Otuke: reviewing the only remaining data on an extinct Bolivian language

Mulder, Sophie

Universiteit Leiden

OTUKE

Reviewing the only remaining data on an extinct Bolivian language

Sophie Mulder
MA thesis Linguistics
Specialization Language Description and Documentation
Supervisor: Dr. E.I. Crevels
Second reader: Dr. E. van Gijn

Universiteit Leiden
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Abstract

Otuke is an extinct Bororoan language that was once spoken in the east of Bolivia. It has likely become extinct in the early 19th century, and the only documentation is a vocabulary of 299 words collected by French scientist Alcide d'Orbigny in the 1830s. This vocabulary remained unpublished until Georges de Créqui-Montfort and Paul Rivet presented it in an article in 1912, followed by a comparative analysis with extant sister language Bororo in 1913. This thesis reviews previous claims made about the Otuke phonology and morphology and aims at generating new knowledge on the Otuke language and its position within the linguistic landscape. This is done by comparing all words in the Otuke vocabulary to related Bororo words that were described in the dictionary by Cesár Albisetti and Ângelo Venturelli in 1962. Phonological and morphological patterns described in Bororo can often be recognized in Otuke as well. The comparative analysis supports some of the claims made by earlier linguists, but also contests some claims and provides new explanations. The output is an overview of phonological and morphological processes present in Otuke. This increase in knowledge on Otuke could be valuable for future research. The reconstruction of Proto-Bororoan could be adjusted, as it is mainly based on sister languages Bororo and Umutina. This could in turn aid in the understanding of the overarching Macro-Jê stock, and the question whether Bororoan should be included or not.

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List of abbreviations

1	first person
2	second person
3	third person
ASS	assertive
CAUS	causative
COM	comitative
FUT	future
IT	iterative
Kov.	Kovareka
PL	plural
SG	singular
SUB	subordinator
THEME	theme

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CHAPTER 1:

INTRODUCTION

1.1 Language endangerment in South America

South America is an incredibly diverse area in many ways. From the many different types of landscapes that can be found there to the high degree of linguistic diversity. It is estimated that at the time of the European colonization, around 700 languages were spoken in the whole of South America. Unfortunately, that number has now severely decreased, and continues to decrease even further (Muysken & Crevels, 2020, pp. 253–254). While a lot of effort is being put into preserving these languages and encouraging speakers to pass them on, this is not always enough to avoid languages from going extinct. In the past, about half of the languages that were once spoken in South America have disappeared. Some languages that have recently gone extinct have been documented by linguists before the last speakers passed away. Other languages, however, went extinct much longer ago, often with little to no documentation. It is these languages that do not always get full attention by linguists due to the scarcity or unreliability of the data. Nonetheless, in a field where language numbers are quickly decreasing, every piece of data can help us understand the puzzling diversity South American languages. Of course, caution should be taken when studying data that was collected by non-linguists, but cautiously studying the data in detail is better than not studying it at all.

One of these extinct South American languages with little documentation is Otuke (also spelled as Otukè, Otuké, Otuque, Otuqui, Otuquis). This language was once spoken in the east of what today is Bolivia, in the province of Chiquitos near the border with Brazil. It has been classified as part of the Bororoan language family, a small family with five members of which only Bororo is still extant. The only known data that is present on Otuke is a list of 299 words, collected by French scientist Alcide d'Orbigny in the 1830s and published by Georges de Créqui-Montfort and Paul Rivet in 1912. While this vocabulary has been studied in the past, it has not often been the sole subject of publications before. Moreover, many of the works on Otuke have been published before the 1950s. If the Otuke data were carefully studied again and compared to more recent data on its sister languages, new insights on its phonological and morphological processes could be gained. This could make the data

more useful for other studies, in particular for the internal classification of Bororoan and for the relation between Bororoan and the Macro-Jê stock.

1.2 Research aims and methods

The most important aim of this thesis is to increase our knowledge of Otuke phonology and morphology based on the only existing vocabulary. To be able to do that, we need to be aware of the existing publications and claims about this language. To specify the research aims of this thesis, the following two research questions have been formulated:

1. "*What is the state of affairs regarding the knowledge about the extinct Otuke language and its position within the linguistic landscape?"*
2. *"What inferences can we make from comparing the Otuke data to its sister language Bororo and which previous claims can be supported by that?"*

In order to answer both these questions, a variety of approaches are used. To answer the first question, all sources that could be found mentioning Otuke were collected and reviewed. This was done by using search engines like Google and www.archive.org, where a large amount of scanned documents are present, especially from before the 20th century. Moreover, trails of references from one source to an earlier source were followed to the earliest publications mentioning Otuke. These sources not only provided information on Otuke itself, but also about its relationships with other languages. All collected sources and the information they provide are summarized in chapter 2, which therefore provides a background for the chapters that follow.

To answer the second research question, a thorough analysis of the Otuke vocabulary is necessary. By comparing the Otuke words to related words in a sister language, implications about the Otuke phonology and morphology could be made. While Otuke has two well-documented sister languages, Bororo and Umutina, there is more data present on Bororo. Due to time restrictions, this thesis only focuses on the comparison between Otuke and Bororo. Therefore, the Bororo dictionary by César Albisetti and Ângelo Venturelli (1962) was searched for words resembling the 299 Otuke words in form and meaning. This dictionary was chosen because of its large amount of words. In some cases, the publication on Bororo by Nonato (2008) was used, as it contains phrases as well. Then, the comparison between the Otuke and Bororo words is used for the evaluation of previously made claims on Otuke phonology and morphology. Moreover, new insights can be gained from the comparisons. The results of this comparative analysis are all included in chapter 3 of this thesis.

1.3 Quality of the data

The Otuke vocabulary that is the focus of this thesis was collected by Alcide d'Orbigny between 1830 and 1833. Because this is almost 200 years ago and because D'Orbigny was not a trained linguist, it is good to consider what this means for the reliability of the data. First, the Otuke data collected around 1830 has a different time depth than the Bororo data it is compared to in this thesis. The Bororo data mainly comes from Albisetti & Venturelli's dictionary from 1962. This leaves a 130 year gap in which Bororo might have differentiated, while the Otuke data stayed the same. Moreover, the words that D'Orbigny wrote down might not be exact phonological representations of the Otuke words. He used his own orthography that was influenced by French and Spanish, which could have caused him to alter Otuke phonemes to match French or Spanish when he wrote them down. Even though D'Orbigny elicited wordlists from many South American languages, his methods for elicitation and notation are unlikely to have been similar to what is regarded good linguistic practice today. D'Orbigny might also have misinterpreted meanings of words, as it is unlikely he was fully familiar with the culture of the Otuke people. Translation errors are common even today, so it is quite thinkable that D'Orbigny did not always document a fitting translation. The translations are therefore considered less reliable than the elicited Otuke words themselves. Finally, the publication of the Otuke vocabulary by De Créqui-Montfort & Rivet in 1912 must have involved the manually copying of 299 handwritten words. This might also have caused errors or misinterpretations that ended up in the published vocabulary.

All these problems could have caused the data to not always be fully reliable, but none of them can be overcome entirely anymore. Therefore, it is necessary to keep them in mind during the whole process of analysis. First, it is possible that the Bororo data that was collected in 1962 is not as similar to Otuke as it once was, making it more difficult to find cognates. Second, the phonetics of the words D'Orbigny recorded should not be considered hard truth, but should be taken as approximations. Some of the phonemes could have been slightly different from what was recorded. Third, translation errors could cause cognates in Otuke and Bororo to have different translations. This might make searching for cognates more difficult, but can be overcome by searching for other translations in the same semantic domain.

1.4 Orthographies used in this thesis

In this thesis, several sources with primary data on Otuke and other Bororoan languages are present. Many of these sources date from before the widespread implementation of the International Phonetic Alphabet (IPA). This has caused the orthographies in the sources to differ from each other. Many of the more dated sources only give an approximation of the phonetic value of the used characters. For example, De Créqui-Montfort & Rivet (1912, p. 318) describe the phonetic value of their characters based on French and Spanish examples in which the sound occurs. This can cause problems for the interpretation of the phonetic value of the characters used, as different pronunciations of the character might exist in different dialects of French and Spanish. Moreover, the phonetic value of characters in French and Spanish could have changed over time, as the article by De Créqui-Montfort & Rivet was written over a century ago.

Because of the uncertainties this brings about regarding the exact phonetic values and their IPA notation, I decided not to alter the orthographies that were used by the authors that provided the primary data. There is one exception, as the dictionary by Albisetti & Venturelli (1962) uses a substantial amount of diacritics to portray the different Bororo vowels. They also use some of the same diacritics as De Créqui-Montfort & Rivet (1912; 1913), but for different phonemes. To avoid confusion and the use of too many diacritics, these vowels from the dictionary by Albisetti & Venturelli were altered into the IPA notation. This means that in all Bororo examples from Albisetti & Venturelli <ǫ> is spelled as /ɔ/ and <o̩> is spelled as /o/. In addition, <ę> is spelled as /ɛ/ and <e̩> is spelled as /e/. These IPA notations were based on the phonetic description of these characters given by Albisetti & Venturelli (1962, p. 0.21).

1.5 Structure of this thesis

This thesis is structured as follows: after this introductory chapter, a background on Otuke and the Bororoan language will be given in chapter 2. All sources on Otuke that could be found will be mentioned and the internal and external classification of the Bororoan language family will be discussed. Next, chapter 3 consists of a detailed analysis of the Otuke data. First, a description of the data and the assembled database will be given. Then, the phonology will be studied and compared to previous research and data on Bororo. Finally, the nominal and verbal morphology will be studied, and previously made claims will be tested. Chapter 4 presents the debate on the relationship between Bororoan and Macro-Jê, and how the newly gathered insights on Otuke could possibly

influence the debate. The thesis ends with a conclusion in chapter 5, that presents an answer to the research questions, and gives possible improvements and suggestions for future research.

CHAPTER 2:

DOCUMENTATION ON OTUKE AND BORORoan

This chapter summarizes all information that is currently known on Otuke and its position within the Bororoan language family. Publications from as early as the 18th century up to the last few decades are discussed, including their relation to each other. Finally, a brief note is made on the discussion about the inclusion of Bororoan in the Macro-Jê family.

2.1 History of documentation on Otuke

The Otuke people have received attention by several scholars in the past. Nevertheless, their language is only sparsely documented. Much of the documentation on the Otuke language is presented in literature that focuses on the Bororoan family as a whole. Moreover, the major part is written in French, Portuguese, Spanish or even Italian or German, making it less accessible to the wider public. The aim of this section is therefore to create an overview in English of all documentation on Otuke. The main available sources that mention Otuke will be presented and shortly described, in order to create an overview that is as complete as possible.

2.1.1 The first mentions

One of the earliest mentions of the name *Otuqui* appears in 1726 in a book by the Jesuit priest Juan Patricio Fernández, who describes his travels among the "indios chiquitos". He lists the names of "rancherías" or small rural settlements that are present in the area, among which the ranchería of the *Otuquimaaca* is mentioned (Fernández, 1895, p. 265). It is unclear if this is a reference to the Otuke people, but it is possible due to similarity of the name and location in the Chiquitos province.

A later mention, and the first with a more convincing connection to the Otuke as we know them today, is given by Lorenzo Hervás y Panduro in the late 18th century. In his *Catalogo delle lingue conosciute*, *Otuque* is mentioned together with the names of other known ethnic groups like *Curuminà* and *Corabé* in a list of groups in the Chiquitos province (Hervás y Panduro, 1784, p. 31).

Next, Kriegk (1838) writes about the province named after the Otuke in *Das Land Otuquis in Bolivia*, based on the reports of Moritz Bach, who became the Secretary of the Otuquis province a few years prior. An extract of a text in the local language is given, which is interpreted to be Otuke by Kriegk. Later, this turned out to be the Chiquito language, as was mentioned by De Créqui-Montfort & Rivet (1912, pp. 319–320).

2.1.2 D'Orbigny

The only first-hand documentation of the Otuke language that is known today was done by Alcide d'Orbigny (1839). This French scientist travelled to South America to do research on its geology, palaeontology, botany, zoology and ethnography. His journey took place from 1826 until 1833, during which he visited Brazil, Uruguay, Argentina, Chile, Peru and Bolivia. From 1830 until 1833 he stayed in Bolivia to do his research. When he returned to France, he published a series of nine volumes in which he reported on his findings (Lema Garrett, 2014, pp. 70–71). In the fourth volume (D'Orbigny, 1839), he describes the native inhabitants of the areas he visits, including their languages. He collected wordlists on several languages that had not received linguistic attention until then, and presents an overview of similar wordlists in 23 languages in order to compare them (1839, p. 80). Among these is a wordlist of Otuke. The published wordlists are quite short and do not contain all the information that was collected by D'Orbigny.

About his encounters with the Otuke, D'Orbigny writes that they used to live in the northeast of the Chiquitos province, between 17 and 18 degrees south and 60 degrees west. At the time he visited them, only 150 of them remained in the missionary reduction of Santo Corazón. Only two elderly Otukes could remember the language they once spoke, and provided D'Orbigny with a vocabulary. All other Otukes only spoke the Chiquito language, which they were forced to speak by the missionaries that founded Santo Corazón. Many other indigenous languages in the area have also become extinct because of this. After analysing the Otuke vocabulary, D'Orbigny noted that the language differed considerably from the Chiquito and Saraveka languages. Only a few words were similar, which he ascribes to the incidental encounters between these peoples (D'Orbigny, 1839, pp. 268–269). When describing his encounters with the Kuruminaka and Kovareka in Santa Ana de Chiquitos, he notes that he collected a few words from each language. As part of these words are similar to Otuke words, he suggests that the Otuke, Kuruminaka and Kovareka were neighbours (D'Orbigny, 1839, pp. 270–271).

In the years following D'Orbigny's travels, several scholars present in their works an overview of the languages of South America, making generous use of the work done by D'Orbigny. These include Latham (1862), Cardús (1886) and Brinton (1891). Latham copies the Otuke wordlist published by D'Orbigny in his *Elements of Comparative Philology* (Latham, 1862, p. 503). Cardús also copies the Otuke wordlist by D'Orbigny in his description of the Fransiscan missions of Bolivia (Cardús, 1886, p. 327). Both present the Otuke wordlist next to the other languages that are spoken in the area. Brinton takes it further than only presenting the Otuke wordlist in his *Linguistic Classification and Ethnographic Description of the Native Tribes of North and South America,* by proposing a link between Otuke and Tacana, spoken to the west of the Chiquitos province, by lexical comparison of six words (Brinton, 1891, pp. 296–297, 304).

Next, Chamberlain (1910, pp. 194–195) presents an overview of little known languages in South America, many of which are located in Bolivia. Among them are Otuke, Kovareka and Kuruminaka, but Chamberlain basically repeats some information that had been presented before by D'Orbigny, Cardús and Kriegk.

2.1.3 New links

According to De Créqui-Montfort & Rivet (1913, p. 369), the first to propose a genealogical link for the Otuke language that still holds today was Von den Steinen (1895, p. 330). He proposed a link between Otuke and Bororo in a footnote of his article about the Chamacoco, a Zamucoan people in the north of Paraguay. However, Von den Steinen and the linguists before him did not have access to all data on Otuke that had been collected by D'Orbigny. D'Orbigny never published the entire vocabulary he collected, and it remained untouched for almost a century. In the early 1900s, however, De Créqui-Montfort and Rivet obtained a considerable number of unpublished vocabularies that D'Orbigny had compiled during his travels from the *Bibliothèque nationale de Paris*, including the entire Otuke vocabulary. In a subsequent (1912) article, they publish the complete Otuke vocabulary and two short wordlists of Kuruminaka and Kovareka, neither of which had been published by D'Orbigny before. Based on comparisons between the vocabulary and wordlists, they propose genetic affiliations between the three languages. Moreover, they present some similarities between Otuke and the Chiquito, Zamuco and Saraveka languages. Yet, they do not think that these languages are related, but ascribe the similarities to language contact.

A year later, they publish another article (De Créqui-Montfort & Rivet, 1913) in which they propose a genetic relation between Otuke and Bororo, that they had not yet discovered in the previous article.

With this, they strengthen Von den Steinen's proposal. The authors present a comparison of Otuke and Bororo words that show phonological and morphological similarities. They propose sound changes that could have caused differing phonemes in cognates over time. Furthermore, they show that several of the affixes present in Otuke correspond to Bororo affixes. Finally, they conclude that Otuke together with Kovareka and Kuruminaka can be grouped into one linguistic group with Bororo. Moreover, they propose that it is possible that the Korabeka, Kurave, Kurukaneka and Tapi languages were also part of this group. They do not, however, provide any proof, as there is no documentation on these languages.

After the publication of the articles by De Créqui-Montfort & Rivet, others stepped in with further classifications of the Bororoan language group. Guérios (1939) proposed a link between the Bororo language and the Merrime and Kayapo languages that are part of the Jê language family. He does, however, not include comparisons with other languages of the Bororoan family. Next, Schmidt (1941, p. 32), who did field research on the Umutina, discovers a connection between the Bororoan group and the Umutina language, spoken in the same area in Mato Grosso, Brazil. Métraux (1942, pp. 115, 135–136) mentions Otuke in his *The Native Tribes of Eastern Bolivia and Western Mato Grosso*. He does not include Bororo in his overview, and does not seem entirely convinced by De Créqui-Montfort & Rivet that Otuke and Bororo are related. Lowie (1946, p. 419) on the other hand, does include Otuke as a separate branch in the Bororoan language family. He includes Umutina in the family as well, although not as a separate branch, but under the Bororo branch.

A well-structured classification of the Bororoan language family is presented by Mason (1950, pp. 282–283). In his overview of the indigenous languages of South America, he includes both Otuke and Umutina in the Bororoan language family. He also includes Kovareka and Kuruminaka as part of the Otuke branch, but is hesitant in including Kurave (or Koraveka), Kurukaneka and Tapi under the same branch. Rodrigues (1986, p. 56) agrees with the classification by Guérios and includes the Bororoan language family in his model of the Macro-Jê stock. He does not, however, include Otuke in the Bororoan language family, possibly because it had become extinct. Later publications have speculated more specifically about the internal classification of the Bororoan language family and its relation to the Macro-Jê stock. This will be discussed in sections 2.2 and 2.3.

2.2 The Bororoan language family

The Bororoan language family used to be located in eastern Bolivia and western Brazil. The family consists of the Bororo, Umutina, Otuke, Kovareka and Kuruminaka languages, of which Bororo is the only surviving member (Camargos, 2013, p. 14). A thorough discussion of the Bororoan language family and a possible internal classification is provided by Camargos (2013). The classification is given in figure 1. This classification is, however, still hypothetical and based mainly on phonological and morphological similarities from the scarce data that is available on these languages. In the present section, the individual languages will be briefly discussed.

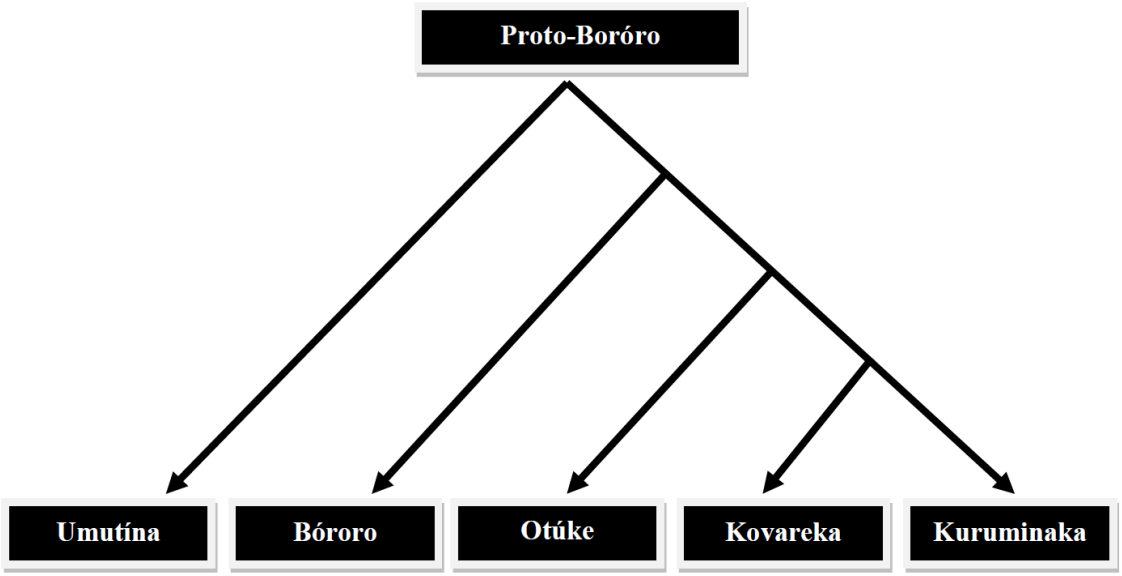


Figure 1: Internal classification of the Bororoan language family (Camargos, 2013, p.207)

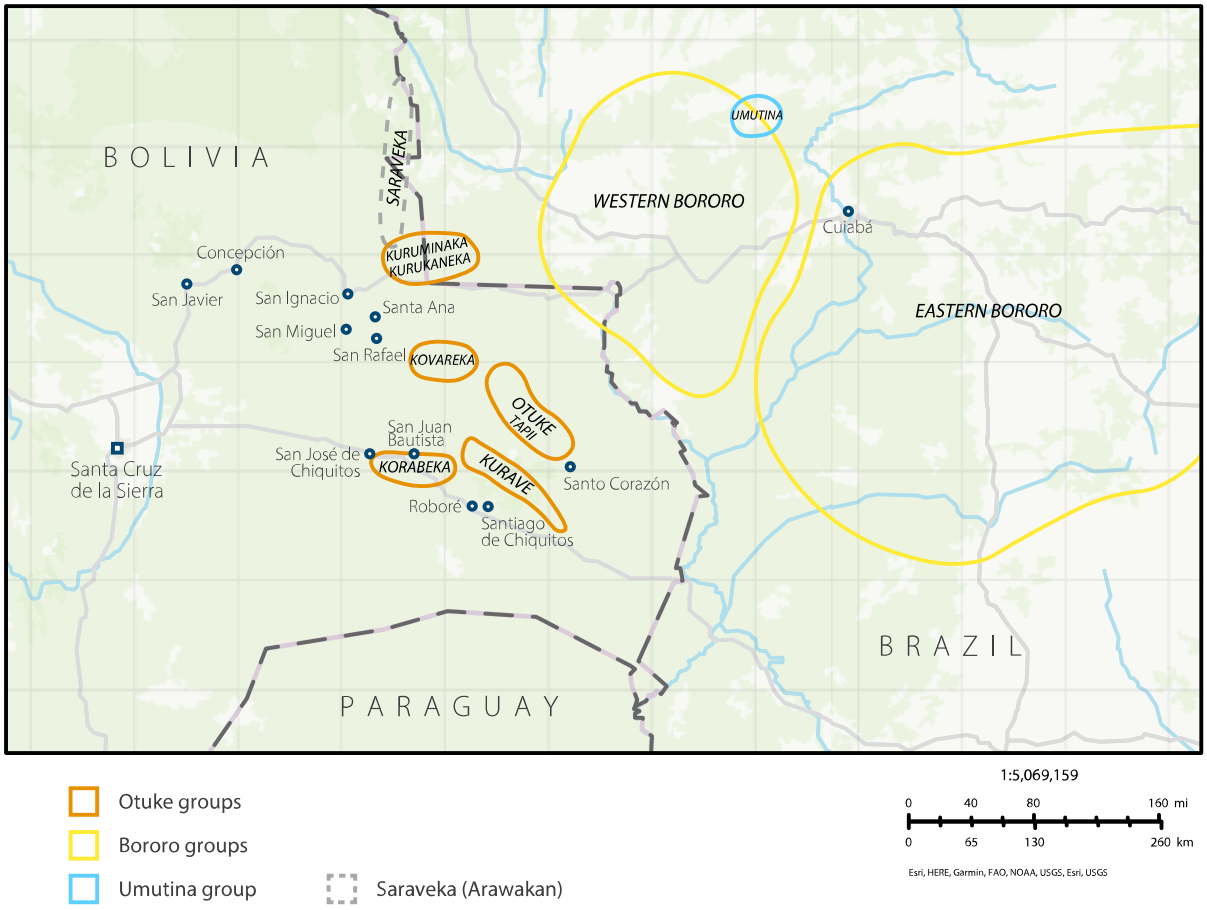
As pointed out, Bororo is the only language of the Bororoan language family that is still spoken today. With only 1390 speakers in 2006, the language is considered to be endangered (Crevels, 2012, p. 184). Bororo used to be spoken in a large area in the Brazilian states of Mato Grosso and Mato Grosso do Sul near the border with Bolivia (map 1) (Camargos, 2013, p. 16).

Umutina has been extinct since 2003 when the last speaker died (Camargos, 2013, p.22). This was shortly after Telles (1995) wrote a grammar sketch based on fieldwork with this last speaker. Before Telles, Schmidt (1941) and Schultz (1952) gathered ethnographic and linguistic data when the language was still spoken by some Umutinas. The language was spoken along the margins of the Upper Paraguay River (map 1) (Camargos, 2013, p. 21).

The Otuke language was probably extinct for a longer time: there were already very few speakers left when D'Orbigny (1839, p. 268) compiled the only vocabulary present on the language, that was later published by De Créqui-Montfort & Rivet (1912). The language was spoken in the northeast of the Chiquitos province in the Santa Cruz department of Bolivia (map 1) (D'Orbigny, 1839, p. 268).

The Kuruminaka language has likely been extinct even longer than Otuke. D'Orbigny (1839, p. 270) only found one person that could remember a handful of words in the Kuruminaka language, but no more than that. It is thought to have been spoken in the northeast of the Chiquitos province, close to the Otuke language (map 1). The Kovareka language has probably been extinct for a similar amount of time as Kuruminaka. Again, only one person was found by D'Orbigny that could speak a few words of the language. It was thought to be spoken close to Kuruminaka in the northeast of the Chiquitos province (map 1) (D'Orbigny, 1839, p. 271).

The original areas of habitation of the Otuke, Umutina and Bororo (Bolivia and Brazil).



Map 1: The original areas of habitation of the Otuke, Bororo and Umutina groups. Included also is the location where Saraveka used to be spoken, a language that was likely in contact with Otuke. Based on the works by De Créqui-Montfort & Rivet (1913, p. 370), Bordignon Enawuréu (1987, p. 25), and Schultz (1962, p. 109).

2.3 Bororoan and Macro-Jê

The Macro-Jê stock is a group of language families spoken mainly in Brazil, containing around 30 languages. The Jê family is the largest, with the most convincing evidence of affiliation. About other language families, however, there is an ongoing debate whether or not they should be included in the Macro-Jê stock (Muysken & Crevels, 2020, p. 261). One of these language families is Bororoan. In the last century, several linguists have included Bororoan in the Macro-Jê stock. The first to establish this link was Guérios (1939), who connected Bororo to the Merrime and Kayapo languages, both members of the Jê family. Rodrigues (1986) followed later, but he states specifically that the existence of an actual Macro-Jê family is still hypothetical. Many of the cognates that are used to support the existence of the Macro-Jê stock only occur in a few languages, but not in all. There is only one word that has a cognate in every language, which is the word for 'foot'. Rodrigues suggests that this is in part caused by the lack of documentation on many languages. Later, Camargos (2013) wrote a dissertation on the Bororoan language family that agreed with the inclusion of Bororoan in the Macro-Jê stock. Recently, however, Nikulin (2020b, pp. 64–65) has contested the previously assumed relation between Bororoan and Macro-Jê. He admits that some similarities can be seen, but he refutes most of the evidence by Guérios and Rodrigues stating that most of the characteristics also occur in languages unrelated to Macro-Jê. Therefore, these would not be exclusively Bororoan and Macro-Jê.

CHAPTER 3:

THE OTUKE DATA

This chapter presents the full analysis of the Otuke data and its comparison to Bororo. It starts with a description of the data and how it was organized for the purpose of this thesis. Next, the analysis of the Otuke data and previous claims that were made will be presented. First, the phonological claims will be reviewed and an overview of the phonological correspondences between Otuke and Bororo will be presented. Then, the morphological claims are reviewed, starting with nominal morphology followed by verbal morphology. Every claim is discussed in a separate section. The chapter is concluded with a summary of the findings.

3.1 The present Otuke data

The Otuke language has likely been extinct since the 19th century. Therefore, analysis of the language relies on the availability of data collected before the language stopped being passed on and the last speakers passed away. The only data on Otuke that we know of today was collected by Alcide d'Orbigny in the 1830s. He collected wordlists in several South American languages, but only published small excerpts of these lists. Based on the original manuscripts D'Orbigny wrote during his travels, which were preserved in the *Bibliothèque nationale de Paris*, the full Otuke vocabulary was published by De Créqui-Montfort & Rivet in 1912. This data consists of a vocabulary of 299 Otuke, 19 Kovareka, and 16 Kuruminaka words. Only three phrases were recorded and no textual data on these languages is present either, which makes studying specific morphological and syntactical processes difficult.

The words that were elicited by D'Orbigny can be ordered into a few categories. Considering D'Orbigny's interest in biology and the determination of new species, it is not surprising that almost half of the elicited vocabulary consists of animal and bird names. Next, over 50 words for body parts were collected, which is not unexpected due to their relatively easy elicitation. Natural phenomena comprise 20 words in the vocabulary, and a similar amount of words is present for plants and for foods. Further categories are small and contain words for tools and objects, but also people and kinship terms. All abovementioned categories consist of words in the nominal domain. Some other

domains are present as well, including some words denoting states, which could be adjectives, and words denoting actions, which could be verbs. Finally, a few pronouns and three short phrases are present in the data.

The data as it was presented by De Créqui-Montfort & Rivet (1912) consists of a list of French words followed by the Otuke counterpart. For some words, an annotation is present indicating comparisons to words with similar forms in Otuke. The Kovareka and Kuruminaka wordlists are intertwined with the Otuke vocabulary and are indicated with (C) for Kovareka and (K) for Kuruminaka. The notation of the words follows a specific orthography based on French that was used in more works by De Créqui-Montfort & Rivet. The characters that were used in the Otuke vocabulary are presented in table 1. An approximation of the IPA value is given based on the description of the characters given by De Créqui-Montfort & Rivet (1912, p. 318).

Table 1: Overview of the orthography used by De Crequi-Montfort & Rivet (1912, p. 318) and the IPA approximation of these characters

Orthography DCM&R	**IPA approximation**
š	/ʃ/
č	/tʃ/
ñ	/ɲ/
l’	/ʎ/
ĩ	/ĩ/
è	/ɛ/
ė	/e/
ẽ	/ẽ/
ã	/ã/
ọ	/õ/
õ	/õ/

This orthography, as used by De Créqui-Montfort & Rivet, is different from what was used by D’Orbigny in his overview of wordlists in 23 South American languages. For the sake of consistency with other languages he presented, he used an orthography based on Spanish, not French. This meant that e.g. /tʃ/ is represented as <ch> in his wordlists, and /w/ is represented as <hu>. It is also possible that <vu> represents /b/ or /β/ in his orthography (D’Orbigny, 1839, p. 80). De Créqui-

Montfort & Rivet slightly altered this notation into their own, and spelled /tʃ/ as <č>, but did keep the notations <hu> and <vu>.

For this thesis, the Otuke vocabulary as presented by De Créqui-Montfort & Rivet was transferred to a database that can be found in appendix A. This database includes several columns: one for the Otuke words, followed by two separate columns for Kovareka and Kuruminaka. The orthography that was used by De Créqui-Montfort & Rivet is maintained for these words. The next two columns contain the French and English translations, followed by a column with annotations as presented by De Créqui-Montfort & Rivet. Additionally, I added another two columns, one with the semantic category the Otuke words belong to, and one with possible Bororo cognates retrieved from the dictionary by Albisetti & Venturelli (1962). When no Bororo word matching the Otuke word in form and meaning was found, the cell was left empty.

Initially, some more information was included in the database, but it was eventually not used for this thesis. This included a proposed list of Bororo cognates that De Créqui-Montfort & Rivet (1913, pp. 371–373) presented. These Bororo words were retrieved from three different, rather dated sources (De Castelnau, 1851, pp. 285–286; Von den Steinen, 1894, pp. 382–406; Frič & Radin, 1906, pp. 545–547). De Créqui-Montfort & Rivet (1912, pp. 326–329) also gave a few lists of possible loanwords from other languages spoken in the area where Otuke was spoken. Neither the cognates nor the loanwords were eventually used for this thesis, and therefore not included in the final database in appendix A.

With all data gathered in one database, it is easier to identify patterns and make connections between the different parts of the data. Being able to sort the data alphabetically and to sort it per category or other groupings facilitates this. The aim of studying the data is to identify and review the phonological and morphological claims made by De Créqui-Montfort & Rivet (1912, 1913), and later by Camargos (2013). Moreover, claims on the Otuke relationship with surrounding languages made by later linguists can also be studied and possibly reconsidered. The main goal in studying this data is to get a better overall picture of the Otuke language, as the language has not often been the sole subject of publications in the past.

3.2 Phonological claims

Several authors have proposed phonological correspondences between the languages of the Bororoan language family. De Créqui-Montfort & Rivet (1913) first propose a few correspondences

that are later expanded by Camargos (2013). Based on comparisons between the original Otuke vocabulary by De Créqui-Montfort & Rivet (1912) and the Bororo dictionary by Albisetti & Venturelli (1962), this thesis adds to the list of phonological correspondences between Otuke and Bororo. Moreover, it evaluates previously proposed correspondences and the cognates these are based on.

3.2.1 De Créqui-Montfort & Rivet (1913)

De Créqui-Montfort & Rivet (1913, pp. 373-375) propose a set of phonological correspondences between Otuke and Bororo based on cognates they found in the two languages. They compare the Otuke vocabulary that they presented in their 1912 article to three Bororo vocabularies by De Castelnau (1851, pp. 285–286), Von den Steinen (1894, pp. 382–406), and Frič & Radin (1906, pp. 545–547). The phonological correspondences that De Créqui-Montfort & Rivet found based on the comparison between the proposed Otuke and Bororo cognates are given in table 2.

Table 2: Phonological correspondences between Otuke and Bororo with examples, as proposed by De Créqui-Montfort & Rivet (1913, pp. 373-375)

Otuke	**Bororo**	**Otuke**	**Bororo**	
<č> /tʃ/	/k/	*i-čeru*	*i-keru*	‘tongue’
		i-čenapo	*i-könabo*	‘navel’
<š> /ʃ/	/k/	*i-šeno*	*i-keno*	‘nose’
		i-šo	*ti-ekü*	‘heart’
/h/	/k/	*eno-huari*	*eno-kuri*	‘armadillo’
		aharo	*kare*	‘fish’
		ohuaru	*okuari*	‘armadillo’
/h/	/g/	*i-viaha*	*i-uaga*	‘penis’
		apoha	*apoga*	‘anteater, squirrel’
		akihu-mari	*akigo*	‘cotton (yarn)’
		huaora	*garo*	‘deer’
		tehua	*túggo, tugo*	‘arrow’
/h/	/t/	*oho*	*oto, åto*	‘beak’
		ahi	*ati*	‘jaguar’
/hua/	/ba/	*huaru*	*baru*	‘sky’
/vua/	/ba/	*vuauru*	*bakuro*	‘wind’

/vi/	/u/	*i-viaha*	*i-uaga*	'penis'
		okivia	*akiua*	'capybara, paca'
		i-vire-egua	*i-ure-ka*	'sole of the foot'

Since De Créqui-Montfort & Rivet use three different vocabularies of Bororo for their comparison with Otuke, this has likely not benefited their analysis of the phonological correspondences. The three vocabularies might reflect different varieties of Bororo, which can cause a skewed view of the correspondences between Bororo and Otuke. Moreover, these vocabularies are quite short and dated, so analysis with newer data would be beneficial.

3.2.2 Camargos (2013)

Camargos (2013, pp. 148-153) compared the Otuke data to newer Bororo data from Albisetti & Venturelli (1962) and some data from Ochoa (2001). Just like De Créqui-Montfort & Rivet, she presented phonological correspondences with examples. These are given in table 3. She agreed with several of the correspondences already made by De Créqui-Montfort & Rivet, but also proposed new ones. In table 3, all correspondences she gives are included, also those by De Créqui-Montfort & Rivet. Camargos also gives the environments in which the phonological correspondences can take place. The examples she gave are not included in table 3 due to the amount of space these would take up. Note that Camargos uses a different orthography than De Créqui-Montfort & Rivet: she replaced <č> with /tʃ/ and <š> with /ʃ/. She also spells the sequence <hu> as /hw/ and <ku> as /kw/.

Table 3: Phonological correspondences between Otuke and Bororo with the environments they occur in, as presented by Camargos (2013, pp. 148-153)

Otuke	**Bororo**	**Environment**
/k/	/k/	#_ V_V
/k/	Ø	V_/t/
/h/	/k/	_V #_
/hw/	/kw/, /k/	V_V
/hw/	/b/, /w/	#_
/hw/	/g/	V_V
/kw/	/g/	V_V
/h/	/g/	V_V

Otuke	**Bororo**	**Environment**
/t/	/t/	#_ V_V
/t/	/d/	V_V
/tʃ/	/dʒ/	V_V
/s/	/tʃ/	V_V
/m/	/m/	#_ V_V
/n/	/n/	#_ V_V
/n/	/m/	#_ V_V
/r/	/r/	#_ V_V

Camargos did not present many examples to prove her propositions. Almost all correspondences she proposes are supported with less than four examples. For some correspondences only one example is given. This is very little evidence to base a phonological correspondence on. Therefore, more examples are necessary to prove the phonological correspondences in Otuke and Bororo.

3.2.3 New insights

In order to improve the amount of evidence for the phonological correspondences that were proposed by De Créqui-Montfort & Rivet (1913) and Camargos (2013), and to possibly propose new correspondences, more data is necessary. To facilitate this, I searched the Bororo dictionary by Albisetti & Venturelli (1962) for every word in the Otuke vocabulary. I took the meaning of the Otuke word, and searched for Bororo words with a similar meaning. A scanned version of the dictionary with character recognition was used to make reverse-searching the dictionary by meaning a lot easier. Of the 299 Otuke words in the vocabulary, 171 had a match in form and meaning with a Bororo word. As many of these are likely to be cognates, phonological correspondences could be extracted from them. To do this, all Otuke-Bororo cognate pairs were analysed and sorted according to the phonological correspondences they presented. This produced a set of examples for every phonological correspondence between Otuke and Bororo. The total overview of the correspondences with all examples is presented in appendix B. The phonological correspondences in appendix B with less than three examples are not considered as structural phonological correspondences, because of the lack of examples. These are therefore not presented in the current section.

In this section, the phonological correspondences are presented that are supported with a significant amount of examples, at least three. Due to lack of space, for every correspondence presented in this section, only two or three examples are given. The full set of examples is present in appendix B. Several of these phonological correspondences were already proposed by De Créqui-Montfort & Rivet (1913) or Camargos (2013) and are now supported with more examples. In addition to that, I will present a number of phonological correspondences that have not yet been proposed earlier. These are made bold. In example set (1)–(7), the phonological correspondences are given with the environment (env.) they occur in, and two or three examples. After each example set, a brief description of the correspondences and the processes that might underlie them are given.

(1)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/t/	/t/	#_	*tehua*	*tugɔ*	‘arrow’
			#(C)V_	*huataha*	*batagaǰe*	‘type of bird’
				itura	*itura*	‘wood, forest’
	/t/	/d/	V_V	*anutake*	*nudu*	‘sleep’
				i-viaroto	*bureado*	‘heel’
				ketari	*kedarɔ*	‘bat’
	/tʃ/	/dʒ/	#_	*čuhu*	*ǰureu*	‘manioc, cassava’
			V_V	*neričoki*	*mɛriǰi(bɔe)*	‘day(time)’
	/k/	/k/	#_	*ketari*	*kedarɔ*	‘bat’
			#(C)V_	*i-reka-vi*	*ɛku-bu*	‘eyelashes, eyebrows’
				okivia	*ɔkiwa*	‘capybara’
	/k/	**/g/**	**V_V**	*rerikeke*	*ǰɛrigige*	‘land tortoise’
				seruki	*ɛrigi*	‘firewood’
				kuku	*kugu*	‘great horned owl’

In the examples in (1), we can see a specific process occurring. In Bororo words, when the phonemes /t/, /k/ or /tʃ/ occur after the second syllable, they are voiced. This always occurs in between vowels. Andrey Nikulin (2020a, pp. 382–383) already described this process as “postpeninitial lenition”. According to him, this means that voiceless obstruents are voiced when they occur after the first two syllables of the word. In the examples presented in (1), that is indeed the case. Nikulin (2020a, pp. 387–389) also mentions another process that occurs in Bororo, which he calls “[-voice] dissimilation”: when two voiceless obstruents occur in adjacent syllables, the second obstruent becomes voiced. Again, we can see this happening in the examples in (1). These two processes were likely independent innovations in Bororo, as they do not occur in Otuke. In fact, the voiced obstruents /d/, /g/ and /ǰ/ do not or only very rarely occur in the Otuke data. We could say that it is likely that in a shared ancestral language, only the voiceless variants of these phonemes occurred, and Bororo innovated. The only exception to these rules is the correspondence between /tʃ/ and /dʒ/. In Bororo, /dʒ/ can occur word-initially, also when /tʃ/ is present in Otuke. That is unexpected regarding the rules presented above. Possibly, the rule does not apply as consistently to affricates as it does to plosives. Another reason could be that a prefix with a voiceless obstruent was dropped, or that borrowing from another language took place.

(2)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/kt/	**/t/**	**V_V**	*aktešo*	*atubo*	‘deer’
				moktuhu	*moto*	‘earth’
	/h/	/k/	#_	*husè*	*kuǰe*	‘hocco (bird *sp.*)’
			V_V	*aharo*	*karɔ*	‘fish’
	/h/	/g/	V_V	*akihumari*	*akigu*	‘(white) cotton’
				apohė	*apɔgɔ*	‘tamandua (lesser anteater)’
	/h/	**Ø**	**V_V**	*ahi*	*ai*	‘cat’
				tohori	*tɔri*	‘shovel-nosed catfish’

In the examples in (2), we can see that consonants and consonant clusters that do not exist in Bororo are realised in different ways in Otuke. The Otuke cluster /kt/ always occurs as /t/ in Bororo, but Otuke /h/ has several Bororo counterparts. When Otuke /h/ occurs in initial position, it always corresponds to Bororo /k/. Whenever Otuke /h/ corresponds to Bororo /g/, this always happens in the third syllable onward or after a syllable with a voiceless obstruent. The realisation of Bororo /g/ for Otuke /h/ can therefore be linked to the processes of voicing described for example (1). The third realisation of Otuke /h/ in Bororo is the dropping of it. The dropping only happens in intervocalic position. This realisation is not similar to /k/ or /g/, which could lead us to believe that in Otuke, these were two separate phonemes. Possibly, the Otuke /h/ that corresponds to Bororo /k/ and /g/ was closer to a velar [x], and the Otuke /h/ that is dropped in Bororo was closer to [w]. The velar [x] is more easily connected to Bororo /k/ and /g/, and [w] is a consonant that is more easily dropped, especially in intervocalic position.

(3)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/hu/	/b/	#_	*huaru*	*baru*	‘sky’
				huekiča	*buke*	‘giant anteater’
	/hu/	/g/	V_V	*tehua*	*tugɔ*	‘arrow’
				uvakuhua	*uwarugareu*	‘partridge’

The examples in (3) show a mutually exclusive environment in which the different variants occur. When Otuke /hu/ occurs in initial position, it always corresponds to Bororo /b/. When Otuke /hu/ occurs in non-initial intervocalic position, it always corresponds to Bororo /g/. Because /b/ and /g/

are phonetically quite distinct, it is possible that D'Orbigny did not hear a phonetic difference that was in fact there when he elicited the Otuke words. For example, the Otuke /hu/ that corresponds to Bororo /b/ could actually be more like [wu], and the Otuke /hu/ that corresponds to Bororo /g/ could be more like [xu]. This is a similar distinction as was made for the examples with /h/ in (2).

(4)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/v/	/b/	#_	*vevika*	*bɔɛiga*	'bow'
			V_V	*aravo*	*aribɔ*	'small bird *sp.*'
	/v/	**/w/**	**V_V**	*liviota*	*riwodo*	'pecui (bird *sp.*)'
				okivia	*ɔkiwa*	'capybara'

The examples in (4) show that Otuke /v/ corresponds to both Bororo /b/ and /w/. These are not unexpected correspondences, as /v/ does not occur in Bororo (Nikulin, 2020a, p. 369), and /b/ and /w/ are phonetically close to /v/. It is very well possible that D'Orbigny wrote sounds like [w] and [β] as <v>, because these sounds are not as common in French. That way, Otuke could have had a phoneme /w/ instead of /v/. When Bororo /b/ occurs instead of /w/ is not entirely clear. The only difference between the two realizations is that /b/ can occur word initially, while /w/ cannot.

(5)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/p/	**/p/**	**#_**	*i-šeno poro*	*ɛnɔ poro*	'nostrils'
			V_V	*apoha*	*apu*	'paca, gray squirrel'
	/b/	**/b/**	**V_V**	*sibiarė*	*riboareu*	'pumpkin'
				surebori	*bɔri*	'wax'
	/p/	**/b/**	**V_V**	*ič-enapo*	*kunabo*	'navel'

In the examples in (5) we can see a similar case of postpeninitial lenition as described before: Otuke /p/ is voiced in Bororo *kunabo* 'navel'. However, this is the only example that is present of the correspondence between Otuke /p/ and Bororo /b/. This means that it is not possible to consider this a structural phonological correspondence based on this example alone. Nikulin (2020a, p. 383) does consider the voicing of /p/ as part of the process postpeninitial lenition. What is interesting is that Otuke does seem to have the phoneme /b/, while it does not have other voiced obstruents. According to Nikulin (2020a, pp. 387–389), Bororo underlyingly does not have the voiced obstruents /d/ and /g/ either, as these are almost always formed through the postpeninitial lenition and [-voice] dissimilation rules. A phonemic /b/ does seem to exist in Bororo, as the examples in (5) show that it

also occurs in initial position and in the second syllable. In that way, Otuke and Bororo are similar in having a phonemic /b/, but no phonemic /d/ and /g/.

(6)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/r/	/r/	#_	*ruka*	*ruke*	‘fly’
			V_V	*tuvukarè*	*togware*	‘horsefly’
				erehe	*arogwa*	‘crocodile’
	/n/	/n/	V_V	*enari*	*ɛnari*	‘woodpecker’
				i-šeno	*ɛnɔ*	‘nose’
	/m/	/m/	#_	*mase*	*maerebɔe*	‘mosquito’
			V_V	*asema*	*amema*	‘iguana’
	/n/	/m/	#_e	*neričoki*	*mɛriǰi(bɔe)*	‘day(time)’
				neda	*mɛa*	‘agouti’

The examples in (6) show that liquids and nasals in Otuke and Bororo are mostly the same. However, one peculiar difference is present between the languages. When Otuke /n/ occurs in initial position before /e/, it always corresponds to Bororo /m/, which is followed by [ɛ]. It is not clear which of the two languages innovated, because both languages also have words with initial /m/ and /n/.

(7)	**Otuke**	**Bororo**	**env.**	**Otuke**	**Bororo**	
	/ɣ/	**/k/**	**#(V)_**	*i-yu*	*ku*	‘belly’
				i-yunara	*kana-ra*	‘(fore)arm, wrist’
				i-yure-tanavo	*ikuruǰa*	‘bladder’
	/č/	**/p/**	**#(V)_**	*ič-era*	*pera*	‘bottom, anus’
				ič-euru	*pɛguru*	‘intestines’
				i-šo	*bapo*	‘heart’

The examples in (7) show quite unusual phonological correspondences. Both /ɣ/ and /k/, and /č/ and /p/ are not phonetically similar. What is striking as well, is that all examples of these unusual correspondences occur in the same position in Otuke: right after the personal prefix *i-*. This prefix is often followed by the same consonants in Otuke, in these cases /ɣ/ and /č/. In Bororo, a similar occurrence is present. Nonato (2008, p. 39) describes that the personal prefixes have two series: one for words that start with a consonant and one for words starting with a vowel. For the first person, words starting with a consonant get *i-*, while words starting with a vowel get *it-, in-* or *ik-*. In Otuke,

the same could be occurring. In that case, the Otuke prefixes in the presented examples would be *iy-* and *ič-.* In Bororo, the words are given without a personal prefix. That means that /k/ and /p/ are part of the stem in these examples. Because the Otuke words do not have an initial consonant in the stem, it could be that this initial consonant was dropped. It is, however, hard to prove this, because we have no examples of these words without personal prefixes.

There are two more processes that can be seen in the data. First, progressive palatalization is clearly present in Otuke, but not in Bororo. Looking at Otuke alone, this could already be seen because many words starting with the pronominal prefix *i-* were followed by the specific structure CiV, such as in *i-tio* 'incisor teeth' and *i-kioka* 'blood'. Comparing the Otuke data to Bororo has confirmed the occurrence of progressive palatalization in Otuke, because the CiV structure is not present in Bororo. See the examples in (8).

(8)

Otuke	**Bororo**	
kitio	*kidɔ*	'parakeet'
liviota	*riwodo*	'bird *sp*.'
i-viaha	*baka*	'penis'

This would mean that in Otuke, the progressive palatalization would not occur in words like *i-tio* 'incisor teeth' and *i-kioka* 'blood' when another pronominal prefix without /i/ is used. Unfortunately, there is no data of Otuke nouns with another pronominal prefix than *i-*, so it is not possible to prove this.

Another process that can be seen in the data is metathesis. There are not many examples, but the most logical explanation for the difference between the Otuke and Bororo form is that, among other things, metathesis of two syllables has occurred in either of the two languages.

(9)

Otuke	**Bororo**	
i-rivi	*biri*	'skin'
etarehohe	*atugorega*	'snake *sp.*'

In conclusion, there is much more to find about the Otuke phonology if it is compared to its sister-language Bororo. The phonological correspondences and processes we have seen in the present section help us understand the Otuke language better. Moreover, the added information on Otuke could help to reconstruct the relations between the languages of the Bororoan language family. In

addition, it could help reconstruct a Proto-Bororo language. Next, the morphology of Otuke can be better explored by comparing Otuke words to Bororo. This will be the focus of the next section.

3.3 Nominal morphological claims

De Créqui-Montfort & Rivet propose in their (1912) article an overview of possible affixes extracted from the Otuke vocabulary they presented in the same publication. They mainly base their proposition of the existence of these affixes on the frequency of their occurrence and a semantic relationship between the words in which they occur. In their (1913) article they compare their claims to existing Bororo affixes. In the following paragraphs, these affixes will be discussed and their existence evaluated. In addition to the claims made by De Créqui-Montfort & Rivet, some claims made by Camargos (2013) about the same affixes will be discussed and reviewed as well. Additional data on Bororo by Albisetti & Venturelli (1962) is given to be able to better explain the observed occurrences in Otuke. All Bororo examples therefore originate from this source, unless mentioned otherwise.

This section will be structured as follows: first, the notion of gender in Otuke will be discussed, followed by an evaluation of a classifier system as proposed by De Créqui-Montfort & Rivet (1913). Next, the existence of compounds in Otuke will be discussed and linked to the preceding section about classifiers. Then, a diminutive suffix will be evaluated, and the section will finish with an analysis of possessive pronominal prefixes in Otuke.

3.3.1 Gender

De Créqui-Montfort & Rivet (1912, p. 325) note that on one word in the Otuke vocabulary the sex of the referent is marked. The marking of the sex of a referent can be an indicator of a gender system, so it is worthy to study this. De Créqui-Montfort & Rivet (1912, p. 325) present the following pair in (10):

(10) **Otuke**

učiviaku ‘chicken’ *čiviaku-huani* ‘rooster’

They suggest that *huani* corresponds to *vuani* ‘man’, which makes *čiviaku-huani* a logical compound meaning ‘chicken-male’. This is the only case in which we see the specification of sex in Otuke, which makes it difficult to study if a gender system is present. Comparing the Otuke example to Bororo,

Albisetti & Venturelli (1962) give several names of animals in which sex is specified. Two examples are given below in (11):

(11) **Bororo**

kɔgɔriga	'chicken'	*adugo*	'jaguar'
kɔgɔriga arɛdu	'hen'	*adugo arɛdu*	'female jaguar'
kɔgɔriga imɛdu	'rooster'	*adugo imɛdu*	'male jaguar'

The terms *arɛdu* and *imɛdu* are also the common words for 'woman' and 'man' in Bororo. This means that the expression of the sex of animals is expressed similarly in Bororo and Otuke. It is very well possible that sex is expressed in a similar manner on nouns with other types of referents in both languages. In Bororo, there also exists a suffix *-gɔ* that indicates female sex (Albisetti & Venturelli, 1962, p. 588), which is illustrated in (12):

(12) **Bororo**

imedʒera	'chief'	*imedʒeragɔ*	'female chief'

This suffix, however, does not seem to be widespread. No other word with this suffix could be found in the Bororo dictionary. Otuke also does not seem to have any occurrence of a similar suffix. It therefore seems clear that the specification of sex is not obligatory in Bororo and Otuke, but is only used when it is necessary, such as for distinction between male and female animals.

3.3.2 Classifiers

According to De Créqui-Montfort & Rivet (1912, p. 322), several suffixes exist in Otuke that could be part of a noun classification system. They compare it to a classification system in the Chibchan languages of Central America. Indeed, several Chibchan languages use a numeral classification system concerning the shape of the object referred to (Pache, 2016). To evaluate if a classification system like this actually exists in Otuke, every classifier suffix proposed by De Créqui-Montfort & Rivet (1912) will be analysed and reviewed. Some remarks on these suffixes made by Camargos (2013) will also be taken into account.

3.3.2.1 The suffix -ra

De Créqui-Montfort & Rivet (1912, p. 322–323) present the first classifier suffix *-ra* that is, according to them, used on words denoting body parts. They give a list of 11 words denoting body parts in which the *-ra* suffix is used. In a following article (1913, p. 376), they add to their proposition and

suggest that the *-ra* suffix could be related to a similar phenomenon in Bororo, since they had observed a suffix *-ra* in several Bororo words denoting body parts. Moreover, they suggest that this suffix might have something to do with the Bororo word *ra*, meaning 'bone'. In that way, the words denoting body parts containing the *-ra* suffix would refer to the bone of that body part. Camargos (2013, pp. 110-111) does not add anything to the existence of the suffix, and concludes that there is either too little data to determine the scope of the suffix, or the putative suffix does not have a function and is part of the stem of these words. She does not take into account the possibility of the suffix being related to the Bororo word *ra* 'bone'.

While it is clear that a substantial amount of body part words have the suffix, it does not occur on all words for body parts in the Otuke data. In fact, only 12 out of the 55 Otuke body part terms have the suffix (see table 4). It is therefore unlikely that this suffix is used for body parts in general. A more specific criterion would have to be involved for this suffix to be used in only this specific subset of body part terms.

When we compare the Otuke body part terms with the suffix *-ra* to Bororo words with the same suffix (table 5), we do not see many correspondences. Only three words are similar in form in both languages, but not all are a semantic match: Otuke *i-viora* 'thighs' and Bororo *i-viyora* 'ankle', Otuke *keara* 'arm' and *i-kera* 'hand', and Otuke *i-miaura* 'breast' and Bororo *i-morora* 'chest'.

Table 4: Otuke body part terms with the -ra suffix (De Créqui-Montfort & Rivet , 1912, pp. 329-337)

Otuke	
i-čaparara	'ear'
i-čera	'anus'
i-čoara	'forehead'
i-čura	'ribs'
i-miaura	'breast'
i-renara	'cheek'
i-šiora	'mouth'
i-tiura	'chin'
i-viora	'thighs'
i-yunara	'forearm'
i-yunara	'wrist'
keara	'arm'

Table 5: Bororo words for body parts with the -ra suffix (De Créqui-Montfort & Rivet, 1913, p. 376 per Von den Steinen, 1894)

Bororo	
i-táu-ra, *i-káu-ra* (*i-tao* 'hair')	'head'
i-kaná-u-ra (*i-kana* 'arm')	'shoulder'
i-ure-rá (*i-ure* 'foot')	'top of the foot'
i-kogu-ra	'chin'
i-moro-ra	'chest'
i-viyo-ra	'elbow'
i-taga-ra	'forearm'
i-ke-ra	'hand'

It therefore seems that the meanings of words receiving the suffix *-ra* in the two languages only partially overlap. This does not help us to identify a criterion for when words for body parts would receive the suffix. Looking back at De Créqui-Montfort & Rivet's (1913) proposal, we could consider the proposition that *-ra* is derived from Bororo *ra* 'bone'. This could mean that in all these words, specifically the bone of the body part is indicated. In words for 'shoulder', 'forehead', 'forearm' and 'ribs' this would make sense. In these body parts, the bone is palpable and visible right beneath the skin. Other body parts in the two lists, like 'ear', 'anus', and 'mouth' do not have such an easily identifiable bone. Moreover, other words for body parts, like Otuke *seni* 'hand', *i-kiarato* 'elbow', *kiaroro* 'shoulder' and *i-šĩ* 'knee' do not get the *-ra* suffix, while they have palpable and visible bones right beneath the skin. With the data presented by De Créqui-Montfort & Rivet it is therefore difficult to establish a condition under which the suffix *-ra* would be used.

Fortunately, the Bororo dictionary by Albisetti & Venturelli (1962) gives a better impression of the suffix in Bororo. In the dictionary, several body part terms occur both with and without *-ra*. In these cases, the form including *-ra* indicates specifically the bone of the body part. This can be seen in (13).

(13) **Bororo**

ɛnɔ	'nose'	*ɛnɔ-ra*	'bone of the nose'
aki	'hip'	*aki-ra*	'ilium bone'
pio	'small projection, elbow'	*pio-ra*	'elbow'
ɛku	'eye'	*ɛku-ra*	'cheekbone'

Due to the scarcity of the elicited words, it is not strange that we do not find such pairs in the Otuke data. What we can see, though, is a correspondence between *i-yuna* 'fingers', and *i-yuna-ra* 'wrist, forearm'. While this is not such a logical derivation, it does show that both forms of the word exist: with and without *-ra.* Based on the Bororo data, that quite clearly shows the meaning of *-ra* to be 'bone', it is likely that the suffix in Otuke had a similar meaning. The suffix occurs frequently on body parts and therefore behaves in a similar way to the Bororo suffix.

3.3.2.2 The suffix -ka

De Créqui-Montfort & Rivet (1912, p. 323) suggest another classifier suffix *-ka*, used for round fruits. They give four examples that are presented in (14).

(14) **Otuke**

huetoka	'lime, orange, lemon, cedra'	*rioka*	'watermelon',
aika	'calabash'	*boka*	'fruit'

Camargos (2013, p. 111) adds to this that there are two more words in the Otuke vocabulary containing a *-ka* suffix: *i-kioka* 'my blood' and *i-ureka* 'sole of my foot'. The latter is however mistakenly considered an Otuke word, as it is in fact a Bororo word presented in the list of Otuke-Bororo correspondences by De Créqui-Montfort & Rivet (1913, p. 373). There, it can be seen that the Otuke form of 'sole of my foot' is spelled as *i-vire-egua.* It is therefore not very plausible to include it in the list of words with *-ka*. Camargos (2013, p. 111) suggests that the occurrence of these other words with *-ka* means that the suffix could be used on words referring to circumscribed objects. She refers to a suffix with a similar use in Suruí, a Tupi-Guarani language. If this were to be the case, then it is odd that a set of other round or circumscribed objects that are present in the Otuke vocabulary do not get the *-ka* suffix: *rarĩ* 'leaf', *huaha* 'egg', *rikihu* 'flower', *čatarivi* 'corn husk', *čuhu* 'cassava' and perhaps even more. It is possible that there is another condition to which a word would have to adhere in order to get the *-ka* suffix, but this does not become evident from the five words presented above. There are in fact more words ending in *-ka* in the Otuke vocabulary that had not been mentioned by De Créqui-Montfort & Rivet or Camargos before. These are presented in (15).

(15) **Otuke**

huarakaka	'toad'	*rektaka*	'centipede'
kahaka	'wood rat, small caracara'	*ruka*	'fly'
oka	'tricolor fox'	*vevika*	'bow'

None of these words explicitly refer to a round or circumscribed object, which makes it even more implausible that a suffix *-ka* would be used on round and circumscribed objects. It is, however, possible that in the cases in (15), /ka/ is part of the stem, while in the cases in (14), *-ka* is a suffix. Nevertheless, it is difficult to establish if this is the case, and it is not very logical if Otuke made this distinction.

When looking at Bororo, no similar words can be found for the fruits presented in (14). It is not unlikely that fruits native to the region, but uncommon for the French D'Orbigny, were addressed with the name of common European fruits, like watermelon, lemon and orange. This makes it rather impossible to find them in the dictionary by Albisetti & Venturelli (1962), where they are probably mentioned under their native name. Therefore, it is not possible to check if a suffix similar to the

Otuke *-ka* is present in Bororo on the same words for these fruits. Because of the small amount of data on round fruits or round objects in Otuke, it is also not possible to verify if *-ka* is a suffix consistently used on words for round fruits. It could, on the other hand, be possible that *-ka* is not a functional suffix in Otuke at all, but just part of the stem of these words. Most of the words for fruits are short in itself, so considering half of the stem as a suffix might not be very plausible.

3.3.2.3 The suffix -vi, -vihi

The third classifier suffix that De Créqui-Montfort & Rivet (1912, p. 323) suggest is *-vi, -vihi.* This suffix is, according to them, used on words that refer to objects that are hair-like. They give six examples that are presented in (16).

(16) **Otuke**

vuaka-vi	'hair (of the body)'	*i-reka-vi*	'my eyebrows, -lashes'
tera-vihi	'beard'	*čatara-vi*	'corn stalks'
i-taho-vihi	'my hair (of the head)'	*mocena-vi*	'grass'

In their 1913 article (p. 376), they present a corresponding suffix occurring in three Bororo words with similar meanings. This suffix is realized as *-bő* in the words retrieved from Von den Steinen (1894, pp. 382–406) and as *-sö/-zö* in the words retrieved from De Castelnau (1851, pp. 285–286). When consulting the more recent source on Bororo by Nonato (2008), the suffix can be found in several words in the vocabulary. Moreover, several other words can be found with, what seems, a longer version of the suffix:

(17) **Bororo (Nonato, 2008, pp. 209–249)**

okwa-bü	'beard'	*boe-bütü*	'grass'
itora-bü	'beard'	*büke bütü*	'cast net'
jerira-bü	'eyebrow'	*poborebütü*	'waterfall'
joku-bü	'eyelash'	*meri bütü*	'sunset'
		bübütü	'rain'

The left column in (17) shows Bororo words that resemble the previously mentioned Otuke words in (16) that are hair-like in their meaning. In the right column, the longer form *-bütü* can be seen in other words that do not all have an evident connection to hair. For *boe-bütü* 'grass' and *bübütü* 'rain', this connection can be envisioned, but the other three words in the right column are difficult to envision as hair-like in their appearance. Instead, it seems that almost all words in the right column have to do with a downward movement. Even a *büke-bütü* 'cast net' moves down when it is

thrown into the water. The distinction between the two forms *bü* and *bütü* can be explained by looking at their meaning as presented in the dictionary by Albisetti & Venturelli (1962). In Bororo, the word *bü* means 'hair that grows on the skin of humans and animals' and the word *bütü* means '(a) fall, birth'. This logically explains the use of both forms. The form *boe-bütü* 'grass' would at first sight resemble more a hair-like object than a fall, but can however also be connected to 'birth': Albisetti & Venturelli (1962, p. 519) mention that this form comes from *bɔtu* for 'birth of vegetation'. On this same page, they give an explanation for *bübütü* 'rain', which is a combination of the Bororo words *bü* and *bütü*. The Bororo believe that rain is made by spirits that let it fall through their hair and beards, so *bübütü* literally means 'falling down the beard'. All in all, we could say that the forms *bü* and *bütü* have two separate functions and meanings, and are not allomorphs of one suffix.

Now looking at the Otuke suffixes *-vi* and *-vihi*: it seems clear that these are related to the Bororo *-bü* suffix, as in both languages they are used for words denoting hair. However, in Otuke, the meaning of *-vi/-vihi* seems to be expanded to hair-like objects, while in Bororo the meaning stays confined to hair. This can be seen in the Otuke words *čatara-vi* 'corn stalks' and *mocena-vi* 'grass'. Moreover, Otuke does seem to have two allomorphs of the same suffix, which was ruled out for Bororo. It is possible that in Otuke, *-vihi* was the original suffix that got shortened to *-vi* over time, but not (yet) in all cases.

In conclusion, the Otuke suffix *-vi/-vihi* seems to denote mostly hair, but also hair-like objects. It is likely related to the Bororo suffix *-bü* that also denotes hair, but is probably not related to *-bütü*, which denotes downward movements.

3.3.2.4 The suffix -to

De Créqui-Montfort & Rivet (1912, p. 323) propose the classifier suffix *-to* for articular points of the body. They give only two words to support their claim, which are given in (18).

(18) **Otuke**

i-kiarato	'my elbow'
i-viaroto	'my heel'

While this is very little evidence, there does seem to be a logical reasoning behind the claim. They mention *keara* 'arm' together with *i-kiarato* 'elbow', suggesting that the latter would be a derivation of the former. The suffix *-to* would then indicate it is the articular point of the arm. For *i-viaroto* 'heel', a similar logical reasoning is not directly possible, because the word for 'foot' is not present in

the Otuke vocabulary. However, two words related to 'foot' are present: *i-vire-eno* 'my toe' and *i-vire-egua* 'the sole of my foot'. Both words contain the stem *-vire-*, which is very similar to *-viaro-*. Moreover, when consulting the Bororo dictionary by Albisetti & Venturelli (1962), the word *bure* 'foot' is present, which seems to be related to Otuke *-vire-*. Searching in the Bororo dictionary, some words for articular points of the body are present containing *-do*. They seem to be derived from the word for the body part that they articulate, as can be seen in (19).

(19) **Bororo**

bureado	'heel'	*bure*	'foot'
pogodao	'knee'	*pogora*	'leg'

Albisetti & Venturelli (1962, p. 679) interpret the suffix *-dɔ* as a fused form of *-du* 'her(s)', and *-ɔ,* as the word *ɔ* 'point'. Moreover, they mention that the word *burea* means 'footprint'. In that way, *bureado* would mean 'point of the footprint', which is the heel. Because the Otuke word *i-viaroto* has a very similar structure and the same meaning, it is likely that *-to* means 'point (of)' in Otuke as well. Likewise, *i-kiaroto* 'my elbow' could be interpreted as 'the point of the arm'. As was discussed in section 3.2.3, Otuke /t/ corresponds to Bororo /d/ when it occurs after the second syllable. This further strengthens the relationship between Otuke *-to* and Bororo *-do*.

Camargos (2013, p. 112) also mentions the *-to* suffix in Otuke, but makes a flawed interpretation due to translations errors from French to Portuguese. She translates *i-kiarato* 'my elbow' as 'cauda', which is 'tail' and *i-viaroto* 'my heel' as 'garra', which is 'claw'. Based on these translations, she suggests that *-to* could indicate extremities of the body. Due to these translation errors, and the proof from Bororo presented above, this interpretation cannot be accepted.

3.3.2.5 The suffix -ru

According to De Créqui-Montfort & Rivet (1912, p. 323), the classifier suffix *-ru* is used on words for natural phenomena. They give four examples that can be seen in (20).

(20) **Otuke**

ouru	'water'
huaru	'sky'
reru	'fire'
vuauru	'wind'

Camargos (2013, p. 112) mentions that two other words in the Otuke vocabulary have the suffix as well: *čeru* 'language' and *ohuaru* 'armadillo, rabbit'. Looking further in the vocabulary, there are many more words ending in *-ru* that had not been presented by De Créqui-Montfort & Rivet or Camargos before. These are given in (21).

(21) **Otuke**

i-čeuru	'intestines'
kaharu	'red and yellow macaw (bird *sp.*)'
kananiru hare	*'*red-rumped cacique (bird *sp.*)'
simiuru-kuku	'screech owl'
subeoru	'honey'
aciyuru	'motacu (palm *sp.*)

There are also many words ending in *-huaru*, a suffix that will be dealt with in section 3.3.2.8. While the four words proposed by De Créqui-Montfort & Rivet make a nice grouping of natural phenomena, or even natural elements, the words presented in (21) cannot all be included in this group. Moreover, there are other natural phenomena in the Otuke vocabulary that lack the *-ru* suffix, like *moktuhu* 'earth', *vetororova* 'thunder' and *verkototaxa* 'rain'. It therefore seems unlikely that this is a suffix that indicates natural phenomena.

If we look up the four words presented in (20) in the Bororo dictionary by Albisetti &Venturelli (1962), all four Otuke words have quite a clear cognate. These are presented in (22).

(22) **Bororo**

pɔuru	'stream of warm water'	<	*pɔ*	'water'
baru	'sky, heat'			
riru	'fire production'	<	*ɛru*	'fire, heat'
bakuru	'wind'			

According to Albisetti & Venturelli (1962), three of the four words presented in (22) are derived from the word *ɛru* 'fire, heat'. *pɔuru*, *baru* and *riru* are made up of two components, of which the second component is the word *ɛru* 'fire, heat'. This can also be seen in the meanings of the three words, that all three reflect heat. According to Albisetti & Venturelli, the fourth example, *bakuru* 'wind', does not contain the word *ɛru*. It therefore seems that the Bororo suffix *-ru* occurs, in some cases, in words with a meaning concerning 'heat'. In Otuke, this is probably the same, at least for *ouru, huaru* and

reru. The other words ending in *-ru* do not have a meaning concerning 'heat', which makes it more likely that *-ru* is part of the stem in these cases.

3.3.2.6 The suffix -ri

De Créqui-Montfort & Rivet (1912, p. 323) propose a classifier suffix *-ri* that they notice on seven words with varying meanings. These words are given in (23).

(23) **Otuke**

tohori	'stone'	*tanari*	'palm grove'
batari	'mountain'	*takuri* (Kov.)	'corn'
huarĩri	'sand'	*rarĩ*	'leaf'
neheri	'metal'		

They admit that they have no clue what this suffix could be used for. Camargos (2013, p. 113) adds that she thinks the suffix is an integral part of the words, and is therefore not a suffix. Moreover, several other words that end in *-ri* are present in the Otuke vocabulary that have not been mentioned by De Créqui-Montfort & Rivet or Camargos. These are presented in (24).

(24) **Otuke**

etari	'boa'	*ari*	'moon'
kuričuri	'porcupine'	*neri*	'sun'
huatari	'giant armadillo'	*akihumari*	'white cotton'
hahari	'ostrich'	*surebori*	'wax'
enari	'woodpecker'		

The fact that such a group of words with no clear semantic or formal similarity ends in the same syllable gives no specific reason to think that *-ri* is a functional suffix. It seems more likely that /ri/ is a frequently occurring syllable in the Otuke language. Moreover, none of the words presented in (23) and (24) occur without the suffix in the Otuke vocabulary. If this was the case, it could have revealed a meaning or function of the suffix that derives a new word from an existing word, like what we saw in section 3.3.2.4 with the suffix *-to*. For the suffix *-ri*, that is, however, not the case.

3.3.2.7 The suffix -ro

De Créqui-Montfort & Rivet (1912, p. 324) propose *-ro* as a classifier suffix based on just one example: *kiaro-ro* 'shoulder'. They do not give any explanation of the possible meaning or function of this suffix. They only note that the word could have been derived from *keara* 'arm'. While one example provides very little evidence, this could again be a case of derivation. The shoulder is an articulation point of the arm, so possibly, *-ro* refers to articular points. However, there are no other words in the Otuke vocabulary that show a similar derivational structure to the suffix *-ro*. In (25), all words in the Otuke vocabulary ending in *-ro* are given. The dictionary by Albisetti & Venturelli (1962) includes a few Bororo words ending in *-ro,* which are given in the right column in (25).

(25)

Otuke		**Bororo**	
kiaroro	'shoulder'	*akɔrɔ*	'jurumpensém (fish *sp.*)'
čoro	'chicha'	*mɔkuro*	'bosom'
i-čaoro	'boy, young'	*bakúrɔ*	'hand fan'
i-šeno poro	'nostrils'	*okwáro*	'mist'
oro	'straw'	*ɔtɔbáro*	'arapápa (bird *sp.*)'
aharo	'fish'		
ohoro	'meadows'		

None of these words seem to have a similar meaning or function that could have been caused by a *-ro* suffix, so these words alone do not seem to bear evidence for a functional *-ro* suffix. Albisetti & Venturelli (1962, p. 906) do have an entry *-ro* in their dictionary indicating that it is a suffix, but no further explanation of its function is given. It is possible that it once was a functional suffix in both Bororo and Otuke, but that it has gotten out of use over time. On the other hand, it is also possible that /ro/ is just a commonly occurring syllable, just like with /ri/, as explained in section 3.3.2.6.

3.3.2.8 The suffix -huari, -huaru

De Créqui-Montfort & Rivet (1912, p. 324) mention that the suffixes *-huari* and *-huaru* are present in several Otuke words for animal species. They give four words containing this suffix, that are presented in (26).

(26)

Otuke	
enohuari	'rat, arachnid, opossum, amphisbaenian'
orohuari	'surubi (fish *sp.*)'

tuhuaru	‘elater (beetle *sp.*)’
ohuaru	‘tapiti (rabbit *sp.*), southern naked-tailed armadillo’

They note that in several Arawakan languages, similar suffixes are also present, such as *-huari*, *-huare*, and *-huaru*. The examples that they give are presented in (27) below. The languages they present are Saraveka, Mučoxeone and Baure, all Arawakan languages of Bolivia. The only language still extant is Baure, spoken in the village of Baures in the northeast of the Beni department. Mučoxeone was also spoken in the Beni department near the city of El Carmen, but is extinct with very little documentation (Loukotka, 1968, pp. 142–143). Both these languages were not spoken in the vicinity of the location where the Otuke lived. Saraveka was on the other hand spoken closer to the area where the Otuke lived, around the reduction of Santa Ana in the Chiquitos province (D’Orbigny, 1839, p. 266). See also map 1.

(27)

Saraveka		**Mučoxeone**	
tuhuari	‘elater (beetle *sp.*), cicada’	*takahuari*	‘rattle snake’
arihuari	‘crocodile’	*ohuaori*	‘otter’
ukaxihuare	‘dragonfly’		
kuzozohuare	‘stork, egret’	**Baure**	
kunahuaru	‘small turtle dove’	*huohuari*	‘otter’
sihihuare	‘owl’		

There is only one example in (27) that matches in form and meaning with one of the Otuke words in (26): Otuke *tuhuaru* ‘elater’ corresponds to Saraveka *tuhuari* ‘elater’. Because of the almost exact similarity, and because the languages are from different language families, it is likely that borrowing has taken place. According to De Créqui-Montfort & Rivet (1912, pp. 327-329), linguistic borrowing took place quite often between the Otuke and Saraveka. It is not unusual to borrow names of animals when these are introduced, but with a beetle species, this might not be very likely. This is possible proof of borrowing of only one out of the four words given by De Créqui-Montfort & Rivet. For the other three words, there is no proof of borrowing, so we have to look for other explanations as well. If we look for related words to the four Otuke words in the Bororo dictionary by Albisetti & Venturelli (1962), we find corresponding forms that seem to be cognates. These are given in (28).

(28) **Bororo**

ɛnɔkuri	‘field armadillo’
orari	‘shovel-nosed catfish’

togware	'fly *sp.*'
okwaru	'variety of six-banded armadillo'

Albisetti & Venturelli (1962, p. 566) mention that *-kuri* and *-ri* in the first two words of (28) mean 'large', which has to do with the characteristics of the animal. For example, in *ɛnɔkuri*, *ɛnɔ* means 'nose' and *kuri* means 'large', referring to the pointy nose of the armadillo. These Bororo examples have a similar form and meaning to the Otuke words. This makes it likely they are related, and makes it less likely that the Otuke words were borrowed from Saraveka. The Bororo example *togware* 'fly *sp.*', is similar to Otuke *tuhuaru* 'elater'. It is therefore also possible that Otuke *tuhuaru* was not borrowed from Saraveka *tuhuari*, but the other way around.

In conclusion, the *-huari* and *-huaru* endings of the Otuke and Arawakan words seem similar, but are not necessarily borrowed. Only for *tu-huaru* 'elater', there is clear Saraveka match. In the other Otuke words, it is possible that *-huari* means 'large', just like *-kuri* in Bororo.

3.3.2.9 The suffix -(h)ohe

According to De Créqui-Montfort & Rivet (1912, p. 324), *-(h)ohe* is a classifier suffix used for words referring to insects. They give two Otuke examples accompanied by three examples from the Arawakan languages Saraveka and Paikoneka in which a similar suffix is present. These are given in (29). When searching in the Otuke vocabulary, a third word with the suffix can be found that is included in (29).

(29)

Otuke		**Paikoneka**	
čečuviohe	'dragonfly'	*čomohe*	'bee'
čokihohe	'marehui (mosquito *sp.*)'	**Saraveka**	
etarehohe	'colubrid snake'	*išohohe*	'horsefly'
		kozozohe	'roundworm'

While there is similarity between the suffixes in the three languages, the fact remains that there are very little examples from any of these languages. It is possible that borrowing has occurred between Saraveka and Otuke, just like for the *-huari* and *-huaru* cases, but there are no concrete examples that match exactly in form and meaning between the languages.

When looking more closely at the Otuke data, there could be another possible explanation. De Créqui-Montfort & Rivet do not mention any pluralization strategy in Otuke, but this case could be a

hint. In Bororo, the plural suffix is *-doge*. In some cases, this suffix is shortened to *-ge* or *-e* (Nonato, 2008, pp. 51-52). The *-ohe* suffix that we see in Otuke could be related to this *-doge* suffix in Bororo. As was explained in section 3.2.3, Otuke /h/ corresponds to Bororo /g/ in several cases after the second syllable. If the suffix is attached to a stem, the Otuke /h/ and Bororo /g/ will always occur after the second syllable. The first /h/ in the *-(h)ohe* suffix is a bit harder to explain, because there are no examples of Otuke /h/ corresponding to Bororo /d/. However, as described by Nonato above, the /do/ part is sometimes dropped in Bororo. It is possible that in Otuke, the first part of the suffix was dropped, and sometimes realized with /h/.

If we consider the Otuke *-(h)ohe* and Bororo *-doge* suffixes to be related, the meaning might also be the same. The three Otuke words presented in (29) would then be plural formations. This is quite conceivable for insects, as they often occur in groups. It could even be a collective marker that is used to refer to groups of things, like insects. In Bororo, we can see the plural marker *-doge* being used on insects as well. Nonato (2008, p. 97) uses *mace-doge* 'mosquitos' in one of his examples. It is possible that the suffix as it occurs in Paikoneka and Saraveka has a similar plural or collective meaning, but it is almost impossible to say because of the little data that is present on these languages.

3.3.2.10 The suffix -poro

De Créqui-Montfort & Rivet (1913, p. 376) note that the suffix *-poro* indicates orifices in both Otuke and Bororo. In Otuke, there is just one example with this suffix: *i-šeno-poro* 'nostrils'. The suggestion of this use of the suffix is supported by the word for 'nose' in Otuke: *i-šeno*. To prove their proposition, De Créqui-Montfort & Rivet give six examples of the same suffix in Bororo. These are presented in (30).

(30) **Bororo**

i-keno-ya-poro	'nostril'
i-viya-ya-poro	'ear canal'
nogua-boro	'hole in the lower lip'
iruo-poro	'throat'
bai-poro, bai-bora	'door'

De Créqui-Montfort & Rivet do not mention where they retrieved these words. The dictionary by Albisetti & Venturelli (1962) gives slightly different forms of the above words. These are given in (31).

(31) **Bororo**

ɛnɔ poro	'nostril'
biadʒa poro	'ear canal'
ipare ɛnɔgwa porodɔdu	'perforation of the lower lip in children'
ruwo poro	'trachea'
baiporo	'door opening, window opening'

Moreover, Albisetti & Venturelli give the meaning of the word *poro* itself: 'hole, orifice'. This proves that the addition of *poro* to a word can indicate a hole or orifice in an object in Bororo, and therefore likely also in Otuke. However, *poro* should probably not be seen as a suffix. It should rather be seen to form a compound with the word it relates to. In fact, this is true for most of the 'classifier suffixes' proposed by De Créqui-Montfort & Rivet (1912). This will be further discussed in the following section 3.3.2.11. Even though there is only one example of the use of *poro* in Otuke, it is likely that its meaning and function is the same as in Bororo, namely to indicate orifices.

3.3.2.11 Evaluation of the classifier system

In the previous section, the classifier suffixes that were proposed by De Créqui-Montfort & Rivet (1912) were all discussed and reviewed. Several of the suffixes could be considered more likely to be part of the stem of the words and not a separate morpheme. This was the case for *-ka*, *-ri*, and *-ro*. These would therefore not be part of a possible classifier system. On the other hand, there were several suffixes that could be linked to a Bororo morpheme with a similar form and meaning. This was the case for *-ra*, *-vi/-vihi*, *-to*, *-ru*, and *-poro*. Every time one of these Otuke suffixes could be linked to Bororo, it was not a suffix in Bororo. Instead, it was a noun that was attached to another stem, forming what is likely to be a compound construction. Examples of this occurrence are given in (32). In Otuke, the constructions were very similar. This leads to the belief that in Otuke, the five suffixes that could be linked to Bororo are instead also nouns in a compound construction. This is illustrated in (33). For every Bororo example in (32), a corresponding Otuke example is given in (33). The analysis of the last two of the proposed classifier suffixes, *-huari/-huaru* and *-(h)ohe*, did not yield a straightforward conclusion. Both could tentatively be linked to Bororo examples, but also to some words from Arawakan languages. Therefore, no examples are given in which these two are analysed as compounds.

(32) **Bororo**

ɛnɔ-ra

nose-bone

‘bone of the nose’

itɔra-bu

neck-hair

‘beard’

burea-dɔ

footprint-point

‘heel’

ɛnɔ-poro

nose-hole

‘nostril’

(33) **Otuke**

i-rena-ra

1SG-cheek(?)-bone

‘my cheekbone’

tera-vihi

neck(?)-hair

‘beard’

i-viaro-to

footprint(?)-point

‘heel’

i-šeno-poro

1SG-nose-hole

‘my nostril’

In conclusion, it is not likely that Otuke had a suffix-based classifier system. While it is not strange that De Créqui-Montfort & Rivet first identified the elements in question as suffixes because of their short form, there is no evidence that confirms this theory. Instead, there is evidence that several of the ‘suffixes’ are compounded nouns. To follow up on this theme, the next section will discuss the occurrence of compounds in Otuke.

3.3.3 Compounds

De Créqui-Montfort & Rivet (1912, pp. 324-325) mention that composition is present in several Otuke words. They give four examples, that are presented in (34).

(34) **Otuke**

a. *kiara-čeuru*

arm-intestine

‘vein’

c. *huse-hemesera*

hocco-??

‘jabiru (bird *sp*.)’

b.	*aktečo-kikia*	d.	*čoketone-emesera*
	deer-horn		swallow-??
	‘antler’		‘turkey vulture’

Based on these examples, they note that compounds in Otuke are formed through juxtaposition, in which the modifier precedes the head. Examples (34a) and (34b) indeed show this formation. Examples (34c) and (34d) are not fully understood, as the meaning of the word *(h)emesera* is not known. It would be logical if this word also referred to a bird, so that the head of the compound would follow the modifier. It is also possible that *(h)emesera* refers to a quality of the bird, such as color or size. However, that way, the order of head and modifier would be different from what we saw in (34a) and (34b). It is unlikely for a language to express compounds with two different orders of modifier and head, which makes it improbable that *(h)emesera* refers to a quality.

In the dictionary by Albisetti & Venturelli (1962), no similar words for the birds in (34c) and (34d) can be found. The Bororo forms that do exist for these birds are given in (35).

(35) **Bororo**

kuǰe	‘hocco’	*bače kɔguio*	‘tuiuiu bird (jabiru)’
piroǰe	‘swallow’	*čiwaǰe*	‘turkey vulture’

The only word that could be related to an Otuke word is *kuǰe* ‘hocco’ corresponding to Otuke *huse* in (34b). These words do not tell us anything about *(h)emesera*. However, looking further in the dictionary, there is a Bororo word that resembles it: *imeǰera* ‘chief’. It is possible that it has a similar meaning in Otuke, which would mean that for example ‘jabiru’ would be ‘hocco-chief’. There are no Bororo words for birds in which *imedʒera* is used, so it is hard to provide concrete proof for this analogy. However, this construction would maintain the order modifier–head that we saw in (34a) and (34b), making it more likely to be correct.

Now considering the compounds proposed in (32) and (33) in section 3.3.2.11: every one of these shows the order modifier–head. This further strengthens the proposal that these are compounds, and not combinations of noun and classifier, as proposed by De Créqui-Montfort & Rivet (1912). It can therefore be said that composition is a common morphological process in both Otuke and Bororo.

3.3.4 Diminutive

De Créqui-Montfort & Rivet (1913, p. 376) very briefly mention that the Bororo diminutive suffix *-rogo* is present in Otuke as well as *-roko*. There is just one example of *-roko* in the Otuke vocabulary: *i-čai-roko* 'male child'. De Créqui-Montfort & Rivet do not mention where they retrieved their information on the Bororo suffix from, but Nonato (2008, p. 54) indeed mentions the Bororo diminutive suffix *-rogu*. As was discussed in section 3.2.3, the phonological correspondence of Otuke /k/ and Bororo /g/ is a common one after the second syllable. This, and their similar meanings, proves that the Otuke suffix *-roko* and the Bororo suffix *-rogu* are likely to be related. The Bororo variant is regularly used on nouns, which can be seen in (36). This would suggest that in the Otuke example presented in (37), *čai* would have to mean 'boy'.

(36) **Bororo (Nonato 2008, p. 54)**

kiogo-rogu

bird-DIM

'little bird'

(37) **Otuke**

i-čai-roko

1SG-boy(?)-DIM

'male child (little boy)'

The word for 'my boy' in Otuke is, however, *i-čaoro*. Possibly, the formation of its diminutive caused the dropping of duplicate syllables: *i-čaoro-roko* would have simplified to *i-čao-roko* and along the way the stem might have slightly changed from *-čao-* to *-čai-*. In any way, the correspondence in form and meaning of the two suffixes prove that *-roko* was likely a diminutive in Otuke.

3.3.5 Possessive pronominal prefixes

After studying the Otuke vocabulary, De Créqui-Montfort & Rivet (1912, p. 322) notice that many of the words start with *i-*, such as *i-kitao* 'head', *i-šeno* 'nose' and *i-reki* 'nail'. They mention that all these words are nouns that can be possessed and could receive a possessive prefix, such as nouns for body parts and kinship relations. As they have seen similar prefixes of this kind in many other South American languages, they assume it is a possessive prefix in these cases as well. They do not explicitly mention, however, what person this possessive suffix would indicate.

In their (1913) article (p. 375), De Créqui-Montfort & Rivet mention that their aforementioned claim of *i-* being a possessive prefix is affirmed by Bororo having the same prefix that is used for the first person on many body parts. They give Bororo examples like *i-wiya* 'my ear', *i-keno* 'my nose' and *i-taura* 'my head'.

Moreover, they mention that in Bororo, the second person singular is represented by the prefix *te-*. When searching for a similar prefix in Otuke, they only find two examples. The word *teravihi* 'beard' could, analogous to Bororo, be interpreted as *te-ravihi* 'your beard'. This is not unexpected, according to De Créqui-Montfort & Rivet, as the Otuke did not have beards, and D'Orbigny must have pointed at his own beard while eliciting. The other word they found was *tiaxarõ* 'molars', which could be interpreted as *ti-axarõ* 'your molars'. A molar is something that is, up to a certain extent, inalienable, and would likely get a personal prefix. Why this word would be used with a second person singular instead of first person singular is, however, unclear. Moreover, the vowel in the prefix differs from that used in the Bororo prefixes.

Camargos (2013, pp. 190-192) adds to the claim made by De Créqui-Montfort & Rivet by not only acknowledging the first person singular *i-* prefix, but also by adding a second person plural *te-* prefix. The existence of a *te-* prefix is claimed by Camargos based on analogous prefixes in Bororo and Umutina. In these two languages, the personal prefix for second person plural is *ta-*. She gives examples like Bororo *ta-viadʒa* 'your ears' and Umutina *ta-maturu kewa* 'you do not speak'. The latter is, however, a person marker on a verb, not on a noun. It is possible that personal prefixes are used similarly on verbs and nouns, but it would have been better to compare only nouns to each other in this case. Camargos then gives three examples of Otuke words that start with *te-*, presented in (38).

(38)

Otuke	**Bororo**	**(Camargos, 2013, p. 191)**
te-wiya*	ta-viadʒa	'your (PL) ears'
te-g-eno*	ta-g-eno	'your (PL) noses'
te-taura*	ta-g-aura	'your (PL) heads'

The Otuke examples in (38) are not referenced and do not occur in the vocabulary by De Créqui-Montfort & Rivet (1912). As it turns out, these are Bororo and not Otuke examples given by De Créqui-Montfort & Rivet (1913, p. 375). She is essentially comparing an older and a newer set of Bororo data to each other. This means that the claim made by Camargos cannot be supported by the words in (38). It can only be supported by the abovementioned example *teravihi* 'beard', and possibly by *tiaxarõ* 'molars', which makes the claim much less convincing.

As for *teravihi*, Nonato (2008, p. 225) gives the Bororo form *itorabü* for 'beard'. Moreover, Albisetti & Venturelli (1962, p. 671) give *itɔru* for 'neck' and *bu* for 'hair, fur'. As was discussed in section 3.3.2.3, the Otuke form *-vihi* and the Bororo form *-bu* are likely related and both denote 'hair'. It is therefore

likely that the Otuke form *tera-vihi* is a cognate of Bororo *itɔru-bu*. With that, the claim of the prefix *te-* in Bororo for second person plural does not have much ground to stand on any more.

In conclusion, not all the personal prefixes proposed by De Créqui-Montfort & Rivet (1912, 1913) can be accepted. The prefix *i-* can be accepted as the personal prefix for first person singular, due to their logical occurrence on body parts and kinship terms and to the existence of the same prefix in Bororo. The prefix *te-* on the other hand, cannot be accepted, as /te/ in *tera-vihi* 'beard' is part of the stem, and *tiaxarõ* is unlikely to have been elicited with a second person plural prefix, and the form of the prefix differs from *te-*.

3.4 Verbal morphological claims

De Créqui-Montfort & Rivet (1912) did not only propose possible nominal morphology, they also proposed some verbal morphology. In addition, Camargos (2013) added some claims about verbal morphology in Otuke based on analogous morphological processes in Bororo and Umutina. In the following paragraphs, both the claims by De Créqui-Montfort & Rivet and by Camargos will be discussed and reviewed. First, verbal pronominal prefixes will be discussed, then verbal suffixes.

3.4.1 Pronominal prefixes

In section 3.3.5, pronominal prefixes with a possessive function in Otuke were discussed. Apart from these possessive prefixes, there might be pronominal prefixes present that are used on verbs. De Créqui-Montfort & Rivet (1912, 1913) do not mention verbal prefixes in particular, but Camargos (2013, pp. 189-192) does. She identifies two series of pronouns in the Bororoan languages: an independent series and a dependent series. The independent series consists of free pronouns, and the dependent series consists of prefixes. For Otuke, she suggests the dependent pronouns *i-* for 1SG, *a-* for 2SG and *te-* for 2PL based on a few Otuke examples and comparisons to Bororo and Umutina. As discussed in section 3.3.5, the suggestion of a putative Otuke prefix *te-* is based on a mix-up of data, and is therefore not supported. For the prefix *i-*, Camargos only presents possessive prefixes on Otuke nouns, which does not prove it to be a verbal person marker as well. Then finally, the prefix *a-* does seem to occur on verbs in Otuke. Camargos (2013, p. 191) presents three Otuke verbs and Bororo and Umutina counterparts that, according to her, have a 2SG prefix *a-*. These are presented in (39).

(39)

Otuke[1]		**Bororo**		**Umutina**	
a-ko	‘drink!’	*a-kudo*	‘drink (you)’	*a-kuta*	‘you drink’
a-nerutà	‘walk (you)’	*a-meru-re*	‘you walked’	*a-menu*	‘you walk’
a-nutake	‘sleep (you)’	*a-nudu-re*	‘you slept’	*a-notu*	‘you sleep’

These examples seem a fair suggestion that in Otuke, the second person singular is indicated with *a-*. However, it is important to note that the translations of the three Otuke verbs as given by De Créqui-Montfort & Rivet (1912) do not all clearly indicate a second person. The third example, *a-nutake*, is translated by De Créqui-Montfort & Rivet (1912, p. 331) as ‘dormir’, which is the French infinitive. Also, the first example, *a-ko*, is not an Otuke word, but Kovareka. Moreover, there are more verbs in the Otuke vocabulary that start with *a-,* and there are seemingly also imperatives that do not start with *a-*. A full list of the verbs encountered in the Otuke vocabulary is given in table 6, but it should be noted that it is possible there are more verbs in the vocabulary. The words in table 6 were all translated as verbs by De Créqui-Montfort & Rivet. When translating the French translations into English, an exclamation mark was added for all imperative verbs and infinitives are indicated with ‘to V’.

Table 6: All verbs in the Otuke vocabulary by De Créqui-Montfort & Rivet (1912), sorted by initial vowel.

Otuke	
aetetake	‘to kill’
ahoateta	‘to cry’
aktopẽhe	‘wake up!’
amakata ača	‘stay there!’
amama-niake	‘how are you?’
anerutà	‘keep walking!
anutake	‘to sleep’
arereta	‘to dance’
aretake	‘look!’
atė	‘come!’

Otuke	
imaxahe	‘I am well’
ivia sike	‘I want’
iyura	‘give me!’
oaketa	‘to eat’
očututa	‘to laugh’
ohuarututa	‘to sing’
oraebie skate	‘I do not want’
osehemate	‘take!’
osemote	‘bring!’
eča ore aačo	‘this is mine’

[1] Camargos translates these Otuke forms as ‘beba!’, ‘caminhe você’, and ‘durma você’. The latter two could be ‘soft’ imperatives. The original translations by De Créqui-Montfort & Rivet (1912), however, are ‘bois!’, ‘chemine!’ and ‘dormir’, which are two imperatives and an infinitive.

What strikes the eye in the list of verbs in table 6, is that all verbs start with *i-, a-* or *o-*. All examples starting with *a-* are given in the left column and those with *i-* and *o-* are given in the right column. Most of the examples starting with *i-* are translated with a first person singular. Most of the words starting with *a-* are either translated as an imperative or with a second person singular. The examples starting with *o-* have a variety of translations. Based on these facts, it is possible that these prefixes represent first, second and third person singular respectively. This is in line with the Bororo personal prefixes as presented by Camargos (2013, p. 190) and Nonato (2008, p. 39): *i-* for 1SG, *a-* for 2SG and *u-* or Ø- for 3SG.

To find more evidence for this proposal, the Bororo grammar by Nonato (2008) was searched for the verbs presented above. He provides a large amount of glossed phrases, which is beneficial for studying verbal morphology. A few cases could be found in which the Bororo verb matched the Otuke verb in both form and meaning. This made it easier to identify the verbal stem in the Otuke word and therefore also to indicate morpheme boundaries in the Otuke forms. The examples are presented in (40), in which the verbal stems that are likely or possibly related are in bold.

(40)

	Otuke	**Bororo**
a.	*i-**maxa**-he*	*i-**pemega**-gödü-nu-re*
	1SG-be.good-?	1SG-be.good-COM-IT-ASS
	‘I am well.’	‘I am starting to get good.’ (Nonato, 2008, p. 270)
b.	*a-**maka**-ta ača*	*… aki a-**mugü** mode*
	2SG-stay-? here	2SG 2SG-stay FUT
	‘Stay here!’	‘You (will) stay here.’ (Nonato, 2008, p. 65)
c.	*a-**reta**-ke*	*a-**rudu**-re boe e-wogu-ji?*
	2SG-see-?	2SG-see-ASS Bororo 3PL-fish-THEME
	‘Look!’	‘Do you see the Bororo fish?’ (Nonato, 2008, p. 93)
d.	*a-**nuta**-ke*	*aki a-**nudu**-re*
	2SG-sleep-?	2SG 2SG-sleep-ASS
	‘You sleep’[2]	‘You sleep.’ (Nonato, 2008, p. 252)

[2] De Créqui-Montfort & Rivet (1912) translate *anutake* as ‘dormir’. Based on the new analysis of *a-* as 2SG, it could be translated as ‘You sleep’ or ‘Sleep!’.

e.	*a-**tė***	*arigao-doge*	*e-**tu**-re*	
	2SG-come	dog-PL	3SG-go-ASS	
	‘Come!’	‘The dogs went away.’		(Nonato, 2008, p. 290)
f.	*o-**huarutu**-ta*	*u-**ragodu***[3]		
	3SG-sing-?	3SG-sing		
	‘He/she/it sings’[4]	‘He/she/it sings.’		(Nonato, 2008, p. 295)

The examples in (40) show a new interpretation of the Otuke verbs based on their Bororo counterparts. They show that Otuke verbs are likely, just like Bororo verbs, built according to a specific structure: a pronominal prefix followed by the verbal stem, followed by suffixes indicating tense, aspect, mood or other verbal categories. By separating the verbal stem in the Otuke examples based on their Bororo counterpart, the Otuke pronominal prefixes take shape. The *i-* and *a-* prefixes are the same as in Bororo, and the *o-* prefix can be considered phonologically close to Bororo *u-*. It is therefore a logical assumption that these three Otuke prefixes correspond to the Bororo singular personal prefixes.

The list of Otuke verbs as presented above has some examples that are a bit harder to explain. For example, *i-yura* ‘give me’ would have a 2SG subject and a 1SG object based on the translation. Yet, the 1SG is marked on the verb. This could be explained by a similar process in Bororo: in intransitive clauses, the subject is marked on the main verb, while in transitive clauses, the object is marked on the main verb (Crowell, 1979, pp. 21-22; Nonato 2008, pp. 71-72). This is basically an ergative alignment system, as shown in the examples in (41).

(41)	**Bororo (intransitive)**			**Bororo (transitive)**		
a.	*a-tu-re*	*toro*	b.	*e-re*	*a-wiie*	
	2SG-go-ASS	there		3PL-ASS	2SG-advise	
	‘You go there.’			‘They advise you.’		(Crowell, 1979, p. 23)

Bororo intransitive clauses are formed by adding a personal prefix indicating the subject and TAM suffixes directly to the verb, as shown in (41a). Bororo transitive clauses are formed with a personal prefix indicating the subject directly attached to the TAM suffixes, in turn followed by the verb with a

[3] Albisetti & Venturelli (1962, p. 892) have *radɔdu* ‘to sing’ which resembles the Otuke form even more, but they do not have an inflected form.

[4] De Créqui-Montfort & Rivet (1912) translate *ohuarututa* as ‘chanter’. Based on the new analysis of *o-* as 3SG, it could be translated as ‘He/she/it sings’.

personal prefix indicating the object, as shown in (41b). This means that in transitive clauses, the object prefix is directly attached to the main verb (Crowell, 1979, pp. 21-22).

In Bororo imperatives the subject can be omitted when no negation marker is present, which leaves only the combination of object-verb (Crowell, 1979, p. 64). An example of a Bororo imperative verb with a first person object prefix is given together with Otuke *i-yura* 'give me' in (42). These examples both show that the object of the imperative is marked on the verb. It should be noted that with only one Otuke example of a possible object-marked imperative, it is definitely not a definite explanation, but it does give us a clue of how Otuke verb morphology could have worked.

(42)	**Otuke**	**Bororo**	
	i-yura	*i-reru-dë*	
	1SG-give	1SG-dance-CAUS	
	'Give me!'	'Make me dance!'	(Crowell, 1979, p. 68)

Other forms on the Otuke verb list that are difficult to explain are *ivia sike* 'I want' and *oraebie skate* 'I do not want'. Both these examples consist of two parts, which makes it more difficult to understand them. They are both translated with a first person singular subject, but only the former seems to have the 1SG prefix. Possibly, *oraebie skate* 'I do not want' is expressed as a construction with a 3SG prefix, or the translation is not entirely accurate. Unfortunately, there is not enough data to fully understand these two phrases.

3.4.2 Verbal suffixes

Apart from the verbal prefixes just discussed, it seems that Otuke also has some recurring verbal suffixes. De Créqui-Montfort & Rivet (1912, pp. 325-326) already suggested the suffixes *-ta* and *-take*. They mention that these suffixes probably express temporal differences. Camargos (2013, p. 115), however, notes that it is not possible to know if these suffixes are used to express tense, as they are decontextualized and do not have a translation that reflects any temporal distinction. Indeed, without proper context, it is too difficult to define the meaning of these suffixes. Yet, if we study verbal suffixes in Bororo and look for similarities between the two languages, it might be possible to say something about the meaning of the suffixes in Otuke. The list of verbs that was presented in table 6 is presented again in table 7, but now sorted by verbal ending.

Table 7: All verbs in the Otuke vocabulary by De Créqui-Montfort & Rivet (1912), sorted by verbal ending.

Otuke	
ahoateta	'to cry'
amakata ača	'stay there!'
anerutà	'keep walking!
arereta	'to dance'
oaketa	'to eat'
očututa	'to laugh'
ohuarututa	'to sing'
aetetake	'to kill'
anutake	'to sleep'
aretake	'look!'
amama-niake	'how are you?'

Otuke	
ivia sike	'I want'
aktopẽhe	'wake up!'
imaxahe	'I am well'
oraebie skate	'I do not want'
osehemate	'take!'
osemote	'bring!'
ečа ore aačo	'this is mine'
atė	'come!'
iyura	'give me!'

The recurring suffixes in the list of Otuke verbs are *-ta*, *-ke*, *-he* and *-te*. De Créqui-Montfort & Rivet (1912) mention *-take* as a suffix, but examples (40c) and (40d) show that *-ta-* in these words is more likely to be part of the stem due to their correspondence with the Bororo forms. Bororo has a set of TAM and negation markers that can occur on the verb (Nonato, 2008, pp. 111-117). Moreover, there are some derivational suffixes that occur on verbs as well (Nonato, 2008, pp. 69-71), and some clitics that are considered 'light verbs' by Nonato (2008, pp. 118-127). In (42), an overview of these suffixes and clitics and their function is given.

(42) **Bororo**

-re	assertive	*-dü*	detransitivizer
-ie	reportative	*-gödü*	inchoative/comitative
-wo	desiderative	*-rai*	superlative
-i	infinitive	*=dö*	causative
-modü	future	*=nu*	progressive
-ka	negative	*=kigodü*	habitual

In the remainder of this section, all four possible Otuke verbal suffixes will be discussed and compared to the Bororo suffixes in (42). In addition, some other connections between the Otuke verbs in table 7 and the Bororo verbal suffixes in (42) are made.

The most frequent suffix in Otuke is *-ta*, which is mostly used on verbs that are translated as an infinitive. However, we have seen that these translations might not be entirely accurate due to the probability that verbs starting with *a-* refer to the second person singular. Because *-ta* is the most frequent suffix in the list, it could possibly be connected to the most frequent Bororo verbal suffix: the assertive *-re.* These suffixes, however, do not have a close phonological resemblance, which does not support their relation.

The Otuke suffix *-ke* also occurs several times, but at first sight there does not seem to be a Bororo suffix that can be associated with it. Phonologically, the Bororo negation suffix *-ka* is similar, but none of the Otuke forms with *-ke* are negative. A possibility would be that Otuke *-ke* corresponds to Bororo *-re*, because of the similar use in examples (40c) and (40d). It is, however, difficult to confirm if the Otuke suffix *-ke* has an assertive function, because there are no examples of these verbs without the suffix. Moreover, an assertive is not explicitly expressed in English (or French) translations, making it difficult to recognize it.

The Otuke suffix *-he* could be a variant of Otuke *-ke* because of their phonological similarity. Other than that, there are no further similarities between Otuke *-he* and any Bororo verbal suffix.

The Otuke suffix *-te* shows phonological similarity to the Bororo clitic *=dö*. Nonato (2008, p. 33) describes the vowel <ö> as mid vowel that can be realized as [ɤ], [ʌ], [ɘ] and [ɛ], of which the latter two are pronounced word-finally. This means that Bororo *-dö* can be pronounced [dɘ] or [dɛ] when it occurs word-finally. Also, Bororo /d/ corresponds to Otuke /t/ when it occurs after the second syllable, as was explained in section 3.2.3. This suggests that Otuke *-te* could be the counterpart of Bororo *=dö*. This Bororo clitic has a causative function, as can be seen in example (41). The translations of the Otuke verbs with *-te* do not express a causative meaning, but it is possible that these were not fully understood when D'Orbigny did his elicitation. Unfortunately, there do not seem to be Bororo verbs in Albisetti & Venturelli (1962) or Nonato (2008) with the same meaning that are similar in form to the Otuke verbs. This makes it difficult to unravel the exact morphological structure of the Otuke verbs ending in *-te*, and with that the true function of the suffix *-te*.

The short Otuke phrase *ečа ore aačo* 'this is mine' contains the part /re/, which could be related to the Bororo assertive *-re*. Based on the translation it could be a copula construction. If we compare this construction to copula constructions in Bororo, we find that no verb is used there. In Bororo,

these constructions are formed by the addition of TAM markers to the noun of which the existence is being predicated. Moreover, possession can be expressed with a pronominal prefix on this same noun (Nonato, 2008, p. 152). In (43), a Bororo example that is similar to Otuke *ečа ore aačo* is presented, with a suggestion how the Otuke example can be interpreted based on that comparison.

(43)

Otuke		**Bororo**		
e-čao-re	*aačo*	*i-iodo-re*	*awü*	
1SG-?-ASS	this	1SG-stick-ASS	this	
'This is mine.'		'This is my stick.'		(Nonato, 2008, p. 154)

By fusing the first two elements of the Otuke example, we can see that in both examples the suffix *-re* is used in a similar manner. The meaning of the Otuke element *-čao-* is not known, but it could be related to the Otuke word *i-čaoro* 'my boy' that we also saw in section 3.3.4. It is possible that D'Orbigny did not get the translation right during his elicitation, and that the actual translation would be 'This boy is mine'. Based on this correspondence, it is possible that an Otuke suffix *-re* existed with the same assertive meaning as in Bororo.

Another Otuke example that seems to have a morpheme resembling a Bororo verbal suffix is *oraebie skate* 'I do not want'. The /ka/ part of this example could be related to the Bororo negative suffix *-ka*. This is the only occurrence of a negative in Otuke, but the resemblance with Bororo *-ka* is striking enough to envision a connection.

3.5 Summary

This chapter has provided an overview of the phonological and morphological features that can be extracted from the Otuke vocabulary published by De Créqui-Montfort & Rivet (1912). Many of these phonological and morphological features were already proposed by De Créqui-Montfort & Rivet (1912, 1913) and some remarks were added by Camargos (2013). The goal of this chapter was to review the claims on phonological and morphological features that have been made, and, where possible, to add to them. This goal was achieved by comparing the Otuke examples that De Créqui-Montfort & Rivet gave as support for their claims to cognates in its sister language Bororo. The claims made by De Créqui-Montfort & Rivet could sometimes be supported by relating the Otuke examples to Bororo cognates, but in other cases there was no evidence or even contradicting evidence to the claims.

For several phonological claims, supporting evidence was found. Some new phonological correspondences between Otuke and Bororo were found as well. This produced an overview of all phonological correspondences between Otuke and Bororo that was presented in section 3.2.3. This overview could be of value for future reconstructions of Proto-Bororoan.

For the morphological claims, supporting evidence could not always be found. Some of the claims could be supported by comparing the Otuke examples to Bororo cognates, but other claims could not. For example, the Otuke element *-ra* on several body part terms could be confirmed to mean 'bone' by comparing it to Bororo. Also, the Otuke element *-roko* could be confirmed to be a diminutive by the occurrence of a similar diminutive suffix *-rogu* in Bororo. On the other hand, the Otuke element *-ri* could not be confirmed to be a meaningful suffix, and was considered more likely to have been part of the stem of the words it occurred in. Moreover, the Otuke verbal suffixes could not confidently be linked to Bororo verbal suffixes, leaving the existence and function of these Otuke suffixes uncertain.

In some cases, contradicting evidence from Bororo provided another explanation for morphological processes in Otuke as described by De Créqui-Montfort & Rivet. For example, the existence of a classifier system with suffixes in Otuke could be disproven by the existence of the same 'suffixes' existing in isolation in Bororo. They could therefore be considered part of compounds, which turned out to be a commonly occurring phenomenon in Otuke. In conclusion, the close genetic relationship between Otuke and Bororo has shown to benefit the unravelling of Otuke phonology and morphology. It leaves the way open to a similar comparison between Otuke and Umutina, which could uncover even more of the linguistic features of Otuke.

CHAPTER 4:

BORORoAN AND MACRO-JÊ

In the previous chapter, we have seen evidence that strengthens the relationship between Otuke and Bororo even further and increases our knowledge of Otuke phonology and morphology. On a higher level, several linguists believe that the Bororoan language family is part of the Macro-Jê stock. However, there are also scholars that do not support this link. In this thesis, works of authors from both sides of the debate have been cited. This chapter therefore shines a light on the debate, and evaluates recent claims made by two authors from opposed sides of the debate.

4.1 The Macro-Jê stock

In the literature, the Macro-Jê stock is seen as an overarching group of language families in Brazil of which the genetic relationship is debated. The consensus is that the Jê family is the core of the stock. The debate concerns the inclusion of 14 other language families in the stock (table 8). Several of these families have only one extant member, or no extant members at all (Ribeiro, 2006, p. 422).

Table 8: All language families that have once been proposed to be part of the Macro-Jê stock (adapted from Ribeiro, 2006, p. 422)

Jê	
Kamakã	Karaja
Maxakali	Kariri
Krenak (Borum)	Jabuti
Puri	Yatê
Ofaye	Guato
Rikbaktsa	Chiquitano (Besɨro)
Bororo	Oti

A classification of families within the Macro-Jê stock has been proposed by several linguists like Rodrigues (1986), Greenberg (1987), and Kaufman (1994). All have their own opinion and evidence about the in- or exclusion of the fourteen debated families (Ribeiro, 2006, p. 422).

On an even higher level, some linguists have proposed a genetic relationship between the Tupian family, the Cariban family, and the Macro-Jê stock. Due to the uncertainty surrounding the internal affiliations of Macro-Jê, it is not feasible to make any confident assumptions about the relationship between these three linguistic groups (Ribeiro, 2006, p. 423).

4.2 Jolkesky (2016)

The dissertation by Jolkesky (2016) focuses on the origins and classification of the languages of South America, including the Macro-Jê stock. Based on the concept of archaeo-ecolinguistics, Jolkesky aims at producing a reconstruction of the relationships between the languages of South America, both from a genetic and a contact perspective. This concept combines the disciplines of linguistics, archaeology, anthropology, ethnohistory and genetics in order to get the broadest and least biased understanding of the origins of South American languages (Jolkesky, 2016, pp. 39–40). Jolkesky's approach includes lexical comparisons based on a corpus of 465 lexical items that were filled in per language, as far as these were present. When a significant amount of lexical parallels existed between languages, Jolkesky proceeded to use additional interdisciplinary data to further investigate their relationship (Jolkesky, 2016, pp. 41–43). In doing so, his goal was not so much to definitively prove that languages are genetically related, but to show that languages had been part of the same ecolinguistic environment in the past. He states that his goal is not to produce full reconstructions of proto-languages, but only to use reconstructions as evidence for his claims (Jolkesky, 2016, pp. 255–256).

Considering the Macro-Jê stock, Jolkesky distinguishes several levels of possible relatedness. These are represented in figure 2. First, he considers the languages of the Jê family as most closely related. Then, he includes Besɨro (a.k.a. Chiquitano), Jeoromitxi (a Jabutian language) and Karaja in a Nuclear Macro-Jê family. He considers these languages genetically related based on recent studies by Adelaar (2008), Ribeiro & Van der Voort (2010) and Ribeiro (2012), and on his own comparison of cognates in these languages (Jolkesky, 2016, pp. 257–264). Next, he mentions a possible genetic relationship between the nuclear Macro-Jê family and Bororoan, Rikbaktsa, Kariri and Ofaye, by presenting lists of shared cognates between members of nuclear Macro-Jê and all four of these families. He notes that

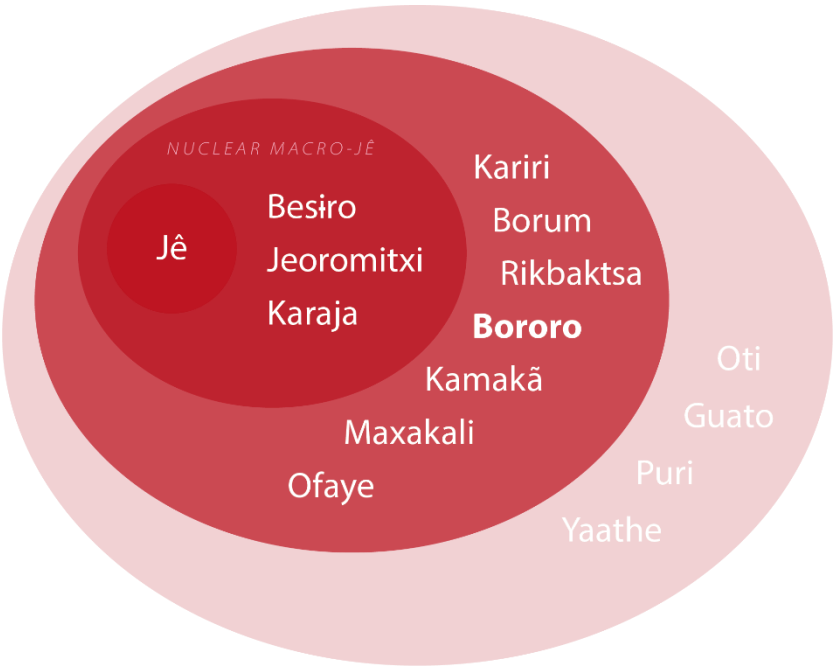


Figure 2: Representation of the internal classification of the Macro-Jê stock by Jolkesky (2016)

the amount of plausible cognates is not as large as for the nuclear Macro-Jê languages, and that Bororoan, Rikbaktsa, Kariri and Ofaye would have undergone strong diversification from each other and from Proto-Nuclear-Macro-Jê through contact with other groups (Jolkesky, 2016, pp. 264–274). Then, he presents similar lists of cognates with members of Nuclear Macro-Jê for the Borum (a.k.a. Krenak), Maxakali and Kamakã families. These three families often only present cognates with just one of the nuclear Macro-Jê languages, making the claim of their genetic relationship with this family less solid. Jolkesky does note that this could still be evidence for Borum, Maxakali and Kamakã to have a Macro-Jê origin, albeit with a large amount of admixture from other languages, both of Nuclear Macro-Jê origin and of non-Macro-Jê origin (Jolkesky, 2016, pp. 274–284). Finally, Jolkesky notes that there has been some previous evidence for a genetic relationship between Macro-Jê and the Guato, Puri, Yaathe (or Yatê) and Oti families, but also mentions that this evidence is extremely weak (Jolkesky, 2016, p. 259). He does not further mention these families as part of Macro-Jê.

Regarding the genetic relationships of Bororoan, Jolkesky presents one table of 33 Proto-Bororoan words with cognates in Proto-Jê, Proto-Jeoromitxi, Besiro and Karaja. In most cases, cognates are present in only two or three of these languages, and in some cases only in one (Jolkesky, 2016, pp. 265–266). Aside from this table, Jolkesky does not give an in-depth analysis of the presented cognates and does not specify how they are evidence for the inclusion of Bororoan in the Macro-Jê

stock. Jolkesky does present two tables with lexical parallels between Bororo and several Macro-Jê languages that he considers the result of contact relationships (Jolkesky, 2016, pp. 269–270). He does not specify how he made the distinction between the cognates and lexical parallels, but it might be that he considered words with a close resemblance in form lexical parallels, and not cognates.

4.3 Nikulin (2020b)

Nikulin (2020b) has a different view on the inclusion of Bororoan and several other families into the Macro-Jê stock. He believes that the Bororoan, Yaathe, Kariri, Puri, Guato and Oti language families should not be considered part of Macro-Jê. As the main goal of Nikulin's dissertation is creating a reconstruction of Proto-Macro-Jê, he notes that it is important not to include language families in the Macro-Jê stock that might not be related, or not related on a similar level as the core languages of the stock (Nikulin, 2020b, p. 54). Nikulin's goal differs from that of Jolkesky, who is interested in both genetic and contact relations of the Macro-Jê languages. This has likely contributed to the difference in their opinions about including certain language families, which will be further discussed in section 4.4.

Nikulin (2020b, pp. 57–64) uses a specific methodology to calculate the distances between the different language families that were included in the Macro-Jê stock by many other authors. His method is based on preliminary lexicostatistics as presented by Starostin (2010). To perform lexicostatistics on the different language families, he composed a list of 39 words based on the Swadesh list. He made sure that for all language families he wanted to study, these 39 words could be reconstructed in the Proto-language. By comparing these wordlists in the different languages, he could count the words that were "technically similar". That is, when the onsets and codas are pronounced at the same point of articulation. He compared languages from the Macro-Jê families Jê, Maxakali, Karaja, Ofaye, Rikbaktsa and Jabuti and found that all of them had at least 15 of aforementioned technical similarities with Proto-Macro-Jê. Based on that, he considered the criterion for a language to be part of the Macro-Jê stock to be a minimum of 15 technical similarities with Proto-Macro-Jê. He also compared Proto-Macro-Jê, Proto-Chiquitano and Proto-Tupian with each other, and got the amounts of 12-13 technical similarities between Proto-Macro-Jê and Proto-Chiquitano, 7-8 technical similarities between Proto-Macro-Jê and Proto-Tupian, and 3 technical similarities between Proto-Chiquitano and Proto-Tupian. Nikulin used these numbers as benchmarks for the relation between a language and the Macro-Jê stock. In that way, languages with between 10 to 15 technical similarities with Proto-Macro-Jê are considered to be related to Macro-Jê on a deeper

level, but not in the core stock, which is the case for Chiquitano. Languages with between 5 to 10 technical similarities with Proto-Macro-Jê are considered to be even further from the Macro-Jê stock, but could be related on a deeper level, as the Tupian family. Languages with less than 5 technical similarities with Proto-Macro-Jê should, according to Nikulin, not be considered related to Macro-Jê.

Nikulin (2020b, pp. 64–69) applied this method to Bororoan. He compared the list of 39 words between Bororoan and Proto-Macro-Jê, and found 6-7 technical similarities. According to his own criteria, this would make Bororoan a family that could be related to the Macro-Jê stock on a very deep level, but it cannot be considered to be part of the core. It would mean that Bororoan is related to Macro-Jê in a similar way as Tupian is related to Macro-Jê. Nikulin does propose that Bororoan could be included in a hypothetical combined macro-family of Macro-Jê and Tupian.

Also, Nikulin refutes the proposals of a genetic relation between Bororoan and Macro-Jê done by Guerios (1939) and Rodrigues (1993, 1999). About the work by Guerios, Nikulin (2020b, p. 39) states that the presented lexical evidence contains errors that were likely caused by low quality of the data that was present on the languages of the Bororoan and Jê families at the time. He notes that in some cases, Guerios' claim was therefore based on non-existent data. In addition, Nikulin (2020b, pp. 64–65) mentions Guerios' claim that the Proto-Bororoan pronominal prefixes **i*- for 1SG and **a*- for 2SG are very similar to those in Proto-Macro-Jê. According to Nikulin, this evidence is not compelling, as similar pronominal prefixes exist in other South American language families, that sometimes do not even have any connection to Macro-Jê. Next, Nikulin (2020b, pp. 43–44) criticizes Rodrigues' (1999) claim of a genetic relation between Bororoan and Macro-Jê, because it is based on only 20 cognates that are not all very strong. Moreover, Nikulin (2020b, p. 65) mentions Rodrigues' (1993) claim that the "linking consonants" between pronominal prefixes and vowel-initial stems are similar in Proto-Bororoan and Proto-Macro-Jê. In Proto-Bororoan, these would be **t*, **k* and sometimes **n*. Again, Nikulin notes that this similarity is not compelling evidence of a genetic relationship between Bororoan and Macro-Jê, because similar occurrences of linking consonants can be seen in other language families like Tupian and Cariban.

4.4 Reflection on the arguments by Jolkesky and Nikulin

It has become clear that Jolkesky and Nikulin use different methods to come to a decision about the in- or exclusion of Bororoan in the Macro-Jê stock. In the present section, some notes on these

methods will be made and the works of Jolkesky and Nikulin will be put into the context of this thesis.

One of the most notable differences between the methods of Jolkesky and Nikulin is the composition of their word lists. Both present lists of words in a variety of languages and compare these with each other in order to identify cognates or borrowings. However, where Nikulin consistently uses the same list of 39 words, Jolkesky uses different words every time he presents cognates in a set of (proto-)languages. The words that Nikulin presents are not all cognates, whereas Jolkesky only presents cognates. In that way, one could say that Nikulin presents the relative amount of cognates per set of languages in an invariable set of words, while Jolkesky presents all cognates he could find in a set of languages.

To illustrate this, we will take a closer look at what both authors use as evidence for the in- or exclusion of Bororoan in the Macro-Jê stock. As explained in section 4.1, Jolkesky presents a list of 33 Proto-Bororoan words with cognates in the proto-languages of the nuclear Macro-Jê family. Of these 33 words, Jolkesky presents 21 cognates in Proto-Jê, 19 in Proto-Jeoromitxi, 21 in Chiquitano, and 16 in Karaja. Nikulin, on the other hand, presents his unchanging list of 39 words in Proto-Bororo, Proto-Macro-Jê, Proto-Chiquitano and Proto-Tupi. Of these 39 words, there are only 6-7 cognates in Proto-Macro-Jê, 4-5 in Proto-Chiquitano and also 4-5 in Proto-Tupí. We can clearly see a difference between Jolkesky's and Nikulin's number of cognates in Proto-Bororoan and the languages of the Macro-Jê stock. However, the numbers of cognates presented by Jolkesky and Nikulin cannot be compared to each other directly, due to the difference in method. Jolkesky presents an absolute number of cognates, while Nikulin presents a relative number.

Another methodological difference between Jolkesky and Nikulin is that Jolkesky splits up the languages of the nuclear Macro-Jê family before he compares them with Proto-Bororoan, while Nikulin only compares Proto-Macro-Jê with Proto-Bororoan. This way, Nikulin does not consider other variants of words in the Macro-Jê family apart from the word he reconstructed as Proto-Macro-Jê. Jolkesky, on the other hand, does consider the separate branches of the nuclear Macro-Jê family, resulting in a higher chance of finding cognates between Proto-Bororoan and the nuclear Macro-Jê languages.

The question then rises: which of these two methods is more suitable for determining the likelihood for a set of languages to be related? Jolkesky essentially only presents the cognates that are beneficial for proving his point, and leaves out words that could not be identified as cognates. He also compares Proto-Bororoan with several nuclear Macro-Jê languages, increasing the chance of

finding cognates. Nikulin, on the other hand, uses the same words every time, in which often only a handful of cognates are presented. Thus, Nikulin does not consider several cognates that would have been supportive of a genetic relationship between the languages in question. He also compares Proto-Bororoan with Proto-Macro-Jê, not considering possible cognates in the daughter languages of Proto-Macro-Jê. Both methods therefore have their pitfalls and both methods might present a different image of the possibility that a set of languages is genetically related. By not presenting data that does not prove their point, both authors are inherently biased towards their own opinion. Due to this, it is difficult to determine which method is 'better' for determining genetic relationships. That being said, it is even more difficult to come up with a method that would not be biased at all. Especially in this field of linguistics, the lack of data already creates a bias towards living or well-documented languages.

4.5 Connecting Otuke to the debate

Jolkesky and Nikulin both use their own reconstructions of Proto-Bororoan to prove their point about the in- or exclusion of Bororoan in the Macro-Jê stock. When studying these reconstructions in detail, it seems that the authors have not, or not always, considered Otuke in their reconstructions. The list of cognates in Proto-Bororoan and nuclear Macro-Jê languages presented by Jolkesky (2016, pp. 265–266) includes some reconstructions that appear to be questionable when Otuke is considered as well. In (44), two reconstructions by Jolkesky are presented. In (45), I compare these reconstructions to the corresponding cognates in Bororo, Umutina and Otuke. The Bororo words are from Albisetti & Venturelli (1962) and Nonato (2008), the Umutina words from Schultz (1952) and Telles (1995). The Otuke words, finally, are taken from De Créqui-Montfort & Rivet (1912).

(44)	**Proto-Bororoan**		(45)	**Bororo**	**Umutina**	**Otuke**
a.	**badʒe*	'mosquito'	a.	*mace*	*bai kurika*	*mase*
b.	**adzo*	'hair, head'	b.	*ao*	*azo*	*kitao, kitaho*

In example (44a), we can see that the affricate /dʒ/ is reconstructed, likely based on Bororo /c/ and Umutina /i/ presented in (45a). However, if we look at Otuke, /s/ is present in the same position. As Bororo /c/ and Otuke /s/ are both voiceless, the reconstruction of voiced /dʒ/ does not fit the picture. Moreover, the Umutina form *bai* does not contain a consonant in the same position at all, making it less likely that a Proto-Bororoan /dʒ/ disappeared in its entirety. Based on these facts, it would be more logical to reconstruct a voiceless consonant like /c/ or /tʃ/. We can see a similar case

in example (44b) and (45b). The affricate /ʣ/ is reconstructed based on Umutina /z/ and the absence of a consonant in Bororo. When we consider the Otuke data as well, we can see the absence of a consonant or /h/ in the same position. Reconstructing /ʣ/ when no consonant is present in two daughter languages seems improbable. It would be more plausible to reconstruct /z/, which then gradually disappeared in Bororo and Otuke.

When we look at the list of cognates presented by Nikulin (2020, pp. 66–67), we can see that Otuke might not always have been taken into account in the Proto-Bororoan reconstructions either. In (46), the reconstructions by Nikulin are presented. In (47), I compare these reconstructions with the corresponding cognates in Bororo, Umutina and Otuke. Once again, the Bororo words are taken from Albisetti & Venturelli (1962) and Nonato (2008), the Umutina words from Schultz (1952). The Otuke words are from De Créqui-Montfort & Rivet (1912).

(46)	**Proto-Bororoan**		(47)	**Bororo**	**Umutina**	**Otuke**
a.	**mɔtɔ*	'earth'	a.	*moto*	*mɔtɔ*	*moktuhu*
b.	**tori*	'stone'	b.	*tɔri*	*tori*	*tohori*

In example (46a) and (47a), we can see that /t/ is reconstructed based on Bororo and Umutina /t/. This is logical of course, but when we consider the Otuke cognate as well, we can see that /kt/ is present in the same position. While this could have been an error when d'Orbigny elicited the Otuke data, we have seen in section 3.2.3 that Otuke /kt/ indeed corresponds to Bororo /t/ in several cases. The possibility that the Proto-Bororoan reconstruction was **mɔktɔ* should therefore be considered seriously. A similar case is present in (46b) and (47b). Nikulin reconstructed **tori* based on Bororo *tɔri* and Umutina *tori*. While this makes sense, the Otuke cognate *tohori* has an intervocalic /h/. Again, this could have been the result of an error by d'Orbigny, but in several cases, Otuke intervocalic /h/ corresponds to the absence of a consonant in Bororo. It is therefore important to consider the possibility that the Proto-Bororoan form was **tohori*.

These few examples already show that the consideration of Otuke is important for creating a more accurate reconstruction of Proto-Bororoan. Especially for future studies, the data on Otuke can be used to further specify the reconstruction of Proto-Bororoan words. A difference in the reconstruction of only a single word can have big consequences, especially in a field where possible genetic relationships are based on small sets of cognates. The current thesis helps to create a more comprehensive overview of the Otuke data, to raise awareness of its existence so that it can more easily be used for further studies.

CHAPTER 5:

CONCLUSION

Now that the analysis of the Otuke data and previous claims on this data has been completed, a conclusion can be drawn from the findings. The results have shown that it is still possible to gain new knowledge about a language that has been extinct for almost 200 years. This chapter provides a discussion of the methods and findings presented in this thesis and provides an answer to the research questions. In the future, more could be done to improve our knowledge of Otuke and its position within Bororoan and Macro-Jê. Therefore, suggestions for future research will be presented at the end of this chapter.

5.1 Answering the research questions

This thesis revolved around answering two research questions that represented two different stages of the research. The first question was focused on the existing research and all that is currently known about Otuke. The second question was aimed at gaining new knowledge about the language by reviewing the data collected by D'Orbigny and any claims that had been made by linguists in the past. To conclude the research of this thesis, answers to the research questions can now be formulated.

The first question was "What is the state of affairs regarding the knowledge about the extinct Otuke language and its position within the linguistic landscape?". The overview of current knowledge about Otuke presented in chapter 2 provides an answer to this question. The first mentions of Otuke date to the 18th century and the language has since received attention from several scholars and linguists. Our current knowledge is entirely based on the documentation of 299 words collected by Alcide d'Orbigny between 1830 and 1833. The full word list was only published in 1912 by Georges de Créqui-Montfort and Paul Rivet. In this publication, they made several claims on the phonology and morphology of the language. In their 1913 article, they observe similarities between Otuke and Bororo and suggest a genetic relation, inspired by an earlier note by Von den Steinen in 1895. Subsequent publications accept this genetic link and as of today, the Bororoan language family is still thought to consist of Bororo, Umutina, Otuke, Kovareka, and Kuruminaka. A more recent publication

by Camargos (2013) states that Otuke is thought to be more closely related to Kovareka and Kuruminaka than to Bororo, and less to Umutina. Linguists have also been in discussion about the inclusion of the Bororoan language family into the overarching Macro-Jê stock. Several linguists, like Guérios (1939), Rodrigues (1986), and Jolkesky (2016) have supported the Macro-Jê affiliation; others, like Nikulin (2020b), contest this relation based on the limited shared characteristics and the scarcity of the evidence. As of today, no consensus has been reached about the inclusion of Bororoan and several other language families in the Macro-Jê stock. More data on the languages of South America is needed to find evidence for either side of the debate. Unfortunately, due to the growing number of endangered and extinct languages, this is becoming more and more challenging.

The second research question was "What inferences can we make from comparing the Otuke data to its sister language Bororo and which previous claims can be supported by that?". The answer to this question can be based on the findings presented in chapter 3. We have seen that for more than half of the Otuke words, a Bororo word could be found that was similar in form and meaning. These lexical correspondences are likely to have been cognates. This further strengthens the established belief that Otuke and Bororo are closely related languages. Studying the cognates made it possible to review and add to the phonological correspondences in the two languages. It turned out that most of the phonological correspondences proposed by De Créqui-Montfort & Rivet (1913) and Camargos (2013) could be further supported with new examples from Otuke and Bororo. Moreover, nine new correspondences could be found. In addition, examples for palatalization and metathesis processes were found as well.

The Bororo cognates were in many cases well described by Albisetti & Venturelli (1962), making it possible to study analogous morphology in Otuke. In several cases, morphological processes noticed by De Créqui-Montfort & Rivet (1912, 1913) could be supported with new evidence from the Bororo cognate. This was the case for the morphemes *-ra*, *-vi/vihi*, *-to*, *-ru*, and *-poro*. While De Créqui-Montfort & Rivet considered these morphemes to be classifier suffixes, the Bororo evidence showed that it is likely that they were part of nominal compounds. For other proposed classifier suffixes, *-ka*, *-ri*, and *-ro*, no supporting evidence could be found. These were considered more likely to have been part of the stem. The proposed classifier suffixes *-huari/huaru* and *-(h)ohe* could have had a morphological function in Otuke, but there is too little evidence from Otuke, Bororo or other languages to draw a definitive conclusion. Other morphological processes proposed by De Créqui-Montfort & Rivet could be supported or corrected with new examples. The morphological marking of masculine and feminine sex seemed to occur by juxtaposing the word for 'man' or 'woman' to a noun in a compound, but not obligatorily. Compounds were likely a common occurrence in Otuke and

maintained the order modifier–head. The suffix *-roko* probably acted as a diminutive, just like *-rogo* in Bororo. The possessive pronominal prefixes as proposed by De Créqui-Montfort & Rivet and Camargos could not all be accepted, but it is clear that *i-* was used for 1SG. The verbal morphology showed that Otuke likely also had pronominal prefixes *a-* for 2SG and *o-* for 3SG. The verbal suffixes in Otuke did not show enough resemblance to the Bororo verbal suffixes to draw any definitive conclusion about their function. However, it is likely that Otuke had a negative suffix *-ka*, and possibly an assertive suffix *-re, -ke*, or *-te*. Their existence and use, however, remain unclear due to the limited amount of Otuke data.

To summarize, both research questions have been answered successfully using the data from the Otuke vocabulary and the Bororo dictionary by Albisetti & Venturelli (1962). The close relationship between the two languages has shown to benefit the phonological and morphological analysis. As a result, new knowledge about the Otuke language was generated 200 years after its extinction. This new knowledge could aid in understanding the bigger picture around the language. New phonological correspondences and morphological processes in Otuke and Bororo can be used to refine the reconstruction of Proto-Bororoan. In its turn, this reconstruction could uncover new evidence for the in- or exclusion of Bororoan in the Macro-Jê stock. Step by step, this could help us understand the complexities of the linguistic history of South America.

5.2 Methodological challenges

This thesis has reviewed past claims and has uncovered new knowledge about the Otuke language and its position within the linguistic landscape. While the goal of this thesis was reached, it remains valuable to look at the challenges that were encountered in the process. In chapter 1, some of the possible challenges for this research had already been brought up, such as the large time gap between the data sources and the use of different orthographies. Here, some more challenges will be presented that were encountered in the process of writing this thesis.

One of the most important issues for this research was finding Bororo cognates for the Otuke data. For almost half of the Otuke words, no Bororo cognates were found. This could simply be due to the fact that there was no cognate present in Bororo anymore, possibly caused by the replacement of the original word in either Otuke or Bororo. However, it is also possible that a cognate was present in Bororo, but I failed to find it. There are several reasons why this could have happened that will now be discussed.

First of all, the research conducted relied on the availability of digital and scanned documents. For example, the dictionary by Albisetti and Venturelli (1962) was originally only published in physical form. The book has more than 1000 pages, which made it almost impossible to search by meaning of lexemes in the dictionary, because it is alphabetically sorted by Bororo lexeme, not by meaning. Fortunately, the dictionary was scanned and published on the online library of native South American languages www.etnolinguistica.org, created by Brazilian linguist Eduardo Ribeiro. Several other sources used for this thesis could be retrieved as scanned documents from this online library. In these scanned documents, Optical Character Recognition (OCR) was active, making the text searchable using Ctrl+F. This made it possible to search the dictionary by Albisetti & Venturelli by meaning instead of by lexeme. However, OCR does not work seamlessly. Characters are not always correctly recognized and are at times assigned a different character than was present in the original document. This is especially the case for older documents with lower quality and documents containing characters with diacritics. For example, Portuguese <ç> is almost always recognized as '9' or '<;' in the dictionary by Albisetti & Venturelli. Moreover, in some cases there are additional characters in the middle of a word that do not belong there, such as *urucu* being recognized as 'uruc::u' or *branco* being recognized as 'b ranco'. This means that a search for *cabeça* 'head' or for *branco* 'white' will not render all instances of these words in the dictionary. Many of them are missed due to the faulty character recognition. A solution for this problem was to only search for parts of these words, such as searching for *cabe* instead of the full *cabeça*. However, this often included many more words into the output, such as *cabelos* and *cabeleira*, making the search much less efficient. Moreover, this did not solve the problem for words with spontaneous extra characters on an irregular basis, such as the extra space in 'b ranco'. Effectively, this means that crucial words in the dictionary could have been missed, and that some Bororo cognates to the Otuke data were never found, even though they existed.

A similar issue that may have caused crucial words in the Bororo dictionary to be missed has to do with translation and semantics. It has been discussed before that translation errors could have occurred during the elicitation by De Créqui-Montfort & Rivet (1912). Moreover, we have seen that Camargos (2013) made translation errors as well. It is possible that translation errors in the works of De Créqui-Montfort & Rivet or Albisetti & Venturelli remained undetected. Likewise, I could have made translation errors myself. I have some knowledge of French and Spanish, but my knowledge of Portuguese is limited. For all three languages, I was dependent on the translation tool www.DeepL.com. This tool gives a direct translation of words and text in a multitude of languages. In addition, it can give alternative translations in the target language. While this is a helpful function,

translation tools like these are inherently limited and cannot give the full semantics of a word. Any of the translation errors that remained undetected could be the reason I failed to find a Bororo cognate.

On top of that, the semantics of Bororo and Otuke words could have changed after their genetic split. The semantics of Bororo words could have diverged even further after the extinction of Otuke in the 19th century. So apart from changes in form, Otuke and Bororo words could also have changed in meaning. Because of this, I might have failed to find some of the cognates in Otuke and Bororo, simply because I was searching for the wrong meaning.

A final issue relating to the Otuke and Bororo cognates is the difficulty to determine if they are true cognates. Some Otuke and Bororo words with the same meaning have very similar forms, such as Otuke *okivia* and Bororo *ɔkiwa*, both meaning 'capybara'. There is little doubt that these two words are cognates. However, other Otuke and Bororo words with the same meaning have quite distinct forms. For example, Otuke *ičičo* has been linked to Bororo *ǰomo*. The only overlapping part of the words, *-čo* and *ǰo-*, is very similar, but the rest of the words is not. Several phonological and morphological processes must have occurred for these words to have originated from the same proto-form. It is also possible that these words are not cognates, but coincidentally resemble each other in form and meaning. Umutina cognates could have been used to strengthen or challenge the position of a pair of cognates in Otuke and Bororo. Unfortunately, this was not possible due to the time limit of this thesis. For future directions, it would be beneficial to include Umutina in the comparison of Otuke and Bororo words.

Summarizing, the methodology of finding Bororo cognates for analyzing the Otuke words had some pitfalls. It is probable that not all Bororo cognates to the Otuke words were found due to shortcomings of Optical Character Recognition (OCR), translation errors, and semantic changes over time. A varying degree of similarity in form between the Otuke and Bororo cognates made it difficult to confirm every pair as actual cognates. For future research, the recognition of these problems is important. Solving these problems might open up new ways for doing similar research.

5.3 Future research

This thesis has provided a basis for the analysis of the Otuke language using the full vocabulary collected by D'Orbigny. The comparison with more recent data on Bororo has proven to be valuable for our understanding of the Otuke language. In the future, the research on Otuke could be

expanded using additional data and resources. Some promising possibilities will be highlighted in this section.

First, a comparative analysis between Otuke and Umutina could uncover even more knowledge about the Otuke language. Due to time limitations tied to this thesis, it was only possible to study cognates in Otuke and Bororo. A systematic comparison of all words in the Otuke vocabulary with Umutina cognates could increase our knowledge of the phonological an morphological processes in Otuke and the Bororoan language family as a whole. Even though Umutina has recently become extinct, several publications on the language exist, including wordlists by Schmidt (1941), Schultz (1952) and Telles (1995). The comparison between Otuke and Umutina could in turn solve new questions that emerged from the comparison between Otuke and Bororo.

Second, the Otuke vocabulary was originally documented as part of a set of unpublished wordlist that D'Orbigny wrote during his travels through South America. These wordlists were never published, but stayed in the *Bibliothèque nationale de Paris*. De Créqui-Montfort & Rivet (1912) eventually published these wordlists, including the Otuke vocabulary. If the original documents are still present in the B*ibliothèque nationale de Paris*, it could be valuable to take a look at them. De Créqui-Montfort & Rivet could have overlooked words or made errors while copying the vocabulary from the manuscript to their own publication. Unfortunately, it is a challenge to find the exact documents in the archival records catalogues of the *Bibliothèque nationale de Paris* (archivesetmanuscrits.bnf.fr/) and the *Muséum national d'Histoire naturelle* (www.calames.abes.fr/pub/mnhn.aspx). Contacting or visiting the library might make it easier to find and consult the original wordlists.

Lastly, as mentioned before, the data produced by this thesis could be used to improve the reconstruction of Proto-Bororoan. One of the aims of this thesis was to create more awareness of the Otuke language and its potential for increasing accuracy in the reconstruction of Proto-Bororoan. Chapter 4 has shown examples where Otuke did not seem to be used for the reconstruction of Proto-Bororoan. It was demonstrated how including Otuke could lead to different reconstructions. Doing this on a larger scale could be influential for future studies of Bororoan and Macro-Jê languages. While the limited phonetic knowledge that D'Orbigny had during the elicitation of his Otuke vocabulary should be kept in mind, Otuke should not be ignored entirely when reconstructing Proto-Bororoan.

In conclusion, the exploration of the Otuke language is far from finished. Future research could still reveal new knowledge about the language and its position within Bororoan and the Macro-Jê stock.

This thesis has shown that we can still learn from languages even long after they have gone extinct. It paves the way for similar research on extinct languages with a small amount of documentation that have not yet received much scholarly attention. Even with small advancements, each new discovery can shed light on the evolution of languages in South America, but also beyond.

REFERENCES

Adelaar, Willem F.H. (2008). Relações externas do Macro-Jê. O caso do Chiquitano. In Stella Telles & Aldir Santos de Paula (Eds.), *Topicalizando Macro-Jê* (pp. 9–27). Recife: Nectar.

Albisetti, César, & Venturelli, Ângelo Jayme. (1962). *Enciclopedia Bororo. Volume I: Vocabulários e Etnografia.* Campo Grande: Museu regional Dom Bosco.

Bordignon Enawuréu, Mário. (1987). *Os bororos na história do Centro-Oeste brasileiro: bóe e-ró marigudúwo*. Campo Grande/Cuiabá: Missão Salesiana de Mato Grosso/CIMI-MT.

Brinton, Daniel G. (1891). *The American Race. A Linguistic Classification and Ethnographic Description of the Native Tribes of North and South America*. New York: N.D.C. Hodges.

Camargos, Lidiane Szerwinsk. (2013). *Consolidando uma proposta de Família Linguística Boróro. Contribuição aos estudos histórico-comparativos do Tronco Macro-Jê*. Doctoral dissertation, Universidade de Brasília.

Cardús, José. (1886). *Las misiones franciscanas entre los infieles de Bolivia. Descripción del estado de ellas.* Barcelona: Librería de la Inmaculada Concepción.

Chamberlain, Alexander F. (1910). Sur quelques familles linguistiques peu connues ou presque inconnues de l'Amérique du Sud. *Journal de la Société des Américanistes*, *7*(1), 179–202.

Crevels, Mily. (2012). Language endangerment in South America: The clock is ticking. In Lyle Campbell & Verónica Grondona (Eds.), *The Indigenous Languages of South America* (pp. 167–234). Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110258035.167

Crowell, Thomas Harris. (1979). *A grammar of Bororo*. Doctoral disserertation, Cornell University.

d'Orbigny, Alcide. (1839). *Voyage dans l'Amérique Méridionale (le Brésil, la république orientale de l'Uruguay, la République argentine, la Patagonie, la république du Chili, la république de Bolivia, la république du Pérou). Tome IV. Partie II.* Paris: Chez Pitois-Levrault et ce., libraires-éditeurs.

de Castelnau, Francis. (1851). *Expédition dans les parties centrales de l'Amérique du Sud, de Rio de Janeiro à Lima, et de Lima au Para. Histoire de Voyage. Tome V*. Paris: Chez P. Bertrand, Libraire-Éditeur.

de Créqui-Montfort, Georges, & Rivet, Paul. (1912). Linguistique Bolivienne. Le groupe Otukè. *Journal de la Société des Américanistes*, *9*, 317–337.

de Créqui-Montfort, Georges, & Rivet, Paul. (1913). Linguistique bolivienne. Les affinités des dialectes Otukè. *Journal de la Société des Américanistes*, *10*(2), 369–377.

Fernández, Juan Patricio. (1895). *Relación historial de las misiones de Indios Chiquitos que en el Paraguay tienen los padres de la Compañía de Jesús*. Madrid: Librería de Victoriano Suárez.

Frič, Vojtěch, & Radin, Paul. (1906). Contributions to the Study of the Bororo Indians. *The Journal of the Anthropological Institute of Great Britain and Ireland*, *36*, 382–406.

Greenberg, Joseph H. (1987). *Languages in the Americas*. Stanford: Stanford University Press.

Guérios, Rosario F. Mansur. (1939). O nexo lingüístico Bororo/Merrime-Caiapó (contribuição para a unidade genética das línguas americanas). *Revista do Círculo de Estudos "Bandeirantes," 2*, 61–74.

Hervás y Panduro, Lorenzo. (1784). *Catalogo delle lingue conosciute e notizia della loro affinità e diversità*. Cesena: Gregorio Biasini all'Insegna di Pallade.

Jolkesky, Marcelo Pinho De Valhery. (2016). *Estudo arqueo-ecolinguístico das terras tropicais sul-americanas*. Doctoral dissertation, Universidade de Brasília.

Kaufman, Terrence. (1994). The native languages of South America. In R.E. Asher & Christopher Moseley (Eds.), *Atlas of the world's languages* (pp. 46–76). London: Routledge.

Kriegk, Georg Ludwig. (1838). *Das Land Otuquis in Bolivia. Nach einem Originalberichte des Herrn Moritz Bach, secretärs dieser Provinz*. Frankfurt am Main: Verlag von Siegmund Schmerber.

Latham, R.G. (1862). *Comparative Philology*. London: Walton and Maberly.

Lema Garrett, Ana María. (2014). El hombre del nuevo mundo. Indígenas de las tierras bajas bolivianas en la mirada de Alcide d'Orbigny. *Caravelle*, *103*, 67–83.

Lima, Stella Telles Pereira. (1995). *A língua umutina: "um sopro de vida".* Master's thesis, Universidade Federal de Pernambuco.

Loukotka, Čestmir. (1968). *Classification of South American indian languages* (J. Wilbert (ed.)). Los Angeles: Latin American Center, University of California.

Lowie, Robert H. (1946). The Bororo. In Julian H. Steward (Ed.), *Handbook of South American Indians. Volume 1: The Marginal Tribes* (pp. 419–434). Washington, DC: Smithsonian Institution. https://doi.org/10.2307/211008

Mason, John A. (1950). The Languages of South American Indians. In Julian H. Steward (Ed.), *Handbook of South American Indians. Volume 6: Physical Anthropology, Linguistics and Cultural Geography of South American Indians* (pp. 157–318). Washington, DC: Smithsonian Institution. https://doi.org/10.1126/science.72.1870.451.a

Métraux, Alfred. (1942). The Native Tribes of Eastern Bolivia and Western Matto Grosso. *Bureau of American Ethnology Bulletin 134*, 1–182. https://doi.org/10.2307/535349

Muysken, Pieter, & Crevels, Mily. (2020). Patterns of dispersal and diversification in South America. In Mily Crevels & Pieter Muysken (Eds.), *Language Dispersal, Diversification, and Contact* (pp. 253–274). Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198723813.003.0015

Nikulin, Andrey. (2020a). Consonantal alternations in Boróro. *International Journal of American Linguistics*, *86*(3), 367–406. https://doi.org/10.1086/708832

Nikulin, Andrey. (2020b). *Proto-Macro-Jê: Um estudio reconstrutivo*. Doctoral dissertation, Universidade de Brasília.

Nonato, Rafael Bezerra. (2008). *Ainore Boe egore: um estudo descritivo da língua bororo*. Master's thesis, Universidade Estadual de Campinas.

Ochoa, Gonçales Camargo. (2001). *Pequeno Dicionário Boróro-Português – a serviço da escola Boróro*. Campo Grande: UCDB.

Pache, Matthias. (2016). The grammaticalization of plant-part terms in Chibchan languages. *International Journal of American Linguistics*, *82*(4), 425–452.

Ribeiro, Eduardo Rivail. (2006). Macro-Jê. *Encyclopedia of Language & Linguistics*, *7*, 422–426.

Ribeiro, Eduardo Rivail. (2012). *A grammar of Karajá*. Doctoral dissertation, University of Chicago.

Ribeiro, Eduardo Rivail, & van der Voort, Hein. (2010). Nimuendajú was right: The inclusion of the Jabutí language family in the Macro-Jê stock. *International Journal of American Linguistics*, *76*(4), 517–570.

Rodrigues, Aryon Dall'Igna. (1986). *Línguas brasileiras. Para o conhecimiento das línguas indígenas*. Sao Paulo: Edições Loyola.

Rodrigues, Aryon Dall'Igna. (1993). Uma hipótese sobre a flexão de pessoa em Bororo. *Anais da 45a Reunião Anual da SBPC*, *2*, 509.

Rodrigues, Aryon Dall'Igna. (1999). Macro-Jê. In R.M.W. Dixon & Alexandra Y. Aikhenvald (Eds.), *The Amazonian Languages* (pp. 165–206). Cambridge: Cambridge University Press.

Schmidt, Max. (1941). Los Barbados o Umotinas en Matto Grosso (Brasil). *Revista de la Sociedad Científica del Paraguay*, *5*(4), 1–51.

Schultz, Harald. (1952). Vocabulario dos Indios Umutina. *Journal de la Société des Américanistes*, *41*(1), 81–137. https://doi.org/10.3406/jsa.1952.2400

Starostin, George. (2010). Preliminary lexicostatistics as a basis for language classification: A new approach. *Journal of Language Relationship*, *3*, 79–116.

von den Steinen, Karl. (1894). *Unter den Naturvölkern Zentral-Brasiliens. Reiseschilderung und Ergebnisse der Zweiten Schingú-Expedition, 1887-1888*. Berlin: Geographische Verlags-buchhandlung von Dietrich Reimer.

von den Steinen, Karl. (1895). Die Schamakoko-Indianer. Nach Guido Boggianis "I Ciamacoco" von Karl von den Steinen. *Globus: Illustrierte Zeitschrift für Länder- und Völkerkunde*, *67*(21), 325–330.

Appendix A: The Otuke database

In this appendix, the full list of Otuke words is presented in alphabetical order. Apart from the 299 Otuke words, 19 Kovareka and 16 Kuruminaka words are included. For every Otuke word, the French translation as presented by De Créqui-Montfort & Rivet (1912) and the English translation are given. In addition, annotations as presented by De Créqui-Montfort & Rivet (1912) are given. Every word was assigned a semantic category for easier management of the data, that is also included. Finally, Bororo cognates for the Otuke words are given in the last column that were collected for the purpose of this thesis.

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
aačo			singe	monkey		Animals	*aka* 'marsupial'
aciyuru			palmier motacu	motacu palm		Plants	PORT *acuri* and ESP *bacuri* from Tupi *uricuri*
ademakate			chat ocelot	ocelot cat		Animals	
aetetake			tuer	kill		Verbs (actions)	
aharo			poisson	fish		Animals	*karɔ*
ahi			chat	cat	cf. jaguar	Animals	*ai*
ahi	*anteko*		jaguar	jaguar	cf. chat	Animals	
ahoateta			pleurer	cry		Verbs (actions)	
ahuaku			grenouille	frog		Animals	*awagu* 'snake (indistinct)'
ahuaku			crotale	rattlesnake		Animals	*awagu* 'snake (indistinct)'
ahukani			cigogne	stork		Birds	
ahuokani			tantale	stork/ibis	cf. cigogne	Birds	
aika			calebasse	calabash		Tools and objects	*aria*
akarakapa			roi des vautours	king vulture		Birds	
akĩ			palmier totai	totai palm		Plants	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
akihumari			coton blanc	white cotton		Plants	*akigu* 'cotton'
akočakune			couguar	cougar		Animals	*aigɔ*
aktečo-kikia			cornes du cerf	deer antlers		Animal body parts	*atubo* 'deer' *kiga* 'horn'
aktešo			cerf guazu pucu	big deer pucu		Animals	*atubo* 'deer (veado-galheiro)'
aktopẽhe			lève-toi	wake up		Verbs (actions)	
aku			bananes	bananas		Food	*bako*
amakata ača			reste là!	stay there!		Verbs (actions)	
amama-niake	*axemakane*	*amama-kene*	se porter : comment te portes-tu?	how are you?		Utterances	
anerutà			chemine!	keep walking!		Verbs (actions)	
aniesokikia			joli	pretty		Adjectives (states)	
anutake			dormir	sleep		Verbs (actions)	*nudu*
apoha			écureuil gris	gray squirrel		Animals	*apu* 'paca'
apohė			fourmilier tamandua	tamandua anteater		Animals	*apɔgɔ*
aratĩtĩ			palmier carundai	carundai palm		Plants	
aravo			grand caracara	large caracara	cf. ibis bronzé	Birds	*aribɔ* 'small bird species'
aravo			ibis bronzé	glossy ibis	cf. grand caracara	Birds	*aribɔ* 'small bird species'
aremiatičo	*turupare*	*arumaxiče*	canard musqué	muscovy duck		Birds	
arereta			danser	dance		Verbs (actions)	
aretake			regarde!	look!		Verbs (actions)	*rudu*
ari			lune	moon		Nature	*ari*
aričoho			pic acahi bleu ciel	sky blue woodpecker		Birds	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
asema			iguane	iguana		Animals	*amema*
asenavo			pérénoptère urubu	black vulture		Birds	
ataxa			pigeon	pigeon		Birds	*metugu*
atè			vers (asticots)	maggots		Animals	*aiǰe* 'animal in the mud'
atė	*mate*	*aru-mat-uma*	viens!	come!	cf. apporte	Verbs (actions)	
atoča			tatou trois bandes	southern three-banded armadillo		Animals	
atsamu			martin-pécheur	kingfisher		Birds	*kadɔmo*
atukua			mollusques anodontes et mulettes	freshwater mussels and clams		Animals	*aturebo*
axo			toucan toco	toco toucan		Birds	*apɔdɔ*
batari			montagne	mountain		Nature	*tɔri*
boka			fruit	fruit		Food	
čaha			tabac	tobacco		Food	
čatari-vi			paille du maïs	corn husk		Plants	
čatute			maïs jeune (choclo)	young corn (corn on the cob)		Food	
čečuhua			sauterelle	grasshopper		Animals	*uwabo čugugu* = sound of rattling
čečuvė			grillons	crickets		Animals	
čečuvi-ohe			libellules	dragonflies	cf. grillons	Animals	
čečuvi-tarutu			blattes	cockroaches	cf. grillons	Animals	
čiviaku-huani			coq	rooster		Birds	
čohosani			troupiale chopi	chopi blackbird		Birds	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
čoketane			maquis nocturne	night monkey	cf. hirondelle	Animals	*ǰukɔ* 'macaco'
čoketane			hirondelle	swallow		Birds	
čoketone emesera			pérénoptère aura	turkey vulture	cf. hirondelle et jabiru	Birds	
čokihohè			mouche marihui	botfly		Animals	
čoro	*iyoro*	*ičoro*	chicha	chicha		Food	
čuhu			manioc	cassava		Food	*ǰureu* 'mandioc'
čurara			todier	tody	cf. oiseau-mouche	Birds	
čurara			oiseau-mouche	hummingbird	cf. todier	Birds	
dečo			oiseau la campanilla	bellbird		Birds	
eadi			vieux	old		Adjectives (states)	
eča ore aačo			mien : ceci est mien	mine: this is mine		Utterances	
enari			pic	woodpecker		Birds	*ɛnari*
enǫ			fille	girl	cf. enfent femelle	People and kinship	
enǫhǫ			enfent femelle	female child		People and kinship	
enohuari			arachnides	arachnids	cf. rat des maisons, amphisbène, didelphe	Animals	*ɛnɔkuri* 'tatu-bola'
enohuari			didelphe	opossum	cf. rat des maisons, bène, arachnides	Animals	*ɛnɔkuri* 'tatu-bola'
enohuari			rat des maisons	house rat	cf. didelphe, amphisbène, arachnides	Animals	*ɛnɔkuri* 'tatu-bola'

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
enohuari			amphisbène	amphisbaenian	cf. arachnides, didelphe, rat	Animals	*ɛnɔkuri* 'tatu-bola'
erehe			crocodile	crocodile		Animals	*arogwa*
etarehohe			serpent couleuvre	colubrid snake		Animals	*atugorega okeadu* 'spilote pulatus'
etari			boa	boa		Animals	*iče* 'jiboia'
evu			mot-mot	motmot		Birds	
hahari			autruche	ostrich		Birds	*pari*
hararakahe			rainette	tree frog		Animals	
haxanana			ceux-là	those		Pronouns	
hehua			landes de poux	lice lands ???		Miscellaneous	*ɔɛku* 'lice'
hohuivike			pou de tête	head lice		Animals	
huačoho			capricornes	capricorn beetles		Animals	
huaha			oeuf	egg		Food	*ba*
huaikiopo			yules	???		Miscellaneous	
hual'a			maison	house		Tools and objects	*bai*
huarakaka			crapaud	toad		Animals	
huaravu			patate	sweet potato		Food	
huarĩri			sable	sand		Nature	*kugaru*
huaroa			cerf guazu bira	big deer bira		Animals	
huaru			ciel	sky		Nature	*baru*
huasahuitaha			nuit	night		Nature	
huasė			aigrette	egret		Birds	*bače*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
huataha			oiseau yerutu	yerutu bird		Birds	*batagaǰe* ‘bigua bird, Anhinga anhinga’
huatari			tatou géant	giant armadillo		Animals	*bɔkɔdɔri*
huekiča			fourmilier tamanoir	giant anteater		Animals	*buke*
huetoka			cedra (fruit)	cedra (fruit)	cf. citron, lima, orange	Food	*bato* (+*ka*?) = ‘mangaba (fruit)’
huetoka			citron	lemon	cf. orange, lima, cedra	Food	*bato* (+*ka*?) = ‘mangaba (fruit)’
huetoka			lima (fruit)	lime (fruit)	cf. orange, citron, cedra	Food	*bato* (+*ka*?) = ‘mangaba (fruit)’
huetoka			orange	orange	cf. cedra, lima, citron	Food	*bato* (+*ka*?) = ‘mangaba (fruit)’
huikičaha			calithrix lion	golden-headed lion tamarin		Animals	
husè			hocco	curassow		Birds	*kuǰe* 'hocco'
huse-hemesera			oiseau jabiru	jabiru bird	cf. pérénoptère aura et hocco	Birds	*kuǰe* 'hocco'
i-čaa, i-čaha			oeil	eye		Body Parts	
ičairoko			enfant mâle	male child		People and kinship	
i-čaoro			jeune	young	cf. garçon	Adjectives (states)	
i-čaoro			garçon	boy	cf. enfent mâle	People and kinship	
i-čaparara			oreille	ear		Body Parts	
i-če			face	face		Body Parts	*e*
i-čenapo			ombilic	navel		Body Parts	*kunabo*
i-čera			anus	anus		Body Parts	*pera* 'bottom' -*poro* 'anus'
i-čeru			langue	language/tongue		Body Parts	*ɛru*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
i-čeuru			intestins	intestines		Body Parts	*pɛguru*
ičiča			cormoran	cormorant		Birds	
ičičo			loutre (grande)	otter (large)		Animals	*ǰomo*
i-čoara			front	forehead		Body Parts	*aora* 'cabeça'
i-čura			côtes (os)	ribs (bones)		Body Parts	*iura*
ĩhuĩxuxẽ	*matata sĩrine*		voleur	thief		Miscellaneous	
i-kiapã			potrine	breast		Body Parts	*para*
i-kiarato			coude	elbow		Body Parts	*pio, piora*
ikiča-ano			il, lui	he, him		Pronouns	*ič̃a* 'here is'
i-kio			cou	neck		Body Parts	*ko*
i-kioka			sang	blood		Body Parts	*koga* 'clotted blood'
ikiša-ošo			je, moi	I, me		Pronouns	*ič̃a* 'here is'
i-kitao, kitaho			tête	head		Body Parts	*ao, aora* 'cabeça'
i-l'a			jambe	leg	cf. os	Body Parts	*ra* 'bone'
i-l'ia			os	bone	cf. jambe	Body Parts	*ra* 'bone'
imaxahe	*ix-emaka-ne*	*iv-amaxa-raha*	(je me porte) bien	(I am) well		Utterances	*pɛmɛga* 'goodness, be good'
i-miama			dos	back		Body Parts	
i-miaura			sein (de femme)	breast		Body Parts	*mɔkuro*
i-reka-vi			cils	eyelashes	cf. sourcils	Body Parts	*ɛku-bu*
i-reka-vi			sourcils	eyebrows	cf. cils	Body Parts	*ɛku-bu*
i-reki			ongles	nails		Body Parts	*buregi* 'toenail'
i-renara			joue	cheek		Body Parts	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
iričorovo			ampullaires	apple snails		Animals	
i-rivi			peau	skin		Body Parts	*biri*
i-šeno			nez	nose		Body Parts	*ɛnɔ*
i-šeno poro			narines	nostrils		Body Parts	*ɛnɔ poro*
i-šĩ			genou	knee		Body Parts	
i-šiora			bouche	mouth		Body Parts	*ia*
i-šo			coeur	heart		Body Parts	*bapo (wabo)*
i-šu			fesses	buttocks		Body Parts	
i-taho-vihi			cheveux	hair		Body Parts	*ao, aora* 'cabeça', bu 'pelo'
i-tio			dents incisives	incisor teeth		Body Parts	ɔ 'dente', *ɔɛnɔ* 'incisor'
i-tiura			menton	chin		Body Parts	*ɔkura*
itura			bois, forêt	wood, forest		Nature	*itura*
ivia sike			je veux	I want		Verbs (actions)	
i-viačone			cheville	ankle		Body Parts	
i-viaha			verge	penis		Body Parts	*baka*
i-viahukatĩ			testicules	testicles		Body Parts	
i-viaroto			talon	heel		Body Parts	*bureado*
i-via-vihi			poils du pubis	pubic hair		Body Parts	*baka + bu*
i-viora			cuisses	thighs		Body Parts	*pogora, bopona*
i-vire-egua			plante du pied	sole of the foot		Body Parts	*burea*
i-vire-eno			orteil	toe		Body Parts	*bureko*
i-yu			ventre	belly		Body Parts	*ku*
i-yuna			doigts	fingers		Body Parts	*kana* 'arm'
i-yunara			avant-bras	forearm	cf. poignet	Body Parts	*kana* 'arm', *ra* 'bone'

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
i-yuna-ra			poignet	wrist	cf. avant-bras	Body Parts	*kana* 'arm', *ra* 'bone'
iyura			donne-moi	give me		Verbs (actions)	
i-yure-tanavo			vessie	bladder		Body Parts	*ikuruǰa*
kadeču			faucon petit	small falcon		Birds	*čeǰe*
kahaka			rat des bois	wood rat		Animals	
kahaka			petit caracara	small caracara		Birds	
kaharu			ara rouge et ara à collier jaune	red macaw and yellow-collared macaw		Birds	
kananiru hare			cacique matico	orange-backed troupial		Birds	
karanahè		*karaina, kañahime*	haricots	beans		Food	
karusane			ara bleu et jaune	blue and yellow macaw		Birds	
keara			bras	arm		Body Parts	*era, ik-era* 'my hand'
kehivio			fourmilière	ant hill		Nature	
kehuè			cigale	cicada		Animals	
kekihi			oiseau hornero	hornero bird		Birds	
ketari	*kietara*		chauve-souris	bat		Animals	*kedarɔ*
kiara-čeuru			veines	veins		Body Parts	*ku-rea* 'blood+way', *pɛdoboro* 'tendon'
kiaroro			épaule	shoulder		Body Parts	
kičočo			puce pénétrante	flea		Animals	*kuieǰe*
kĩhe			chenilles	caterpillars		Animals	
kitio			perruche	parakeet		Birds	*kidɔ*
kĩve			papillon	butterfly		Animals	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
kočakoni			coton mollado	mollado cotton		Plants	
kučaku			alouate rouge	red howler monkey		Animals	*kudugi*
kuhui			tapir	tapir		Animals	*ki*
kuku			duc ñacurutu	great horned owl		Birds	*kugu*
kuričuri			porc-épic	porcupine		Animals	
kurišurè			mouffette	skunk		Animals	
kusaho			engoulevent	nightjar		Birds	
liviota			oiseau pecui	pecui bird		Birds	*riwodo* 'inambu xororo bird'
makihe			termites	termites		Animals	
maktahu			sel	salt		Food	
mamasane			lézard	lizard		Animals	
mase			moustique	mosquito		Animals	*maerebɔe*
matasenė			canard	duck		Birds	
mehetã			épine	thorn		Plants	*bɔtɔ*
mocena-vi			herbe	grass		Plants	
moktuhu			terre	earth		Nature	*moto*
mučata	*takuri*		maïs	corn		Food	*kuiada*
muktorè			ascarides	roundworms		Animals	
nahuahuošio			oiseau	bird		Birds	
navo			plumes	feathers		Animal body parts	*bo* 'plumagem'
neda			agouti	agouti		Animals	*mɛa*
neheri			fer et métaux	iron and metals		Tools and objects	*mɛriri*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
nerekeke			hélices	helix snails		Animals	
neri			soleil	sun		Nature	*mɛri*
neričoki			jour	day		Nature	*mɛriǰi(bɔe)* 'day(time)'
oaketa			manger	eat		Verbs (actions)	
očututa			rire	laugh		Verbs (actions)	
ohaeta			lagune	lagoon		Nature	
ohatẽ			graine	seed		Plants	
ohaveta			palmier marayahu	marayahu palm		Plants	
oho			bec	beak		Animal body parts	*ɔtɔ*
oho			héron ordinaire roux	red heron	cf. anis des savanes et des palétuviers	Birds	
oho			ani des savanes et des palétuviers	savanna ani and mangrove ani	cf. heron	Birds	*ɔri* 'crotophaga ani'
ohorè			rat taupe	mole rat		Animals	*ɔkiwareu* 'vard. De rato'
ohoro			prairies	meadows	cf. paille	Nature	*kiworo* 'capim de praia'; *oro* 'child, palm sprout'
ohuaru			lapin tapiti	tapiti rabbit	cf. tatou encoubert	Animals	*okwaru*
ohuaru			tatou encoubert	armadillo	cf. lapin tapiti	Animals	*okwaru*
ohuarututa			chanter	sing		Verbs (actions)	*radɔdu (ragodu* Nonato, 2008)
ohuè			guêpe à miel	honey wasp		Animals	*atuge*
oka			renard tricolore	tricolor fox		Animals	
okane			scarabée	beetle		Animals	
okivia			cabiai	capybara	cf. paca	Animals	*ɔkiwa*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
okivia			paca	paca	cf. cabiai	Animals	
oorošoahe			calithrix	tamarin		Animals	
opohema			paresseux (animal)	sloth		Animals	
oraebie skate			je ne veux pas	I don't want		Verbs (actions)	
oraruhuohiko			musique	music		Miscellaneous	
oro			paille	straw	cf. prairie	Plants	
orohuari			poisson surubi	surubí fish		Animals	*orari* ‘spotted fish (Siluridae)’
orovosokiete			laid	ugly		Adjectives (states)	
oroykia			cerf guazu ti	big deer ti		Animals	*orogu* 'guaçuti-femea'
oroykia			cerf guazu pyta	big deer pyta		Animals	*orogu* 'guaçuti-femea'
osehemate			prends!	take!	cf. apporte	Verbs (actions)	
osemote		*arumatuma*	apporte!	bring!		Verbs (actions)	
ouru			eau	water		Nature	*pɔ, pɔuru* 'stream of warm water'
ouru			rivière	river	cf. eau	Nature	*pɔ, pɔuru* 'stream of warm water'
oviča-via			laine	wool	esp.: oveja?	Tools and objects	
rarĩ			feuille	leaf		Plants	*aro, aru, raru*
rèhè			loup rouge	red wolf		Animals	*rie* 'guara'
reho			perroquet sey et perroquet amazône	sey parrot and amazon parrot		Birds	*rɛkɔ*
rektaka			scolopendre	centipede		Animals	*bɛtaga*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
rerikeke		*zerikiki*	tortue de terre	land tortoise		Animals	*ǰɛrigige*
reru			feu	fire		Nature	*ɛru, ɔru* 'fire', *riru* 'fire production'
ričonekia			fourmi	ant		Animals	*re (kurireuge) čɔreuge*
rikihu			fleur	flower		Plants	*ičɛgu*
rioka			melon d'eau	watermelon		Food	
roktu			argile	clay		Tools and objects	*rotu*
rosoho			tatou peba	six-banded armadillo		Animals	*bɔtɔwu* 'vard. de tatu-bola de floresta'
ruka			mouche	fly		Animals	*ruke*
rusa			crabe	crab		Animals	*ruča*
sehuetovo			alouate noir	black howler monkey		Animals	
seki-ačo			nous	we		Pronouns	*čegi* 'vard. de nos (excl)'
seni			main	hand		Body Parts	*era, ik-era* 'my hand'
seni			paume de la main	palm of the hand		Body Parts	*era, ik-era* 'my hand'
seni			pouce et autres doigts	thumb and other fingers	cf. main et paume de la main	Body Parts	*era, ik-era* 'my hand'
seruki			bois à brûler	firewood		Tools and objects	*ɛrigi*
sibiarė			citrouille	pumpkin		Food	*riboareu*
simiuru-kuku			petit duc, effraie	small owl		Birds	*kugu* 'vard. De coruja'
sišaara	*ačura*		chien	dog		Animals	
sorekuni			glouton taira	taira glutton		Animals	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
subeoru		*zeru*	miel	honey		Food	
subuča			cochon	pig		Animals	
surè			abeille	bee		Animals	*burɔe*
surebori			cire	wax		Tools and objects	*bɔri*
sureuruni			chat heyra	heyra cat		Animals	
suvuakarani			pécari	peccary		Animals	
tanari			palmeraie	palm grove		Plants	
taraho			poule d'eau	coot	cf. jacana	Birds	
taraho			oiseau jacana	jacana bird	cf. poule d'eau	Birds	
tarinikia			pou garrapata	tick		Animals	
tatakomė			oiseau kamichi	kamichi bird		Birds	
taura-axute			cervelle	brain		Body Parts	
tehai			canne à sucre	sugarcane		Food	*takoreu*
tehua			flèche	arrow		Tools and objects	*tugɔ*
tera-vihi			barbe	beard		Body Parts	*itora-bu*
tiaxarõ			dents molaires	molar teeth		Body Parts	
tohohui			palmier cuse	cuse palm		Plants	
tohori	*tĩri*		pierre	stone		Nature	*tɔri*
tokitoki			spatule	spoonbill		Birds	
totota			ibis de Cayenne	cayenne ibis		Birds	
tovini			tique garrapata	tick		Animals	
tuhare(-)turutu			lampyres	fireflies		Animals	*butuiari*

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
tuhuaru			hélater	beetle		Miscellaneous	*togware*
tuvukarè			taon	horsefly		Animals	*togware*
učiviaku			poule	hen		Birds	
ukema			étoile	star		Nature	*ikuie*
ukikua			cornes	horns		Animal body parts	*kiga*
uktahi			coati brun et roux	brown and red coati		Animals	
urukua			cobaye	guinea pig		Animals	*kurugɔ*
utsė			tortue d'eau	water tortoise		Animals	*upe*
uvakuhua			perdrix	partridge		Birds	*uwarugareu*
vavenesitia			vulve	vulva		Body Parts	
verkototaxa			pleuvoir	rain		Nature	
vetororova			tonnere	thunder		Nature	
vevika			arc	bow		Tools and objects	*bɔɛiga*
vuaka-vi			poil	hair (fur)		Animal body parts	
vuaneti			femme	woman		People and kinship	
vuani			homme	man		People and kinship	
vuauru			vent	wind		Nature	*bakuru*
	emaka	*sĩt-ĩmaxa*	bon, bonne	good, nice		Adjectives (states)	

Otuke	Kovareka	Kuruminaka	French	English	Annotations	Category	Bororo (A&V, 1962)
		čirimaha	mauvais	bad		Adjectives (states)	
		setaki	très mauvais	very bad		Adjectives (states)	
	kurora sĩrine		gourmand	glutton		Animals	
		mono, mapo	anguille	eel		Animals	
	okokate sĩrine		lèvres (grosses)	lips (thick)		Body Parts	
		ušamo	diable	devil		Miscellaneous	
	i-ñoto		beau-frère	brother-in-law		People and kinship	
	i-yetaka		frère	brother		People and kinship	
	i-mana		mère	mother		People and kinship	
	i-yoxa	*čoko*	père	father		People and kinship	
	ako	*aku-tuto*	bois!	drink!		Verbs (actions)	

Appendix B: Phonological correspondences in Otuke and Bororo

In this appendix, the table with phonological correspondences between Otuke and Bororo is presented. These correspondences are the focus of section 3.2.3, where a shorter overview of the correspondences is given. This table presents all examples on which the correspondences were based. The environment in which the correspondence occurs is given in the left column after '/'. Underlined correspondences are based on only one or two examples, and are not considered structural.

Otuke	**Bororo**	**Otuke**	**Bororo**	**English**
kt	t	*aktečo-kikia*	*atubo* 'deer' *kiga* 'horn'	deer antlers
/ V_V		*aktešo*	*atubo* 'deer (veado-galheiro)'	big deer pucu
		moktuhu	*moto*	earth
		rektaka	*bɛtaga*	centipede
		roktu	*rotu*	clay
t	d	*anutake*	*nudu*	sleep
/ V_V		*aretake*	*rudu*	look!
		huatari	*bɔkɔdɔri*	giant armadillo
		i-viaroto	*bureado*	heel
		ketari	*kedarɔ*	bat
		kitio	*kidɔ*	parakeet
		liviota	*riwodo 'inambu xororo bird'*	pecui bird
		mučata	*kuiada*	corn
		ohuarututa	*radɔdu, ragodu (N)*	sing
t	t	*ataxa*	*metugu*	pigeon
#_		*atukua*	*aturebo*	freshwater mussels and clams
#(C)V_		*batari*	*tɔri*	mountain
		etarehohe	*atugorega okeadu 'spilote pulatus'*	colubrid snake
		huetoka	*bato (+ka?) = mangaba*	cedra, lemon, lime, orange
		itura	*itura*	wood, forest
		tehai	*takoreu*	sugarcane
		tehua	*tugɔ*	arrow
		tera-vihi	*itora-bu*	beard

		tohori	*tɔri*	stone
		tuhare(-)turutu	*butuiari*	fireflies
		tuvukarè	*togware*	horsefly
		huataha	*batagaǰe (bigua bird, anhinga anhinga)*	yerutu bird

d	-	*neda*	*mɛa*	agouti

k	k	*aku*	*bako*	bananas
#_		*čoketane*	*ǰukɔ 'macaco'*	night monkey
#(C)V_		*i-kio*	*ko*	neck
		i-kioka	*koga 'clotted blood'*	blood
		i-reka-vi	*ɛku-bu*	eyelashes, eyebrows
		ketari	*kedarɔ*	bat
		kitio	*kidɔ*	parakeet
		kučaku	*kudugi*	red howler monkey
		kuhui	*ki*	tapir
		kičočo	*kuieǰe*	flea
		kuku	*kugu*	great horned owl
		okivia	*ɔkiwa*	capybara
		ruka	*ruke*	fly
		ukema	*ikuie*	star
		ukikua	*kiga*	horns
		huekiča	*buke*	giant anteater
		keara	*era, ik-era 'my hand'*	arm

k	g	*ahuaku*	*awagu*	rattlesnake
V_V		*i-kioka*	*koga 'clotted blood'*	blood
		i-reki	*buregi 'toenail'*	nails
		kučaku	*kudugi*	red howler monkey
		kuku	*kugu*	great horned owl
		oroykia	*orogu 'guaçuti-femea'*	deer (guazu ti, guazu pyta)
		rektaka	*bɛtaga*	centipede
		rerikeke	*ǰɛrigige*	land tortoise
		ričonekia	*re (kurireuge) čɔreuge*	ant
		seruki	*ɛrigi*	firewood

		simiuru-kuku	*kugu 'vard. De coruja'*	small owl
		akočakune	*aigɔ*	*cougar*
		vevika	*bɔɛiga*	bow

ku	g	*ukikua*	*kiga*	horns
		urukua	*kurugɔ*	guinea pig

k	gw	*tuvukarè*	*togware*	horsefly

k	-	*huatari*	*bɔkɔdɔri*	giant armadillo
		urukua	*kurugɔ*	guinea pig

g	-	*i-vire-egua*	*burea*	sole of the foot

h	k	*aharo*	*karɔ*	fish
V_V		*i-miaura*	*mɔkuro*	breast
#_		*i-viaha*	*baka*	penis
		ohorè	*ɔkiwareu 'vard. De rato'*	mole rat
		reho	*rɛkɔ*	sey parrot and amazon parrot
		tehai	*takoreu*	sugarcane
		vuauru	*bakuru*	wind
		husè	*kuǰe 'hocco'*	curassow
		enohuari	*ɛnɔkuri 'tatu-bola'*	arachnids, opossum, house rat, amphisbaenian
		hehua	*ɔɛku 'lice'*	lice lands ???
		ohuaru	*okwaru*	six-banded armadillo (encoubert)

h	-	*ahi*	*ai*	cat
V_V		*kuhui*	*ki*	tapir
		moktuhu	*moto*	earth
		orohuari	*orari 'spotted fish (Siluridae)'*	surubí fish
		rèhè	*rie 'guara'*	red wolf
		tohori	*tɔri*	stone
		huaha	*ba*	egg
		i-taho-vihi	*ao, aora 'cabeça', bu 'pelo'*	hair
		i-kitao, kitaho	*ao, aora 'cabeça'*	head
		i-taho-vihi	*ao, aora 'cabeça', bu 'pelo'*	hair

h	g	*apohė*	*apɔgɔ*	tamandua anteater
V_V		*etarehohe*	*atugorega okeadu 'spilote pulatus'*	colubrid snake
		i-čeuru	*pɛguru*	intestines
		huataha	*batagaǰe (bigua bird, anhinga anhinga)*	yerutu bird
		akihumari	*akigu 'cotton'*	white cotton

h	gw	*erehe*	*arogwa*	crocodile
		tuhuaru	*togware*	elater (beetle), fly

h	ǰ	*čuhu*	*ǰureu 'mandioc'*	cassava

h	p	*hahari*	*pari*	ostrich

h	t	*oho*	*ɔtɔ*	beak
		ohuè	*atuge*	honey wasp

h	i	*tuhare(-)turutu*	*butuiari*	fireflies

h	w	*rosoho*	*bɔtɔwu 'vard. De tatu-bola de floresta'*	six-banded armadillo

h	r	*neheri*	*mɛriri*	iron and metals
		oho	*ɔri 'crotophaga ani'*	savanna ani and mangrove ani

hu	b	*huaha*	*ba*	egg
#_		*hual'a*	*bai*	house
		huaru	*baru*	sky
		huasė	*bače*	egret
		huataha	*batagaǰe (bigua bird, anhinga anhinga)*	yerutu bird
		huatari	*bɔkɔdɔri*	giant armadillo
		huekiča	*buke*	giant anteater
		huetoka	*bato (+ka?) = mangaba*	cedra, lemon, lime, orange

hu	w	*ahuaku*	*awagu*	rattlesnake

hu	g	*huarĩri*	*kugaru*	sand
V_V		*uvakuhua*	*uwarugareu*	partridge
		tehua	*tugɔ*	arrow
		čečuhua	*uwabo čugugu = sound of rattling*	grasshopper
		ohuè	*atuge*	honey wasp

v	b	*aravo*	*aribɔ 'small bird species'*	glossy ibis, large caracara
#_		*i-rivi*	*biri*	skin
V_V		*i-taho-vihi*	*ao, aora 'cabeça', bu 'pelo'*	hair
		i-viaha	*baka*	penis
		i-viaroto	*bureado*	heel
		i-vire-egua	*burea*	sole of the foot
		i-vire-eno	*bureko*	toe
		navo	*bo 'plumagem'*	feathers
		vevika	*bɔɛiga*	bow
		vuauru	*bakuru*	wind

v	w	*liviota*	*riwodo 'inambu xororo bird'*	pecui bird
		okivia	*ɔkiwa*	capybara
		uvakuhua	*uwarugareu*	partridge

b	b	*sibiarė*	*riboareu*	pumpkin
		surebori	*bɔri*	wax

v	-	*tuvukarè*	*togware*	horsefly
		vevika	*bɔɛiga*	bow

p	b	*ič-enapo*	*kunabo*	navel
V_V				

p	p	*i-kiapã*	*para*	breast
		apoha	*apu 'paca'*	gray squirrel
		apohė	*apɔgɔ*	tamandua anteater
		i-šeno poro	*ɛnɔ poro*	nostrils

-	p	*ouru*	*pɔ, pɔuru 'stream of warm water'*	water, river

k-	p	*ik-iarato*	*pio, piora*	elbow

x	g	*imaxahe*	*pɛmɛga 'goodness, be good'*	(I am) well

x	p	*axo*	*apɔdɔ*	toco toucan

t	k	*i-tiura*	*ɔkura*	chin

y-	k	*i-yu*	*ku*	belly
		i-yunara	*kana 'arm', ra 'bone'*	forearm, wrist, fingers
		i-yure-tanavo	*ikuruǰa*	bladder

k	č	*rikihu*	*ičɛgu*	flower

d	č	*kadeču*	*čeǰe*	small falcon

č	g	*čečuhua*	*uwabo čuguɑu = sound of rattling*	grasshopper

č	d	*kučaku*	*kuduɑi*	red howler monkey
č-	p	*ič-era*	*pera 'bottom' -poro 'anus'*	anus
		ič-euru	*pɛguru*	intestines
		i-šo	*bapo (wabo)*	heart

č-	k	*aačo*	*aka 'marsupial'*	monkey
		ič-enapo	*kunabo*	navel

š	b	*aktešo*	*atubo 'deer (veado-galheiro)'*	big deer pucu

č	ǰ	*ičičo*	*ǰomo*	otter (large)
		čoketane	*ǰukɔ 'macaco'*	night monkey
		čuhu	*ǰureu 'mandioc'*	cassava
		kadeču	*čeǰe*	small falcon
		kičočo	*kuieǰe*	flea

		neričoki	*mɛriǰi(bɔe) 'day(time)'*	day

s	č	*rusa*	*ruča*	crab
		huasė	*bače*	egret

s	t	*rosoho*	*bɔtɔwu 'vard. De tatu-bola de floresta'*	six-banded armadillo

s	ǰ	*husè*	*kuǰe 'hocco'*	curassow

i	č	*kičočo*	*kuieǰe*	flea

č	i	*mučata*	*kuiada*	corn

ts	p	*utsė*	*upe*	water tortoise

r	r	*aharo*	*karɔ*	fish
		aretake	*rudu*	look!
		ari	*ari*	moon
		batari	*tɔri*	mountain
		aravo	*aribɔ 'small bird species'*	glossy ibis, large caracara
		batari	*tɔri*	mountain
		enari	*ɛnari*	woodpecker
		enohuari	*ɛnɔkuri 'tatu-bola'*	arachnids, opossum, house rat, amphisbaenian
		erehe	*arogwa*	crocodile
		hahari	*pari*	ostrich
		huarĩri	*kugaru*	sand
		huaru	*baru*	sky
		huatari	*bɔkɔdɔri*	giant armadillo
		i-čera	*pera 'bottom' -poro 'anus'*	anus
		i-čeru	*ɛru*	language/tongue
		i-čeuru	*pɛguru*	intestines
		i-čoara	*aora 'cabeça'*	forehead
		i-čura	*iura*	ribs (bones)
		i-kiarato	*pio, piora*	elbow
		i-reki	*buregi 'toenail'*	nails

		i-šeno poro	*ɛnɔ poro*	nostrils
		i-tiura	*ɔkura*	chin
		itura	*itura*	wood, forest
		i-viaroto	*bureado*	heel
		i-vire-egua	*burea*	sole of the foot
		i-vire-eno	*bureko*	toe
		i-yunara	*kana 'arm', ra 'bone'*	forearm, wrist, fingers
		i-yure-tanavo	*ikuruǰa*	bladder
		keara	*era, ik-era 'my hand'*	arm
		ketari	*kedarɔ*	bat
		neheri	*mɛriri*	iron and metals
		neri	*mɛri*	sun
		ohorè	*ɔkiwareu 'vard. De rato'*	mole rat
		ohoro	*oro 'child, palm sprout'*	meadows
		ohuaru	*okwaru*	six-banded armadillo (encoubert)
		ohuarututa	*radɔdu, ragodu (N)*	sing
		orohuari	*orari 'spotted fish (Siluridae)'*	surubí fish
		oroykia	*orogu 'guaçuti-femea'*	deer (guazu ti, guazu pyta)
		rarĩ	*aro, aru, raru*	leaf
		rèhè	*rie 'guara'*	red wolf
		reho	*rɛkɔ*	sey parrot and amazon parrot
		rerikeke	*ǰɛrigige*	land tortoise
		reru	*ɛru, ɔru 'fire', riru 'fire production'*	fire
		ričonekia	*re (kurireuge) čɔreuge*	ant
		roktu	*rotu*	clay
		ruka	*ruke*	fly
		rusa	*ruča*	crab
		seruki	*ɛrigi*	firewood
		sibiarė	*riboareu*	pumpkin
		surè	*burɔe*	bee
		surebori	*bɔri*	wax
		tera-vihi	*itora-bu*	beard
		tohori	*tɔri*	stone
		tuhare(-)turutu	*butuiari*	fireflies
		tuvukarè	*togware*	horsefly

		urukua	*kurugɔ*	guinea pig
		vuauru	*bakuru*	wind

r	-	*i-reka-vi*	*ɛku-bu*	eyelashes, eyebrows

s	-	*seruki*	*ɛriɡi*	firewood

r	b	*rektaka*	*bɛtaga*	centipede

k	r	*aika*	*aria*	calabash
		uvakuhua	*uwarugareu*	partridge

h	r	*čuhu*	*ǰureu 'mandioc'*	cassava

r	ǰ	*rerikeke*	*ǰerigige*	land tortoise

n	n	*enari*	*ɛnari*	woodpecker
		enohuari	*ɛnɔkuri 'tatu-bola'*	arachnids, opossum, house rat, amphisbaenian
		i-šeno	*ɛnɔ*	nose
		i-šeno poro	*ɛnɔ poro*	nostrils
		i-yunara	*kana 'arm', ra 'bone'*	forearm, wrist, fingers

m	m	*asema*	*amema*	iguana
		imaxahe	*pɛmɛga 'goodness, be good'*	(I am) well
		i-miaura	*mɔkuro*	breast
		mase	*maerebɔe*	mosquito
		moktuhu	*moto*	earth

n	m	*neda*	*mɛa*	agouti
#_e		*neheri*	*mɛriri*	iron and metals
		neri	*mɛri*	sun
		neričoki	*mɛriǰi(bɔe) 'day(time)'*	day

n	k	*i-vire-eno*	*bureko*	toe

m	k	*mučata*	*kuiada*	corn

s	m	*asema*	*amema*	iguana
l'	i	*hual'a*	*bai*	house
r	i	*i-šiora*	*ia*	mouth
l'	r	*i-l'a, i-l'ia*	*ra 'bone'*	leg, bone
l	r	*liviota*	*riwodo 'inambu xororo bird'*	pecui bird
s	r	*mase*	*maerebɔe*	mosquito
		sibiarė	*riboareu*	pumpkin
r	n	*ričonekia*	*re (kurireuge) čɔreuge*	ant
r	b	*rosoho*	*bɔtɔwu 'vard. De tatu-bola de floresta'*	six-banded armadillo
s	b	*surè*	*burɔe*	bee