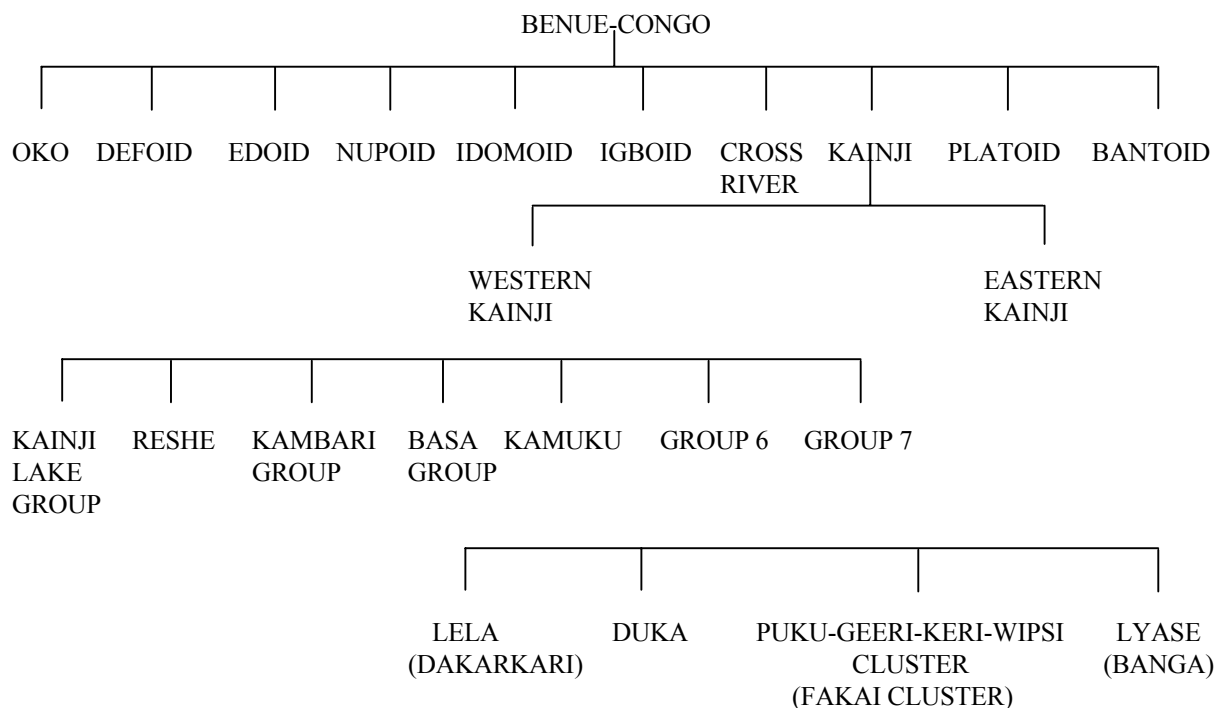


Figure 1. Tree diagram of Duka language classification.
(based on Williamson 1989 and Gerhardt 1989)

Starting in 1964, Cressman and Skitch analyzed the Duka language quite extensively with the purpose of translating scripture portions⁵ into it. In conjunction with linguist John Bendor-Samuel, they published a paper on the grammar of the Duka nominal phrase (Bendor-Samuel et al. 1971) and later expanded this into a book which describes Duka grammar at sentence, clause, and phrase levels⁶ (Bendor-Samuel et al. 1973). In the introduction to this book, they assert that the Duka language has “two main dialect clusters,” Western and Eastern. They also claim: “The political and geographical centre of the Duka people is located in the Eastern dialect...” (1973:1). Their work in general and the book in particular has the Eastern dialect (or dialect cluster) as its focus. Cressman and Skitch also provide some demographic information, giving the approximate number of Duka speakers as thirty thousand (Bendor-Samuel et al. 1971:59, footnote 1) and the two autonymns of the Duka language as *et-Hun* [ɛt+hún] in the Eastern dialect and *es-Saare* [ɛs+sááɾe] in the Western dialect (Cressman and Skitch 1974:1). They further say that the number of speakers from each of the two dialects is unknown. Unfortunately, most of their notes on the Duka language were irrecoverably lost after they left Nigeria (David Crozier, personal communication). The above-mentioned publications, some notes from sessions with N.B.T.T.⁷ consultants, the Duka literature listed in appendix A, a dictionary card file, and some unpublished papers describing Duka religious beliefs and practices (Cressman 1971a, b, and Skitch 1971a, b) are the written sources that remain.

Two men, Ceslaus Prazan and Frank Salamone, have written about the Duka people from a mainly anthropological perspective. The focus of their studies is on the third subgroup of the Duka people listed in Gunn and Conant (mentioned earlier), the group living in the Yauri Emirate (now part of Kebbi State). Prazan, who worked (out of

⁵Their aim was to translate the entire New Testament into Duka, but the translation project was suspended in 1979 at the request of U.M.C.A. leadership.

⁶The grammatical description follows a hierarchical display model.

⁷Nigeria Bible Translation Trust.

Yelwa) as a Dominican Catholic missionary among the Duka people from 1964 to 1973, writes that Gunn and Conant's description of the location of the "main body of Dukawa" in the western and northern part of Rijau District corresponds with what his Duka friends (from the Yelwa subgroup) assert. However, he feels that the Gunn and Conant reference "does not appear appropriately to describe the full extent of the Dukkawa's habitation, especially to the north and south of Yelwa" (Prazan 1977:4). Though he does not give any statistics, Prazan suggests that "Dukkawa habitation is now more extensive than was the case when previous studies were compiled," citing the existence of Duka settlements near Koko (fifty miles north of Yelwa) and within ten miles of Kontagora (sixty-five miles southeast of Yelwa). Figure 2 shows the area investigated by Prazan (1977:2) in his book on the Duka people.⁸

The book is a case study of a Duka community's manner of life and value systems. It reflects the philosophical commitment of the Dominicans to a missionary approach that is anthropologically based (Salamone 1972:220–221). Prazan's descriptions should not necessarily be considered valid for the whole Duka people, however. Also, Prazan's editor points out a "serious defect" of the book:

...every single word but *gormo* which Father Prazan uses to describe Dukku [Duka] practices is standard Hausa. It must be remembered, of course, that he would be using Hausa and not *Dukkanci* as his vehicle of communication, but it would have been valuable to have arrived at some opinion as to the capacity of the Dukku language itself to withstand assault from the dominant social, cultural and economic influence which is undoubtedly Hausa. (Muffet 1977a:xxii, italics his)

This comment reflects a concern which is taken up by our sociolinguistic study.⁹

⁸Figure 2 should be compared to figure 3, which shows the area of focus in our survey. Note that Dukku, Iri, and Rijau are shown on both maps.

⁹Muffet attempts to remedy the defect by an editorial postscript which includes a 46-item Duka word list, with the words separated into groups according to the extent of their association with Hausa (Muffet 1977b).

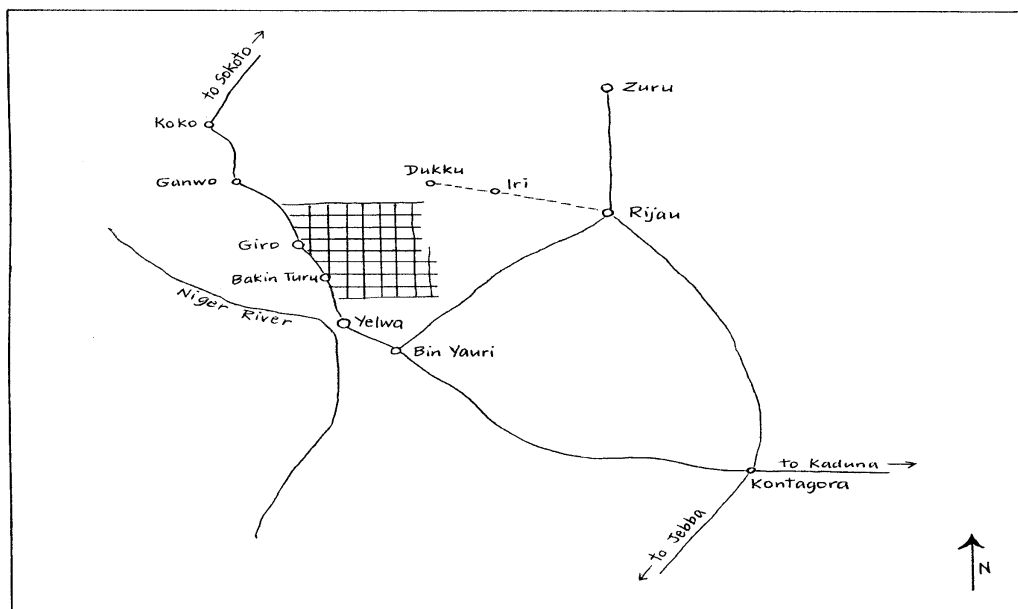


Figure 2. Map of the Yelwa Area.

Sketch map of the Yelwa (Yauri) Area of Kebbi State, Nigeria, showing the location of the area investigated by Ceslaus Prazan (1977:2).

Scale: 1 inch = approx. 32 miles

— main road

- - - bush road



area investigated

Salamone is an American anthropologist who has conducted fieldwork among the Duka people and other ethnic groups near Yelwa since 1970. His studies have focussed on conversion from the Duka traditional religion to Christianity (1972), ethnic identity and interaction (1974), and the meaning of marriage in Duka society (1978, 1981). Of particular interest is Salamone's estimation of the importance of *gormu*¹⁰ in Duka society: "It is no exaggeration to say that the *gormu* complex is the primary means through which the acephalous Dukawa society is tied together" (1972:222). Another interesting observation he makes concerns the motivation of those Duka who left Dukku and Iri and resettled near Yelwa early in the British colonial era. He says those who resettled "tended to be the more conservative who believed they would be better able to maintain their old ways in the bush" (Salamone 1974:48–49). Salamone has made a worthwhile contribution to understanding the Duka people from an anthropological perspective. Like Prazan's, his conclusions may not be valid for the whole Duka people since his writings have also been based on the study of the subgroup near Yelwa. He divides the Duka people in this subgroup on the basis of whether they originally came from Dukku or from Iri (Salamone 1974:50). In addition to Dukku and Iri, Prazan (1977:4) gives the following list of Duka tribal subgroups which his contacts said were located in the Rijau and Zuru areas: Shingiri [Sindiri],¹¹ Upawki [Ifake], Udu [Uddu], Doge [Dugge], Cenjiri [Sanjiri], Kirhaw [Kirho], Katagiwa [Rata Giwa], Abka [Afka], Dirin Daji, and Makuku.

The research secretary of Calvary Ministries (CAPRO), Miss Patience Ahmed, conducted a joint survey of the Duka and Kambari peoples in 1985. In her report (1985) she includes a profile of the Duka people, descriptions of five Duka towns, and summaries of Duka occupations, cultural beliefs, and religion. Two demographic details from the report are of particular interest to our research. First, an estimate of the Duka population as seventy-three thousand

¹⁰Bride service (spelled *gormo* by Prazan): the Duka male's practice of winning his bride by working on the farm of her father.

¹¹The names in brackets are the forms (possibly Hausa-ized) that are shown on figure 3, the map of the area surveyed. They are all names of Duka villages, although they may originally have been clan names.

is given (Ahmed 1985:3). This is substantially higher than the Cressman and Skitch estimate (Bendor-Samuel et al. 1971) of thirty thousand. The higher number is an estimate based on 1963 census figures for Magama L.G.A. (Local Government Area).¹² Second, the report indicates that the town of Tungan Magajiya, though once part of Duka territory, is now 85 percent inhabited by the Dakarkaris (from Zuru) who, in search of medical attention from the U.M.S. hospital, migrated to the area (1985:6). Ahmed further indicates that the Duka people later “wanted to take back their land from the Dakarkaris,” and that this has brought about a “cold war” between the two peoples. This situation has implications for prospective language work among the Duka people.

The Duka homeland is in rich savannah grasslands¹³ cut by intermittent streams and rivers. The land is between two hundred and five hundred meters in altitude. The terrain is flat in some places and hilly in others, with large outcroppings of rock in some areas. The rainy season extends from May to October, the Harmattan season (generally cool with dry, dust-laden winds from the Sahara Desert) from November to January, and the hot season from February to April.¹⁴ There are periods of transition between the seasons and considerable variation from year to year in the intensity and duration of these seasons (Prazan 1977:6–8). The Duka people are primarily peasant agriculturalists, relying on agriculture both for subsistence and for money to purchase goods and some foodstuffs. Hunting and wrestling matches for youths are popular activities from December to April. The Duka have the reputation among the surrounding indigenous peoples of being the best hunters in the area (Ahmed 1985:3).

The two principal centres of population for the Duka people are the towns of Rijau and Dukku.¹⁵ Iri may also be considered to have historic importance along with Dukku as a centre of resistance to “the various attempts of the Fulani from Kontagora and the Hausa of Yauri to subjugate them [the Duka]” (Salamone 1981:9, cf. Sambo 1991:2).

Rijau is headquarters for the local government and the largest town in Rijau L.G.A. (Local Government Area),¹⁶ with a population of over sixteen thousand. The town is divided into old and new settlements, with the old settlement occupied mainly by Duka people and the new inhabited by more recent arrivals including Fulani, Hausa, Yoruba, and Igbo (Ahmed 1985:7). In 1810 a Fulani man set himself up over Rijau with the title *Sarkin Bauchi* (Gunn and Conant 1960:50). The Duka inhabitants of old Rijau were originally migrants from a Duka settlement called Rata Giwa, and they still consider the chief of Rata Giwa (*Sarkin Rata Giwa*) to be their head; however, he is subject to the *Sarkin Bauchi*¹⁷ of Rijau. Besides the local government secretariat, Rijau has a large market area, a clinic, a dispensary, a cultural centre, and a rural electricity system (Ahmed 1985:7). It is unclear whether or not the Duka people constitute the majority of Rijau’s population.

Dukku, the second largest town in Rijau L.G.A., has a population of over 9,000 (Ahmed 1985:18). Again the

¹²Ahmed estimated the Duka population in Magama L.G.A. to be one-third of the total population of Magama L.G.A. This total population figure was 190,181 according to the 1963 census count (Ahmed 1985:18), which tax collection efforts have shown to be a rather high figure (Ahmed, personal communication). The number of Duka people living outside Magama L.G.A. was estimated to be ten thousand. Thus the Duka population estimate was calculated to be sixty-three thousand (within Magama) plus ten thousand (outside Magama), giving a total of seventy-three thousand (Ahmed, personal communication).

¹³Also known as orchard bush.

¹⁴“Dry season” is the term commonly used to lump together the Harmattan season and the hot season, since they are both characteristically dry.

¹⁵Ahmed (1985:6–7) also profiles the towns of Tungan Magajiya, Darangi, and Iri in her report, and Sambo (1991) profiles the town of Iri.

¹⁶In the creation of new states and L.G.A.s by presidential decree (September 1991), the former Magama L.G.A. (of Niger State) was split in two. Its northern district, Rijau District, became the new Rijau L.G.A. and the southern two districts, Ibelu and Auna, became the new Magama L.G.A. The town of Rijau, formerly the seat of Magama L.G.A., became the seat of Rijau L.G.A. and Auna became the seat of Magama L.G.A. Rijau L.G.A. corresponds roughly to the Duka homeland, though quite a few Duka people live outside it.

¹⁷A non-Duka man.

population is a mixture of Duka indigenes and others who are mainly Hausa. The Hausa name for the people group, Dukawa or Dukkawa, may mean ‘people of Dukku’, but “no data available explains the priority of Duku [sic] implied in this name” (Gunn and Conant 1960:50). Gunn and Conant also cite a 1938 report which lists the town of Dukku as having 3,058 Dukawa and 1,269 Hausa. It is our impression that Duka inhabitants still constitute the majority of Dukku’s population. Dukku (unlike Rijau) is situated on an untarred road. In her report, Ahmed notes little of western influence in Dukku “except in the establishment of a primary school, a basic clinic, a secondary school, and a reading room” (1985:6).

1.4 Map of Area Surveyed

In order to prepare a map of the Duka homeland (figure 3), we recorded odometer readings on our LandRover each time we travelled out to a new location. For each location we determined the distance from Rijau, the seat of the local government for Rijau L.G.A (formerly part of Magama L.G.A.). The map, based on the Niger State Ministry of Lands and Survey map of Magama L.G.A. (n.d.), is intended as an aid to better understanding place references made in this report.

2. PROCEDURES

2.1 Objectives

In order to assess the current linguistic situation, we pursued the following objectives:

- (1) to determine the reference points (i.e., Duka towns or villages) needed for a study of the dialects of the Duka people,
- (2) to determine lexical similarity between the Duka dialects spoken at the various reference points, and also to determine lexical similarity between the Duka language and the languages closely related to it (Lela, the Fakai cluster, and Banga), and
- (3) to investigate intelligibility between the Duka dialects, especially testing a representative of the Eastern dialects (Rijau) and a representative of the Western dialects (Iri) at all test points.

Reference points were determined using an interview schedule on grouping and the background information summarized in section I, part C. Lexical similarity was determined by the collection, review, and comparison of word lists. Dialect intelligibility was investigated by the method of recorded text testing.¹⁸

To assess the current sociolinguistic situation among the Duka people, we pursued the following objective:

- (4) to investigate the Duka community’s language use and language attitudes, particularly with reference to their mother tongue and the language of wider communication, Hausa.

Language use and attitudes were investigated using interviews and observations. Two things were of particular concern in this investigation:

- (a) the domains of use of the Duka language and Hausa, and
- (b) the significance attached by the Duka people to continuing the development of Duka as a written language.

2.2 Tools and Their Use

Before beginning our field work, we tentatively chose five Duka population centres on the basis of background

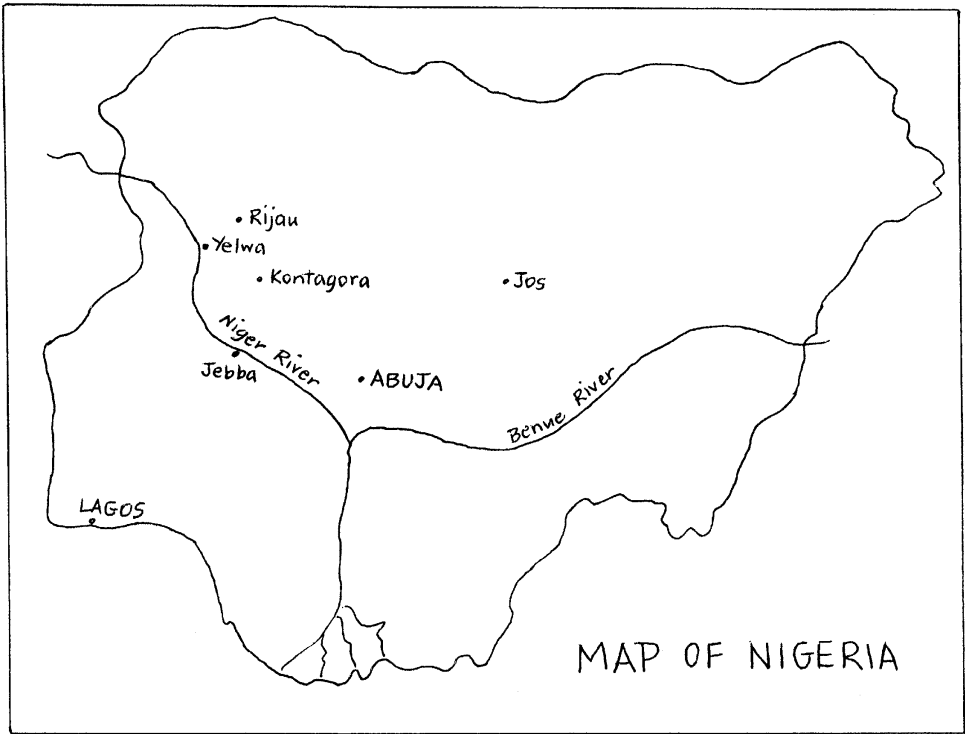
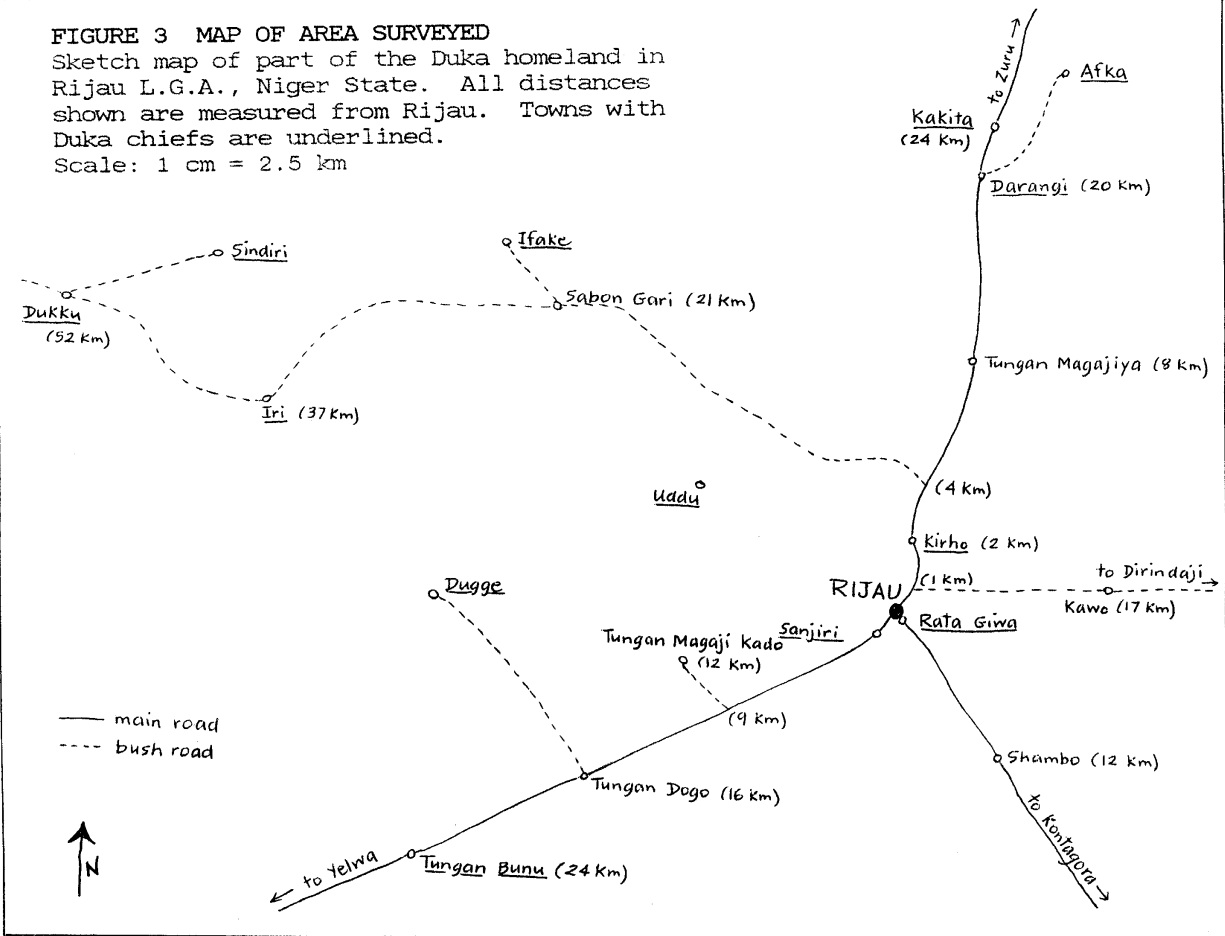
¹⁸The construction and use of recorded text tests is explained in detail by Casad (1974).

information—Dukku, Iri, Rijau, Tungan Bunu, and Darangi.¹⁹ Our intention was to collect a word list and to conduct a grouping interview with a representative of each centre. Then on the basis of dialect differences indicated by these interviews and word lists, we chose reference points for measuring dialect intelligibility.

¹⁹We later realized that we had overlooked the Duka subgroup near Yelwa, so we also collected a word list there.

FIGURE 3 MAP OF AREA SURVEYED

Sketch map of part of the Duka homeland in Rijau L.G.A., Niger State. All distances shown are measured from Rijau. Towns with Duka chiefs are underlined. Scale: 1 cm = 2.5 km



2.2.1 Interview Schedule on Grouping

The interview schedule (see appendix B) was designed to obtain information as a basis for grouping the towns and villages around several reference points. We used it to give structure and direction to interviews with five Duka men but did not use the complete set of questions in any one interview. Clark Regnier interviewed the pastor²⁰ of the U.M.C.A. church in Dukku and an adult son of the village chief in Iri. Steve Dettweiler interviewed a man from Darangi who dispenses medicine at Iri on market day, the owner²¹ of a pharmacy in Tungan Bunu, and the head of the Rijau Local Government Education Authority in Rijau. In this way, the five Duka population centres in focus were all represented. The representatives' responses, taken all together, gave a picture of the Duka dialect situation as perceived by Duka people.

2.2.2 Collection and Review of Word Lists

Word lists were collected in the five Duka villages which we selected as tentative reference points. In addition, we later collected a word list in Duci Kura near the town of Giro in Kebbi State, in order to determine whether the Duka of that area (the Yelwa subgroup) have a distinct dialect. At all six locations we used a 172-item word list which corresponds closely to the SIL²² Preliminary Standard Word List for Africa (Bergman 1989a:3–5).²³ After the initial experience of eliciting the word list (in Dukku) we altered the order of the list so that more nouns were obtained at the beginning of the elicitation session. This altered ordering was still by semantic domain, however. We felt that it was better to defer introducing the complication of variant verb forms until the language speaker had “warmed up” to the process of elicitation. Each verb was requested in two forms, with the standard pattern being (for example) “He is eating”, then “eat.”

Elicitation was through Hausa, which is the language of wider communication in northwest Nigeria. Prior to collecting any word lists in Duka, we discussed each English gloss with the translator to elicit the nearest equivalent in the Hausa characteristic of the area. In each word list elicitation session the linguist stated the English word, the translator gave the Hausa equivalent, and the Duka speaker said the Duka word two times (with further repetition sometimes requested by the linguist). Only the Hausa and Duka words were recorded on the cassette tape, but the paper version of the word list shows English as well. We attempted to elicit the complete word list in all six villages, although in a very few cases the Duka speaker could not come up with the appropriate Duka word.

Five out of the six word lists (those of Dukku, Iri, Rijau, Darangi, and Giro) were collected from adult men living in their home villages. The Tungan Bunu word list was elicited from two teen-aged girls, both of whom lived in Tungan Bunu. They had difficulty with the meanings of some Hausa cue words, lowering the reliability²⁴ of the Tungan Bunu list. The first girl became obviously bored and restless after helping us for a while (with items 1–100), so that we allowed another girl to replace her (for items 101–172). Table 1 gives standard information about the six word lists. Appendix C shows the six Duka word lists in columns beside the corresponding list of English glosses.

²⁰A Duka man who grew up near Rijau.

²¹Born in Darangi, this man lived there fifteen years and in Tungan Bunu for twenty-two years.

²²SIL International.

²³Items not included from the SIL word list were: ‘wash (a pot)’, ‘lie down’, ‘seed’, and ‘dry’ (adjective). Additional items on our word list (not on the SIL list) were: ‘corpse’ (#50), ‘compound’ (#86), ‘town’ (#89), ‘song’ (#99), ‘dry up’ (#110), and ‘spider’ (#129).

²⁴A reliability code is assigned to each word list according to descriptions given in Wimbish (1989:31). These codes are shown in table 1.

Table 1. Background Data for Word Lists

Word List Code	Area Spoken	Date Collected	Place Collected (In/(O)ut of Area	Collector's Name	Translator's Name	Language Speaker	Reliability Code
DUD1	Dukku and vicinity	May 1991	I - Dukku	Clark Regnier	Ishaya Sambo	Adaka Sambo	C
DUD2	Iri and vicinity	May 1991	I - Iri	Clark Regnier	Ishaya Sambo	Muhammed Jide	C
DUD3	Tungan Bunu and vicinity	July 1991	I - Tungan Bunu	Stephen and Sonia Dettweiler	Ishaya Hanya	Jima Changana (#1-100) Elizabeth Bawa (#101-172)	D
DUD4	Rijau and vicinity	July 1991	I - Shambo	Stephen and Sonia Dettweiler	Ishaya Hanya	Musa Hago Shenjir	C
DUD5	Darangi and vicinity	July 1991	I - Darangi	Stephen and Sonia Dettweiler	Ishaya Hanya	Alhaji Iddarisu Darangi	C
DUD6	Giro (Kebbi State) and vicinity	March 1992	I - Duci Kura	Stephen Dettweiler	Barnabas Bulus	Boka Kenge	C

After an initial comparison of the first five word lists, we subjected the word lists to a process of review in order to lessen the chance of confusing elicitation errors with dialect differences. In the process of word list review, we sat down with first-language speakers of Duka who were sufficiently proficient in English. We discussed with them all the records in which the word attributed to their dialect showed substantial phonetic differences from at least one of the other dialects. We sought first to elicit the Duka word that they would naturally use, and then questioned them about the meaning of other words given on the record. We were fortunate to have first-language speakers of two different dialects of Duka as our language helpers on the third survey trip, when we first did this word list review.²⁵ Clark Regnier conducted the review process with David Ishaya, a speaker of the Rijau dialect, and Steve Dettweiler conducted the same process with Isaiah Sambo, a speaker of the Dukku dialect. The review process was carried out a third time when the Giro word list was compared to the others. In this case we had help from a group of several Duka speakers from the Giro area, one of whom was proficient in English. We particularly discussed all discrepancies between the Giro word list and the Dukku and Iri word lists, since it is claimed that the people in the Giro area moved there from either Dukku or Iri (Prazan 1977:4). The results of all three review sessions are reflected in the combined Duka word list of appendix C.

Two Duka word lists, collected from Dukku and Rijau, were compared with a word list from each of the closely related languages: Lela, Banga, and the Fakai cluster. All five of these word lists were collected by our late colleague Clark Regnier, and each one contains 290 items. The comparison was done in order to compute lexical similarity between Duka and each of its linguistically close relatives.

²⁵A thorough review of the word lists would involve Duka speakers from Iri, Tungan Bunu, and Darangi as well. This has not yet been done. Accordingly, the fact that the data has not been verified is clearly indicated on the data questionnaire for these three word lists.

2.2.3 Dialect Intelligibility Testing

We recorded a long text and a short text in each of the two villages we visited on the first survey trip (Dukku and Iri) and in each of the three villages we visited on the second survey trip (Tungan Bunu, Rijau, and Darangi). We also prepared five or six questions on the content of each short text and twelve questions on each long text. These questions were patched into the texts, then a preliminary hometown run of the tests was conducted. The results of this preliminary run were used to evaluate the quality of the questions. On the basis of this evaluation, we eliminated enough questions to give a short practice test with five questions and a long test with ten questions.²⁶ Also, it was sometimes necessary to alter the wording of the questions.

We administered a selection of the recorded text tests at each of four test points. These four points were determined on the basis of the results from grouping interviews and word list comparison. Specifically, we included only one test point (Iri) from the Dukku-Iri-Giro triad because we considered these three towns to be in the same dialect group on the dual bases of grouping interviews and word list comparison. In each of the four locations (Tungan Bunu, Darangi, Iri, and Rijau) we tested at least ten young people (between the ages of 10 and 20). By testing young people (and not adults) we hoped to get a more accurate measure of **inherent** intelligibility. Adults are more likely to have had significant exposure to dialects other than their own. Therefore, they might do well on the tests due to **acquired** intelligibility.

The Secretary of Education of the Rijau L.G.A. supplied us with a letter to the headmasters and principals of the schools in the Rijau L.G.A. This letter was very helpful to us in obtaining cooperation from the schools in order to test the children.

A young person chosen to take the test was first asked a few questions in order to ascertain whether he adequately represented the dialect group we were testing. Each person who was considered eligible listened first to a short story for practice. To lessen distractions, the tests were administered through earphones. There was no score given for the short story. Subsequently, the person listened to a longer story. This story and the short practice story were both in their “hometown” dialect. We tallied the answers they gave to each of the ten questions: “R” for a right answer, “W” for a wrong answer, and “H” for a half-right answer. If the person being tested did not understand the story or the question for any reason and wanted that section played again, we would rewind the cassette and play it again. At the end of the longer “hometown” story, we calculated the percentage of correct answers given: 10 percent for a right answer, 5 percent for a half-right answer, and 0 percent for a wrong answer. If the score was 80 percent or more,²⁷ we asked the subject to listen to another story or two, each recorded in a different dialect from their own. Although each of these stories was told in an “other-town” dialect, the test questions were still asked in the subject’s hometown dialect. These tests were scored in the same way as the hometown test, except that we allowed only two “free” replays of a section of text per story. We allowed replays beyond the limit of two, but did not give credit for

²⁶There is one exception: the Tungan Bunu test scores are based on nine questions, not ten. The final version of the Tungan Bunu long story (after preliminary testing) had ten questions, but one of these questions was later answered incorrectly by four Tungan Bunu (hometown) subjects—a definite indication that it was a bad question. Thus it was eliminated from the calculation of the score of anyone who listened to the Tungan Bunu test tape.

²⁷Eighty percent is generally expected to be the minimum that a fully cooperating subject should score on a hometown test. However, a subject who scores less than 80 percent is not automatically rejected (Casad 1974:24–25). In our dialect intelligibility study we included the results of one subject at the Tungan Bunu test point with a hometown test score under 80 percent. We judged her low score to be due to the presence of distractions and the fact that she needed both the shorter and the longer hometown stories to learn how to take the test.

right answers gained by this, which we deemed “excessive repetition.”²⁸ At each test point we tested at least ten subjects.²⁹

From data previously collected, we had the hypothesis that Rijau was the central dialect. So as a minimum we wanted to use the Rijau text test in all areas and to test the supposed noncentral dialects in Rijau. In the Tungan Bunu test area we administered the Rijau, Iri, and Tungan Bunu text tests. In Darangi we administered the Rijau, Iri, and Darangi text tests. In Iri the Rijau and Iri text tests were administered and in Rijau text tests from all four areas (Tungan Bunu, Darangi, Iri, and Rijau) were administered.³⁰

2.2.4 Interviews and Observations

Data concerning language use and language attitudes were obtained, for the most part, in interviews. Some data, such as the existence of a radio program in the Duka language, came out rather incidentally while using the Interview Schedule on Grouping (appendix B). We used this Interview Schedule with five men representing five Duka villages. Other information was gained by discussing Hausa and Duka language use with four Duka individuals during the third survey trip. These individuals were a 65-year-old man from Darangi, two young men from Iri, and a grandmother who lived near Iri. We also discussed sociolinguistic questions informally with our Hausa interpreters, Isaiah Sambo and David Ishaya (both Duka men), and more formally interviewed Isaiah Sambo concerning some of the items covered in a “rapid appraisal” questionnaire (Bergman 1991:7–10).

Observations were made on what language (Duka or Hausa) was being used in various situations and specifically on the matter of language use in the practice of Christianity and of the traditional religion.

2.3 Evaluation of Procedures

Although we feel that overall the procedures effectively carried out the stated objectives, there are four ways in which we would alter the procedures if conducting this type of survey again.

- (1) We would verify all word lists in the manner recommended in the *Survey Reference Manual* (1990:3.5.2). This would improve the reliability of the word lists by reducing elicitation errors.
- (2) It would have been better to choose Dukku as a test point for dialect intelligibility testing rather than Iri. Although using the Rijau test tape at the Iri test point showed adequate intelligibility, Esther Cressman questioned (personal communication) whether people at Dukku adequately understand the Rijau dialect. We assumed on the basis of high lexical similarity between the Dukku and Iri dialects that the Iri test point results would be extendable to the whole Dukku-Iri dialect group (Giro was later included in this). Since former long-term research on the Duka language calls this assumption into question, further intelligibility testing (at Dukku and possibly at Giro) seems called for.³¹

²⁸Casad contends that a test subject who has no difficulty with the hometown test may be hesitant or repeat questions in succeeding tests “because he cannot understand what the text says and furthermore he is embarrassed to admit it” (1974:25). Casad says, “the administrator may choose to score the subject incorrect for such a response.”

²⁹Some subjects at test points outside the Rijau area were mistakenly allowed to proceed through the tests even though they had lived in the Rijau area for three or more years. When this fact was later noticed, their results were excluded. This exclusion accounts for the sample size being nine rather than ten at the three test points outside Rijau.

³⁰We tested fifteen subjects at the Rijau test point. Each of these subjects listened to the hometown (Rijau) test tape and two of the three “other-town” test tapes. We administered the other-town test tapes in such a way that ten Rijau subjects listened to each one. However, one subject’s scores were later excluded because we felt his low scores on the Tungan Bunu and Iri test tapes (50 percent on each) were due to test anxiety. This exclusion accounts for the sample size of nine for the Tungan Bunu and Iri test tapes at the Rijau test point.

³¹Miss Cressman’s communication arrived after we had completed dialect intelligibility testing, and time constraints did not permit us to do testing at Dukku and Giro.

- (3) We would gather information more widely on language use, language attitudes, and other sociolinguistic factors. It would have been useful to survey a larger number of church and community leaders, whether Duka or those working with Duka people. Also it would have been helpful to record observations on language use and attitudes in a journal on a regular basis.
- (4) Most of our sample sizes for recorded text testing were slightly too small (nine rather than the recommended ten people) and also one of the recorded text tests (Tungan Bunu) ended up being based on nine questions rather than ten. We recommend particularly to those lacking field experience with recorded text testing that one should take a sample of twelve people at each test point and base each test on twelve questions (which have already previously been screened). These two precautions allow for excluding up to two people from a sample and up to two questions from a test in the event that mistakes are made in selecting the sample or some test questions yield unacceptable results in the hometown situation (both of these problems happened to us). See Bergman (1989b:14–16) for reasons why test question quality and sample size are important in evaluating the significance of differences between people's test scores.

3. ANALYSIS AND RESULTS

3.1 Grouping Interviews

Many of the questions in the interview schedule on grouping pertain to the Duka interviewees' perceptions of what the dialect differences within the Duka language are. The perceptions of each interviewee are displayed in table 2, followed by our best attempt at a consensus of these perceptions.

Table 2. Dialect Picture by Town
According to Grouping Questionnaire Interviewees

DIALECT “BLOCK”	RIJAU “BLOCK”	DARANGI “BLOCK”	TUNGAN BUNU “BLOCK”	DUKKU “BLOCK”
INTERVIEWEE				
Secretary of Education Garba Abara <i>from Rijau</i>	Rijau Sanjiri T. Magajiya Uddu	Darangi Afka Kakita		Dukku Iri Sindiri Ifake Dugge T. Bunu [<i>may be different</i>]
Pharmacy owner Sani Abdullahi <i>from Darangi & T. Bunu</i>	Rijau Sanjiri (Sahoma) (Rukukuje)	Darangi Afka T. Magajiya (Gamji)	T. Bunu Dugge Uddu (Genu) (Madalla)	Dukku Iri (Sabon Gari and other towns on Dukku-Iri road)
Pastor Auta Donka <i>from Dukku & Rijau</i>	Rijau T. Magajiya Sanjiri Uddu Darangi Kakita Afka (Dirindaji)		T. Bunu Dugge	Dukku Sindiri Iri Ifake (Abdu Iri) (Mallam Bawa)
Muhammed Jidi <i>from Iri</i>	Rijau Uddu Darangi (Uja)			Dukku [some differences from Iri] Iri Ifake Sindiri
Dispenser at Iri dispensary <i>from Darangi</i>	Rijau T. Magajiya (Dirindaji)	Darangi [closer to Rijau block than Dukku block]	T. Bunu	Iri [?]
OUR “BEST GUESS”	Rijau [Rata Giwa] Sanjiri T. Magajiya [Kirho] Uddu	Darangi Afka Kakita	T. Bunu Dugge	Dukku Iri Sindiri Ifake

Towns without Duka “chiefs” are shown in parentheses. T. = Tungan

All interviewees considered the Duka language to have three or four dialects (or dialect clusters).³² Gunn and Conant found no mention of any clan or “subtribal” organization, past or present, among the Duka people (1960:49), and this is consistent with our findings. It seems that the best analysis of the Duka people is on a

³²The Education Secretary used the term “block” for a group of Duka towns.

geographical basis, according to the traditional centres of Duka population. The education secretary for Rijau L.G.A., Mr. Garba Abara, suggested this analysis and listed thirteen traditional Duka centres: Sanjiri, Rata Giwa (associated with Rijau), Zente (Tungan Bunu), Dugge, Kirho (near Tungan Magajiya), Darangi, Afka, Kakita, Dukku, Iri, Sindiri, Ifake, and Uddu. At present each of these villages or towns has a Duka chief who is recognized by the government with the title *sarki*.³³ Sometimes Duka people will give the name of the village they come from as their surname. The Duka often relocate their families for the sake of water or farmland. New settlements that are started in this way tend to be associated politically and linguistically with the centre from which their founders came. For example, Tungan Magaji Kado is associated in this way with Sanjiri; also, the Duka near Giro in Kebbi State still align themselves with either Dukku or Iri three or four generations after relocation (Prazan 1977:4).

Our tentative breakdown of the Duka language is into four dialect clusters. This is based on our interviewees' perception of three or four dialect "blocks." It is preferable to use the higher number of four since it is easier to remove unnecessary distinctions later than to go back and study additional subgroups which were overlooked. By collecting a word list in the Giro area, we verified that the Duka subgroup near Giro in Kebbi State is part of the Dukku block linguistically as well as historically. The subgroup that Gunn and Conant describe as being in the eastern part of the Rijau District (now Rijau L.G.A.) and "extending into the Sakaba District of the Zuru Federation" (1960:50) is assumed by us to correspond to the two eastern blocks³⁴ (Rijau and Darangi). Then what they call the "main body of Dukawa" corresponds to the two Western blocks (Dukku and Tungan Bunu). It is difficult to see the current validity of Gunn and Conant's description of the relative sizes of these two Duka subgroups if these correspondences are correct, i.e., the Eastern blocks seem about equal (or possibly larger) in population when compared to the Western groups, not "much smaller" (1960:49–50).

Table 3 shows the autonyms for the Duka people and language. Initially we obtained this data during grouping interviews. Subsequently, during the course of our fieldwork we heard the names with the root *hun* being used in the Rijau and Darangi areas and the names with the root *saare* being used in the Dukku, Tungan Bunu, and Giro areas. The language autonyms are identical with those given by Cressman and Skitch (1974:1) and follow the Eastern vs. Western dialect distinction they made. It seems reasonable to combine these roots and to begin calling the Duka people and language by the name *Hun-Saare*, as suggested by Blench (personal communication).

Table 3. Autonyms for the Duka People and Language³⁵

	'a Duka person'	(s.) 'the Duka people' (pl.)	'the Duka language'
Western	<i>net</i> [nɛt]	<i>nehne</i> [nɛhnɛ]	<i>es-saare</i> [ɛssaɾɛ]
or	<i>ko-saare</i>		
Eastern	<i>ko-hun</i> [kohun]	<i>hunne</i> [hunne]	<i>et-hun</i> [ɛθhun]

3.2 Analysis and Comparison of Word Lists

The WORDSURV program (Wimbish 1989) was used in computing the percentage of lexical similarity for each pair of word lists. In this program the various forms given for a particular gloss are assigned to possible cognate sets

³³It is not clear whether the Duka traditionally had chiefs. Chiefs are now politically appointed and may be required to convert to Islam to gain their appointment.

³⁴Note that Dirindaji, which is near Sakaba in the district immediately east of Rijau L.G.A., was aligned by two interviewees with the Rijau "block."

³⁵The people name can mean the whole human race or just the Duka people, depending on the context. The names *es-saare* and *et-hun* appear to be the names used in the different dialects for the Duka language as a whole, not merely for their particular Duka dialect.

by the linguist who enters the word list data. We claim only to have **possible** cognate sets because we did not carry out historical reconstructions but assigned the words to sets on the basis of surface phonetic similarity.³⁶

Known or suspected affixes were not included in the WORDSURV comparison process, but they are shown in the combined word list (appendix C). Any item known to be a loan word from Hausa was excluded from comparison. Loan words are marked with an asterisk in the combined word list. Other items excluded from comparison under WORDSURV were:

- (1) items identified as the result of elicitation errors during the three sessions of word list review. These items are marked with a double asterisk in the combined word list and shown with an English gloss underneath,
- (2) items where the same Duka word was given for two different prompts (for example, the prompts ‘man’ and ‘husband’ produced the same Duka word). When this happened, one of the two identical items was marked with a double asterisk and a message pointing out the similarity was shown underneath it.

In a few cases, two different Duka words were given for the same prompt by people of the same dialect area. If these were judged to be synonyms, they were entered in the same slot on the combined word list and separated by a slash mark. Both synonyms were included in the comparison process, as permitted by WORDSURV.

The four matrices shown in figure 4 result from comparing the six Duka word lists using WORDSURV. These matrices result from counting possible cognates shared between pairs of word lists. The tally matrix reports the number of possible cognate forms that were shared between each pair of word lists. The N (total) matrix reports the total number of words compared between each pair of lists. The percentages matrix reports the number of shared possible cognates as a percentage of the total number of words compared between each pair of lists (i.e., the tally number divided by the total number). Finally, the variance matrix indicates the range of error for each percentage. This range of error is computed using standard statistical procedures and is based on the possible cognate percentage, the total number of words compared, and the reliability rating of each word list (given in table 1). Appendix D explains how to read the matrix entries, and should be consulted by the reader unfamiliar with presentation of data in matrix form. Appendix E presents a phonostatic analysis of the Duka word list data.

Tally Matrix						Percentages Matrix					
Rijau						Rijau					
142	Darangi					90	Darangi				
132	126	Iri				85	82	Iri			
135	128	146	Dukku			85	82	94	Dukku		
134	130	142	149	Giro		84	83	91	94	Giro	
122	117	128	127	126	T.Bunu	79	77	84	83	82	T.Bunu
N (Total) Matrix						Variance Matrix					
Rijau						Rijau					
157	Darangi					2.9	Darangi				
156	154	Iri				3.6	4.0	Iri			
158	156	156	Dukku			3.6	4.0	2.3	Dukku		
159	157	156	158	Giro		3.7	3.8	2.8	2.3	Giro	
154	152	152	153	154	T.Bunu	4.7	4.9	4.1	4.2	4.3	T.Bunu

Figure 4. Lexical similarity among six dialects of Duka.

³⁶A clearly defined set of criteria for what words have “surface phonetic similarity” (and hence are considered “possible cognates”) is presented in Blair (1990:31–33). These criteria, based on word length and classification of pairs of phones as either phonetically similar segments or not, are what we have applied in our word list comparison.

When the calculation of lexical similarity between two speech forms by analysis of word lists yields a similarity figure of *less* than seventy percent (at the upper confidence limit of the calculation), this indicates that these speech forms are different languages (Bergman 1990:9.5.2). The percentages of lexical similarity between the various pairs of Duka word lists range from a low of 77 percent (+/- 4.9%) between the Darangi and Tungan Bunu word lists to a high of 94 percent (+/- 2.3%) between the Iri and Dukku word lists and also between the Dukku and Giro word lists. Since all our similarity figures exceed seventy percent, the word list evidence does not support the hypothesis that any of these dialects is a language distinct from other varieties of the Duka language. This coincides with the widespread perception (both among the Duka people and those who have studied them) that Duka is a single language. It also substantiates the grouping (by our interviewees) of Dukku and Iri speech forms into one dialect cluster, the Giro speech form's close linguistic relationship to the Dukku dialect (as suggested by Prazan (1977) and Duka people in the Giro area), and the relative isolation of the Tungan Bunu dialect. These facts can also be seen on a cluster diagram (figure 5b) for the Duka dialect situation, prepared on the basis of the lexical similarity percentages. Figure 5a presents the lexical similarity figures in the form of a schematic map, both as background for the cluster diagram and to show the percentages in the context of geographic distance between reference points.

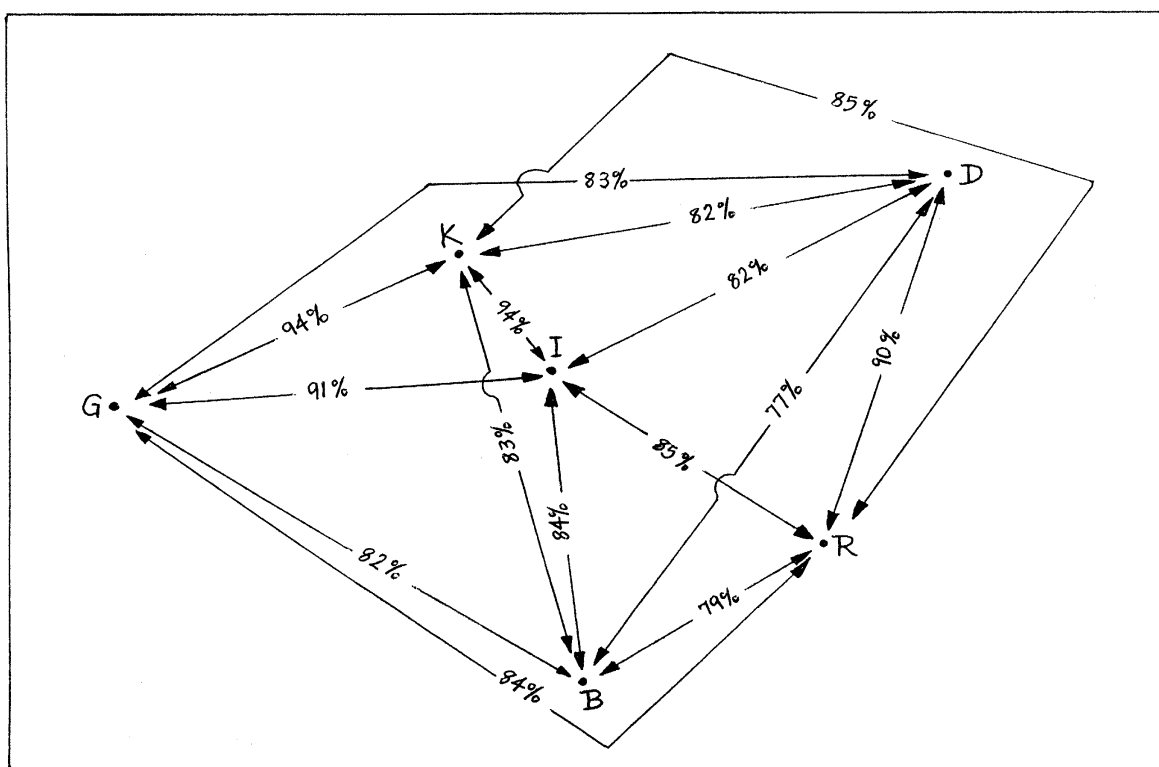


Figure 5a. Schematic map of word list reference points.

(showing lexical similarity figures)

D=Darangi R=Rijau B=Tungan Bunu
I=Iri K=Dukku G=Giro

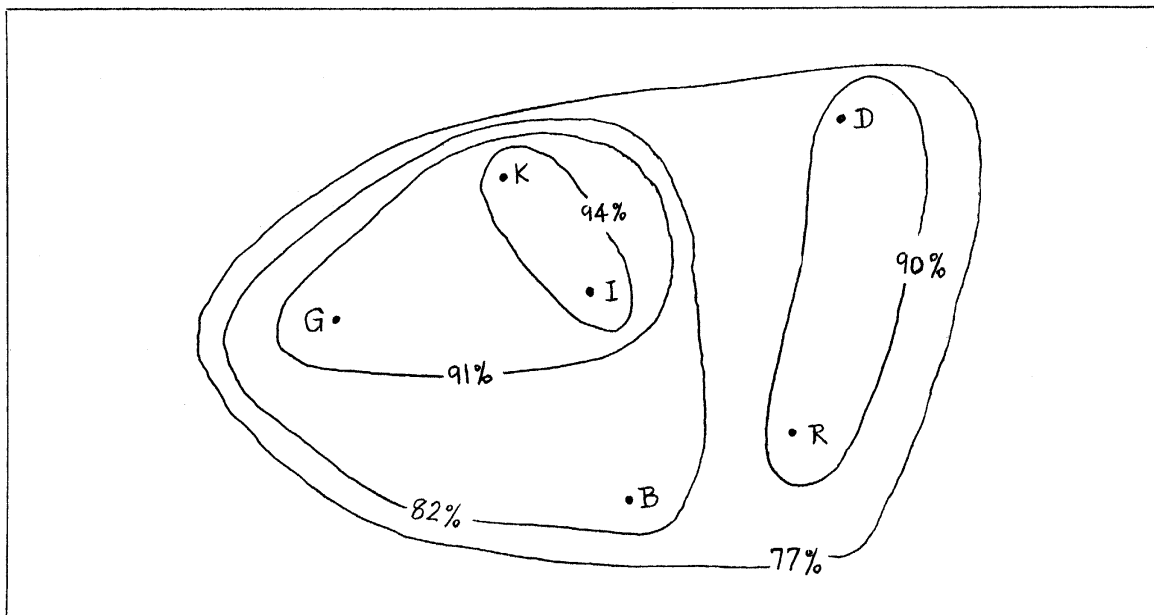


Figure 5b. Cluster diagram.

(six Duka dialects clustered according to minimum lexical similarity)

D=Darangi R=Rijau B=Tungan Bunu
I=Iri K=Dukku G=Giro

The cluster diagram (figure 5b) shows the following on the basis of lexical similarity between word lists:

- (1) Dukku, Iri, and Giro cluster at a minimum lexical similarity threshold of 91 percent.
- (2) Rijau and Darangi cluster at a minimum lexical similarity threshold of 90 percent.
- (3) Tungan Bunu joins the Dukku-Iri-Giro cluster at a threshold of 82 percent. It appears to be the most distinct dialect.
- (4) The Duka dialects, clustered as a whole, have lexical similarity equal to or greater than 77 percent (plus or minus 5 percent).

Lexical similarity figures also show the Duka language to be distinct from the other Western Kainji languages closely related to it (i.e., the Group 7 languages). Figure 6 is a matrix presentation of lexical similarity figures computed by WORDSURV on the basis of five 290-item word lists.

<p>Tally Matrix</p> <p>Duka (Dukku) 213 Duka (Rijau) 158 173 Fakai (Ror) 112 124 148 Banga (Gwamhi) 124 144 137 114 Lela (Com)</p> <p>N (Total) Matrix</p> <p>Duka (Dukku) 247 Duka (Rijau) 245 275 Fakai (Ror) 237 263 259 Banga (Gwamhi) 244 278 272 262 Lela (Com)</p>	<p>Percentage Matrix</p> <p>Duka (Dukku) 86 Duka (Rijau) 64 63 Fakai (Ror) 47 47 57 Banga (Gwamhi) 51 52 50 44 Lela (Com)</p> <p>Variance Matrix</p> <p>Duka (Dukku) 2.8 Duka (Rijau) 4.4 4.3 Fakai (Ror) 5.5 5.2 4.7 Banga (Gwamhi) 5.2 4.8 5.0 5.4 Lela (Com)</p>
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Figure 6. Lexical similarity among languages of Western Kainji, Group 7.
(Names in parentheses indicate dialect of person giving word list)

If the criterion of less than 70 percent lexical similarity (at the upper confidence limit) between speech forms is used (as previously) to indicate “different languages,” it can be seen that Duka (whether in its Rijau or Dukku form), Lela (Dakarkari), Banga (Lyase), and the Fakai cluster (Puku-Geeri-Keri-Wipsi cluster) are distinct languages. The Fakai cluster appears to be the most closely related to Duka of the Group 7 languages; however, its lexical similarity to the Dukku dialect of Duka is 68.4% at the upper confidence limit.³⁷

3.3 Dialect Intelligibility Testing

Lexical similarity figures have demonstrated the relative linguistic unity of the Duka people along with the diversity among their dialects. Since these figures exceed 70 percent in all comparisons of Duka dialects, an investigation into dialect intelligibility is needed to determine how well people can understand the various Duka speech forms (Bergman 1990:9.5.2). This investigation will also provide information which will be useful in the choice of an appropriate standard reference dialect for work in this language.

Figure 7 presents the results of conducting recorded text testing (RTT) at four test points in the Duka homeland. For each test point, the scores of each subject who listened to the test tapes are given (as percentages) across one row of the table for that test point. The first test tape played at each test point was the hometown tape. The Rijau and Iri tapes were used at all test points.

³⁷The studies of both Blench (1988:4) and Amfani (1990:53) also indicate that Duka and the Fakai cluster are more closely related than Duka and Lela.

Test Point #1 - Tungan Bunu				Test Point #2 - Darangi					
Test Tapes:				Test Tapes:					
		T.Bunu	Rijau	Iri		T.Bunu	Rijau	Iri	
S	1	67	90	90	S	1	100	80	70
U	2	83	90	90	U	2	95	90	85
B	3	89	100	100	B	3	90	80	65
J	4	100	85	80	J	4	90	80	85
E	5	83	100	90	E	5	100	90	75
C	6	94	100	100	C	6	90	90	75
T	7	89	90	100	T	7	85	90	90
S	8	100	90	90	S	8	80	90	100
:	9	83	70	75	:	9	90	90	75

Test Point #3 - Iri				Test Point #4 - Rijau					
Test Tapes:				Test Tapes:					
		Iri	Rijau			Rijau	Darangi	Iri	T.Bunu
S	1	95	100	S	1	100	*	95	78
U	2	90	100	U	2	80	100	*	72
B	3	90	100	B	3	100	90	90	*
J	4	95	100	J	4	100	90	*	94
E	5	100	90	E	5	100	90	80	*
C	6	90	100	C	6	100	*	90	94
T	7	80	80	T	7	90	100	*	94
S	8	95	90	S	8	100	100	100	*
;	9	100	90	;	9	100	85	*	85
					10	90	*	90	83
					11	100	100	70	*
					12	100	*	60	94
					13	100	90	*	89
					14	95	90	80	*

Figure 7. RTT results (as percentages) at four test points.

Table 4 summarizes the results shown in the four tables of figure 7. Not all test tapes were administered at every test point. For each test tape used at a test point, it shows the sample size (in parentheses), the mean intelligibility score (as a percentage), and the sample standard deviation. It has been found that in dialect intelligibility testing it is best to report these three measures for each sample. Reporting only mean intelligibility scores, without standard deviation, can obscure the presence of bilingualism (or in this case, bidialectalism). Also, standard deviation is “the basis for showing statistically whether two groups can reasonably be treated as distinct on the basis of samples taken from each” (Grimes 1988:19).

Table 4: Summary of Dialect Intelligibility (RTT) Scores

		Test Points:							
		Rijau		Darangi		Iri		Tungan Bunu	
T e s t T a p e s	Rijau	97% ,	(14) 6.1	87% ,	(9) 5.0	94% ,	(9) 7.3	91% ,	(9) 9.5
	Darangi	94% ,	(10) 5.8	91% ,	(9) 6.5	/////		/////	
	Iri	84% ,	(9) 12.7	80% ,	(9) 10.9	93% ,	(9) 6.2	91% ,	(9) 8.8
	Tungan Bunu	87% ,	(9) 8.2	/////		/////		88% ,	(9) 10.3

(shows sample size in parentheses, sample mean in bold type, and sample standard deviation)

///// = testing not conducted)

Bergman suggests, “when the effect of bilingualism is small, the standard deviation is usually less than 8–10%” (1989b:7). For example, ten subjects at the Rijau test point achieved a mean score of 94 percent when the Darangi test tape was administered to them. The sample standard deviation of 5.8 indicates that the effect of bilingualism is small. Thus, 94 percent is likely a valid point estimate of inherent intelligibility of Rijau people for the Darangi dialect.³⁸ Applying Bergman’s rule-of-thumb to other entries in table 4, we can see that in most cases the sample mean intelligibility is likely a reflection of inherent intelligibility rather than of acquired intelligibility (bilingualism).

There are two instances in the table of sample standard deviations higher than ten percent, for which we should consider the possibility of the mean score being affected by bilingualism.³⁹ These are the instances of Rijau and Darangi subjects listening to the Iri test tape (with sample standard deviations of 12.7 and 10.9 respectively). While it is not possible in these two instances to say that the effect of bilingualism is small, neither is it clear that bilingualism must be present. Barbara Grimes (1988:19) says that “a standard deviation of 15 percent or more indicates the probable presence of a bilingual overlay on intelligibility.” She cautions, however, against interpreting a standard deviation under 15 percent as an indication that no bilingualism is involved. All we can say is that *possibly* some Rijau and Darangi people have acquired higher comprehension of the Iri dialect than they would inherently have.

We now employ an optimization method developed by J. Grimes to aid in the interpretation of intelligibility data. The purpose of this method is to find the network of dialect groupings which minimizes communication costs (Casad 1974:36–49). The cost for each network has two parts: the fixed cost, which represents the effort and funds expended to establish a vernacular language program at a particular dialect centre; and the variable cost, which

³⁸It is also possible to calculate a range estimate of intelligibility, expressed as a confidence interval of values clustering around the sample mean. Casad (1974:171–173) suggests the use of range estimates rather than point estimates of dialect intelligibility, although he acknowledges two problems with the validity of this. In our study the calculation of range estimates did not yield any additional insights, so they are not shown.

³⁹The sample standard deviation of 10.3 in the Tungan Bunu hometown test scores cannot be considered an indicator of bilingualism, since by definition people do not have *acquired* intelligibility in their hometown dialect.

represents the amount of information lost between dialects (Simons 1979:16). For example, to establish a vernacular language program in the Rijau area only, the variable cost component for speakers of the Tungan Bunu dialect is 9 (one hundred minus the mean intelligibility score (91 percent)). The fixed cost component is set at an arbitrarily high level relative to the variable cost (I have chosen 50). Figure 8 shows how the matrix of the mean intelligibility scores is transformed into the variable cost matrix. Note that the variable cost in the hometown situation is assumed to be zero.

	R	D	I	B			R	D	I	B	
R	97	8	94	91			R	0	13	6	9
		7									
D	94	9	//	//		\Rightarrow	D	6	0	//	//
		1									
I	84	8	93	91			I	16	20	0	9
		0									
B	87	//	//	88			B	13	//	//	0
	Intelligibility Matrix						Variable Cost Matrix				

Figure 8. Deriving the variable cost matrix from the intelligibility matrix for Duka dialects

R=Rijau D=Darangi // =testing not conducted
I=Iri B=Tungan Bunu

In the case of the Duka, it is a simple matter to compare the total communication cost for four possible networks.⁴⁰ The first communication network to consider is one in which a Duka language program is established at all four dialect centres (Rijau, Darangi, Iri, and Tungan Bunu). For this network the variable costs are zero, but the fixed costs are 200, yielding a total communication cost of 200.

The second possible network has a language program only at Iri. For this network the variable costs are 45 (16+20+0+9) and the fixed cost is 50, yielding a total communication cost of 95. This is clearly an improvement on the cost of the first network considered.

The third possible network has a language program only at Rijau. For this network the variable costs are 28 (0+13+6+9) and the fixed cost is again 50, yielding a total communication cost of 78 (again an improvement over the previously considered networks).

The last network we will consider has two language programs established, one at Rijau and one at Iri. If we align Darangi speakers with the Rijau centre, and Tungan Bunu speakers with the Iri centre,⁴¹ the variable costs are 22 (0+13+0+9) and the fixed costs are 100. The total communication cost is thus 122. Even though the variable costs are lower than those of the other networks, the total communication cost is higher.

This analysis shows that the network which minimizes communication cost is one in which a vernacular language program is established in the Rijau dialect.

⁴⁰Only the Rijau test tape and the Iri test tape were used at all four test points. The testing was limited in this way because after our first two survey trips we were convinced that the basic distinction among Duka dialects was the Eastern vs. Western distinction made by Cressman and Skitch. Rijau and Iri were chosen as the respective reference points for the Eastern and Western dialect clusters. This limited testing served to limit the number of possible communication networks to the four considered here.

⁴¹Other alignments of these speakers with the two dialect centres are possible, but this alignment is the one suggested by clustering on the basis of lexical similarity (see figure 5b). Also, other alignments do not yield a lower total communication cost than is calculated here.

Note that the analysis takes only the linguistic factor of dialect intelligibility into account. Sociolinguistic factors must also be considered in deciding where to establish a vernacular language program.

Other dialect intelligibility studies have demonstrated the existence of “an area of marginal intelligibility which presents special problems for dialects whose closeness to each other is between that of adequate intelligibility and inadequate intelligibility” (Grimes 1988:20). Grimes goes on to suggest that when intelligibility for narrative texts is between seventy-five percent and ninety percent, then further testing needs to be done using hortatory, expository, and explanatory texts. Examination of table 4 shows the following instances of marginal intelligibility: Iri test tape at Rijau test point and Darangi test point, Tungan Bunu test tape at Rijau test point and Rijau test tape at Darangi test point. If the decision is made to establish a language program in the Rijau dialect, the last instance (Darangi intelligibility of the Rijau dialect) is the only pertinent case of marginal intelligibility. Because of the small sample size in our testing, we recommend that the narrative text be tested with more people to confirm or deny the existence of marginal intelligibility in this instance.⁴²

3.4 Language Use, Language Attitudes, and Other Social Factors

Our observations during nine weeks of field work in the Duka homeland indicate the presence of a significant degree of Hausa bilingualism in Duka society. Duka and Hausa are in two different language families, Niger-Congo and Afro-Asiatic respectively, therefore the possibility of inherent intelligibility of Hausa by Duka speakers is nil. However, it is not difficult for the average Duka person to acquire at least enough Hausa to get by in the market. There is a good deal of mixing of people from different language groups, certainly in the main centres (Rijau and Dukku) and to some extent in smaller settlements. In this kind of situation, “particular attention needs to be given to ascertaining the patterns of language use that exist” (Bergman 1990:9.5.2).

During interviews on the third survey trip, the Duka language was reported as language of choice in home domains such as conversation with family members, singing, and prayer. The only exception noted to this is in mixed marriages, which are quite rare. Duka is also the language used at the well-attended dry season festivals which occur at old village locations. In general, the Duka people use their language in any interaction among themselves. We observed two possible exceptions to this pattern. First, Duka people will interact among themselves using Hausa as a courtesy when outsiders are present. Second, someone from one of the Western dialect groups (Dukku-Iri-Giro-Tungan Bunu) might speak to a Rijau or Darangi dialect speaker using Hausa. For example, our interpreter (who is from Dukku) often chose to use Hausa, not Duka, when speaking to Duka people in Rijau or Darangi. In our interaction with Duka children ages 10–20 during recorded text testing, we observed that they were able both to understand Duka stories and questions well and to respond using the Duka language. They are maintaining fluency despite the fact that seventy percent of the children tested are receiving education in Hausa and English (thirty percent of those tested have no school education).

The Hausa language was reported as language of choice in situations involving interaction with outsiders such as market transactions and conversation with non-Duka neighbors. The Duka language-use pattern appears to be one of strong maintenance of the mother tongue alongside Hausa with no evidence of a shift from Duka to Hausa in “insider” domains.

The Duka display a strong interest in maintaining their own language and culture. There is a radio program in the Duka language, broadcast from Kontagora twice a week for ninety minutes. This includes personal messages,

⁴²On the basis of lexical similarity figures, we would have predicted *adequate* intelligibility of the Rijau dialect by Darangi speakers and a *higher* intelligibility for the Rijau dialect at Darangi than at Iri or Tungan Bunu. In fact the Mann-Whitney test (Bergman 1989b:14–17), when applied to our data, indicates that there is no significant difference between the Darangi performance on the Rijau test and the performances at Iri and Tungan Bunu on the same test, at a confidence level of ninety-five percent. Thus it seems likely that further testing will show adequate intelligibility of the Rijau dialect by Darangi dialect speakers.

government announcements, and sometimes advice for Duka farmers. The broadcaster uses the Rijau dialect. Educated Duka living in the Rijau area formed the Dukawa Cultural Association several years ago in order to promote the Duka culture and language. They would like to develop a standard Duka orthography and write educational pamphlets for children. We met with several members who were especially concerned about the purity of the Duka language, that is, reducing the number of loan words.⁴³ Several young Duka Christian leaders have indicated a desire to use materials (including Scriptures) written in the Duka language among their people. One older Duka man who is already literate in Hausa was dubious about the value of reading in the Duka language.

Approximately thirty primary schools and four secondary schools in Rijau district have Duka students. Only two of the primary schools and none of the secondary schools have a high proportion of Duka students. During our survey trip we met three Duka men who are teachers—one at the secondary level and two at the elementary (we visited five schools). The Duka people have a reputation of placing a lower value on education than do the peoples intermingled with them, though education does seem to be more highly valued among the Eastern Duka. Although there are Duka materials that could be used at a primary school level, they are not currently being used. Very few Duka people have received education beyond the secondary school level. Only a handful of Christian young men are receiving Bible training (in English).

The Duka people are organized under thirteen town chiefs, one of whom (chief of Rata Giwa) is considered the most important chief. Each Duka settlement is aligned with one of these towns. There are indications that these chieftaincies are not traditional titles, but were created during the British colonial era. According to one individual, one of the main duties of the chief in the colonial era was to convince people in the outlying Duka settlements to pay taxes. The chief then submitted these payments to the Hausa authorities through whom the British indirectly ruled northern Nigeria. Even today the chief's position is not hereditary, neither is the chief chosen by his people. The appointment comes from the government and all the chiefs are Muslim (at least in name). This organizational structure appears to be accepted by the people.

The traditional organizational structure of Duka society, Salomone claims, was acephalous; held together by kinship ties and the *gormu* complex (1972:222). A traditional title, *Sarkin Noma* (chief of farmers), was hereditary but not automatically inherited. The heir to the title needed to demonstrate his worth by giving gifts to his supporters, the elders, and the village head (Fuller 1991:3). It is not known how strong the traditional organizational structure of Duka society is at present.

Like many other minority peoples in the north of Nigeria, the Duka mention better water supply, improved health care, and adult education as community development needs. Yet there is a widespread tendency to cling to traditions and resist change. Some Duka see those who get higher education as “spoiled” for farming and maintaining Duka traditions. Duka Christians see two further needs for their people: the need for deliverance from demonic dominion, from fear of witchcraft and from fear of ancestors, and the need for clear Bible teaching (Sambo 1991:3 and Fuller 1991:4).

Of the nine church services we attended while in the Duka homeland, only two were in congregations with significant numbers of Duka people. These two were the U.M.C.A. congregations at Shambo and Tungan Magaji Kado. Both were conducted in Hausa by a Lela pastor, although in one place (T.M. Kado) two Duka choruses were enthusiastically sung. The Duka scripture portions already translated (see appendix A) did not appear to be in use by people in any congregation we attended. The CAPRO missionary claims to be using some of the Duka literature in his work. The C.M.F. work at Iri started since the completion of our fieldwork. The missionary there, a Duka man, claims to use the Duka language in conducting services. The congregation, almost entirely Duka, uses the Hausa Bible. There is translation into Hausa for the sake of three non-Duka people who regularly attend (Isaiah Sambo, personal communication). Many Duka people spoke with appreciation of Esther Cressman and Donna Skitch and their ability in the Duka language. One retired man, a Muslim who is literate in Hausa, showed us his dog-eared copy of the Gospel of Mark in Duka but did not claim to be using it. According to our observation, then, the current

⁴³Apparently, Darangi and Rijau dialects use more Hausa loan words than the western dialects.

use of the available Duka literature is very limited. Oral use of the Duka language in the church context is not quite so limited.

In analyzing our observations on the Duka sociolinguistic situation, we considered the list of causes of language shift given by Fasold (1984:217) as frequently cited in studies on language shift. These causes are migration, industrialization (and other economic changes), school language (and other government pressures), urbanization, higher prestige for the language being shifted to, and smaller population of speakers of the language being shifted from. There is no evidence of extensive industrialization, urbanization, or migration at the present time in the Duka homeland or the surrounding areas. The combination of “higher prestige” and “smaller population” is admittedly present for Hausa vis-a-vis Duka. The use of Hausa (and English) in schools and government does not yet seem to have had a widespread effect on the Duka, who do not have a large proportion of their population involved in education or government. Overall, the likelihood of widespread shift of the Duka people to the Hausa language does not seem to be high at present.

3.5 Evaluation of Results

To meet the purpose of this survey, we collected both qualitative and quantitative data. We have attempted to increase the *reliability* of the results by using proven methods (e.g., word list comparison, recorded text testing) in a responsible manner and by comparing data obtained from different people and by various methods with each other to ensure a cohesive understanding of the situation. The *validity* of results obtained on a sociolinguistic survey (necessarily based on a short period of fieldwork) is best evaluated in the context of a longer term of linguistic fieldwork such as is possible in a vernacular language program.

For the sake of those who may be involved in such a program we would like to point out the following gaps in our data, which should in time be filled in:

- (1) Several questions arising from library research were not adequately addressed in the process of the survey. This problem arose because, in our inexperience as surveyors, we carried out the bulk of this library research as a postlude to the fieldwork rather than as a necessary prelude (Bergman 1990:2.0.1–2.0.2). Two such questions which need further investigation are: (a) Are the Duka in the Giro area more conservative than those in Rijau L.G.A.? and (b) Was the organizational structure of Duka society traditionally acephalous, and what significance (if any) do the Duka continue to attach to the traditional structure?
- (2) The data presented do not give an adequate profile of the Duka communities’ proficiency in Hausa, so we cannot say definitively that Hausa literature is not adequately comprehended by the Duka people. A U.M.C.A. leader who suspended the Duka language program in 1979 claimed that the Duka preferred literacy in Hausa to literacy in Duka. Thus Hausa bilingualism testing among the Duka could play a valuable role in validating to church leaders the need for a Duka language program. Testing methods such as SLOPE (Bergman 1990: 5.1), Sentence Repetition Testing (Radloff 1991), or even the use of a self-evaluation questionnaire (Blair 1990:97–106) would give a comprehensive profile of community bilingualism, if it is felt that the need for such a profile justifies the costs in obtaining it.
- (3) It is not known whether the Duka subgroup in the area of Giro (Kebbi State) have adequate intelligibility of the Rijau dialect. Dialect intelligibility testing in the Giro area is needed to determine this point.

4. SUMMARY OF SURVEY FINDINGS

4.1 From Background Research

- A1. Temple claims that the Duka language is mutually comprehensible to both Duka and Kambari peoples; this claim is demonstrated to be false by Rowlands. (Report, pp. 3–4)
- A2. Gunn and Conant identify three subgroups of the Duka people according to their geographic location. (p. 4)
- A3. Six word lists in the Duka language have been collected and either published or archived. (p. 4)
- A4. Duka's close linguistic relatives under the present classification scheme are Lela, Banga, and the Fakai Cluster. (p. 4)
- A5. The geographic neighbours of the Duka people are the Shanga, Reshe, Kambari, Lela, Kamuku, Fakai Cluster, and Banga peoples. (p. 5)
- A6. U.M.S. missionaries Cressman and Skitch carried out extensive analysis of the Duka language in the context of a Bible translation project from 1964 to 1979. Much of this analysis was lost. (pp. 5–6)
- A7. Cressman and Skitch assert that the Duka language consists of two main dialect clusters, Western and Eastern. Their work was primarily conducted in the Eastern dialect area, which they identify as the political and geographical centre of the Duka people. (p. 5)
- A8. A book by Catholic missionary Ceslaus Prazan describes the Western Duka people living around Giro from an anthropological perspective. Prazan contends that Duka habitation is more extensive now than what the Gunn and Conant reference to the Duka people implies. (p. 6)
- A9. Anthropologist Frank Salamone suggests that Duka society is acephalous and that *gormu* (bride service) has a very important role in tying it together. (p. 7)
- A10. Estimates of the total Duka population vary widely and not all the variation is accounted for by the dates of the estimates. The most recent estimates of Duka population are thirty thousand (in 1971) and seventy-three thousand (in 1985). (p. 8)
- A11. Tension over the issue of land ownership exists between the Duka people and the Lela (Dakarkari) who have migrated into the town of Tungan Magajiya. (p. 8)
- A12. The most important Duka centre, the town of Rijau, is divided into an old settlement occupied mainly by Duka people and a new settlement inhabited primarily by Hausa-speaking non-Duka people. Each settlement has a chief, but the Duka chief is subject to the Hausa one. (p. 10)
- A13. The primary occupation of the Duka people is farming; they are also known for their hunting skill. (p. 10)
- A14. Dukku, the second most important Duka centre, shows the influence of westernization less than Rijau and likely has a higher proportion of Duka inhabitants. (p. 10)

4.2 From Field Research

- B1. The best ethnolinguistic analysis of the Duka people is on a geographical basis, according to thirteen traditional centres of Duka population. (Report, p. 20)
- B2. The Duka language, according to the people's perceptions, consists of four dialect clusters centred at Rijau, Dukku, Darangi, and Tungan Bunu. Correlating these with Cressman and Skitch's analysis, Rijau and Darangi are the two Eastern dialect centres, Dukku and Tungan Bunu are the two Western ones. (p. 20)
- B3. The names *et-Hun* and *es-Saare* were confirmed as autonyms for the Duka language in the Eastern and Western dialects respectively. The combined name *Hun-Saare* is suggested as an appropriate name for the Duka people and language.⁴⁴ (pp. 20–21)
- B4. Pairwise comparison of 172-item word lists collected from six Duka centres yields lexical similarity figures exceeding seventy percent for all pairs. This is objective confirmation of the widespread perception that Duka is a single language. (p. 22)
- B5. Lexical similarity figures show the clustering of Iri and Giro dialects with Dukku and the clustering of the Darangi dialect with Rijau at about the same level (ninety percent). They show the clustering of Tungan Bunu with the other Western dialects at a lower level (eighty-two percent). This diversity among dialects motivated us to conduct an investigation into dialect intelligibility. (pp. 23–24)
- B6. Computation of lexical similarity figures based on the comparison of 290-item word lists from Duka and the three languages most closely related to it demonstrates that they are distinct languages. This computation also supports the hypothesis that the Fakai cluster is more closely related to Duka than is Lela. (p. 24)
- B7. Recorded text testing at four Duka dialect centres gave results which seem for the most part to reflect inherent intelligibility rather than acquired intelligibility (bilingualism). (pp. 26–27)
- B8. Application of Grimes' optimization method to the dialect intelligibility scores shows that, if only the linguistic factor of dialect intelligibility is considered, the Rijau dialect area is the best location for establishing a Duka language program. (pp. 27–28)
- B9. The summary table of mean intelligibility scores shows just three instances of marginal dialect intelligibility; the remaining mean scores indicate adequate intelligibility at a ninety percent threshold level. Only one of the three instances of marginal intelligibility is pertinent to the establishment of a Duka language program in the Rijau dialect area, and further testing is likely to show that this is not a true case of marginal intelligibility. (p. 28)
- B10. There is a significant degree of Hausa bilingualism in Duka society. (p. 29)
- B11. The Duka language is being maintained in "insider" domains; the Hausa language is used in dealings with outsiders (non-Duka). Duka language vitality was observed to be strong alongside Hausa. (p. 29)
- B12. The Duka generally display a strong interest in maintaining their own language and culture; the Dukawa Cultural Association (representing chiefly the literate, educated Duka of Rijau at present) advocates continuing the development of Duka as a written language. (p. 29)

⁴⁴This follows the convention that use of the autonym is preferable to use of the name given by another ethnic group. Duka is an abbreviated form of the Hausa name for this people; Hun-Saare is an abbreviated form of their autonyms.

- B13. In general it seems that the Duka people do not value formal education (in Hausa and English) very highly. Two primary schools are homogeneously Duka, and there are some Duka teachers in the school system. (p. 30)
- B14. The current organization of the Duka under chiefs appointed by the government is accepted by the people, but there is some evidence that Duka society was traditionally organized a different way. (p. 30)
- B15. Current use of Duka literature is very limited. The use of the Duka language in a church context is rather minimal as well, though exceptions exist. (pp. 30–31)
- B16. Factors frequently cited as causes of language shift do not appear to be present to any great extent in the Duka sociolinguistic situation. (p. 31)

5. ASSESSMENT

Some of the survey findings listed in section 4 are directly relevant to the *need* for development of Duka as a written language, others are more relevant to the *characterization* of a Duka language development program, and still others are helpful in rating the *priority* of such a program. Some findings are not directly relevant by themselves to these issues (need, characterization, or priority), but have just been presented as potentially useful information.

The *need* for continuing the development of Duka as a written language and renewing the Bible translation program is shown by the following factors:

- (1) Duka is both perceived and shown to be a single language (B4),⁴⁵ though consisting of at least four dialects (B2, B5). It is linguistically distinct from other closely related languages (A1, B6). Literature in other closely-related languages, even if it existed, would not be inherently understood by the Duka people.
- (2) While it is true that many Duka understand and speak Hausa (B10), it is the Duka language that they use in all “insider” domains (B11). At present, Duka is thriving and we did not find evidence that the situation would be changing in the near future (B16).

The following components are useful in *characterizing* a prospective Duka language program:

- (1) Interest has been expressed by the Dukawa Cultural Association in developing Duka as a written language (B12). This is an avenue through which Duka literacy might be encouraged.
- (2) Alleged strained relations between the Duka and the Lela (A12) can be expected to have some bearing on a Duka language program, since most of the leaders and pastors of the U.M.C.A. church (the predominant church in the area) are Lela. There is a need for gaining the cooperation not only of these U.M.C.A. leaders, but the leaders of other churches and missions which are active in the Duka homeland (A13).
- (3) The Duka are predominantly farmers (A15) and so the towns are not as homogeneously Duka (A14, A16) as the more rural settlements. However, since the language area is largely rural, there is still potential for development of Duka literacy programs in rural churches and schools.
- (4) The Duka of the Giro area (A8) are an important subgroup, not to be overlooked as potential users of translated scriptures and other Duka literature.
- (5) Although a body of translated scripture portions and Duka literature has been developed (A6), there are few readers for this literature. Very few churches in the Duka homeland are using the Duka language and literature

⁴⁵The numbers in parentheses throughout this subsection refer to the lists of survey findings in section 4 (pp. 32–34).

(B15). One reason why the Duka literature is not being used is that nobody is publishing or distributing it. Other possible reasons are the tendency for churches and missions in northern Nigeria to advocate the use of Hausa over local languages, and the small number of Duka Christians.

- (6) Numerous findings (A7, A16, B1, B2, B5, B7, B8, B9) are relevant to the question of what Duka dialect should be developed as the standard reference dialect. Table 5 is used to evaluate the suitability of each of six Duka dialects to be the reference dialect of the Duka language. The fundamental criteria and method for this evaluation are those presented by Sadembouo (1988:3–5). It can be seen that the Rijau dialect emerges as the clear choice for Duka reference dialect on the basis of the fundamental criteria, so that there is no need to examine the secondary criteria listed by Sadembouo (1988:4).

Table 5. Criteria for the Choice of a Reference Dialect
(based on Sadembouo 1988)

Criteria	Rijau	Darangi	Iri	T.Bunu	Giro	Dukku
Fundamental Criteria						
High degree of accepted understanding of the dialect	#	#	#	#	#	#
High degree of predicted understanding of the dialect	10	0	0	0	#	#
Numerical importance of the dialect speakers	10	10	0	5	0	10
Advantageous geographical position of the dialect	10	0	0	0	0	0
The location of the dialect at the center of activity	10	0	0	0	0	0
Dialect prestige	10	0	0	0	0	5
Pureness of the dialect	0	0	10	10	10	10
Vehicularity of the dialect	10	0	0	0	0	0
Points obtained	60	10	10	15	10	25
Points possible	70	70	70	70	60	60
% Score	86	14	14	21	17	42

Key # : no data obtained

6. RECOMMENDATIONS

Linguistic and sociolinguistic factors in the Duka situation, summarized and assessed in the previous section, indicate that there continues to be a definite need for literature in the Duka language. Restarting a language program should be given high priority. The Rijau dialect should continue to be the standard reference dialect. Linguistic personnel should allocate in a rural area outside Rijau. Contacts with Duka in the Giro area should also be developed. The Dukawa Cultural Association and other leaders of Duka society should be made aware that technical linguistic help is available if they are interested in restarting a language program.

APPENDICES

Appendix A. Listing of Duka Literature

<i>A metɔtɔ nɔ Wan gwɔ</i> (selections on Jesus' birth 'A Saviour is born for you')	N.D.
<i>A yowos nɔw Karatu 1</i> (first in a series of three primers – outdated edition)	N.D.
<i>Ka Koyi Dukkanci a Saukake</i> (Learn Dukkanci Easily – transition primer from Hausa to Dukkanci)	N.D.
<i>Labari on Koyaw Hoob</i> (Hunting Stories) by Mr. Danbaba Noma Kirho	December 1972
<i>Takardaw Markus</i> (Gospel of Mark – Duka/Hausa diglot)	1976
<i>Ɔr de tɔm ɔn kat ɔ shir</i> (book of songs and verses 'The Hoe for hoeing in God's farm')	1976
<i>Jagoran Karatun Dukkanci</i> (primer, including stories and dictionary)	1976
<i>Takardaw Akar</i> (first in a series of two primers)	March 1978
<i>Bongon de Shir</i> (diglot Duka/Hausa tract)	September 1978
<i>Swɔɔgtɔt Má</i> (Traditional proverbs)	September 1978
<i>A zɔngɔ nɔ tunam mɔka</i> (diglot Duka/Hausa tract 'Let us get ready now')	February 1979
<i>Gɔsɔt Yɛɛso Kɔristi</i> (Letter to the Hebrews – 'The Greatness of Jesus Christ')	April 1979
<i>Takarda ɔw Kamna</i> (The Three Letters of John – 'Book of Love')	April 1979
Primer Series 1-2-3 (Duka only, except for introduction)	May 1979
also: The Gospel of John in first draft with numerous notes	
Cassette tapes (one of Scripture from John)	

Appendix B. Interview Schedule of Grouping

Preamble:

Thank you for agreeing to help us today. We are interested in your dialect and ones that sound like it. Some dialects are very similar to one another. Some sound a little different from your dialect, while others are very different. Some people might speak faster than you do. Some might use words you do not know or pronounce words in a different way than you do.

Prompts for examples (to use optionally in 1.2 and 3.2):

In (name of place), do they speak faster/slower than you?
 do they use words you do not know?
 do they call some objects by different names?
 do they use more Hausa (or other language) when they talk your language?
 do they mumble their words?
 do they say things in a mixed-up way?
 do they say words of your language in a slightly different way, but you can still tell what they are talking about?
 do you have them repeat what they said sometimes?

- 1.1 List other towns/villages that speak your language *similarly* to you, with small differences.
- 1.2 Can you give us some examples of the small differences?
- 2.1 List other towns/villages that speak your language *exactly* like you do, with no differences.
- 3.1 List other towns/villages that speak your language *differently* than you, with many differences.
- 3.2 Can you give us some examples of the differences?
- 4.1a. What is the name you use, in Dukanci, for all people of your tribe? (i.e., for all Dukawa)?
 - b. Is there a Dukanci word for *one man* of your tribe?
 - c. Is there a Dukanci word for *one woman* of your tribe?
 - d. Do you have names for smaller groups of people within the whole group of Dukawa people? (Note: *kabila* – Hausa for ‘clan’) (If yes, list)
 - e. Do you have Dukanci words for people of different tribes? (If yes, list)
- 5.1a. What is the name you use for your language?
 - b. Do you know any other names Duka people use for this language? (If yes, list)
 - c. Are there different names for different ways of speaking your language? (i.e., for different dialects – give example) (If yes, list)
 - d. Do you have Dukanci names for the languages that other tribes speak? (If yes, list)
- 6.1 List other towns and villages that speak a *different language*, with some similarity to your language. (e.g., words, sounds)
- 6.2 How well do you understand the language used in each of these towns and villages? (go through the list of 6.1) (possible answers: a. very well; b. fairly well; c. poorly; d. not at all)

Appendix C. Combined Duka Word List

	ENGLISH	RIJAU (verified)	DARANGI	T. BUNU	IRI	DUKKU (verified)	GIRO (verified)
1	sky	ʃiɾ	tɔn	əɾ-kɪntɛ	o-ʃiɾ	o-ʃiɾ	ʃiɾ / tɔntɔn
2	sun	əɾ-hɔ	əɾ-hɔ	əɾ-hɔ	əɾ-hɔ	rɛ-hɔ	əɾ-hɔ
3	cloud	əɾ-kjɪntɛ	əɾ-ki'intɛ	jowaɾ	əɾ-kjɛntɛ	əɾ-kjɛntɛ	əɾ-kɪntɛ
4	wind	əɾ-mjo	əɾ-mjɔ	əɾ-mjɔ	əɾ-mjɔ	əɾ-mjo	əɾ-mjo
5	moon	o-rɛɲ	əɾ-rɛɲɔ	o-rɛɲ	o-rɛɲɔ	u-rɛɲ	o-rɛɲ
6	star	do-rɛɔɛn	əɾ-rɛɔɛɾ	rɛɔɛn	o-rɛɔɛɾ	u-rɛɔɛn	rɛɔɛn
7	ground	o-dak	u-dakʰ	ɔm-hi	o-dakʰ	o-dak	o-dɔkʰ
8	metal	o-kwɔm	o-kwam	o-kwɔm	o-kwɔm	u-kwɔm	o-kwɔm
9	rock	əɾ-taaɾ	o-ta'aɾ	ɔ-taɾ	əɾ-taaɾ	əɾ-taaɾ	ə-taaɾ
10	hill	o-haak	o-hag	o-'igɛ	o-igɛ	u-igjɛɾ	o-igɛ
11	dust	u-kuɾa *	o-kuɾa *	o-kuɾa *	əɾ-kuɾa *	u-kuɾa *	əɾ-kuɾa *
12	sand	əɾ-hɛɾɛɔ	əɾ-hɛɾɛɔ	əɾ-hɛɾig	əɾ-hɛɾɛɔ	əɾ-hu'	əɾ-hɛɾɛɾɪ
13	fire	o-ɾa	o-ɾa	o-ɾa	ɾa	ɾa	ɾa
14	burn (v)	əɾ-tɪkʰ	əɾ-do	əɾ-tɪkʰ	əɾ-tɪk	tɪk	tɪkʰ
15	firewood	tɪtoɾa ** 'tree+fire'	əɾ-tɪɛ ** same as 'tree'	tɪɛɾa **	tɪdaɾa ** 'tree+fire'	tɪnneɾa **	tɪɛdɔnɾa ** 'tree+fire'
16	split (v)	əɾ-bakʰ	əɾ-bakʰ	aɾ-bak	əɾ-bɪkɔɾ	bɛkɛɾ	əɾ-bɪks
17	ash (hot)	əɾ-tɪɔw	əɾ-tɪɔw	əɾ-tɪɔ	əɾ-tɪɔ	m-tɪaw	əɾ-tɪɔ
18	smoke	əɾ-hɛ	əɾ-hɪ	əɾ-hɪ	əɾ-hɪ	o-hjɪ	əɾ-hɛ
19	water	əɾ-hɔ	əɾ-hɔ	əɾ-mi	əɾ-mi	əɾ-mi	əɾ-mi
20	drink (v)	əɾ-sɔ	əɾ-swɔ	əɾ-sɔ	əɾ-swɔ	əɾ-sɔ	əɾ-sɔ
21	pour (v)	əɾ-duuz	əɾ-duz	əɾ-duuz	əɾ-duuz	əɾ-duz	əɾ-duuz
22	rain	hɔmɔnkɪm	hɔ'mankɪm	mimantɔn	kɪm	kɛm	kʰɪm
23	dew	o-mɪ	əɾ-mi	o-mi	əɾ-mɪ	u-mɪ	o-mi
24	river	o-rɔɔɔ / u-rɔw	u-rɔɔ	kɔɔ	o-rɛw	u-rɛw	əɾ-sa
25	person	nɛtʰ	nɛtʰ	nɛtʰ	nɛtʰ	nɛt	nɛt
26	man	tɪampɔ	kjampɔ	əɾ-kjampɔ	wa-kjampɔ	kjæmpɔ	kjampo
27	husband	tɪampɔ **	kjampɔ-wɪ ** same as 'man'	kjampɔ **	wa-kjampɔ **	kjæmpɔ **	kjampo ** same as 'man'

	ENGLISH	RIJAU	DARANGI	T. BUNU	IRI	DUKKU	GIRO
28	woman	n _ε 'a	na'a	wa-ni'a	ne'a	n _ε 'a	n _ε 'a'
29	wife	n _ε 'a **	na'a **	ni'a **	n _ε a _r g _j ε **	n _ε 'a **	n _ε 'a' **
			same as 'woman'		'woman+marry'		same as 'woman'
30	ancestor	ja _η ga'ε 'ancient people'	kumo _η g 'old person'	mo _η gan _ε a _η gan _ε "old people of ancient"	jandaka 'ground people'	jæ _{nd} aka	jans _ε k _j ε 'old people'
31	child	wa	u-wa	wa	wa	wa	wa
32	name	ə _r -d ₃ in	ə _r -d ₃ in	a-t _ʃ in	ə _r -d ₃ in	ə _r -d ₃ im	ad- ₃ im
33	one	t _ʃ oon	t _ʃ oo _r	d _ɪ i	d _ɔ n	d _ε n	d _ɪ in
34	two	joo _r	joo _r	ʃoo _r	joo _r	juu _r	joo _r
35	three	t _ɪ th	t _ɪ th	t _ɪ th	t _ɪ t	t _ɪ t	t _ɪ th
36	four	n _ɔ ss	nas	nas	nass	nas	nass
37	five	taan	taan	tan	taan	taan	taan
38	six	t _ʃ iin	t _ʃ in	t _ʃ iin	t _ʃ innd	t _ʃ i _η	t _ʃ ind
39	seven	ta'joo _r	ta _η 'jo _r	ta'juu	ta'joo _r	ta'jaa _r	ta'joo _r
40	eight	'ee _r	e _r	εε _r	ɪɪ _r	εε _r	'εε _r
41	nine	d ₃ i _r ɔ	d ₃ i _r ɔ	d ₃ i _r ɔ	d ₃ i _r ɔ	d ₃ i _r ɔ	d ₃ εd _ɔ
42	ten	ɔp ^h	'ɔp ^h	ɔp ^h	ɔp ^h	ɔp ^h	ɔp
43	many	ə-tumo _r	d _ε εn	d _ε εn	o-yawa *	o-mo _r / d _ε εn	o-mo _r
44	all	k _ɔ p	kw _ε	kap	kap ^h	mai	kutup / k _ɔ p
45	speak (v)	t _ε p	ə _r -t _ε p	t _ε p	ə _m -t _ε p _ɔ	ə ⁻ t _ε p	t _ε p
46	count (v)	ə _r -'ɔɔg	ə _r -'ɔg	ə _r -ɔg	ə _m -ɔg	ə _r -ɔ ^k	ə _r -'ɔ ^k
47	know (v)	ə _m -nap	ə _m -nap	u-n _ɪ pt _ε	ə _m -nap	ə _m -nap	ə _m -nap
48	salt	ə _m -pɔ _r	ə _m -pɔ _r	ə _m -pɔ _r	ə _m -pɔ _r	ə _m -pɔ _r	ə _m -pɔ _r
49	die (v)	ə _m -ma _r	ə _m -ma _r	ə _m -ma _r	ə _m -ma _r	ə _m -ma _r	ə _m -ma _r
50	corpse	ə _r -'u	ə _r -'u	ə _r -'u	ə _r -u	ə _r -u	ə _r -'u
51	marry (v)	ə ^d -g _ɪ	ə ^d -g _ε	ə _r -g _ε	ə _r -g _j ε	ə _r -g _ε	æ _r -g _ε
52	give birth (v)	o-math ^h	o-math ^h	o-math ^h	ə _r -mat	o-mat	o-math ^h
53	bury (v)	d _ɪ k ^h	u-bit _ɔ s _ɪ t _ε	ə _m -bi _r g _ε	ə _m -d ₃ ɔ ^k	d _ɔ k	ə _m -bit _ε
54	fear (v)	o-g _ε r	u-g _ε r	o-g _ε r	o-g _j ε _r	o-g _j ε _r	o-g _ε r
55	laugh (v)	o-n _ε m _ɪ s	ə ^t -n _ε m _ɪ s	ə _n -n _ε ms	ə ⁻ -n _ɪ ms	o-n _ε ms	ə _n -n _ε ms
56	see (v)	o-h _j εn	u-h _j εn	o-h _{jan}	ə _m -h _{jan}	o-h _j εn	ə _m -h _j æ _n
57	show (v)	ə _m -kut _ε	ə _m -kut _ε	ə _m -kut _ε	ə _m -kop _ε	ə _m -kot _ε	ə _m -kot _ε
58	smell (v)	w _ɪ s	w _ɪ s	w _ɪ z	w _ɪ s	w _ɪ s	w _ɪ z

	ENGLISH	RIJAU	DARANGI	T. BUNU	IRI	DUKKU	GIRO
90	road	o-tʃow	əm-tʃow	ər-tʃo	ər-tʃa	u-tʃow	o-tʃow
91	rope	o-hi	o-hi	o-hi	u-hi	o-hi	o-hi
92	who?	wane *	wɔ *	wanun *	wawɔ *	wane *	wanwi *
93	what?	janne	mewi *	jantɔ	jantɔ	jæne	jannɛ
94	why?	rɪmijanne	rɔmijanɛ	majanɔ	maɾɛ	jændɔ	madɛnjannɛ
95	night	əm-tɛth	əm-tɛth	əm-tɛt	əm-tɛt	ən-dɛt	əm-tɛth
96	year	əS-hakʰ	ər-hakʰ	əS-hak	u-hak	o-hak	o-hak
97	play (v)	ər-hɔgt	ər-hɔkt	əm-kaw	əm-kaw	ər-hogtɛ	ər-hoktɛ
98	sing (v)	o-sɛpʰ / əm-hu	ə-sɛp	ə-sɛp	o-sɛp	o-sɛp	əS-sɛpʰ
99	song (n)	o-sɛpʰ **	ə-sɛp **	ə-sɛp **	o-sɛp **	o-sɛp **	əS-sɛpʰ **
			same as 'sing'			same as 'sing'	
100	whistle (v)	o-tʃɛɛɾ	əS-kɛɾ	ər-kɪ	o-kjeɾe	o-kɛɾ	o-kɛɛɾ
101	war	ər-gin	ər-gin	hani	ər-gan	ər-gɛn	ər-gun
102	hit (v)	am-wɔS	'ɔS	wɔsi	əm-bu ** 'thresh'	ər-bu **	wasɛ
103	tree	u-tʃɛ	o-'ju	ə-tʃɪ	u-tʃe	ə-tʃe	o-tʃe
104	bark	ət-pɔɔg	o-pɔ'ɔg	ər-pɔɔg	u-pɔg	ər-pɔg	o-pɔɔg
105	leaf	ət-wa	o-wa	ər-wa	ər-wa	o-hwɔ	ər-hwɔ
106	root	o-gɛɛɾ	o-gɛɛɾ	əZ-gəɾɛ	u-gɛɾɛ	o-gɛɾɛ	əS-gɪɾɛ
107	round	dʒɪɾdʒɪɾ	ər-katɛnte	////	əm-ɾig	gɛɾgɛɾ	gɪɾgɪɾ
108	hot	əm-susam ** "sweat"	o-ɾa **	o-ɾa **	o-maza *	o-maza *	o-maza *
			same as 'fire'				
109	cold	u-hwu	o-hiw	o-hiw	o-ho	o-how	o-hiw
110	dry up (v)	əŋ-hwɔ	u-hwɔ'ɔg	i-hitɛ	əm-hwɔ	m-hwɔ	hi
111	new	pɪ-jo	pɪ-wi	pɔ'ɔ	o-pɪ'ɔ	ərə-pɔ-dɔn	ə-pɪ-jo
112	good	ər-bɔn	ər-bon	ə-Sɔɾ	ɛ-Sɔn	ər-Səɾ	əS-Sɔɾ
113	tall	əm-sɛɛb	əm-sɛɛb	əm-sɛɛp	əm-sɛp	əm-jus / əm-sɛɛp	əm-joz
114	long	əm-sɛɛb **	əm-sɛɛb **	əm-sɛɛp **	əm-sɛp **	əm-jus **	əm-joz **
			same as 'tall'			same as 'tall'	
115	small	ɾɛk-jo	ə-ɾɛk-uwɪ	ər-maɾi	o-ma'o	ərə-mjadi	ər-medɛ
116	short	əm-kʰon	ko-kon	ər-kon-di	o-kun-jo	ər-kun-di	kɪn-uwɪ
117	full	əm-ʃɪ	əm-ʃooz	ɛ-sin	o-ɾs	o-ɾs	iisɛ
118	animal	ər-gɪt ** 'domestic animal'	o-ɾɔk ** same as 'elephant'	o-kja	nɛmjikɔt	u-bisa	o-bɛsa

	ENGLISH	RIJAU	DARANGI	T. BUNU	IRI	DUKKU	GIRO
119	fat (n)	əm-sæm	əm-səm	əm-sjam	əm-səm	əm-səm	əm-səm
120	horn	o-ka _r	o-ka _r	əs-ka	o-ka _r	o-ka _r	ə _r -kæ _r
121	tail	u-t _{ir}	o-tə _r	o-t _{er}	u-tə _r	o-tu _r	o-ti _r
122	cow	o-na	o-na	o-na	o-na	u-na	o-na
123	chicken	u-kiid	o-k _{ir} th	o-kiith	o-kj _{it}	u-kj _{et}	o-kiith
124	egg	əd-gj _ε	ət-g _ε	ə _r -g _e	ə _r -gj _ε	ə _r -gj _e	ə _r -gj _ε
125	dog	o-w _ɔ	u-w _ɔ	o-w _ɔ	u-w _ɔ	u-w _ɔ	o-w _ɔ
126	bark (v)	ə-tʃ ^h æ ⁿ	əs-tʃan	ij _ε -tʃə ⁿ	εs-tʃan	tʃan	ə-tʃan
127	goat	u-gw _ɔ _r	u-gw _ɔ _r	o-gw _ɔ _r	u-gw _ɔ _r	u-gw _{oo} _r	o-gw _ɔ _r
128	louse	kwa _r kwata *	kwa _r kwata *	kwa _r kwata *	u-kw _ɔ _r kw _ɔ _r tu *	k _ɔ _r k _ɔ _r ta *	kwa _r kwato *
129	spider	o-da _r εg _ɪ nda **	gizogizo *	////	u-giz _ɔ *	u-gizogizo *	o-kuda _ŋ gu
130	elephant	o-r _g	u-r _ɔ g	////	u-r _ɔ g	u-r _{oo} g	o-r _ɔ g
131	fish	d _ɔ an	gj _ε n	gjan	o-gjan	o-gjan	o-gj _ε n
132	swim (v)	əs-swaag	əs-səwag	ij _ε -swaag	u-swag	u-s _ɔ p	o-sa _ɔ p
133	bird	o-no	o-no	o-no	o-n _ɔ	ɔ-n _ɔ	o-no
134	wing	ət-k _{ik} _ɪ n	o-kap ^h	o-baab	ə _r -baab	o-baab	ə _r -baab
135	feather	ət-tʃan	əs-kjan	əs-kjan	o-kjan	o-kjan	ə _r -kj _ε n
136	fly (v)	əm-huks _ε	əm-h _ɔ ks _ε	i-hus _ɪ s _ε	əm-ka _r ε ^t	ə _r -ɔ _r	əm-huks _ε
137	snake	o-hw _ɔ	o-hw _ɔ	o-as	u-was	u-was	o-was
138	tortoise	o-kaa _r	o-kaa _r	o-kaa _r	o-ka _r	u-ka _r	o-kaa _r
139	spear	o-tak ^h	o-t _ɔ k ^h	o-'ε _r	o-ma _ʃ _i *	u-gw _ɔ b	o-gw _ɔ p
140	throw (v)	əm-d _ɔ _ɪ _r _ɪ	əm-gj _ɔ _r ε	u-t _ε t _ε	ə _r -b _ɔ n	u-b _ɔ n	əm-bonz
141	knife	ə _r -wan	ə _r -wan	ə _r -wan	ə _r -wan	u-wan	ə _r -wan
142	kill (v)	əm-h _ɔ	ə _r -h _ɔ	u-hot _ε	əm-h _ɔ	əm-h _ɔ	h _ɔ
143	skin	o-k ^h a	o-ka	o-ka	o-ka	u-ka	o-ka
144	head	ə _r -hi	ə _r -hi	ə _r -hi	o-hji	o-hji	o-hi
145	hair	əs-hi	əs-hi	əs-si	ə _ʃ -hi	εs-hi	əs-hi
146	ear	o-t _ɔ	ət-t _ɔ w	ə-t _ɔ	u-t _ɔ	o-t _ɔ	ət-t _ɔ
147	eye	ij _ʃ	is	ə _r -'iz	ə _r -is	ə _r -i _ʃ	ə _r -'is
148	nose	ə _r -ho	ə _r -ho	ə _r -h _ɔ	ə _r -h _ɔ	ə _r -ho	ə _r -ho
149	mouth	u-nu	nu	o-nu	o-nu	o-nu	o-nu
150	tongue	ə _l -l _ɪ m	ε _l -lem	ə _l -l _ε n	el-lin	ə _n -d _ɪ n	ə _n -d _ε n
151	tooth	i-j _ɪ n	nin	ε _n -nin	nin	nin	nin
152	neck	ə _r -g _ε ks	tʃ _ɔ r	ə _r -g _ε s	ə _r -gj _ε ks	ə _r -gj _ε ks	ə _r -gj _ε ks

	ENGLISH	RIJAU	DARANGI	T. BUNU	IRI	DUKKU	GIRO
153	arm	o-kom	kɔm	əm-kwɔm	o-kɔm	u-kom	o-kɔm
154	finger nail	kaŋku	kaŋku	ər-kaŋku	kanku	u-kaŋku	o-kəŋku
155	breast	ə-dɛ	ə-dɛ	ə-dɛ	ər-dɛ	ə-dɛ	əd-dɛ'
156	heart	ər-huɾ	ər-huɾ	ər-huɾ	ər-huɾ	ər-huɾu	ər-huɾ
157	belly	ət-mɛn	ət-mɛn	ər-mɛn	ər-mɛn	ər-mɛn	o-mɛn
158	intestine	ət-mɛn **	əs-mɛn **	ər-kɪth	ər-mɛn **	jɛnɛ-mɛn **	ər-mɛn **
			same as 'belly'		same as 'belly'		same as 'belly'
159	liver	ər-dʒaab	ər-dʒaab	ər-pɔk	ər-dʒab	ər-dʒab	ə-dʒab
160	navel	ər-'iib	ər'iʔb	ər-'iib	ər-'iib	ər-'iʔb	ər-'iib
161	leg	o-na	o-na	əs-na	o-na	o-na	o-na
162	knee	u-ɾwɔn	o-wɪn	əm-kuth	u-ɾwɔn	u-ɾwɛn	o-wɪn
163	buttocks	ər-ta	ət-ta	ə-du	ər-də	ɔ-dɔ	əp-tədo
164	swell (v)	əm-hu	əm-hwɪ	ər-hutɛ	əm-hu	əm-hu	huuz
165	blood	əm-hjon	əm-hjo	əm-hjɔ	əm-hjɔ	əm-hjɪ	əm-hjo
166	bone	o-tʃaaɾ	o-tʃaɾ	bəge	u-tʃaaɾ	u-tʃaaɾ	o-tʃaaɾ
167	urine	əm-mɪz	əm-mɪ'ɪs	əm-mɪz	əm-mɔɔs	mə'əs	əm-mɪz
168	spit (v)	əm-tʃɔps	əm-tʃɔps	wɛsɛse	əm-tʃjaps	m-tʃɪps	əm-tʃɔps
169	vomit (v)	ət-gwɔ	əd-gwɔ	ər-gwɔ	əm-gwɔ	ər-gwɔ	ər-wɔ
170	blow (v)	əm-huɾ	ə-miiz	əm-huɾ	əm-hus	əm-wiz / əm-hus	əm-wiiz
171	cough (v)	o-'ooɾ	əs-'ɔɾ	o-'ɔɔth	u-'ɔt	u-'wɔt	ər-'wɔɔt
172	scratch (v)	əs-kɪt	əs-kɪth	əm-kɪth	əs-kɪt	əm-kɪt	əm-kɪt

Appendix D. Meaning of WORDSURV Matrix Entries

The following explanation applies to figure 4, which demonstrates the lexical similarity among six dialects of Duka by means of matrices. Each matrix number tells something about the relationship between word lists named at the top of its column and at the end of its row. For example, the relationship between the Rijau and Giro word lists is described as follows in the matrices:

- (1) There are 134 possible cognates shared between Rijau and Giro. (see Tally Matrix)
- (2) A total of 159 words were compared between Rijau and Giro. (see N (Total) Matrix)
- (3) 84 percent of the words compared between Rijau and Giro are possible cognates (this is 134 divided by 159 multiplied by 100 percent). (see Percentages Matrix)
- (4) The amount of error is +/- 3.7%. In other words, the true percentage of possible cognates shared between Rijau and Giro is predicted to be somewhere in the range from 80.3% to 87.7%. (see Variance Matrix)

Appendix E. Phonostatic Analysis of Duka Word List Data

Changes Matrix

Rijau
112 Darangi
121 110 Iri
133 118 109 Dukku
113 111 124 128 Giro
108 100 108 122 100 T. Bunu

Ratios Matrix

Rijau
23 Darangi
27 25 Iri
29 27 22 Dukku
25 25 26 25 Giro
27 25 26 29 24 T. Bunu

Correspondences Matrix

Rijau
493 Darangi
448 435 Iri
454 430 489 Dukku
458 448 482 507 Giro
404 395 421 418 418 T. Bunu

The three matrices shown above result from WORDSURV's computation of the number of sounds that have changed between possible cognates in each pair of word lists.⁴⁶ They present a phonostatic analysis of the Duka dialect situation, showing the amount of phonological divergence between the dialects represented by the six word lists. The changes matrix reports the total number of sounds (i.e., phones) that have changed between possible cognates for each pair of word lists. Finally, the ratios matrix reports the percentage of phones that have changed between possible cognates for each pair of word lists.

Note that, unlike the cognate percentages displayed in the third matrix of figure 4, 'the lower the ratio the closer the similarity between the two word lists.' (Wimbish 1989:62) This presentation of phonostatic results is made without further comment. It is hoped that it will be useful in the study of "the correlation between lexical similarity and phonological similarity, and of both with intelligibility" (Bergman 1990:3.5.4).

⁴⁶This is similar to a degrees of difference matrix (Wimbish 1989:60–63), except that it counts the number of phones that have changed between word lists rather than measuring the amount by which the phones have changed. In other words, the sound changes analysis is the degree of difference analysis with a default setting of DD=0 for identical phones and DD=1 for different phones.

Appendix F. Names and Addresses of Key Contacts in Duka Area

M. Garba Isah Abara
 Education Secretary of Rijau L.G.A.
 founding member of Dukawa Cultural Association

Rijau Local Government Education Authority
 Rijau via Kontagora

Pastor Auta Donka
 pastor, UMCA church, Tungan Bunu
 Box 1
 Zuru, Kebbi State

Pastor and Mrs. Gayya Dishi
 UMCA Tungan Magaji Kado
 Box 1
 Zuru, Kebbi State

Jacob and Omonor Wade
 CAPRO missionaries
 Box 184
 Zuru, Kebbi State

Philemon Bawa
 principal, Missionary Bible College
 Box 1
 Zuru, Kebbi State
 Phone: 067-31020

David Ishaya pastor, church in Gusau Chapel of Grace Box 227 Zuru, Kebbi State	and missionary Living Faith Foundations Box 1365 Sokoto, Sokoto State
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Isaiah Sambo
 missionary in Iri with Christian Missionary Foundation
 Hausa interpreter for Dettweilers during survey
 Dukkawa Missions, Iri
 c/o M.B.C. Tungan Magajiya
 Box 1
 Zuru, Kebbi State

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