



8-2010

## A phonological description of "Pet Talk" in Arara

Isaac Costa de Souza

[How does access to this work benefit you? Let us know!](#)

Follow this and additional works at: <https://commons.und.edu/theses>



Part of the [Linguistics Commons](#)

---

### Recommended Citation

Souza, Isaac Costa de, "A phonological description of "Pet Talk" in Arara" (2010). *Theses and Dissertations*. 4466.

<https://commons.und.edu/theses/4466>

This Thesis is brought to you for free and open access by the Theses, Dissertations, and Senior Projects at UND Scholarly Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UND Scholarly Commons. For more information, please contact [und.common@library.und.edu](mailto:und.common@library.und.edu).

A PHONOLOGICAL DESCRIPTION OF “PET TALK” IN ARARA

by

Isaac Costa de Souza  
Bachelor of Arts, Universidade Federal do Pará, 1980  
Master of Arts, Universidade Estadual de Campinas, 1988

A Thesis  
Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Arts

Grand Forks, North Dakota

August

2010

This thesis, submitted by Isaac Costa de Souza in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

---

Chair

---

---

This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

---

Dean of the Graduate School

---

Date

## PERMISSION

Title           A Phonological Description of “Pet Talk” in Arara  
Department   Linguistics  
Degree        Master of Arts

In presenting this thesis in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my thesis work or, in his absence, by the chairperson of the department or the dean of the Graduate School. It is understood that any copying or publication or other use of this thesis or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of North Dakota in any scholarly use which may be made of any material in my thesis.

Signature \_\_\_\_\_

Date \_\_\_\_\_

## TABLE OF CONTENTS

LIST OF FIGURES .....	vi
LIST OF TABLES.....	vii
ACKNOWLEDGEMENTS.....	viii
ABBREVIATIONS AND SYMBOLS.....	x
ABSTRACT.....	xii
CHAPTER	
1 INTRODUCTION .....	1
2 GENERAL INFORMATION ABOUT THE ARARA PEOPLE.....	4
3 THE ARARA LANGUAGE.....	8
3.1 A Brief Overview of Arara Phonology.....	8
3.1.1 Phonemic Inventory .....	8
3.1.2 Syllable Structure .....	19
3.1.3 Stress .....	20
3.1.4 Some Common Phonological Processes .....	21
3.2 Brief Overview of Arara Grammar.....	26
3.2.1 Morphological Typology.....	26
3.2.2 Ergative Type .....	27
3.2.3 Word Order.....	28
3.2.4 Noun Phrases.....	29
3.2.5 Relational Phrases .....	30
3.2.6 Tense, Aspect and Mood.....	30
3.2.7 Plural Forms .....	32
4 LUDLING DATA.....	34
4.1 Meaning and Purpose of the Word Games .....	35

4.2	Presentation of Data.....	40
4.2.1	Capuchin Monkey Talk.....	41
4.2.2	Duski Titi Monkey Talk.....	44
4.2.3	Large Bird Talk.....	49
4.2.4	Trumpeter and Woodpecker Talk.....	52
4.2.5	Coati Talk.....	54
4.2.6	Agouti Talk.....	57
4.2.7	Peccary and Dog Talk.....	60
4.2.8	Small Bird Talk.....	63
4.2.9	Toucan Talk.....	66
4.2.10	Spider Monkey Talk.....	69
4.2.11	Squirrel Monkey Talk.....	75
4.2.12	Howler Monkey Talk.....	79
4.2.13	Tortoise Talk.....	81
4.3	Summary of the Ludlings.....	82
5	CONCLUSION.....	85
	APPENDICES.....	88
	Appendix 1 Contrast Among Consonants.....	89
	Appendix 2 Contrast Among Vowels.....	94
	Appendix 3 Chart with Ludlings.....	96
	Appendix 4 Recording of Ludlings.....	105
	Appendix 5: Flora and Fauna Identification.....	120
	BIBLIOGRAPHY.....	123

## LIST OF FIGURES

Figure	Page
1: Map of Arara Area.....	5

## LIST OF TABLES

Table	Page
1: Consonants.....	8
2: Vowels .....	16
3: Pets' Names and Ludlingants .....	41



## ACKNOWLEDGEMENTS

To God, who gave me life and joy during the whole process of studying at SIL-UND;

To the Arara people, who taught me their language and their way of life;

To my family, Shirley, Micla, and Leisa, for their love;

To my parents (*in memoriam*);

To my supporters, for their prayers and financial help for all these years I have been working among the Arara people;

To my friend Eduardo Ishida, for his example as a tremendous human being (*in memoriam*);

To my dear friends David and Delores Scherling for their friendship and love;

To Ruth Aldrich and family, Al and Cheryl Jensen, Ron and Erin Hesse, James and Dorothy Wheatley, Robert and Dorothy Wright, Armindo and Marli Lobato, Vince and Mindy McCannell-Unger, Kiyosh and Elizabeth Ishida, Eliane Ishida, Samuel and Wanda Miller, Lorena Bridgeman, Neil and Doris Wolf, Daniel and Marcia Lawrance, Robert and Kathie Dooley, Wes and Jean Bell, Lynn Mishler, Margie Liedtke, Keith and Heidi Barkman, Ed and Sally Koehn, Paul and Mary Mullen, Steve and Sonia Dettweiler, George and Liebby Gebhardt, and Lee Otts for their great help and love;

To Benigno Pessoa Marques, Afonso Alves da Cruz, Arismar Mendes, Carlos Vianey, Caetano Ventura, and other workers (or previous workers) from FUNAI-Altamira, for their constant help;

To Mark Karan and Albert Bickford, who through SIL-UND granted me scholarships to stay at the UND facilities for several summers;

To Henry Huang, Steve Sheldon, Bob Dooley, Keith Barkman, Alec Harrison, and Dave Harthan, who helped me raise scholarships to come to SIL-UND, through The Seed Company, SIL-Brazil Branch, and SIL Americas;

To Stephen A. Marlett, for leading me to come to SIL-UND;

To John Clifton, for his wise and nice instructions as the Academic Director at SIL-UND;

To Aryon Rodrigues, for introducing me to the initial analysis of the Arara language;

To Carl Harrison, for teaching me subjects such as incorporation and ergativity, present in the Arara language;

To my Committee Members, for their friendship and guidance;

To my colleagues from ALEM and SIL, for their friendship;

To Steve Parker, who was my main advisor and taught me much more than just phonology.

## ABBREVIATIONS AND SYMBOLS

A	Subject of transitive clause
Abs	Absolutive
Adjr	Adjectivizer
Admon	Admonition
Aff	Affirmative mood
Aug	Augmentative
Caus	Causative
Dir	Direction
Dist	Distal
DO	Direct object
Ela	Elicative case
Erg	Ergative
Excl	Exclusive
Fem	Feminine
Hort	Hortatory
Imp	Imperative
Imperf	Imperfective
Inc	Inceptive
Incl	Inclusive
Iter	Iterative
lit	Literally
LUD	Ludlingant
Mur	Murmured
N	Noun
Neg	Negation
Nmlz	Nominalizer
O	Object
Past	Past
p.c.	Personal communication
Perf	Perfective aspect
Perm	Permission
PL	Plural
PN	Proper name
Poss	Possessive

Pred	Predicate
Pres	Present tense
Prog	Progressive aspect
Purp	Purposive
Q	Question Particle
Rec	Recent past
Refl	Reflexive
Rem	Remote past
Rhet	Rhetorical question
S	Subject
sp.	Species
T	Prefix /tu-/ and its allomorphs
UF	Underlying Form
Uni	Universal time (Incomplete?)
Verb	Verbalizer
1	First person
2	Second person
3	Third person
12	First person inclusive
/ /	Abstract representation
[ ]	Phonetic representation
+	Morpheme boundary
.	Syllable boundary
Ǟ	A weak vowel that can be deleted

## ABSTRACT

The Arara people of Para, Brazil, as a whole, are remnants or survivors of some larger Cariban groups who descended from the headwaters of the upper Xingu to the mid and low areas of this river by the beginning of the nineteenth century. Now they live in three different villages: Maia, Cachoeira Seca and Laranjal.

The present thesis aims to describe thirteen different *ludlings* or “play languages” that elderly Arara people from Laranjal know and sometimes use in talking to pets. Play languages are linguistic forms that are purposely manipulated at some level. The strategies which the Arara people use to manipulate the base language to form their ludlings are the addition of affixes and/or certain phonological modifications, such as copying vowels, nasalization, murmur, and lateralization of flaps. The addition of affixes may trigger some phonological processes, such as vowel deletion and haplology. In addition to the ludlings, an informal sketch of Arara phonology is presented as part of the background for the discussion of the “language games”, as well as a brief overview of Arara grammar.

# CHAPTER 1

## INTRODUCTION

This thesis describes thirteen different play languages, or ludlings,<sup>1</sup> that elderly Arara people sometimes use in talking to pets. The use of play languages among the Araras is decreasing, and only elderly people know them. The Arara language is spoken in the state of Pará, Brazil. The data presented here were collected during several years, starting in November, 1982, in the Posto de Vigilância 1, and later, starting in 1994, in the village of Laranjal, under the auspices of the Summer Institute of Linguistic (SIL) and the Brazilian non-governmental organization Associação Linguística Evangélica Missionária (ALEM).<sup>2</sup> Scientific names for plants and animals were collected from different sites on the internet, usually with a picture of each type or species. Arara proper names used in this thesis are from the Arara language (not borrowed from Portuguese).

The strategies that Arara people use to manipulate the base language to form their ludlings in talking to pets are the addition of affixes and/or some phonemic modifications, such as copying vowels, modifying vowels, nasalization, murmur, and lateralization of taps. The addition of affixes may trigger some phonological processes, such as vowel truncation and haplology.

---

<sup>1</sup> For a discussion of this term, see Section 4.1.

<sup>2</sup> In 2010 I collected supplementary data following the Institutional Review Board (IRB) policies, under the University of North Dakota (UND), using an Informed Consent document, which was signed by me and by the Arara language resource person.

This thesis consists of four chapters. Chapter one is an introduction where I present the purpose of the thesis and how it is organized. Chapter two presents general information about the Arara people, including a short history of their group. Chapter three presents an overview of Arara phonology, as well as a brief overview of Arara grammar. In the phonological section some phonological phenomena are discussed in prose with no formal representations; in the grammar section, there is a brief sketch that describes grammatical structures of the language that are pertinent to the discussion in the remainder of the thesis. Chapter four deals with word game data and includes the meaning and purpose of the ludlings, presentation of the data, and a summary of their phonological behavior. Closing the thesis, there is a small conclusion section. In addition to this, there are five Appendices: the first one shows contrast among consonants in Arara; the second one presents contrast among vowels in Arara; the third one presents a summary charts of the ludling data forms in isolation or in simple syntactic constructions; the fourth one presents transcriptions of ludlings that were recorded in sentential contexts; the fifth one presents a table for flora and fauna with terminology in Arara, English, Latin (scientific names), and Portuguese.

The Arara data are written with the International Phonetic Alphabet (IPA). Narrow Phonetic transcriptions are shown inside square brackets, while more abstract representations are sometimes shown in slashes and sometimes without any such marks. By abstract representation, I mean any representation that is not phonetic. I do not always intend these to signify an underlying representation, since I will use slashes for various purposes. For example, the same stem can have different abstract forms: /ibu/ or /ip/ 'to take a bath', depending on what is being presented. Since stress usually falls on the last

syllable of the word, it is not marked in the Arara examples, except in the section about stress (3.1.4).

With this thesis, I document these interesting language games that are very typical of Arara culture. As far as I know, there is very little documented information about any similar ludlings among the other indigenous people groups in Brazil. One of them is about the Palikur people, from the state of Amapá, northern Brazil, written by Diana Green (1998), from the Summer Institute of Linguistics (SIL, Brazil). In her paper she comments that there is a ludling using a reversal strategy in the Guarani language of southern Brazil. Finally, I hope that the Arara people, once aware of studies like this, will continue to use these ludlings in their culture.

As a preview of what is coming later in chapter 4, here are few ludling forms: [paru] ‘water’, but [palugu] ‘water (talking to a capuchin monkey)’. In this ludling, they add the infix /-gV-/ to the base word, and change /r/ into [l]. Another example is [wɔt] ‘fish’, but [idiwɔt] ‘fish (talking to a titi monkey)’. In this ludling, they add the prefix /idi-/ to the base word. Finally, [eduet] ‘hammock’, but [ẽdũẽt] ‘hammock’ (talking to a howler monkey). In this ludling, they nasalize the vowels of the base word.



## CHAPTER 2

### GENERAL INFORMATION ABOUT THE ARARA PEOPLE

Various unrelated ethnic groups with unrelated languages in Brazil are referred to as “Arara” by outsiders, including Arara-Karo, from Rondônia,<sup>3</sup> Arara of Acre,<sup>4</sup> Arara of Mato Grosso,<sup>5</sup> and Arara of Pará.

This thesis is a study of the language of the Arara of Pará, a Cariban language (Rodrigues 1986; Meira 2006), ISO 639-3 code *aap*. These people, as a whole, are remnants of some larger Cariban groups who came down from the headwaters of the upper Xingu to the mid and low areas of this river by the beginning of the 19th century (Souza in progress). They now live in three different villages: Maia, Cachoeira Seca and Laranjal. People living in Maia do not speak the Arara language anymore, only Portuguese.

Maia is located on the Xingu River, below the city of Altamira. The residents have had contact with the Juruna people since the 19th century, with whom they merged as one

---

<sup>3</sup> The Karo language belongs to the Ramarama family, of the Tupi linguistic stock (Rodrigues, 1986). They are located in the southern area of the Lourdes creek, in the State of Rondônia (Gabas Jr., Nilson. [www.institutosocioambiental.org.br/pib/epienglish/karo.shtml](http://www.institutosocioambiental.org.br/pib/epienglish/karo.shtml) – accessed on July 19, 2008). Its ISO 639-3 code is *arr* (Gordon 2005).

<sup>4</sup> Also called Apolima-Arara, whose speakers live along the Humaitá River, a tributary of the Tarauacá river, in the state of Acre. The speakers come from different ethnic groups, including Chama, Amoaka, Santa Rosa, Arara and Jaminawa (Padilha, Lindomar. [www.amazonlink.org/amazonia/culturas\\_indigenas/povos/apolina\\_arara.html](http://www.amazonlink.org/amazonia/culturas_indigenas/povos/apolina_arara.html) – accessed on July 19, 2008). The ISO 639-3 code is *mcd* (Gordon 2005).

<sup>5</sup> Other names for this language are Arara do Beiradão and Arara do Rio Branco. Its ISO 639-3 code is *axg*. The language is almost extinct (Gordon 2005).

ethnic group, as well as with other Brazilian citizens. In the late 1990s, they were recognized as a separate people by the Fundação Nacional do Índio (FUNAI), the Brazilian federal entity that manages indigenous affairs in the country. The residents of the other two Arara villages still speak the Arara language. These villages are located along the left bank of the Iriri River, the largest tributary of the Xingu.

Figure 1: Map of Arara Area<sup>6</sup>



---

<sup>6</sup> This map was prepared by Jonathan Fuchs, and is used with his permission.

The Arara people living in Laranjal were contacted by FUNAI during two different periods of time: 1981 and 1983. The group contacted in 1981 had fifty people and the other one only twenty. The Arara living in Cachoeira Seca were contacted by the same governmental agency in 1987. They numbered about thirty people. These Arara people as a whole call themselves [ugɔrɔŋ'mɔ], which is the first person inclusive pronoun. The morphological structure of this word is: [ugɔ'rɔ] (first person inclusive) and [-ŋmɔ] (plural) (Souza 2004). Thus, some of them translate the meaning of their autonym as just *nós* in Portuguese (“we” in English).<sup>7</sup>

There are about 335 speakers of Arara living in the villages of Laranjal (about 250) and Cachoeira Seca (about 85). According to my research (Souza in progress), people from these two villages were separated from each other around 1925, when there was a conflict between them on a place along the Iriri River called Cachoeira Grande, close to the mouth of this river, and not very far from Laranjal village. An advocate for the indigenous cause named Afonso Alves da Cruz told me (p.c. 2004) that one day he was traveling in a motor boat along the Iriri River with an Arara family from Cachoeira Seca, and as they were passing by Cachoeira Grande, a woman in the boat, who was the oldest woman from Cachoeira Seca at that time, cried out: “I know this place! It was here that my people separated themselves from the Laranjal people! Piput (the oldest man from Laranjal at that time) was very small! I remember it!” She pointed out that when this happened she was about the same age as a girl from her family, who was six years old. Through an examination of Piput’s teeth, dentists from FUNAI estimated the year of his birth as 1922. Since he was not able to remember that story, he would have been three years old or less at the time of the event.<sup>8</sup>

---

<sup>7</sup> The first person exclusive pronoun is [tʃimna].

<sup>8</sup> I thank Afonso Alves da Cruz for his long discussions with me about Arara ethnohistory. Without his

Some languages related to Arara are Hixkaryana, Apalaí, Wayway, Makuxi, Taulipang, Waimiri, Atroari, Kuikuro, Bakairi, and Ikpeng (Txikão), among others. By comparing descriptions of these languages (lexicon and morphology) it is possible to state that the closest one to Arara is Ikpeng (Rodrigues 1986).<sup>9</sup>

My first contact with the Arara people from Laranjal was in November 1982. At that time my wife and I spent four months in Posto de Vigilância 1. Between November and December 1986 I spent a month with three young Arara men at this same Posto de Vigilância. Only in 1987 were my wife and I able to start having regular interaction with them. Since that time we have spent several months of every year among the Arara people. During these periods of time, we began studying their language and culture, developed a practical alphabet for writing the language, helped to start a school among them, helped them acquire medicines, helped protect their territory, helped them acquire canoes and sewing machines, and established a nursery for fruit plants and trees such as mahogany to help in their food and money resources, etc.

Only twice was I able to visit people from Cachoeira Seca: the first time by invitation from an anthropologist who was doing studies for the Cachoeira Seca's area demarcation, and the second time by the FUNAI's chief in the Cachoeira Seca village, Afonso Alves da Cruz. I stayed in the village for one week during each trip. However, my main research has been among the Arara from Laranjal. Thus the ludling data I present in this thesis were collected among the Arara living in Laranjal, the only sub-group where these ludlings have been attested.

---

knowledge, my studies about these people would have many gaps.

<sup>9</sup> I have personally collected comparative data from some of these languages, including Makuxi, Kuikuro, Bakairi and Ikpeng. These data have not yet been published.

## CHAPTER 3

### THE ARARA LANGUAGE

#### 3.1 A Brief Overview of Arara Phonology

##### 3.1.1 Phonemic Inventory

The Arara language has twenty-two phonemes: sixteen consonants and six vowels.

#### A. Consonants

A phonemic consonant chart, used as a basis for systematic transcription, is shown below with the sixteen consonants.

Table 1: Consonants

	Bilabial	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Stop	p    b	t    d			k    g	
Affricate			tʃ			
Nasal		m    n			ŋ	
Trill	(ʙ)					
Tap			r			
Fricative						(h)
Central Approximant		w			j	
Lateral Approximant			l			

In order to confirm the consonant phonemes of the language, I show contrast between some of them in Appendix 1 at the end of this thesis. Of these sixteen consonants, two of them occur rarely: the voiceless bilabial trill [ʙ] and the glottal fricative [h]. They occur in a very specific phonological environment. For example, the voiceless bilabial trill occurs in expressive words.<sup>10</sup> In addition to that, it occurs only in

---

<sup>10</sup> Expressive words resemble ideophones, but have a larger scope of meaning, as can be seen in the examples in (1).

onset position. Furthermore, it only occurs before the vowel [u], which is always followed by an alveolar or palatal consonant. The trill does not occur in proper names.

All seven of the words in which it occurs are given in (1) below:

- |     |    |             |                                    |
|-----|----|-------------|------------------------------------|
| (1) | a. | [Ḃutekeni]  | ‘Orion’s belt, Pleiades’           |
|     | b. | [Ḃutakeni]  | ‘small and round cultivated field’ |
|     | c. | [Ḃut Ḃut]   | ‘an insect’                        |
|     | d. | [Ḃuta]      | ‘to throw away’                    |
|     | e. | [Ḃuta Ḃuta] | ‘rolling on the ground’            |
|     | f. | [Ḃutʃak]    | ‘to shoot an arrow’                |
|     | g. | [Ḃutʃik]    | ‘to miss a target/aim’             |

The glottal fricative occurs only in coda position but never word-finally and, like the voiceless bilabial trill [Ḃ], is always followed by a coronal consonant, also in a very specific phonological environment. It is present in only four words in the normal language, but also occurs in proper names.

- |     |    |            |                           |
|-----|----|------------|---------------------------|
| (2) | a. | [muhna]    | ‘there further’           |
|     | b. | [muhtɔ]    | ‘over there’              |
|     | c. | [kahtarat] | ‘fire caterpillar’        |
|     | d. | [niahnia]  | ‘a banana’                |
|     | e. | [muhtahta] | ‘proper name for a man’   |
|     | f. | [mohtidi]  | ‘proper name for a man’   |
|     | g. | [tʃahʃa]   | ‘proper name for a woman’ |

For these reasons [Ḃ] and [h] are placed within parentheses in the consonant chart. They are excluded from further discussion in this section. It is also worth mentioning that a few expressions sometimes include two implosive stops that are otherwise never used in the lexicon: [b] and [d].<sup>11</sup>

- |     |    |             |                                     |
|-----|----|-------------|-------------------------------------|
| (3) | a. | [bɔh]       | ‘(s/he is) lying down in a hammock’ |
|     | b. | [dɔh ketkɔ] | ‘sit down!’                         |

Because of their specific occurrence in special expressions, they are not included in the Arara phonemic inventory.

---

<sup>11</sup> The only exception in the whole Arara language is [bak keni] ‘hoe’.

In normal speech, the voiced bilabial and alveolar stops have an optional lenis realization intervocalically: [β] and [d̥],<sup>12</sup> respectively. Here are some examples:

- (4) a. [mɔβɛ] ‘a fruit’  
 b. [aβat] ‘manioc bread’
- (5) a. [id̥ara] ‘fly’  
 b. [ouɔ̃ɔ] ‘big traditional house’

There is no such realization for the voiced velar stop /g/. In addition to this lenition process, there are restrictions on the occurrence of some of the Arara phonemes. For example, in lexical items other than proper names, there is lack of contrast between [t] and [tʃ] before the high front vowel [i]. In this environment only the affricate occurs:

- (6) a. [tʃitʃi] ‘sun’  
 b. [kɔtʃi] ‘a fish’  
 c. [tʃiruka] ‘coati’

This neutralization of contrast occurs because an alveolar stop always is realized as a palatal affricate before /i/, as can be seen in examples (7b) and (7c) below, where this lexical phonological process happens to reflexive and first person dual inclusive prefixes, respectively:

- (7) a. /ɔt-pɛ-pɔ-lu/<sup>13</sup> → [ɔtɛpɔlu] ‘s/he hit his/her own forehead’  
 Ref-forehead-hit-Rec
- b. /ɔt-inɔ-lu/ → [ɔtʃinɔlu] ‘they left each other’  
 Ref-leave-Rec
- c. /kut-inɔ-lu/ → [kutʃinɔlu] ‘we (dual) left him/her’  
 12Erg-leave-Rec

The process of affrication of a coronal stop also occurs (lexically and post-lexically) before a palatal approximant, as can be seen in (8b) and (9b) below:

- (8) a. /kariamɯ-um/ → [kariamɯum] ‘sheep’  
 deer-Aug

<sup>12</sup> The lenis form [d̥] is an IPA notation for a quickly released [d], similar to an alveolar tap.

<sup>13</sup> Here there is object incorporation.

- b. /ɔrɔt-um/ → [ɔrɔtʃum]<sup>14</sup> ‘cultivated cashew’  
 cashew-Aug
- (9) a. /pitɔt i-emi-lu/ → [pitɔd iemilu] ‘I ate a (tropical) fruit’  
 fruit 1Erg-eat-Rec
- b. /pitɔt jemi-lu/ → [pitɔtʃemilu] ‘s/he ate a (tropical) fruit’  
 fruit eat-Rec

However, there is contrast between [t] and [tʃ] before the vowel [i] in proper names:

- (10) a. [titik]<sup>15</sup> ‘proper name for a man’  
 b. [tʃipi] ‘proper name for a woman’
- (11) a. [mohtiti]<sup>16</sup> ‘proper name for a man’  
 b. [tatʃi] ‘proper name for a man’

Before the vowel [i] the voiceless affricate [tʃ] is voiced into [dʒ] after nasal

consonants, as in (12b) below.

- (12) a. /i-la-tʃi/ → [ilatʃi] ‘his/her mouth’  
 3Abs-mouth-Poss
- b. /i-mumu-tʃi/ → i-mumØ-tʃi<sup>17</sup> ‘his/her head’  
 3Abs-head-Poss [imumdʒi]

Thus, within a word only the voiced affricate is found after a nasal:

- (13) a. /kuŋtʃi/ → [kuŋdʒi] ‘a bird’  
 b. /tɔŋtʃiri/ → [tɔŋdʒiri] ‘a lizard’  
 c. /ɛmtʃin/ → [ɛmdʒin] ‘his daughter’

---

<sup>14</sup> Here there is insertion of the palatal approximant [j], and coalescence of the preceding /t/ and /j/, resulting in the affricate [tʃ]. Insertion of [j] occurs within certain linguistic structures that involve relationships between a direct object + 3 person verb (statement only), genitive-nouns, and the noun stem -Aug when the first constituent ends in a consonant and the following one starts with a vowel (except for [i]): /ɔrɔt ɛnɛbuɪlu/ → [ɔrɔtʃɛnɛbuɪlu] ‘s/he brought cashew fruit’, /ɔrɔt awom/ → [ɔrɔtʃawom] ‘cashew fruit tail (shred)’, /wom-um/ → [womjum] ‘cultivated banana’. Compare these examples with: [ɔrɔd inɛbuɪlu] ‘I brought cashew fruit’, [munbɔ awom] ‘rat tail’, and [munbɔum] ‘big rat’. Palatal glide insertion does not occur between subject-verb and moods other than declarative. Palatalization triggered by [j] is a post-lexical process. Compare: /ibut jɛ/ → [ibutʃɛ] ‘his mother-in-law’ with /ibut imu/ → [ibud imu] ‘his father-in-law’.

<sup>15</sup> This man is deceased.

<sup>16</sup> This man is deceased.

<sup>17</sup> Here there is a vowel deletion process, whereby across morpheme boundaries a vowel is deleted before a non-liquid consonant.



Actually, affricate voicing is part of a general process whereby only voiced obstruents occur after a nasal consonant, as illustrated in (14b) and (15b):

- |      |    |                          |   |                        |          |                          |
|------|----|--------------------------|---|------------------------|----------|--------------------------|
| (14) | a. | /ɛnɛbɯ-ta/<br>bring-Dist | → | ɛnɛb∅-ta <sup>18</sup> | [ɛnɛpta] | ‘bring it (from there)!’ |
|      | b. | /ɛnɛŋɯ-ta/<br>see-Dist   | → | ɛnɛŋ∅-ta               | [ɛnɛnda] | ‘(go there to) see it!’  |
| (15) | a. | /ɛnɛbɯ-kɔ/<br>bring-Imp  | → | ɛnɛb∅-kɔ               | [ɛnɛpkɔ] | ‘bring it!’              |
|      | b. | /ɔmɔmɯ-kɔ/<br>enter-Imp  | → | ɔmɔm∅-kɔ               | [ɔmɔmgɔ] | ‘come in!’               |

Thus, within a word only voiced obstruents are found in this environment:

- |      |    |                       |   |
|------|----|-----------------------|---|
| (16) | a. | [tomgɛm]              | ‘an insect’   |
|      | b. | [panbak]              | ‘ball’  |
|      | c. | [amdɛt] <sup>19</sup> | ‘handle, strap, hank made of cotton or vegetal fiber’ |

As shown in examples (14a) and (15a) above, other voiced consonants do not cause the subsequent voiceless consonant to be realized as voiced. On the contrary, they are realized as voiceless themselves.

Although the alveolar stop [t] never occurs before [i] in the lexicon other than in proper names, its voiced counterpart [d] rarely can occur before this vowel: in the question word [wadite] ‘how is it?’, and in few derived words, where the vowel /e/ is raised to [i] before [a], in a dissimilation process. In this case, it must be noted that the voiced alveolar stop [d] is not realized as palatal before [i]. Examples are given in (17b) and (18b):

- |      |    |  |   |              |                  |
|------|----|--|---|--------------|------------------|
| (17) | a. | /ɯ-guri-dɛ-lɯ/<br>1-angry-Verb-Rec       | → | [ɯguridelɯ]  | ‘I got angry’    |
|      | b. | /ɔ-guri-dɛ-ane/<br>2Abs-angry-Verb-Admon | → | [ɔguridiane] | ‘don’t get mad!’ |

<sup>18</sup> For vowel deletion here and in example (15), see footnote 17.

<sup>19</sup> The Arara people from Cachoeira Seca village pronounce all these words with the corresponding voiceless stops.

- (18) a. /i-mu-dε-lu/ → [imudelw] ‘it laid an egg’  
           3Abs-egg-Verb-Rec  
       b. /ni-mu-dε-a/ → [nimudia] ‘let it lay eggs’  
           3Abs-egg-Verb-Perm

The sequence [di] also occurs in proper names:

- (19) a. [adidi] ‘proper name for a woman’  
       b. [mohtidi]<sup>20</sup> ‘proper name for a man’

Other restrictions on sound occurrences can be found in utterance-initial position. Of the fourteen consonants, only nine occur in this position: the voiceless stops [p], [t] and [k], the affricate [tʃ], the bilabial and alveolar nasals [m] and [n], the lateral [l], and the glides [w] and [j]. The other five cannot be found in utterance-initial position: the voiced stops [b], [d] and [g], the dorsal nasal [ŋ], and the tap [r]. Neither consonant group seems to form a natural class. Examples with consonants in utterance-initial position are given in (20):

- (20) a. [pera] ‘a tropical fruit’  
       b. [tupɔ] ‘a gourd container’  
       c. [kutɔ] ‘a toad’  
       d. [tʃanɔ] ‘poison’  
       e. [mɯta] ‘a monkey’  
       f. [nunɔ] ‘moon’  
       g. [lukuɯnden] ‘scorpion’  
       h. [wauri] ‘small fruit of a palm tree’  
       i. [jaguri] ‘agouti’

However, in terms of stops it is possible to see from affixation that each pair of voiceless and voiced stops occurs lexically in initial position in underlying forms (UF).

Examples are given in (21) for voiceless and (22) for voiced, respectively:

- (21) a. /kambɔt/ → [kambɔt] ‘firewood, fire’  
       b. /i-kambɔt-ru/ → [ikambɔru] ‘his/her firewood, fire’  
           3Abs-fire-Poss  
       (22) a. /buɯlepte/ → [puɯlepte] ‘knife’  
           b. /i-buɯlepte-n/ → [ibuɯlepten] ‘his/her knife’  
           3Abs-knife-Poss

---

<sup>20</sup> This is different from [mohtiti] ‘proper name for a man’ in (11a).

As can be seen in (21b) above, the /k/ of the stem does not voice after the prefix [i-]; the phonetic representation \*[igamboruw] is unacceptable. Therefore, the variation between [p] and [b] in [pwulepte] and [ibwulepten] in (22a) is better explained as a devoicing process (utterance-initially) than a voicing process after a vowel across a morpheme boundary.

Stems starting with underlying voiceless consonants are extremely rare, like the example in (21) above. They form just a small group of stems: about twenty or less in the whole language. The most common situation is to have stems starting with voiced consonants which are realized as voiceless word-initially.

There are other kinds of examples showing a difference of behavior between underlying voiceless and voiced stops. One of them is that a voiceless alveolar stop (/t/) in a UF is realized as voiced after a nasal consonant, while in this same environment, an underlying voiced alveolar stop is deleted. This is possible to see comparing examples (23b) and (24b) below, where in the first there is voicing of a consonant and in the second deletion:

(23)	a.	/ak-ta/ <sup>21</sup> eat-Dist	→ [akta]	‘(go there and) eat it’
	b.	/ɛnɛn-ta/ see-Dist	→ [enenda]	‘(go there and) see it’
(24)	a.	/i-ɛmi-da/ 1Erg-eat-Near	→ [iemida]	‘I will eat it’, or ‘let me eat it (near me)’
	b.	/i-ɛnɛn-da/ <sup>22</sup> 1Erg-see-Near	→ [ienena]	‘I will see it’ or ‘let me see it (near me)’

Yet among the fourteen consonants, only six can be found in utterance-final position: the voiceless stops [p], [t] and [k] and the nasals [m], [n], and [ŋ]. The other eight cannot:

---

<sup>21</sup> The UF for “eat” is /agu/ and “see” in (b) is /eneŋu/. They were modified here for the sake of simplicity. The vowel deletion is referred to in footnote 17.

<sup>22</sup> See the previous footnote about the UF for “see”.

the voiced stops [b], [d] and [g], the affricate [tʃ], the lateral [l], the tap [r], and the glides [w] and [j]. Examples with consonants in utterance-final position are illustrated in (25):

- |      |    |         |  |                     |
|------|----|---------|--|---------------------|
| (25) | a. | [kamap] |  | ‘a gourd container’ |
|      | b. | [wakat] |  | ‘alligator, cayman’ |
|      | c. | [kək]   |  | ‘evening, night’    |
|      | d. | [ɔgum]  |  | ‘wasp’              |
|      | e. | [ugon]  |  | ‘man’               |
|      | f. | [manəŋ] |  | ‘a coconut bug’     |

In terms of UF’s, the analysis developed to show contrast between the stops in initial position does not apply to the stops in final position because: (a) they agree in voicing with the following segment in a derived environment; or (b) they resyllabify to the onset position when the next segment is a vowel, as expected in any other language. In other words, in UF’s stops are unspecified for voicing lexically in final position. This non-specification is represented by capital letters here and elsewhere.<sup>23</sup> Examples of voicing agreement between stops are shown in (26) and (27):

- |      |    |             |   |             |                              |
|------|----|-------------|---|-------------|------------------------------|
| (26) | a. | /kamaB/     | → | [kamap]     | ‘a gourd container’          |
|      | b. | /kamaB tut/ | → | [kamap tut] | ‘he wants a gourd container’ |
|      | c. | /kamaB lɔn/ | → | [kamab lɔn] | ‘gourd container itself’     |
| (27) | a. | /kagaG/     | → | [kagak]     | ‘a toucan bird’              |
|      | b. | /kagaG tut/ | → | [kagak tut] | ‘he wants a toucan bird’     |
|      | c. | /kagaG lɔn/ | → | [kagaɣ lɔn] | ‘a toucan bird itself’       |

Examples of stops moving to the onset position when the next segment is a vowel are presented below:

- |      |    |              |   |                             |                     |
|------|----|--------------|---|-----------------------------|---------------------|
| (28) | a. | /ibuɯD/      | → | [i.buɯt]                    | ‘his wife’          |
|      | b. | /ibuɯD imuɯ/ | → | [i.buɯ.di.mũ]               | ‘his father-in-law’ |
| (29) | a. | /adaG/       | → | [a.dak]                     | ‘two, pair’         |
|      | b. | /adaG adaG/  | → | [a.da.ga.dak] <sup>24</sup> | ‘four’              |

<sup>23</sup> Small upper case [ɓ] is used to represent a bilabial trill in this thesis. Therefore, it cannot be used to represent lack of contrast in voicing. Thus capital letters will be used: /B/ stands for bilabial, /D/ for alveolar, and /G/ for velar.

<sup>24</sup> The insertion of /j/ does not occur between a word for number and a verb (regarding /j/ insertion, see footnote 14).

- c. /adaG amuD/ → [a.da.ga.muut] ‘s/he (has) two pets’  
 d. /adaG enepkɔ/ → [a.da.ge.nep.kɔ] ‘bring two!’

On the other hand, all of the consonants may occur in onset position within an utterance. But in coda position within an utterance, only the stops (voiceless and voiced) and the nasals may occur, a total of nine consonants: [p], [b], [t], [d], [k], [g], [m], [n], and [ŋ]. However, the voiced stops occur only across word boundaries. The other five consonants never occur in coda position: [tʃ], [l], [r], [w], and [j]. Some examples of consonants in coda position within an utterance are shown in (30):

- (30) a. [tuap.kɔ] ‘a toucan bird’  
 b. [kamap tarik.pe] ‘the gourd container is big’  
 c. [kamab lon] ‘gourd container itself’  
 d. [ɔt.pido] ‘an armadillo’  
 e. [wakad wɔlu] ‘he killed an alligator’  
 f. [tuk.tɔ] ‘cultivated field’  
 g. [kagag lon] ‘toucan bird itself’  
 h. [tom.gem] ‘insect’  
 i. [en.ban] ‘her/his food (fruit)’  
 j. [kuŋ.ɕi] ‘a bird’  
 k. [wag wak] ‘a bird’

## B. Vowels

As mentioned above, the Arara language has six vowels. A vowel chart is shown below with these phonemes:

Table 2: Vowels

	Front	Central	Back	
	Non-round	Non-round	Non-round	Round
High	i		ɯ	u
Mid	ɛ			ɔ
Low		a		

In order to confirm the vowel phonemes of the language, I show contrasts between them in Appendix 2 at the end of this thesis.

Phonetically, the high back vowels, /u/ and /ɯ/, tend to be pronounced as lax or slightly open. On the other hand, the mid front vowel /ɛ/ and the mid back vowel /ɔ/ tend

to be realized as more close before the close vowels /i/ and /u/. Examples with /ɛ/ being realized as [e] are given in (31) below:

- (31) a. [murei] 'chair, bench'  
 b. [eudu]<sup>25</sup> 'his ambush'

Examples with /ɔ/ being realized as [o] are given in (32) below:

- (32) a. [ogoi]<sup>26</sup> 'snake'  
 b. [pou] 'small peccary'

The front mid vowel /ɛ/ is often pronounced as [e] in closed syllables:

- (33) a. [ɔet] 'rubber tree, plastic'  
 b. [ɔrek] 'skin wound'  
 c. [puɾep] 'instrument made out of vine put on feet to climb trees'

An Arara speaker can pronounce a word in several different ways, showing vowel fluctuation. This is illustrated below with the word for 'beads':

- (34) a. [kuri]  
 b. [kɔri]  
 c. [kɔri]

However, there are restrictions on the occurrence of the vowels. Although all of them can begin a word or an utterance, with rare exceptions only /a/ and /ɛ/ begin stems that take prefixes (e.g. nouns that can be possessed, and verbs). Here are some examples with nouns with stems starting with vowels other than /a/ and /ɛ/:

- (35) a. ug-iɛ-n 'our (incl.) tooth'<sup>27</sup>  
 12Abs-tooth-Poss  
 b. u-ɔdɔ 'my owner'<sup>28</sup>  
 1Abs-owner  
 c. u-u-n 'my food'<sup>29</sup>  
 1Abs-food-Poss

Here are some examples with verbs:

---

<sup>25</sup> This is a trisyllabic word: [e.u.du].

<sup>26</sup> This is also a trisyllabic word: [o.go.i].

<sup>27</sup> Only eight stems starting with /i/ were found.

<sup>28</sup> Only this stem was found.

<sup>29</sup> Only this stem was found. No stem was found starting with /u/.

- (36) a. i-ɔkpe-lu                     ‘I kept it’  
           1Erg-keep-Rec  
       b. i-ubi-tke-lu                 ‘I looked for it’  
           1Erg-seeK-Iter-Rec  
       c. in-iadu-lu<sup>30</sup>                ‘I burned it’  
           1Erg-burn-Rec  
       d. i-uɔmdu-mɛ-lu             ‘I put it in the water; I made it to dive’  
           1Erg-dive-Caus-Rec

At the same time, all of them undergo a nasalization process when they are in utterance-final position and are preceded by a nasal consonant. This may be seen as an intonational marking of an utterance boundary. Some examples are presented in (37)

below:

- (37) a. /abiana/       → [abianã]                ‘a peccary’  
       b. /pone/       → [põnẽ]                ‘piranha’  
       c. /ɔremi/       → [ɔremĩ]               ‘a fish’  
       d. /tɔrɔmɔ/      → [tɔrɔmõ]             ‘Brazil nut’  
       e. /imu/         → [imũ]                 ‘its egg’  
       f. /kariamɯ/     → [kariamũ]            ‘deer’  
       g. /mau/         → [mãũ]                 ‘cat’

When vowels are not in utterance-final position there is no nasalization. Some examples are presented in (38) below:

- (38) a. [abiana βɔk]                ‘on the peccary’  
       b. [põne βɔk]                 ‘on the piranha’  
       c. [ɔremi βɔk]                 ‘on the fish’  
       d. [tɔrɔmɔ βɔk]               ‘on the Brazil nut’  
       e. [imu βɔk]                    ‘on the egg’  
       f. [kariamɯ βɔk]               ‘on the deer’  
       g. [mau βɔk]                    ‘on the cat’

Vowel nasalization occurs in proper names that end in a vowel, when said in an emphatic call. In this case, the nasalization spreads over all vowels of the word:<sup>31</sup>

<sup>30</sup> /i/ needs to be better analyzed, since it receives /in-/ as the person marking prefix, which comes before consonants, and not vowels.

<sup>31</sup> In this same kind of emphatic call, proper names that end in consonants have an extra unrounded high back vowel /ɯ/ after that consonant: /waŋɔT/ → [waŋɔdu] ‘proper name for a man’, /paŋ/ → [paŋɯ] ‘proper name for a boy’. Depending on the length of the calling, the epenthetic vowel can be lengthened.

- (39) a. [ẽŋgõĩ] ‘proper name for a man’  
 b. [õtpã] ‘proper name for a woman’  
 c. [tʃĩmĩ] ‘proper name for a man’

### 3.1.2 Syllable Structure

Arara has the following syllable types: V, CV, VC, and CVC. Thus its maximal syllable template is CVC; there is no obligatory onset. All syllable types can occur word-initially and word-finally. Here are some examples with the V pattern, word-initially and word-finally, respectively:

- (40) a. [u.pu] ‘yam’  
 b. [ɔ.gum] ‘wasp’
- (41) a. [mu.ɛ] ‘bag made out of vegetable fiber’  
 b. [tu.a] ‘a wild fruit’

Here are some examples with CV, word-initially and word-finally, respectively:

- (42) a. [mɔ.ɛ] ‘a toad’  
 b. [ka.map] ‘a gourd container’
- (43) a. [ɔna.kɔ] ‘a bird’  
 b. [u.bu] ‘stone’

Here are some examples with VC, word-initially and word-finally, respectively:

- (44) a. [ɔt.pidɔ] ‘an armadillo’  
 b. [ap.tenu] ‘wind’
- (45) a. [ɛ.ɔk] ‘a beetle’  
 b. [ɔ.ɛt] ‘rubber tree, plastic’

Here are some examples with CVC, word-initially and word-finally, respectively:

- (46) a. [tuk.tɔ] ‘cultivated field’  
 b. [kɔt.kɔt] ‘a bird’
- (47) a. [am.nɛt] ‘his blood vessel, his vein’  
 b. [ka.map] ‘a gourd container’



### 3.1.3 Stress

In words pronounced in isolation, such as in a list, primary stress in Arara preferentially falls on the last syllable of the word. Some examples are given in (48) below:<sup>32</sup>

- |      |    |            |  |                     |
|------|----|------------|--|---------------------|
| (48) | a. | [kə'kə]    |  | 'my uncle'          |
|      | b. | [wa'kat]   |  | 'alligator, cayman' |
|      | c. | [tuk'tə]   |  | 'cultivated field'  |
|      | d. | [apte'nũ]  |  | 'wind'              |
|      | e. | [ɔtkoi'mɔ] |  | 'an armadillo'      |

However, there are some variations in stress. If a word ends in a sequence of two vowels (followed or not followed by a consonant) and the second vowel is [+high], the stress may alternatively switch to the previous vowel, resulting in a variation between a monosyllabic and a disyllabic realization of the same word. Some examples are given in (49) below:

- |      | Two Syllables |         | One Syllable |                      |                              |
|------|---------------|---------|--------------|----------------------|------------------------------|
| (49) | a.            | [po'u]  | ~            | ['pou] <sup>33</sup> | 'small peccary'              |
|      | b.            | [iu'i]  | ~            | ['ui] <sup>34</sup>  | 'tree'                       |
|      | c.            | [mã'ũ]  | ~            | ['mãũ]               | 'cat'                        |
|      | d.            | [tə'uŋ] | ~            | ['təuŋ]              | 'shotgun with a long barrel' |
|      | e.            | [a'ut]  | ~            | ['aut]               | 'his ribs'                   |

Normally the pronunciations in the left column occur in careful speech; the others in normal speech. This variation is not present when the second vowel is [-high], as can be seen below:

- |      |    |        |         |                                   |
|------|----|--------|---------|-----------------------------------|
| (50) | a. | [mʉ'ɛ] | *['mʉɛ] | 'bag made out of vegetable fiber' |
|      | b. | [tu'a] | *['tua] | 'a wild fruit'                    |
|      | c. | [mɔ'ɛ] | *['mɔɛ] | 'a toad'                          |

Usually this variation is also absent in words containing three syllables:

<sup>32</sup> This is the only section of the thesis where stress is marked.

<sup>33</sup> If [u] were a consonant, [po'u] or ['pou] would receive [-gəm] as plural and not [-ŋmə] as it does (see Section 3.2.7).

<sup>34</sup> The phonetic form [jei] 'wood, tree', starting with a consonant, was attested only in the ludling examples (see Appendix 3, example 4).

- (51) a. [takw'i]      \*[ta'kwɪ]      'manioc flour'  
 b. [ogo'i]      \*[o'goi]      'snake'

But there are some exceptions. In these cases, the consonant of the penultimate syllable must be a liquid: /r/ or /l/. Some examples are given in (52) and (53) below:

- (52) a. [mure'i]      ~      [mu'rei]      'chair, bench'  
 b. [kare'i]      ~      [ka'rei]      'non Indian'
- (53) a. [lala'u]      ~      [la'lau]      'proper name for a woman'  
 b. [tʃila'u]      ~      [tʃi'lau]      'proper name for a woman'

Since stress on words pronounced in isolation, such as in a list, is very predictable, in the rest of my phonetic transcriptions I will not mark it. However, it is worth noting that within a sentence the stress can change from its final position within the word to a different syllable. This can be seen in words such as [itʃigu'ru] 'his urine' and [u'rɔ] 'I', which in isolation are spoken with stress on the last syllable, but within a sentence pronounced with stress on the third and second syllable (from right to left), respectively.

- (54) [i'tʃigu'ru doŋ 'u:rɔ]<sup>35</sup>      'I am going to urinate'  
 /i-tʃigu-ru      doŋ urɔ/  
 3Abs-urine-Poss be I

### 3.1.4 Some Common Phonological Processes

In this section I will present one phonological constraint and some of the common phonological processes that occur in the Arara language.

#### **Obligatory Contour Principle**

The Obligatory Contour Principle (OCP) "prohibits consecutive or adjacent identical segments" (Goldsmith 1990:309). When identical segments are adjacent the OCP is violated. In Arara UF's, it is possible to find sequences of segments with similar points of articulation, consonants or vowels, violating the OPC. When this happens, one of them is deleted: either the first or the second segment. It is not yet completely understood what

---

<sup>35</sup> This sentence was collected in 1988, from a young man during an Arara festival. It was recorded with a Sony tape recorder. An Arara vowel can be lengthened in an emphatic linguistic environment.

triggers the direction of deletion. Examples involving regressive deletion of consonants

are shown in (55b), (56b), and (57c):

- |      |    |                              |   |                                   |
|------|----|------------------------------|---|-----------------------------------|
| (55) | a. | /ɛruB/ <sup>36</sup>         | → [ɛrup]  | ‘hurry’                           |
|      | b. | /ɛruB mɔmuru/<br>hurry PN    | → ɛru∅ mɔmuru<br>[ɛru momuru]                     | ‘hurry, Momuru!’                  |
| (56) | a. | /i-bɔD put/<br>3Abs-lip hair | → [ibɔt put]                                      | ‘his beard, his moustache’        |
|      | b. | /i-bɔD-ruw/<br>3Abs-lip-Poss | → i-bɔ∅-ruw<br>[ibɔruw]                           | ‘his/her lips’                    |
| (57) | a. | /wan/                        | → [wan]   | ‘honey’                           |
|      | b. | /ɛpi/                        | → [ɛpi]   | ‘his/her skin, its bark, leather’ |
|      | c. | /wan ɛpi/<br>honey bark      | → wan j-ɛpi <sup>37</sup><br>wa∅ jɛpi<br>[wajɛpi] | ‘beeswax’                         |

Examples of progressive consonant deletion, which occurs only in suffixes, are shown in (58b) and (59b) below:

- |      |    |                                |  |
|------|----|--------------------------------|--|
| (58) | a. | abɛ-dam<br>ebb-season          | ‘season of ebbing (water stream), dry season’    |
|      | b. | inmɛl-am<br>fill-season        | ‘season of filling (water stream), rainy season’ |
| (59) | a. | ɛɲu-ru<br>eye-Poss             | ‘her/his eye’                                    |
|      | b. | i-dagin-u<br>3Abs-whistle-Poss | ‘her/his whistle’                                |

Examples of regressive vowel deletion are shown in (60b) and (61b):

- |      |    |                                |                           |
|------|----|--------------------------------|---------------------------|
| (60) | a. | urɔ                            | ‘I’                       |
|      | b. | malon ur ɛndɔ<br>enough I here | ‘I am going to stay here’ |

---

<sup>36</sup> It must be remembered that stops lose their voicing contrast in utterance-final position: in this position, only voiceless stops occur. Thus, a capital symbol in the underlying representation stands for an archiphoneme that points to neutralization of contrast (see footnote 23).

<sup>37</sup> Here there is a feeding relationship: a palatal approximant is inserted across word boundaries between a C and the following V (CjV), and the preceding coronal C is deleted by virtue of the OCP violation (∅jV).

- (61) a. aḡna 'mortar'  
 b. aḡn ebu-ru 'pestle'  
 mortar handle-Poss

An example of progressive vowel deletion is shown in (62b):

- (62) a. wauri aru 'fruit tree's leaf'  
 fruit leaf  
 b. waḡwa ru 'fruit tree's leaf'  
 tree leaf

### Progressive Vowel Deletion

A vowel is deleted after another vowel across a morpheme boundary. This deletion applies only in certain suffixes: /-eḡḡe/ 'plural in postpositions', /-ebara/ 'negation', and /-uḡe/ 'there is'. This phonological process cannot be insertion since it would be necessary to propose that there is insertion of different vowels, such as [e] vs. [u].

Examples with the 'plural' suffix in postpositions /-eḡḡe/:

- (63) a. /i-buḡeḡ-eḡḡe/ → [ibuḡeḡeḡḡe] 'he/she is like them'  
 3Abs-similar-Pl  
 b. /uḡ-wuḡna-eḡḡe/ → uḡ-wuḡna-Øḡḡe 'for us'  
 12Abs-for-Pl [uḡwuḡnaḡḡe]

Examples with the 'negative' suffix /-ebara/:

- (64) a. /mḡndḡn-ebara/ → [mḡndḡnebara] 's/he, it is not there'  
 there-Neg  
 b. /tḡ-nḡn-dḡ-ebara/ → tḡ-nḡn-dḡ-Øbara 'it is not possible to see it'  
 T-see-Nmlz-Neg [tḡnḡndebara]

Examples with the 'existential' suffix /-uḡe/:

- (65) a. /mulik-uḡe/ → [muliguḡe] 'there is an ani bird'  
 ani-there.is  
 b. /pumiḡ-uḡe/ → pumiḡ-Øḡe 'there is a woman'  
 woman-there.is [pumiḡe]<sup>38</sup>

<sup>38</sup> This phonetic representation shows that the deletion process being described here does not apply cyclically; otherwise the phonetic form would be \*[pumiḡe]. But that surface form means 'she is a woman'.

## Nasalization of Stops

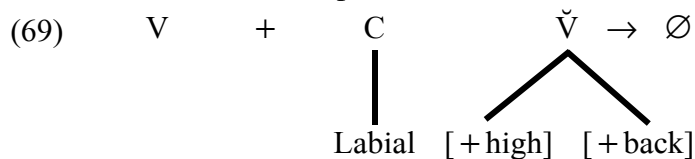
A stop consonant is realized as a nasal before a nasal consonant, as can be seen in

(66b), (67b), and (68b) below:

- |      |    |                                    |   |                                     |
|------|----|------------------------------------|---|-------------------------------------|
| (66) | a. | /wambiT <sup>39</sup>              | → [wambit]                                  | ‘vulture’                           |
|      | b. | /wambiT muren/<br>vulture baby     | → [wambin muren]                            | ‘vulture’s baby’                    |
| (67) | a. | /w-ibuu-lu/<br>1Erg-bathe-Rec      | → [wibuulu]                                 | ‘I took a bath (today)’             |
|      | b. | /w-ibuu-naŋuru/<br>1Erg-bathe-Prog | → w-ibØ-naŋuru <sup>40</sup><br>[wimnaŋuru] | ‘I am taking a bath (in the river)’ |
| (68) | a. | /ug-arɔ/<br>12Abs-lung             | → [ugarɔ]                                   | ‘our (incl.) lung’                  |
|      | b. | /ug-mum-tʃi/<br>12Abs-head-Poss    | → [uŋmumɕi]                                 | ‘our (incl.) head’                  |

## Vowel Deletion in CV Syllables

A high back vowel, [u] or [ʉ], is deleted after another vowel across a morpheme boundary. The vowels must have an intervening labial consonant. The following diagram represents this vowel deletion process.



Only a few nouns with obligatory possession undergo this deletion. The phonological process described here cannot be insertion since it would be necessary to propose that there is insertion of different vowels, such as [u] or [ʉ]. As shown in the above chart, the vowels that are sensitive to deletion after a prefix are marked with a diacritic to mark this sensitivity. This breve mark over the vowel is an ad hoc device, just to show that they

<sup>39</sup> See footnote 23 for an explanation of capital letters.

<sup>40</sup> Across morphemes a vowel is deleted in verb stem-final position before a non-liquid consonant (see footnote 17); stop sequences then are realized as voiceless: /bt/ → [pt]. Even when both stops are underlyingly voiced they are realized as voiceless: /ug-banan/ → [ukpanan] ‘our (incl.) ear’.

have a different behavior in relation to other vowels that do not undergo deletion in the same environment. Examples of noun stems with vowels sensitive to deletion are: /mũnu/ ‘body, flesh’, /mũdabuuri/ ‘food’, /mũbɛ/ ‘shoulder blade, scapula’, /bũtʃi-/ ‘leg’, etc. As already stated, all noun stems with a vowel sensitive to deletion begin with a labial consonant.

- |      |    |                                  |                    |               |
|------|----|----------------------------------|--------------------|---------------|
| (70) | a. | /mɔukɔ bũtʃi-n/<br>PN leg-Poss   | → [moukɔ butʃin]   | ‘Mouko’s leg’ |
|      | b. | /i-bũtʃi-n/<br>3Abs-leg-Poss     | → [iptʃin]         | ‘his leg’     |
| (71) | a. | /tatʃi mũbua-tʃi/<br>PN arm-Poss | → [tatʃi mubuatʃi] | ‘Tatji’s arm’ |
|      | b. | /i-mũbua-tʃi/<br>3Abs-arm-Poss   | → [imbuatʃi]       | ‘his arm’     |

Noun stems with vowels not sensitive to deletion after a prefix have no diacritic: /bana/ ‘ear’, /mɔwa/ ‘back’, /duru/ ‘central part of the body’, /beba/ ‘forehead’, /bia/ ‘cheek’, etc.

### Regressive Vowel Harmony

When the back round vowel /u/ occurs before a tap preceding the mid vowel /ɛ/, the mid vowel spreads its features to the back vowel across morpheme boundaries. Here are some examples:

- |      |    |                                |              |                    |
|------|----|--------------------------------|--------------|--------------------|
| (72) | a. | /i-muŋu-ru/<br>3Abs-blood-Poss | → [imuŋuru]  | ‘his/her blood’    |
|      | b. | /tu-muŋu-rɛ/<br>T-blood-Adjr   | → [tumuŋɛrɛ] | ‘s/he is bleeding’ |

However, if the preceding vowel is not an /u/, then /ɛ/ does not spread its features.

- |      |    |                           |            |                         |
|------|----|---------------------------|------------|-------------------------|
| (73) | a. | /abo-n/<br>wing-Poss      | → [abɔn]   | ‘its wing’              |
|      | b. | /t-abo-rɛ/<br>T-wing-Adjr | → [tabɔrɛ] | ‘it is with open wings’ |

## 3.2 Brief Overview of Arara Grammar

### 3.2.1 Morphological Typology

In relation to the synthetic index (Comrie 1989:46; Whaley 1997:128-9), the Arara language is a synthetic language since it utilizes various prefixes and suffixes, as illustrated in (74).<sup>41</sup>

- (74) tu-wə-duu-k      ɔmɔrɔ-ŋmɔ ganan  
DO-kill-Pl-Imp you-Pl      at.least  
'kill it!, at least you all (do it)'<sup>42</sup>

No statistical research was done, however the Arara language seems to uniformly share fusional and agglutinative characteristics, according to the terms of the fusion index (Comrie 1989:46; Whaley 1997:133). Example (75b) below shows fusion occurring between the second person /ɔ-/ and the vowel /ɛ/ in the stem, resulting in [i].

- (75) a. /ug-ɛɛ-n/              [ugɛren]              'our (incl.) liver'  
12-liver-Poss  
b. /ɔ-ɛɛ-n/              [iren]<sup>43</sup>              'your liver'  
2-liver-n

Examples in (76) show agglutinative characteristics in Arara. The majority of these morphemes can be easily segmented.

- (76) a. kuʃ-ip-ta-ndu-n  
12Erg-bathe-Dist-Pl-Hort  
'let's (all) take a bath' (elicited)  
b. k-ɔd-ɛmia-gurugɛ-da  
1Erg-Refl-hand-wash-Near  
'I am going to wash my hand (in a near place)' (elicited)

In Arara there are three orders of prefixes and seven of suffixes. Sentence (76b) above is an example of a sequence of three prefixes: person-Refl-Noun. Here is an example of five suffixes:

---

<sup>41</sup> The transcription here is phonological, not phonetic.

<sup>42</sup> Text *Abiana wyna tjimna kundomba* (We went hunting peccaries). Author: Akitu Arara. Recorded and transcribed by Isaac and Shirley Souza. May 1, 2002.

<sup>43</sup> [ɛɛn] is 'her/his liver'; [ieren] is 'my liver'.

- (77) i-n-ɛŋua-nɔp-tɔn-tadamu-lu-ŋmɔ  
 3Abs-O.Nom-know-Caus-Verb-Iter-Rec-Pl  
 ‘the ones that are to be taught by him’ (elicited)

The following diagram shows the order in which the different morphemes occur in verbs:

- (78) Erg Abs Incorp **Stem** Caus Verb Iter Tense Aspect Indic Pl  
 Ref Imp

### 3.2.2 Ergative Type

In terms of person cross-referencing on the verb (Comrie 1989:111, 126), Arara displays an ergative-absolutive pattern. The prefix of the subject of an intransitive clause has the same form as the prefix of the direct object of a transitive clause. The prefix of the subject of a transitive clause has a different form. Some examples are given below (all of them elicited):

- (79) a. u-wungu-lu  
 1Abs-sleep-Rec  
 ‘I slept’  
 b. Ø-u-mɔŋɔgu-lu  
 3Erg-1Abs-wait-Rec  
 ‘he/she waited for me’  
 c. in-Ø-mɔŋɔgu-lu  
 1Erg-3Abs-wait-Rec  
 ‘I waited for him/her’

In the entire Arara language, there are nine intransitive verbs that form clauses with an ergative subject prefix, similar to the ones that occur in transitive clauses. In terms of first person, five of them occur with the allomorph [w-] and four with the allomorph [k-]. This last allomorph occurs only before verb stem starting with the vowel /ɔ/; the allomorph /w-/ occurs before verb stems starting with the other vowels, as can be seen in (80) below.

- (80) a. w-ibu-lu  
 1Erg-bathe-Rec  
 ‘I took a bath’



- b. k-ɔrigu-lu  
 1Erg-dance-Rec  
 ‘I danced’<sup>44</sup>

When a language has intransitive verbs that sometimes perform the function of an active subject and sometimes perform the function of a non-active subject, it can be said that this language has split intransitivity. Since in Arara there are so few intransitive verbs with ergative (active) prefixes and the vast majority has absolutive (non-active) prefixes, it cannot be classified as having split intransitivity.

### 3.2.3 Word Order

For transitive clauses, Arara has the basic word order object-verb-subject (OVS).

Examples are given below:

- |      |                                     |                |       |
|------|-------------------------------------|----------------|-------|
|      | O                                   | V              | S     |
| (81) | ɔremi                               | abot-tadamu-lu | kɔkɔ  |
|      | fish.(sp.)                          | catch-Iter-Rec | uncle |
|      | ‘uncle caught several “oremi” fish’ |                |       |

- |      |  |                         |         |
|------|--|-------------------------|---------|
|      | O  | V                       | S       |
| (82) | ...wɔtɔmɔ                                  | aut j-ak-takpu-lu       | waga... |
|      | tapir                                      | rib Relr-eat-finish-Rec | PN      |
|      | ‘...Waga finished eating the tapir rib...’ |                         |         |

For intransitive clauses, the word order is primarily SV.

- |      |                                  |                          |            |
|------|----------------------------------|--------------------------|------------|
|      | S                                | V                        |            |
| (83) | [mutɛ                            | kun-ɛp-pa] <sup>45</sup> | i-ɛʃit     |
|      | PN                               | Rem-arrive-Ind           | 1Abs-house |
|      |                                  |                          | inside-Dir |
|      | ‘Mute came to my house (remote)’ |                          |            |

- |      |   |           |  |
|------|---|-----------|--|
|      | S   | V         |  |
| (84) | paru                                      | akunde-lu |  |
|      | water                                     | dry-Rec   |  |
|      | ‘the water dried up (in the small creek)’ |           |  |

---

<sup>44</sup> The other verbs that follow these patterns are: [webulu] ‘I arrived’, [wudɔlu] ‘I went out’, [wibeŋuru] ‘I fled’, [wiʃilu] ‘I layed down’, [kɔramelu] ‘I missed the target’, [kɔrapɔtadamulu] ‘I walked around’, and [kɔngulu] ‘I climbed up’.

<sup>45</sup> The use of square brackets within a sentence is only to mark syntactic constituents.

OVS word order is quite rare among the languages of the world. For example, in one database of 1228 different languages, only nine are reported to have this word order, and six of them are from South America (Dryer 2008:331).

In stative clauses, Arara has the word order subject-adjectival predicate (S-AP).

- |      |                                 |       |                            |
|------|---------------------------------|-------|----------------------------|
|      | S                               |       | AP                         |
| (85) | marag                           | wet   | puɣirimam-be <sup>46</sup> |
|      | cockroach                       | feces | dirt-Pred                  |
|      | ‘the cockroach feces are dirty’ |       |                            |

### 3.2.4 Noun Phrases

OV languages usually have the order adjective-noun (Comrie 1989:95). However, in Arara, a noun phrase has the adjective after its head:

- |      |   |               |              |
|------|---|---------------|--------------|
|      | N                                       | Adj           |              |
| (86) | uɣɔn                                    | ka-kɔ-mnu     | i-rumbɔ-lu   |
|      | man                                     | high-over-Neg | 3Abs-die-Rec |
|      | ‘the short man died (today)’ (elicited) |               |              |
- 
- |      |   |            |                         |
|------|---|------------|-------------------------|
|      | N   | Adj        |                         |
| (87) | [wɔŋɔ   | tarik-kɔm] | budɛk-ɛbara tawe,       |
|      | game  | big-Pl     | like.be-Neg             |
|      |   |            | monkey.(sp) T-flesh-Neg |
|      | ‘monkey is not like big game meat; it does not have a big body’ |            |                         |

On the other hand, the number precedes the noun:

- |      |  |       |                      |
|------|--|-------|----------------------|
|      | Num  | N     |                      |
| (88) | [anane   | nunɔ] | w-ɛp-ta-nbɔm         |
|      | one  | moon  | 1Erg-come-Dist-later |
|      | ‘I will come back within one month (from the city to the village)’ |       |                      |
- 
- |      |  |       |              |
|------|--|-------|--------------|
|      | Num  | N     | Adj          |
| (89) | [adak  | ɔbine | apaguruɔdem] |
|      | two  | metal | flat         |
|      |  |       | put-Rec      |
|      |  |       | buy.few      |
|      | ‘s/he put two worthless coins (in the basket)’ |       |              |

The head may be detached from the number and placed at the end of the clause:

---

<sup>46</sup> Text: *Marak*. Author: Akitu Arara. Text collected and transcribed by Isaac and Shirley Souza, Altamira, April 23, 2004. The word [marak] seems to be borrowed from the Portuguese *barata* ‘cockroach’.

- (90) Num N  
 [adak] n-itʃ-a [i-amu-t]  
 two 3Abs-Aux-Perm 1Abs-pet-Poss  
 ‘let me get two pets (from these ones)’

Or the number may be detached from the head to the end of the clause:

- (91) N Num  
 [marapa] abi-luu papa [adak]  
 paddle make-Rec father two  
 ‘my father made two paddles’

### 3.2.5 *Relational Phrases*

Typological studies show that OV languages usually have postpositions instead of prepositions (Comrie 1989:95). The Arara language follows this general typological tendency, as may be seen in the following examples:

- (92) walɔ muren i-abɔt-taŋ-de [ɔrɔŋ bɔk]  
 hawk.(sp.) small 1Sg.Erg-catch-Uni-Perf ground on  
 ‘I caught a small hawk on the ground’
- (93) t-udu-k [karei wuna]  
 DO-give-Imp non.Indian to  
 ‘give it to the non-Indian!’

### 3.2.6 *Tense, Aspect and Mood*

The Arara language inflects verbs for tense, aspect and mood. Tense is marked by [-luu] ‘recent past’, [-nɛ] ~ [-n] ‘remote past’, [-tʃi] ~ [-t] ‘present’, [-tɔmɛ] ‘future’, [-taŋ] ~ [-aŋ] ‘universal tense’.<sup>47</sup> Below are examples of each tense:

- (94) a. w-ibuu-luu  
 1Erg-bathe-Rec  
 ‘I took a bath (today)’  
 b. w-im-nɛ-ba  
 1Erg-bathe-Rem-Ind  
 ‘I took a bath (yesterday)’  
 c. w-ip-tʃi  
 1Erg-bathe-Pres  
 ‘I bathe’

---

<sup>47</sup> /-(t)ɔŋ/ has been glossed as universal tense (Uni) because: (a) in indicative clauses it does not point to a specific time, but only functions as a support to the aspect markers for perfective and imperfective; (b) in interrogative clauses it seems to function as a non-past tense.

- d. pawi i-ak-tɔmɛ kɔgɔlɔne  
curassow.(sp.) 1Erg-eat-Fut tomorrow  
'tomorrow I will eat the curassow'
- e. w-ip-taŋ-dɛ-ba  
1Erg-bathe-Uni-Perf-Ind  
'I already took a bath'

Aspect is marked by [-dɛ] 'perfective', [-gu] 'imperfective', and [-naŋuuru]

'progressive'. Below are examples of each aspect:

- (95)
- a. w-ip-taŋ-dɛ-ba  
1Erg-bathe-Uni-Perf-Ind  
'I already took a bath'
  - b. w-ip-taŋ-gu-ba  
1Erg-bathe-Uni-Imperf-Ind  
'I was taking a bath'
  - c. w-im-naŋuuru  
1Erg-bathe-Prog  
'I am taking a bath'

Mood is marked by [-kɔ] ~ [-k] 'imperative', [-nɛ] ~ [-n] 'hortatory', and [-ba]

'affirmative'.<sup>48</sup> Here are examples with imperative and hortatory mood:

- (96)
- a. ip-kɔ  
bathe-Imp  
'take a bath!'
  - b. kuʃ-ip-tu-n  
12Erg-bathe-Pl-Hort  
'let's (all) take a bath!'

Here are examples with the affirmative mood:

- (97)
- a. w-ip-taŋ-dɛ-ba  
1Erg-bathe-Uni-Perf-Aff  
'I took a bath'
  - b. w-im-nɛ-ba  
1Erg-bathe-Rem-Aff  
'I took a bath (yesterday)'

However, /-ba/ never occurs with recent past:

- (98) \*w-ibu-lu-ba  
1Erg-bathe-Rec-Aff  
'I took a bath'

---

<sup>48</sup> Interrogative mood (Yes-No Questions) is formed by the use of the particle [ga] ~ [ka], as in [magu ga] 'did you eat?', and [mip ka] 'did you take a bath?'.

### 3.2.7 Plural Forms

There are thirteen different allomorphs for showing plurality in Arara. They can be classified into eight groups, depending on the grammatical form they occur in. In the clusters below with more than one member, the allomorphs depend on the phonological environment. In the verbs, the plural forms refer mainly to the subject.

- (99) a. [-ŋgmɔ] ~ [-kɔm ~ -gɔm]<sup>49</sup> nouns, proper nouns, adjectives, subject in verbs in the indicative mood, verb suffix of purpose
- b. [-tɔm ~ -dɔm] subject in verbs in the interrogative mood and in verbs in future tense
- c. [-ɛnɲɛ ~ -nɲɛ] object of post-positions, subject of verbs in conditional sentence, subject in verbs in negative mood, verbal stems without markers for mood/aspect/time, adverbs of intensity
- d. [-tu ~ -du] subjects in verbs in imperative and hortatory mood, subjects in verbs with the suffix for ‘later (euphemic imperative)’, subject in verbs with the suffix for ‘always’
- e. [-ptu] subject in verbs with the suffix for ‘admonition’
- f. [-ndu] subject in verbs with the suffix for ‘distal’
- g. [-am] possessor of obligatorily possessed nouns without the possessor marker, possessor of obligatorily possessed nouns with the nominalizer of past, a question word
- h. [-bu] object of post-position for ‘companion’

Proper names can have plural suffixes, as other nouns do:

- (100) a. [taiŋmɔ] ‘Tai and others’
- b. [pwtɔtkom] ‘Pytot and others’
- c. [mutemgom] ‘Mutem and others’

There is no agreement in number between a verb and any of its overt arguments, or between a head and its dependent. Examples of absence of agreement at the sentence level are given below in (101) and (102):

- (101) a. karei      ɯdɔ-lu-ŋmɔ      ‘the non-Indians went out’  
non.Indian go-Rec-Pl
- b. karei-ŋmɔ      ɯdɔ-lu      ‘the non-Indians went out’  
non.Indian-Pl go-Rec

<sup>49</sup> The suffix [-ŋmɔ] occurs after a vowel, and the suffixes [-kom] and [-gom] after a consonant; but [-kom] after a voiceless consonant and [-gom] after a voiced consonant.

- c. \*karɛi-ɣmɔ      ʊdɔ-lu-ɣmɔ      ‘the non-Indians went out’  
           non.Indian-PL go-Rec-Pl
- (102) a. pumiɛ kure-ɣmɔ-p                      ‘the women are beautiful’  
           woman good-Pl-Adjr
- b. pumiɛ-ɣmɔ kure-p                      ‘the women are beautiful’  
           woman-Pl good-Adjr
- c. \*pumiɛ-ɣmɔ kure-ɣmɔ-p              ‘the women are beautiful’  
           woman-Pl good-Pl-Adjr

An example at the phrase level is given below:

- (103) a. wɔŋɔ tarik-kɔm                      ‘the big game meats’  
           game big-Pl
- b. \*wɔŋɔ-ɣmɔ tarik-kɔm                ‘the big game meats’  
           game-Pl big-Pl

## CHAPTER 4

### LUDLING DATA

In this chapter I present the Arara ludlings that I collected from some elderly Arara people living in the village named Laranjal. In terms of the ludlings, young people are not, unfortunately, learning them any longer and the elderly Arara, due to lack of practice, are forgetting them. As a dying phenomenon, it is not unusual for the ludling speakers to have trouble with some or many of these unique forms. Indeed, the first time I heard these language games was in about 2001, and it was only by chance. One evening I was sitting at a table with some young Arara men and I spoke to one of them in the same way as I had been speaking to his little daughter. Children learning the Arara language use [l] instead of [r]: [jɔlu] instead [jɔru] ‘tortoise’. So I replied to one of his questions by saying [ibala] instead of [ibara] ‘no, nothing’, pretending I was a little boy. Laughing and widening his eyes he replied to me with surprise: “I am not a monkey for you to talk to me like this!” Then I found out that I was going to learn something new about the Arara language. I grabbed my notebook and said: “What? Is it not only children who speak this way?” He explained: “We only speak like that to monkeys. For example, instead of saying [amuru] we say [amulu]” (this word denotes a kind of alcoholic drink made out of chewed roots, mainly cassava). But he did not know any more examples. So he pointed out some people who would know more of these. The next day I started going to those people and, in several sessions, I discovered thirteen different ludlings that they use not only to talk to monkeys, but to other pets as well, one for each kind of animal that they

are talking to.<sup>50</sup> As can be seen, the effect of my joke was the opposite of what I had intended. Instead of the man interpreting my utterance as if I were a little child talking, he interpreted it as if had been talking to a pet.

#### 4.1 Meaning and Purpose of the Word Games

Ludlings are common among the languages of the world, as pointed out by Bagemihl (1996:319). In the literature, according to Sherzer (1982), ludlings have different labels, such as “disguised speech”, “linguistic games”, “ludling,” “pig latins”, “secret codes”, “secret languages, “speech disguise”, and other names. Botne & Davis (2000) use the term “language game”. Sherzer prefers the terminology “play language”. In this thesis I use some of these terms, with preference for the label *ludling*, from Latin *ludus* ‘game’ and *lingua* ‘language’, as described by Laycock (1969:14). Also, the word *ludlingant*, derived from *ludling*, will be used in this thesis. This word is defined by Sanders (2000:31) as the morpheme “realized as a substring of the output that is sensitive to constraints that reference it.” His definition includes only the reversal ludling morpheme, but here I use the term *ludlingant* for any morpheme used by the Arara people in their ludlings.

Laycock (1972) says that a ludling is a transformation of an ordinary language, changing the format but not the content of the original message, for purposes of concealment or comic effect (Frazier & Gil 2007). In this sense, Sherzer (1982:175) states that play languages imply the creation of new linguistic codes derived from the base language. He also says that play languages are linguistic forms that at any level are purposely manipulated. In this sense, the Arara language has ludlings, since the Arara

---

<sup>50</sup> Child speech is not included here because, although having some small similarities with the *ludlings*, it also has lots of differences. For example, one main strategy to talk to children is to shorten consonants and words ([tekə] instead [ɔdepkə] ‘come here’), something out of the ludlings’ scope.



elders purposely manipulate the base language, changing the format but not the content of it, creating new linguistic codes with a certain purpose. Sherzer says that strictly speaking, the ludlings are not games, since they do not involve competition or winners, being primarily used for fun, although this does not mean that they need to be necessarily humorous (Sherzer 1982:175). Indeed, in Arara the elders do not have a humorous purpose when they use them.

Historically, purpose was crucial for ludling studies. Bagemihl (1996:699) says that traditional definitions of language games were based mainly on their sociolinguistic function. According to him they always have restricted sociolinguistic functions. Along this line, Sherzer (1982) specifies some common functions of play languages: concealment or secret, language learning (in Thai), pure fun or for play's sake. He also says that some play languages are used in ritual contexts. In relation to the Arara language, the ludlings fulfill a very restricted sociolinguistic purpose; they are used to "talk" to the Araras' pets as an expression of friendship. They can use the ludlings any time they approach their pets. On the other hand, in Arara there is no ritual context in which the ludlings are used.

Although being important, the purpose approach was not enough to explain the ludlings in the languages around the world. Thus Laycock<sup>51</sup> shifted this approach to one based on the ludlings' formal properties themselves. From this perspective, according to Bagemihl (1996:697) there are some factors intrinsic to ludling data: (a) they are quite unlike ordinary language operations and (b) they are relatively restricted with respect to their sociolinguistic function. In other words, the data have common operations such as

---

<sup>51</sup> This happened in: Laycock, Donald. 1972. "Towards a typology of ludlings, or play-languages." *Linguistic Communications: Working Papers of the Linguistic Society of Australia* 6:61-113 (see Bagemihl 1996). I was not able to find the Laycock article, so it is not part of my bibliography.

reversal, replacement, etc., that are not common to the normal language. Also, while the normal language can be used for a great variety of sociolinguistic functions, ludlings have very restricted social functions. Thus, in defining ludlings, Bagemihl (1996:699) includes the following criteria:

- (a) ludling morphological processes may involve affixing, templatic structure, reversal, and replacement;
- (b) their affixes are limited to one or at most a handful of lexical items;
- (c) their morphology is semantically empty.

Criterion (b) does not describe the Arara ludlings very well, since these are quite productive. However, criteria (a) and (c) do. Commenting on criterion (a) above, Bagemihl (pp. 699-700) states that affixing is the simplest process in forming ludlings, and it involves attachment of a ludling affix to a non-ludling word. The ludling affix may have a vowel slot that is unspecified for its quality; but also it may have a vowel specified for its quality. The infix /-gV-/ is an example of a ludling affix containing an unspecified vowel. This infix can be added to an Arara base word such as /abat/ 'manioc bread', resulting in the ludling form /abagat/. An example of an affix containing specified vowels in Arara is the prefix /idi-/, which can be added to the same Arara base word /abat/, resulting in the ludling form /idibat/. Bagemihl also states that in templatic processes nasality may be mapped onto the template. This is attested in Arara, where the feature of nasalization can pertain to a word, a phrase, a sentence or a whole discourse. This can be seen in the Arara base word /tawɛ/ 'capuchin monkey', which turns to /tãwẽ/ after the addition of the ludling's nasal feature. Yet in reference to (a) above, Bagemihl says that all or most of the vowels in a non-ludling utterance are replaced by one or two segments in the ludling form. In Arara the vowels in a base word can be replaced by the vowel [æ], or by lower and/or more fronted vowels in relation to the vowels of the base word, as can

be seen in /tawɛ/ changing to [tæwæ]. All of these phenomena will be presented in more detail in Section 4.2 below.

Commenting on (c) above, Bagemihl (1996:700) states that ludling morphology is semantically empty because it is used only to classify the speaker or the hearer as belonging to a particular category of individuals. For example, a person uses Pig Latin to address someone who belongs to a certain circle of friendship. In the Arara culture, a person uses the appropriate ludling to address specific classes of animals. Thus, the infix /-gV-/ is used to talk to capuchin monkeys; the prefix /idi-/ to talk to titi monkeys; the infix /-pt-/ to talk to squirrel monkeys; and nasalization is used to talk to howler monkeys.

The Arara people love their pets. Therefore, pets are very important in the Arara culture. Arara myths reveal that some animals were their ancestors, mainly the monkeys. Sometimes the Arara people use the ludlings' structures for naming their pets, according to each animal species. Thus they can give the name /muni-gV/ → [munigi] 'brother' to a capuchin monkey. Usually the pets get names like any human being and the process of naming them is the same they use to name people. Then a person can get a proper name like [tuɸtʃigɔriwɯ] 'crooked shinned'; a capuchin monkey can get a proper name such as [tuɸtapa] 'the one who has a flat hand'.<sup>52</sup> Right after the Arara contact with FUNAI, it was possible to see Arara mothers feeding from their own breasts not just their new babies but also own baby monkeys that their husbands had brought from the forest. For other pets, they offered their milk in a leaf. Thus, in this sense, it is not a surprise that the Arara people have different language games when playing with their pets. The surprise is in the high number of ludlings they use to "talk" to their pets. Just for a matter of

---

<sup>52</sup> See Souza (in progress).

statistical comparison, Javanese (the language I found with the most play languages) presents only seven different ludlings (Sherzer 1982:183-186).<sup>53</sup> Arara has almost twice this many.

In spite of the differences between a ludling and the base language in which it originates, an actual development in ludling analysis is the recognition that a ludling also involves linguistic processes of the ordinary language (Bagemihl, p. 701). In this sense, Sherzer (1982) states that there are similarities and differences among the linguistic structures of ludlings and ordinary languages. Haas (1967) provides a taxonomy of mechanisms or rules involved in play languages that are common to the languages of the world, namely: addition, subtraction, reversal, and substitution. The phonological typology of language games shows that the two most common types of games are syllable transpositions and phoneme insertions in one or more locations in a word (Botne & Davis 2000). On the other hand, reversal does not exist cross-linguistically. The ludlings in Arara fit in this typology, since they are built up mainly through the insertion of one ludling per word. It is noteworthy that what belongs to ordinary languages is more common in the ludlings and what does not belong to ordinary languages is rarer among the ludlings. If syllable reversal is not exploited in common languages, it will not be widely used in the ludlings. On the other hand, if addition is common among the languages of the world, it will be used in ludlings. Indeed, addition is the main process by which Arara speakers form their ludlings (eleven, out of thirteen).

Bagemihl (p. 711) states that “ludlings are an integral part of the human linguistic capacity and as such, an integral part of linguistic theory”. In other words, linguistic

---

<sup>53</sup> I did not do an exhaustive search on this.

theory has the necessary tools to analyze the ludlings around the world. I illustrate this using the thirteen different ludlings I found in the Arara society.

## 4.2 Presentation of Data

Some Arara elders from Laranjal village use ludlings to address different pets. These ludlings occur mainly with nominal words, like nouns. But they are also attested in verbs, phrases, and sentences, although only one man knows all thirteen ludlings and can use them in sentences. They are built through the addition of affixes to the base words of the Arara language. To form a ludling in Arara the attachment of only one affix is necessary. This affix can be a prefix, a suffix, an infix, or a suprafix. Among these, only the first two affixes occur in the normal Arara language. The last two are specific to the ludlings. These ludlings include vowel nasalization ( $V \rightarrow \tilde{V}$ ), vowel deletion ( $V-V \rightarrow V\emptyset$ ), and changes in consonant manner of articulation ( $/r/ \rightarrow /l/$ ), tap deletion ( $((/r/ \rightarrow \emptyset)$ , consonant replacement ( $C(C) \rightarrow pt$ ), changes in vowel quality ( $V \rightarrow \text{æ}$ ), etc. These changes will be exemplified and discussed below. For now I present the pets and the ludlingants relating to them:

Table 3: Pets' Names and Ludlingants

	English	Arara	Ludlingant
a.	capuchin monkey	/tawɛ/	infix /-gV-/
b.	titi monkey	/kutʃamit/	prefix /idi-/
c.	large birds: chicken, duck, Brazilian merganser, guan and curassow	/tʃarina/ <sup>54</sup> , /mak keni/, /jarambi/, /wɔgaraum/, /pawi/	prefix /wi-/
d.	trumpeter, woodpecker	/warakina/, /iɛberɛburu/	prefix /pɔ-/
e.	coati	/tʃiruka/	prefix /nu-/
f.	agouti	/jaguri/	prefix /pi-/
g.	peccary, dog	/abiana/, /wɔkɔri/	prefix /tɔ-/
h.	small birds: macaw, parrot, orange-cheeked, parakeet	/kara, awu, karaja, karaum/, /tʃarɔktʃarɔ/, /kui/, /ɛridak/	prefix /ɛɲna-/
i.	toucan	/tuapkɔ, pilik, kagak, tʃirɔ/	prefix /ɛɲnara-/ <sup>55</sup>
j.	spider monkey	/wɔɲɔum/	prefix /un-/
k.	squirrel monkey	/tʃamit/	infix /-pt-/
l.	howler monkey	/arun/	vowel nasalization
m.	tortoise	/jɔru/	murmuring the whole base word and lowering and/or fronting the first vowel, some vowels, or even all of the vowels from the base language; the optimal segment to be achieved is the low front vowel [æ]

The Arara ludlings have as their label in Arara [ilumbanbɔt] ‘to make tongue’ (i-lu-mban-bɔt = 3Abs-tongue-Verb-Purp). The Arara people do not use the word for tongue as a metaphor for language, except in these ludlings. The term they use for language/speech is [wɔrundɔɲɔ]. The Arara ludlings have the same inventory of phonemes that is found in the normal language. Each ludling will now be presented in detail.

#### 4.2.1 Capuchin Monkey Talk

Capuchin monkeys are called *tawɛ* in Arara. The ludling for this species of monkey is labeled in Arara *tawɛ lumbanbɔt* ‘to make the tongue of a capuchin monkey’. There are

<sup>54</sup> Borrowed word from Portuguese: galinha.

<sup>55</sup> The two prefixes /ɛɲna-/ and /ɛɲnara-/ appear to be completely unrelated to each other. That is, the last syllable made up of /ra-/ does not occur as an independent morpheme elsewhere in the language.

two steps to build the capuchin monkey ludling: (a) a morphological process that consists of adding the infix /-gV-/ right after the base word's last vowel, where the V is a vowel without underlying feature specifications, copying the phonological features of the last vowel from the word; and (b) a replacement of /r/ by /l/.<sup>56</sup> Examples in (104) below show the ludlingant /-gV-/ added to base words ending in a consonant.

(104)	a.	ɛduɛt	ɛduɛgɛt	'his hammock'
	b.	ibam	ibagam	'his illegitimate father'
	c.	kɔk	kɔgɔk	'night, evening'
	d.	ɔɛt	ɔɛgɛt	'rubber tree, plastic'
	e.	pɔrat	pɔlagat	'a catfish'

Examples in (105) show this same ludling added to base words ending in a vowel.

(105)	a.	aɛ	aɛgɛ	'a wasp'
	b.	nu <sup>57</sup>	nuɣu	'abcess, tumor'
	c.	ibara	ibalaga	'no, nothing'
	d.	paru	palugu	'water'
	e.	kuri	kuligi	'bead'
	f.	pɔu	pɔugu	'small peccary'
	g.	ikpa	ikpaga	'mud'
	h.	muni	muniɣi	'my brother'

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, adjectives, and even auxiliaries, as can be seen in (106) below (see

Appendices 3 and 4).

(106)	a.	kɔkɔ-ŋmɔ uncle-Pl	kɔkɔŋmɔgɔ	'uncles'
	b.	k-ɔd-ɛmia-gurugɛ-da 1Erg-Refl-hand-wash-Near	kɔdɛmiagurugɛdaga	'I am going to wash my own hand (near)'
	c.	tɔrik-kom-bɛ big-Pl-Adjr	tɔlɛkombɛgɛ <sup>58</sup>	'they are big'

<sup>56</sup> This is the same kind of change that occurs in baby talk (see the introduction to this chapter).

<sup>57</sup> The phonetic representation for this example is [nuʔ]. A glottal stop is added to a CV content word when spoken in isolation. The glottal stop is not a phoneme in Arara.

<sup>58</sup> Here the speaker changed the /i/ of /tɔrik/ to [ɛ].

- d. kəɔɔlone [n-itʃ-a]                      kəɔɔlone [nitʃagah]<sup>59</sup>    ‘leave it for  
tomorrow [Abs-Aux-Perm]                      tomorrow’

It can be seen above that the ludlingant /-gV-/ occurs word-finally in polymorphemic words that end in open syllables, as it does in monomorphemic ones. However, there is one exception with the suffix for deceased beings: /-mgeni/. Here the suffix comes after the ludlingant:

- (107) papa-mgeni                      papagamgeni<sup>60</sup>                      ‘my deceased father’  
father-deceased

This probably happens because the meaning of the suffix refers to the whole word, including the ludlingant. In the general case, it is the ludlingant that seems to have scope over the whole word. Besides occurring in polymorphemic words, the ludlings in general also occur in larger linguistic structures, such as sentences.

- |       |   |                    |               |               |     |
|-------|---|--------------------|---------------|---------------|-----|
|       | O   | V                  | Oblique       |               |     |
| (108) | kala-ga   | in-wə-tke-lu       | kəɔɔŋɣe-ge    | taukala-ga    | bək |
|       | macaw.(sp.)-LUD   | 1Erg-kill-Iter-Rec | yesterday-LUD | inga.tree-LUD | on  |
|       | ‘I repeatedly killed macaws yesterday in the inga tree’ |                    |               |               |     |

- |       |                             |                 |                     |        |
|-------|-----------------------------|-----------------|---------------------|--------|
|       | S                           | AP              |                     |        |
| (109) | taupa-ga                    | tərik-kəm-bɛ-gɛ | tahie <sup>61</sup> | kumuuk |
|       | banana.(sp.)-LUD            | big-Pl-Adjr-LUD | very                | Rem    |
|       | ‘the bananas were very big’ |                 |                     |        |

As can be seen in (108) and (109) above, the changes triggered by the ludlingant only occur within the scope of a word, and thus do not affect the surrounding words, phonologically speaking. It can also be seen that the ludling sentences follow the same

---

<sup>59</sup> Here the speaker changed the second /ɔ/ of /kəɔɔlone/ to [ɜ]; this variation is common among some of the Arara speakers. He also added an extra [h] at the end of the utterance. Instead of the fricative, Arara speakers optionally use the stop [ʔ]. This process of adding a glottal at the end of an utterance is very common in normal speech.

<sup>60</sup> There is another example similar to this one in our data: /uɣ-enba-ga-n-gom/ (12Abs-food-LUD-Poss-Pl) ‘it is our food’ (see Appendix 4, example (11)).

<sup>61</sup> In this sentence the speaker did not change the /r/ into [l] in the stem [tərik]; he also changed the /g/ into /h/: /tagie/ → [tahie].



grammatical structures of the Arara base language. For example, sentence (108) shows ergativity (see Section 3.2.2) and OV word order (see Section 3.2.3). It can also be seen that within a verbal sentence like (108), only the object has a ludlingant attached to it, but not the verb. On the other hand, the adverbial complements have a ludlingant attached to them. However, the attachment of a ludlingant to an adverbial phrase seems to be optional, since there is one example where there is no ludlingant attached to it: /kɔʒlone n-itʃ-a-qaɦ/ ‘leave it for tomorrow’ (Appendix 4, example (19)). The grammatical word /bək/ does not have a ludlingant attached to it. Within a stative sentence, such as (109) above, both the subject and the adjectival predicate have a ludlingant attached to them, but not the adverb of intensity /tagie/ nor the tense marker /gumuuk/. The general data above show that this ludlingant occurs with all syllable types:

(110)	a.	V	pɔ.ɹ	pɔuɹ	‘small peccary’
	b.	CV	nɹ	nɹu	‘abcess, tumor’
	c.	VC	ɛ.du.ɛt	ɛduɛɛt	‘hammock’
	d.	CVC	i.bam	ibagam	‘his illegitimate father’

In terms of this specific ludling which adds the infix /-gV-/ to a base word, according to Bagemihl (1996:699) the addition of affixes, and vowel copying, are common phenomena among the languages of the world.

#### 4.2.2 *Duski Titi Monkey Talk*

Duski titi monkeys are called [kuʃamit] in Arara. The ludling for these species of monkeys is labeled in Arara [kuʃamit lumbanbɔt] ‘to make the tongue of a duski titi monkey’. The morphological process used by the Arara people to build the duski titi monkey’s ludling is the addition of the prefix [idi-] to the stem of the base language form, where it has a /d/ before an /i/, which is a rare sequence in the Arara base language (see Section 3.1.1). Here are some examples with the ludlingant /idi-/:

(111) a.	nu	<u>id</u> inu	‘abcess, tumor’
b.	wət	<u>id</u> wət	‘fish’
c.	kək	<u>id</u> igək <sup>62</sup>	‘night, evening’

We can see in the data above that there is no morphophonological process when [idi-] is attached to a monosyllabic word. Similarly, in some words starting with a CV syllable and where the next vowel of the stem is different from the vowel of this first CV syllable, there is no morphophonological process resulting from the addition of [idi-].

(112) a.	malən	<u>id</u> imalon	‘that’s okay’
b.	muni	<u>id</u> imuni	‘my brother’
c.	tʃɛlu	<u>id</u> itʃɛlu	‘my sister’
d.	kuɰɛn	<u>id</u> ikuɰɛn	‘cassava’ <sup>63</sup>
e.	pilunɔ	<u>id</u> ipilunɔ	‘bird hind quarter’
f.	pəu	<u>id</u> ibəu	‘small peccary’

However, in a few stems with these same characteristics, there is deletion of the first CV syllable as a result of adding [idi-].

(113) a.	idi-taupa	→ idi-ØØupa	[ <u>id</u> iupa]	‘a banana’
b.	idi-nabiət	→ idi-ØØbiət	[ <u>id</u> ibiət]	‘sweet potato’

On the other hand, if a stem starts with a CV(C) syllable and the next vowel of the stem has the same backness as the first vowel of this CV(C) syllable, then deletion (haplology) extends to the vowel of this syllable: /idi-V[αback](C)CV[αback](C)/ → [idiØØ(C)CV].

(114) a.	/idi-jeme/	→ idi-ØØme	[ <u>id</u> ime]	‘mom, my mother’
b.	/idi-kəkɔ/	→ idi-ØØkɔ	[ <u>id</u> ikɔ]	‘my uncle’
c.	/idi-papa/	→ idi-ØØpa	[ <u>id</u> ipa]	‘dad’
d.	/idi-pəmu/	→ idi-ØØmu	[ <u>id</u> imu]	‘beetle (sp.)’
e.	/idi-kutkut/	→ idi-ØØtkut	[ <u>id</u> itkut]	‘night monkey’
f.	/idi-womjum/	→ idi-ØØmjum	[ <u>id</u> imium] <sup>64</sup>	‘banana (generic)’

<sup>62</sup> The variation between [kək] and [idi-gək] is better analyzed as a devoicing process than a voicing process (see Section 3.1.1, examples (21) and (22)).

<sup>63</sup> Other examples from Appendix 3 are: /murei/ → [idimurei] ‘bench’, /pɛra/ → [idibera] ‘a fruit’, /purak/ → [idiburak] ‘an arrow’, and /pɔrat/ → [idibɔrat] ‘a catfish’.

<sup>64</sup> Phonetically speaking, the /j/ turns into the vowel [i], here and elsewhere.

As seen in (114e-f) this deletion process does not extend to a coda of a vowel to be deleted. Furthermore, there seem to be exceptions to the deletion process, since a vowel with the same backness as another one in the following syllable is not deleted in a few stems:

- |       |    |         |                     |                     |
|-------|----|---------|---------------------|---------------------|
| (115) | a. | /kamap/ | [ <u>id</u> ikamap] | ‘gourd container’   |
|       | b. | /wakat/ | [ <u>id</u> iwakat] | ‘alligator, cayman’ |
|       | c. | /manan/ | [ <u>id</u> imanan] | ‘a coconut bug’     |

There are other examples with fluctuation, such as /kara/ ‘macaw (type of)’, where the speaker once said /idigara/ and another time /idiara/. If the stem starts with a vowel, this vowel is deleted: /idi-V/ → [idiØ]. Examples are given below:

- |       |    |            |               |                      |                 |
|-------|----|------------|---------------|----------------------|-----------------|
| (116) | a. | idi-ae     | → idi-Øe      | [ <u>id</u> ie]      | ‘wasp (sp.)’    |
|       | b. | idi-abat   | → idi-Øbat    | [ <u>id</u> ibat]    | ‘manioc bread’  |
|       | c. | idi-amuru  | → idi-Ømuru   | [ <u>id</u> imuru]   | ‘his/her drink’ |
|       | d. | idi-emiaru | → idi-Ømiaruu | [ <u>id</u> imiaruu] | ‘his/her hand’  |
|       | e. | idi-upuu   | → idi-Øpuu    | [ <u>id</u> ipuu]    | ‘yam’           |

A similar phonological phenomenon occurs in the Arara normal language, as seen in Section 3.1.4 (specifically, Progressive Vowel Deletion), where the second vowel is deleted in a vowel sequence. Again, if the vowel to be deleted in the ludling form has a coda, the coda is not subject to deletion:

- |       |    |            |              |                     |             |
|-------|----|------------|--------------|---------------------|-------------|
| (117) | a. | idi-enben  | → idi-Ønben  | [ <u>id</u> inben]  | ‘penis’     |
|       | b. | idi-ikpa   | → idi-Økpa   | [ <u>id</u> ikpa]   | ‘mud’       |
|       | c. | idi-ɔtpidɔ | → idi-Øtpidɔ | [ <u>id</u> itpidɔ] | ‘armadillo’ |

As can be seen in (107), a consonant in coda position preserves its voicing feature after the deletion process. If the vowel to be deleted is followed by a non-final syllable starting with an /r/, the deletion extends to this syllable.

- |       |       |           |             |                  |          |
|-------|-------|-----------|-------------|------------------|----------|
| (118) | ɔremi | idi-ɔremi | → idi-ØØØmi | [ <u>id</u> imi] | ‘a fish’ |
|-------|-------|-----------|-------------|------------------|----------|

For now, only (118) was found as an example. If the /r/-syllable occurs at the end of the (first) stem, it will not be subject to the deletion process, as can be seen in (119) below:

- (119) a. *idi-kurɔ-kurɔ*<sup>65</sup> → *idi-ØØrɔ-kurɔ* [*idirɔkurɔ*] ‘a bird’  
 b. *idi-kurɛ-p* → *idi-ØØrɛ-p* [*idirep*] ‘it is good’  
 c. *idi-wurɯ-pe* → *idi-ØØrɯp-pe* [*idirɯpe*] ‘it is bad’  
 d. *idi-tɔrik-kɔm-bɛ* → *idi-ØØrik-kɔm-bɛ* [*idirikombɛ*] ‘they are big’

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, adjectives, and adverbs, as can be seen in (120) below (see Appendices 3 and 4).

- (120) a. *i-ɛnma-n* *idinman* ‘my path’  
 1Abs-path-Poss  
 b. *k-ɔd-ɛmia-gurugɛ-da* *idimiagurugɛda* ‘I am going to wash  
 1Erg-Refl-hand-wash-Near my own hand (near)’  
 c. *tɔrik-kom-bɛ* *idirikombɛ* ‘it is big’  
 big-Pl-Adj  
 d. *kɔgɔlɔnɛ n-itʃ-a* *idigɔlɔnɛ nitʃɔ*<sup>66</sup> ‘leave it for  
 tomorrow Abs-Aux-Perm tomorrow’

It can be seen above that the ludlingant /idi-/ occurs word-initially in polymorphemic words, as it does in monomorphemic ones. In (120a and b) the deletion process goes over the vowel of the prefix and is extended to the first vowel of the stem, deleting two vowels. In monomorphemic words (see example (116a) above) the deletion process deletes only one vowel, not extending deletion over the second vowel of the stem. In (120a and b) the deletion acts completely over the personal and reflexive prefixes. The example below also shows the complete deletion of a prefix:

- (121) *ugu-ptʃi-n-gɔm* *idiptʃingɔm* ‘our (incl.) leg’  
 12Abs-leg-Poss-Pl

As happens with /-gV-/, the ludling /idi-/ also occur in larger linguistic structures, such as sentences.

- (122) O V Oblique  
*idi-ara in-wɔ-tkɛ-lu idi-gɔnɲɛ idi-ukara bɔk*  
 LUD-macaw.(sp.) 1Erg-kill-Iter-Rec LUD-yesterday LUD-inga.tree on  
 ‘I repeatedly killed macaws yesterday in the inga tree’

<sup>65</sup> Word formed through reduplication.

<sup>66</sup> Here there is a variation with the vowel: /a/ → [ɔ].

	S	AP	
(123)	idi-upa	tɜrik-kom-bɛ	tɜ(giɛ)
	LUD-banana	big-Pl-Adjr	very
	‘the bananas are very big’		

Again, as triggered by the ludling /-gV-/ , the changes triggered by /idi-/ only occur within the scope of a word, and thus do not affect the surrounding words, phonologically speaking. The same occurs in terms of grammatical structures, following the patterns of the base language. Some words that start with a voiceless stop in the Arara base language preserve their voiceless nature after the addition of the ludlingant /idi-/ , while others do not, changing from voiceless to the corresponding voiced counterparts, as can be seen below:

(124)	a.	piluŋɔ	<u>i</u> dipiluŋɔ	‘bird hind quarter’
	b.	pɔu	<u>i</u> dibɔu	‘small peccary’
(125)	a.	kuɔɔn	<u>i</u> dikuɔɔn	‘cassava’
	b.	kɔʈʈi	<u>i</u> digoʈʈi	‘a fish’

As can be seen in (124a) and (125a) above, neither [p] nor [k] voices after the addition of /idi-/ . However, in examples (124b) and (125b), both [p] and [k] voice after this ludlingant. Therefore, the variation between [p] and [b], and [k] and [g] is better explained as a devoicing process (utterance-initially) than a voicing process after a vowel across a morpheme boundary. This same kind of devoicing process is found in the Arara base language (see Section 3.1.1, examples (21) and (22)). There is no example showing this variation between the alveolar stops [t] and [d]. Only the voiceless counterpart occurs in this environment.

(126)	a.	takui	<u>i</u> ditakui	‘manioc flour’
	b.	tawɛ	<u>i</u> ditawɛ	‘capuchin monkey’
	c.	tamgɔ	<u>i</u> ditamgɔ	‘old man, grandfather’
	d.	tuktɔ	<u>i</u> dituktɔ	‘cultivated field’

Absence in the variation of voicing between the alveolar stops may be due to limited data. This same absence of variation is also present among the affricates [tʃ] and [dʒ], but

this is expected from the base language, where an affricate does not voice after a vowel.

It voices only after a nasal consonant (see Section 3.1.1, examples (12)). The general data

show that the ludlingant /idi-/ occurs with all syllable types:

(127)	a.	V	a.ɛ	<u>i</u> die	‘a wasp’
	b.	CV	<u>ku</u> .den	<u>i</u> dikuuden	‘cassava’
	c.	VC	<u>ik</u> .pa	<u>i</u> dikpa	‘a fish’
	d.	CVC	<u>kut</u> .kut	<u>i</u> ditkut	‘night monkey’

All the ludlings formed by prefixation, except for /un-/, such as /idi-/, /wi-/, /pɔ-/, /nuu-/, /pi-/, /tɔ-/, /ɛŋna-/, and /ɛŋnara-/, work in similar ways in terms of phonological processes, mainly the last seven ones that have the syllabic shape CV.

#### 4.2.3 Large Bird Talk

Large birds, including chickens, muscovy ducks, Brazilian mergansers, guans, and curassows are, respectively, called [tʃarina], [bakeni], [jarambi] [wogaraum], and [pawi] in Arara. The ludling for these species of large birds is labeled in Arara [tʃarina, bakeni, jarambi, wogaraum, pawi bene lumbanbɔt] ‘to make the tongue of chickens, muscovy ducks, Brazilian mergansers, guans, and curassows’. The morphological process used by the Arara people to build these large birds’ ludling is the addition of the /wi-/ prefix.

(128)	a.	nu	<u>wi</u> nu	‘abcess, tumor’
	b.	wɔt	<u>wi</u> wɔt	‘fish’
	c.	kɔk	<u>wi</u> gɔk	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the ludling /idi-/. See section 4.2.2 (Duski Titi Monkeys Talk) for a description of these phonological patterns, which are analogous to that ludling. Thus the data in (128) show examples of the /wi-/ ludling in monosyllabic words. In (129) below there are examples of this ludling attached to polysyllabic words, resulting in a haplology process:

/wi-(C)V/ → [wi(∅)∅].

(129)	a.	wi-aɛ	→ wi-∅ɛ	[ <u>wi</u> ɛ]	‘a wasp’
	b.	wi-taupa	→ wi-∅∅upa	[ <u>wi</u> upa]	‘a banana’
	c.	wi-ɔɛt	→ wi-∅ɛt	[ <u>wi</u> ɛt]	‘rubber tree’

d.	wi-abat	→ wi-Øbat	[ <u>w</u> ibat]	‘manioc bread’
e.	wi-onat	→ wi-Ønat	[ <u>w</u> inat]	‘corn’
f.	wi-jɛmɛ	→ wi-ØØmɛ	[ <u>w</u> ime]	‘mom, my mother’
g.	wi-pɔ̃mu	→ wi-ØØmu	[ <u>w</u> imu]	‘a beetle’
h.	wi-ɔ̃rɛmi	→ wi-Ørɛmi	[ <u>w</u> iremi]	‘a fish’
i.	wi-muni	→ wi-ØØni	[ <u>w</u> ini]	‘my brother’

It is interesting to note that example (129h) shows that /wi-/ triggers a different phonemic process than the ludlingant /idi-/ above. The /idi-/ extends deletion to the next syllable with an /r/-onset (see example (118) above); /wi-/ does not extend deletion to this /r/-initial syllable. On the other hand, similar to /idi-/, here this deletion process does not extend to the coda of a vowel to be deleted.

(130) a.	wi-enben	→ wi-Ønben	[ <u>w</u> inben]	‘his penis’
b.	wi-ikpa	→ wi-Økpa	[ <u>w</u> ikpa]	‘mud’
c.	wi-ɔ̃tpidɔ	→ wi-Øtpidɔ	[ <u>w</u> itpidɔ]	‘armadillo’
d.	wi-kutkut	→ wi-ØØtkut	[ <u>w</u> itkut]	‘night monkey’
e.	wi-womjum	→ wi-ØØmjum	[ <u>w</u> imium]	‘banana’

This ludlingant, as /idi-/ and the other ludlings, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (131) below (see Appendices 3 and 4).

(131) a.	i-ɛnma-n 1Abs-path-Poss	<u>w</u> inman	‘my path’
b.	k-ɔ̃d-ɛmia-guruge-da 1Erg-Refl-hand-wash-Near	<u>w</u> idemiagurugeda	‘I am going to wash my own hand (near)’
c.	in-dɛkɛ-lu 1Erg-write-Rec	<u>w</u> indɛkɛlu	‘I wrote it’
d.	tɔ̃rik-kɔ̃m-be big-Pl-Adjr	<u>w</u> ɛrik-kɔ̃m-be <sup>67</sup>	‘they are big’

Unlike the ludling /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first CV syllable, as in (131b) above. But like /idi-/, it deletes identical vowels in a prefix:

(132)	ugu-ptʃi-n-gɔ̃m 12Abs-leg-Poss-Pl	<u>w</u> iptʃingɔ̃m	‘our (incl.) leg’
-------	--------------------------------------	---------------------	-------------------

<sup>67</sup> Here the speaker changed /wi-/ to [we-] ‘LUD’, in a dissimilation process.

In terms of exceptions, in a couple of words starting with a bilabial consonant, no deletion occurs:

- (133) a. pɔu                      wibɔu                      \*wiu                      ‘small peccary’  
           b. pɔrat                      wibɔrat                      \*wirat                      ‘catfish’

There are similar examples where the deletion process does apply:

- (134) a. puɾak                      wirak                      ‘arrow (type of)’  
           b. pɛra                      wira                      ‘fruit (type of)’

As the /idi-/ ludling, /wi-/ also occurs in sentences, following the parameters of the base language.

- |       |   |                    |               |               |     |
|-------|---|--------------------|---------------|---------------|-----|
|       | O   | V                  | Oblique       |               |     |
| (135) | wi-ra   | in-wɔ-tkɛ-lu       | wi-gɔŋɲɛ      | wi-ukara      | bɔk |
|       | LUD-macaw.(sp.)   | 1Erg-kill-Iter-Rec | LUD-yesterday | LUD-inga.tree | on  |
|       | ‘I repeatedly killed macaws yesterday in the inga tree’ |                    |               |               |     |

- |       |                            |                 |         |
|-------|----------------------------|-----------------|---------|
|       | S                          | AP              |         |
| (136) | wi-upa                     | wi-rik-kɔm-bɛ   | da(ɡiɛ) |
|       | LUD-banana.(sp.)           | LUD-big-Pl-Adjr | very    |
|       | ‘the bananas are very big’ |                 |         |

The ludlingant /wi-/, as does /idi-/, also demonstrates the devoicing process of stops.

- (137) a. piluŋɔ                      wipiluŋɔ                      ‘bird hind quarter’  
           b. pɔu                      wibɔu                      ‘small peccary’

It was seen that in the /idi-/ ludling there is no example of variation of voicing between the alveolar stops [t] and [d]. With /wi-/, in addition to [t] and [d], there is also no example showing variation of voicing between the velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following

examples:

- (138) a. takwi                      wikwi                      ‘manioc flour’  
           b. tawɛ                      wiwe                      ‘capuchin monkey’  
           c. tamɡɔ                      wimɡɔ                      ‘old man, grandfather’  
           d. tukto                      wiktɔ                      ‘cultivated field’  
           e. kuɖɛn                      widen                      ‘cassava’  
           f. kɔtʃi                      witʃi                      ‘a fish’

This deletion process is also true of the palatal affricate [tʃ].



- |       |    |       |       |                   |
|-------|----|-------|-------|-------------------|
| (139) | a. | ʃelw  | wilw  | ‘sister’          |
|       | b. | ʃamit | wimit | ‘squirrel monkey’ |

The general data also show that this ludling occurs with all syllable types.

- |       |    |     |         |       |                |
|-------|----|-----|---------|-------|----------------|
| (140) | a. | V   | a.ɛ     | wiɛ   | ‘a wasp’       |
|       | b. | CV  | ku.den  | widen | ‘cassava’      |
|       | c. | VC  | ik.pa   | wikpa | ‘mud’          |
|       | d. | CVC | kut.kut | wikut | ‘night monkey’ |

#### 4.2.4 Trumpeter and Woodpecker Talk

Trumpeters and woodpeckers are, respectively, called [warakina] and [iebereburu] in Arara. The ludling for these species of animals is labeled in Arara [warakina iebereburu bene lumbanbɔt] ‘to make the tongue of the trumpeters and woodpeckers’.

The morphological process used by the Arara people to build the trumpeters’ and woodpeckers’ ludling is the addition of a /pɔ-/ prefix.

- |       |    |     |       |                  |
|-------|----|-----|-------|------------------|
| (141) | a. | nu  | pɔnu  | ‘abcess, tumor’  |
|       | b. | wɔt | pɔwɔt | ‘fish’           |
|       | c. | kɔk | pɔgɔk | ‘night, evening’ |

The phonological patterns of this ludling work almost exactly the same way as those of the /idi-/ and /wi-/ ludlings. However, it is much more similar to the patterns of the /wi-/ ludling (see Section 4.2.3). Thus, example (141) illustrates the ludlingant /pɔ-/ in monosyllabic words. In (142) below there are examples of this ludling attached to polysyllabic words, resulting in the haplology process: /pɔ-(C)V/ → [pɔ(∅)∅]. Here are some examples:

- |       |    |          |   |          |                      |                  |
|-------|----|----------|---|----------|----------------------|------------------|
| (142) | a. | pɔ-aɛ    | → | pɔ-∅ɛ    | [pɔɛ]                | ‘a wasp’         |
|       | b. | pɔ-taupa | → | pɔ-∅∅upa | [pɔupa]              | ‘a banana’       |
|       | c. | pɔ-ɔɛt   | → | pɔ-∅ɛt   | [pɔɛt]               | ‘rubber tree’    |
|       | d. | pɔ-abat  | → | pɔ-∅bat  | [pɔbat]              | ‘manioc bread’   |
|       | e. | pɔ-ɔnat  | → | pɔ-∅nat  | [pɔnat]              | ‘corn’           |
|       | f. | pɔ-jɛmɛ  | → | pɔ-∅∅mɛ  | [pɔmɛ]               | ‘mom, my mother’ |
|       | g. | pɔ-pɔmu  | → | pɔ-∅∅mu  | [pɔmu] <sup>68</sup> | ‘a beetle’       |

<sup>68</sup> Here the word resulting after the addition of the ludlingant is coincident with the base Word. Therefore, there is a homonym process between the base language and this ludling, in this case.

h.	pɔ-ɔɾemi	→	pɔ-Øɾemi	[pɔɾemi]	‘a fish’
i.	pɔ-kurɔ-kurɔ	→	pɔ-ØØɾɔ-kurɔ	[pɔɾɔkurɔ]	‘a bird’
j.	pɔ-muni	→	pɔ-ØØni	[pɔni]	‘my brother’

Like /wi-/, this ludlingant does not extend deletion to an /r/-initial syllable (see Section 4.2.3). And like all the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(143) a.	pɔ-ɛnbɛn	→	pɔ-Ønbɛn	[pɔnbɛn]	‘his penis’
b.	pɔ-ikpa	→	pɔ-Økpa	[pɔkpa]	‘mud’
c.	pɔ-ɔtpidɔ	→	pɔ-Øtpidɔ	[pɔtpidɔ]	‘armadillo’
d.	pɔ-kutkut	→	pɔ-ØØtkut	[pɔtkut]	‘night monkey’
e.	pɔ-womjum	→	pɔ-ØØmjum	[pɔmium]	‘banana’

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (144) below (see Appendices 3 and 4).

(144) a.	i-ɛnma-n 1Abs-path-Poss		pɔnman	‘my path’
b.	k-ɔd-ɛmia-guruge-da 1Erg-Refl-hand-wash-Near		pɔdɛmiagurugɛda	‘I am going to wash my own hand (near)’
c.	in-dɛkɛ-lu 1Erg-write-Rec		pɔndɛkɛlu	‘I wrote it’
d.	tɔrik-kɔm-bɛ big-Pl-Adjr		pɔrik-kɔm-bɛ	‘they are big’

Like the ludling /wi-/, and unlike /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first CV syllable of the word, as in (144b) above. But unlike /idi-/ and /wi-/, it does not delete identical vowels in a prefix:

(145)	ugu-ptʃi-n-gɔm 12Abs-leg-Poss-Pl		pɔgɔptʃingɔm <sup>69</sup>	‘our (incl.) leg’
-------	-------------------------------------	--	----------------------------	-------------------

Like /wi-/, there are exceptions to the deletion process (/pɔ-(C)V/ → [pɔ(Ø)Ø]):

(146) a.	pɔu	pɔbɔu	*pɔu	‘small peccary’
b.	pɔrat	pɔbɔrat	*pɔrat	‘catfish’

There are similar examples where the deletion process does apply:

(147) a.	pɔurak	pɔrak	‘an arrow’
b.	pɔɛra	pɔra	‘a fruit’

<sup>69</sup> Here the expected form is [pɔgɔptʃingɔm]; or better yet, [pɔptʃingɔm], deleting the whole prefix /ugu-/, as occurs with the other ludlings.

Like the two previous ludlings formed by prefixation (/idi-/ and /wi-/), this ludling also occurs in sentences, following the parameters of the base language.

	O	V	Oblique		
(148)	pɔ-ra	in-wɔ-tkɛ-lu	pɔ-gɔŋɛ	pɔ-ukara	bɔk
	LUD-macaw.(sp.)	1Erg-kill-Iter-Rec	LUD-yesterday	LUD-inga.tree	on
	'I repeatedly killed macaws yesterday in the inga tree'				

	S	AP	
(149)	pɔ-upa	pɔ-rik-kom-be	tagiɛ
	LUD-banana.(sp.)	LUD-big-Pl-Adjr	very
	'the bananas are very big'		

And like /idi-/ and /wi-/ , this ludling also demonstrates the devoicing process of stops.

(150)	a.	pilɔŋɔ	pɔpilɔŋɔ	'bird hind quarter'
	b.	pɔu	pɔbɔu	'small peccary'

And like /wi-/ , there is no example showing variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV

syllable word-initially, such as in the following examples:

(151)	a.	takwi	pɔkwi	'manioc flour'
	b.	tawe	pɔwe	'capuchin monkey'
	c.	tamgɔ	pɔmɔgɔ	'old man, grandfather'
	d.	tuktɔ	pɔktɔ	'cultivated field'
	e.	kuɔden	pɔɔden	'cassava'
	f.	kɔtʃi	pɔtʃi	'a fish'

This deletion process is also true of the palatal affricate [tʃ]:

(152)	a.	tʃɛlu	pɔlu	'sister'
	b.	tʃamit	pɔmit	'squirrel monkey'

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(153)	a.	V	a.e	pɔe	'a wasp'
	b.	CV	ku.den	pɔden	'cassava'
	c.	VC	ik.pa	pɔkpa	'mud'
	d.	CVC	kut.kut	pɔtkut	'night monkey'

#### 4.2.5 Coati Talk

Coatis are called [tʃiruka] in Arara. The ludling for this species of animal is labeled in Arara [tʃiruka lumbanbɔt] 'to make the tongue of the coati'. The morphological process

used by the Arara people to build the *coati*'s ludling is the addition of a /nɛ-/ or /nu-/ prefix.<sup>70</sup>

(154)	a.	nu		<u>nu</u> nu	‘abcess, tumor’
	b.	wɔt		<u>nu</u> wɔt	‘fish’
	c.	kɔk		<u>nu</u> gɔk	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the prefixed ludlings already presented. However, it is much more similar to the patterns of those ludlings formed of two phonemes, such as /wi-/ and /pɔ-/ (see Sections 4.2.3 and 4.2.4). Thus, example (154) illustrates the ludlingant /nu-/ in monosyllabic words. In (155) below there are examples of this ludling attached to polysyllabic words, resulting in a haplology process: /nu-(C)V/ → [nuØØ]. Here are some examples:

(155)	a.	nu-aɛ	→	nu-Øɛ	[ <u>nu</u> e]	‘a wasp’
	b.	nu-taupa	→	nu-ØØupa	[ <u>nu</u> upa]	‘a banana’
	c.	nu-ɔɛt	→	nu-Øɛt	[ <u>nu</u> ɛt]	‘rubber tree’
	d.	nu-abat	→	nu-Øbat	[ <u>nu</u> bat]	‘manioc bread’
	e.	nu-ɔnat	→	nu-Ønat	[ <u>nu</u> nat]	‘corn’
	f.	nu-jɛmɛ	→	nu-ØØmɛ	[ <u>nu</u> mɛ]	‘mom, my mother’
	g.	nu-pɔmu	→	nu-ØØmu	[ <u>nu</u> mu]	‘a beetle’
	h.	nu-ɔrɛmi	→	nu-Ørɛmi	[ <u>nu</u> rɛmi]	‘a fish’
	i.	nu-kurɔ-kurɔ	→	nu-ØØrɔ-kurɔ	[ <u>nu</u> rɔkurɔ]	‘a bird’
	j.	nu-muni	→	nu-ØØni	[ <u>nu</u> ni]	‘my brother’

Like the other prefixed ludlings formed of two phonemes, this ludlingant does not extend deletion to an /r/-initial syllable. And like all the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(156)	a.	nu-ɛnben	→	nu-Ønben	[ <u>nu</u> nben]	‘his penis’
	b.	nu-ikpa	→	nu-Økpa	[ <u>nu</u> kpa]	‘mud’
	c.	nu-ɔtpidɔ	→	nu-Øtpidɔ	[ <u>nu</u> tpidɔ]	‘armadillo’
	d.	nu-kutkut	→	nu-ØØtkut	[ <u>nu</u> tkut]	‘night monkey’
	e.	nu-wɔmjum	→	nu-ØØmjum	[ <u>nu</u> mium]	‘banana’

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (157) below (see Appendices 3 and 4).

<sup>70</sup> During my latest field work (2010), I collected data mainly with the /nu-/ prefix; before that, data were formed with [nɛ-]. I will use /nu-/ here, since it is the most recent form noted.



	S		AP	
(162)	nə-upa		ne-mi-am	nə-rik-kom-be tah(ie)
	LUD-banana.(sp.)		LUD-hand-Loc	LUD-big-Pl-Adjr very
				‘the bananas in his/her hand are very big’

Like the other ludlings, this ludling also shows the devoicing process of stops.

(163)	a.	piluŋɔ	<u>nu</u> piluŋɔ	‘bird hind quarter’
	b.	pou	<u>nu</u> bou	‘small peccary’

And like the ludlings formed of two phonemes, there is no example with variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following examples:

(164)	a.	takwi	<u>nu</u> kwɪ	‘manioc flour’
	b.	tawɛ	<u>nu</u> wɛ	‘capuchin monkey’
	c.	tamgɔ	<u>nu</u> mɡɔ	‘old man, grandfather’
	d.	tuktɔ	<u>nu</u> ktɔ	‘cultivated field’
	e.	kwɛden	<u>nu</u> ɛden	‘cassava’
	f.	kɔtʃi	<u>nu</u> tʃi	‘a fish’

Yet, like the other prefixed ludlings formed of two phonemes, there are examples of deletion of the palatal affricate [tʃ].

(165)	a.	tʃɛlu	<u>nu</u> lu	‘sister’
	b.	tʃamit	<u>nu</u> mit	‘squirrel monkey’

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(166)	a.	V	<u>a</u> .e	<u>nu</u> e	‘a wasp’
	b.	CV	<u>ku</u> .den	<u>nu</u> den	‘cassava’
	c.	VC	<u>ik</u> .pa	<u>nu</u> kpa	‘mud’
	d.	CVC	<u>ku</u> t.kut	<u>nu</u> tkut	‘night monkey’

#### 4.2.6 *Agouti Talk*

Agoutis are called [jaguri] in Arara. The ludling for these species of animals is labeled in Arara [jaguri lumbanbɔt] ‘to make the tongue of agoutis’. The morphological process used by the Arara people to build these animals’ ludling is the addition of a /pi-/ prefix.

(167)	a.	nu	<u>pi</u> nu	‘abcess, tumor’
	b.	wɔt	<u>pi</u> wɔt	‘fish’
	c.	kɔk	<u>pi</u> gɔk	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the prefixed ludlings already presented. However, it is much more similar to the patterns of those ludlings formed of two phonemes (see the ludlings above). Thus, example (167) illustrates the ludlingant /pi-/ in monosyllabic words. In (168) below there are examples of this ludling attached to polysyllabic words, resulting in a haplology process: /pi-(C)V/ → [pi(∅)∅]. Here are some examples:

(168)	a.	pi-æ	→	pi-∅ε	[ <u>pie</u> ]	‘a wasp’
	b.	pi-taupa	→	pi-∅∅upa	[ <u>piupa</u> ]	‘a banana’
	c.	pi-æet	→	pi-∅et	[ <u>piet</u> ]	‘rubber tree’
	d.	pi-abat	→	pi-∅bat	[ <u>pibat</u> ]	‘manioc bread’
	e.	pi-onat	→	pi-∅nat	[ <u>pinat</u> ]	‘corn’
	f.	pi-jeme	→	pi-∅∅me	[ <u>pime</u> ]	‘mom, my mother’
	g.	pi-pɔmu	→	pi-∅∅mu	[ <u>pimu</u> ]	‘a beetle’
	h.	pi-ɔremi	→	pi-∅remi	[ <u>piremi</u> ]	‘a fish’
	i.	pi-kurɔ-kurɔ	→	pi-∅∅rɔ-kurɔ	[ <u>pirɔkurɔ</u> ]	‘a bird’
	j.	pi-muni	→	pi-∅∅ni	[ <u>pini</u> ]	‘my brother’

Like other prefixed ludlings formed of two phonemes, this ludlingant does not extend deletion to an /r/-initial syllable. And like the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(169)	a.	pi-enben	→	pi-∅nben	[ <u>pinben</u> ]	‘his penis’
	b.	pi-ikpa	→	pi-∅kpa	[ <u>pikpa</u> ]	‘mud’
	c.	pi-ɔtpidɔ	→	pi-∅tpidɔ	[ <u>pitpidɔ</u> ]	‘armadillo’
	d.	pi-kutkut	→	pi-∅∅tkut	[ <u>pitkut</u> ]	‘night monkey’
	e.	pi-womjum	→	pi-∅∅mjum	[ <u>pimium</u> ]	‘banana’

This ludlingant, like any other, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (170) below (see Appendices 3 and 4).

(170)	a.	i-ɛnma-n 1Abs-path-Poss		pinman		‘my path’
	b.	k-ɔd-ɛmia-guruge-da 1Erg-Refl-hand-wash-Near		pidemiagurugeda		‘I am going to wash my own hand (near)’
	c.	in-dɛke-lu 1Erg-write-Rec		pinɛkelu		‘I wrote it’

- d. tɔrik-kəm-be                      pɛrik-kəm-bɛ<sup>72</sup>                      ‘they are big’  
big-Pl-Adjr

Like the ludlings formed of two phonemes, and unlike /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first (C)V syllable. And like all of the prefixed ludlings, except for /pɔ-/, the ludlingant here deletes identical vowels in a prefix:

- (171) ugu-ptʃi-n-gɔm                      pɪptʃɪŋgɔm                      ‘our (incl.) leg’  
12Abs-leg-Poss-Pl

Also like the other prefixed ludlings, there are exceptions to the deletion process

/pi-(C)V/ → [pi(∅)∅]:

- (172) a. pɔu                      pɪbɔu                      \*piu                      ‘small peccary’  
b. pɔrat                      pɪbɔrat                      \*pirat                      ‘catfish’  
c. malɔn                      pɪmalɔn                      \*pilɔn                      ‘that’s okay’

Like the other prefixed ludlings, there are also similar examples where the deletion does apply:

- (173) a. pɪurak                      pɪrak                      ‘an arrow’  
b. pɛra                      pɪra                      ‘a fruit’

And like all of the ludlings, /pi-/ also occurs in sentences, following the parameters of the base language.

- (174) O                      V                      Oblique                      pi-ukara                      bɔk  
pi-ra                      in-wɔ-tkɛ-lu                      pi-gɔŋɛ                      LUD-yinga                      on  
LUD-macaw.(sp.) 1Erg-kill-Iter-Rec LUD-yesterday LUD-inga.tree on  
‘I repeatedly killed macaws yesterday in the inga tree’

- (175) Adv:Manner                      V                      Oblique: Source  
pi-pɔrɛ                      tagiɛ w-ɛbu-lu                      pi-dua-n-dubɔ-p  
LUD-empty very 1Erg-arrive-Rec LUD-forest-Ela-Former-now  
‘I arrived from the forest without any load’

Like other ludlings, this ludling also shows the devoicing process of stops.

- (176) a. piluŋɔ                      pɪpiluŋɔ                      ‘bird hind quater’  
b. pɔu                      pɪbɔu                      ‘small peccary’

<sup>72</sup> This is a variant of [pirikombɛ].



And like the ludlings formed of two phonemes, there is no example with variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following examples:

(177)	a.	takui	<u>p</u> ikui	‘manioc flour’
	b.	tawe	<u>p</u> iwe	‘capuchin monkey’
	c.	tamgɔ	<u>p</u> imgɔ	‘old man, grandfather’
	d.	tuktɔ	<u>p</u> iktɔ	‘cultivated field’
	e.	kudɛn	<u>p</u> idɛn	‘cassava’
	f.	kɔtʃi	<u>p</u> itʃi	‘a fish’

Yet, like the other prefixed ludlings formed of two phonemes, there are examples of deletion of the palatal affricate [tʃ].

(178)	a.	tʃɛlu	<u>p</u> ilu	‘sister’
	b.	tʃamit	<u>p</u> imit	‘squirrel monkey’

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(179)	a.	V	<u>a</u> .ɛ	<u>p</u> iɛ	‘a wasp’
	b.	CV	<u>ku</u> .dɛn	<u>p</u> idɛn	‘cassava’
	c.	VC	<u>ik</u> .pa	<u>p</u> ikpa	‘mud’
	d.	CVC	<u>kut</u> .kut	<u>p</u> itkut	‘night monkey’

#### 4.2.7 Peccary and Dog Talk

Peccaries and dogs are, respectively, called [abianã] and [wɔkɔri] in Arara. The ludling for these species of animals is labeled in Arara [abiana wokɔri bene lumbanbɔt] ‘to make the tongue of the peccary and the dog’. The morphological process used by the Arara people to build the peccary’s and dog’s ludling is the addition of a /tɔ-/ prefix.

(180)	a.	nu	<u>tɔ</u> nu	‘abcess, tumor’
	b.	wɔt	<u>tɔ</u> wɔt	‘fish’
	c.	kɔk	<u>tɔ</u> gɔk	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the prefixed ludlings already analyzed. However, it is much more similar to the patterns of those ludlings formed of two phonemes (see these ludlings above). Thus, example (180) illustrates the ludlingant /tɔ-/ in monosyllabic words. In (181) below there

are examples of this ludling attached to polysyllabic words, resulting in a haplology

process: /tɔ-(C)V/ → [tɔ(∅)∅]. Here are some examples:

(181)	a.	tɔ-æ	→	tɔ-∅ε	[tɔε]	‘a wasp’
	b.	tɔ-taupa	→	tɔ-∅∅upa	[tɔupa]	‘a banana’
	c.	tɔ-ɔɛt	→	tɔ-∅ɛt	[tɔɛt]	‘rubber tree’
	d.	tɔ-abat	→	tɔ-∅bat	[tɔbat]	‘manioc bread’
	e.	tɔ-ɔnat	→	tɔ-∅nat	[tɔnat]	‘corn’
	f.	tɔ-jɛmɛ	→	tɔ-∅∅mɛ	[tɔmɛ]	‘mom, my mother’
	g.	tɔ-pɔmu	→	tɔ-∅∅mu	[tɔmu]	‘a beetle’
	h.	tɔ-ɔɾɛmi	→	tɔ-∅ɾɛmi	[tɔɾɛmi]	‘a fish’
	i.	tɔ-kurɔ-kurɔ	→	tɔ-∅∅ɾɔ-kurɔ	[tɔɾɔkurɔ]	‘a bird’
	j.	tɔ-muni	→	tɔ-∅∅ni	[tɔni]	‘my brother’

Like the other prefixed ludlings formed of two phonemes, this ludlingant does not extend deletion to an /r/-initial syllable. And like all the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(182)	a.	tɔ-ɛnbɛn	→	tɔ-∅nbɛn	[tɔnbɛn]	‘his penis’
	b.	tɔ-ikpa	→	tɔ-∅kpa	[tɔkpa]	‘mud’
	c.	tɔ-ɔtpidɔ	→	tɔ-∅tpidɔ	[tɔtpidɔ]	‘armadillo’
	d.	tɔ-kutkut	→	tɔ-∅∅tkut	[tɔtkut]	‘night monkey’
	e.	tɔ-wɔmjum	→	tɔ-∅∅mjum	[tɔmium]	‘banana’

The haplology process triggered by the ludlingant /tɔ-/ seems not to apply in base words starting with labial consonants:<sup>73</sup>

(183)	a.	wɔtɔmɔ	→	/tɔ-wotomo/	[tɔwɔtɔmɔ̃]	‘tapir’
	b.	wakat	→	/tɔ-wakat/	[tɔwakat]	‘alligator, cayman’
	c.	muda	→	/tɔ-muda/	[tɔmuda]	‘wait!’
	d.	muta	→	/tɔ-muta/	[tɔmuta]	‘a monkey’
	e.	muni	→	/tɔ-muni/	[tɔmuni] <sup>74</sup>	‘brother’
	f.	mananɲ	→	/tɔ-mananɲ/	[tɔmananɲ]	‘a coconut bug’
	g.	pɔu	→	tɔ-pɔu	[tɔbou]	‘small peccary’
	h.	pɔrat	→	tɔ-pɔrat	[tɔbɔrat]	‘catfish’

There are similar examples, with bilabial stops, where the deletion process does apply:

<sup>73</sup> But there are exceptions, such as: /tɔ-wɔmjum/ → tɔ-∅∅mjum [tɔmium] ‘banana’ (see example (182e)).

<sup>74</sup> However, see example (181j) above, where we have the form [tɔni] for this ludling.

- |       |    |       |       |            |
|-------|----|-------|-------|------------|
| (184) | a. | pʉrak | tʉrak | ‘an arrow’ |
|       | b. | pɛra  | tʉra  | ‘a fruit’  |

This ludlingant, like any other, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (185) below (see Appendices 3 and 4).

- |       |    |   |                 |   |
|-------|----|---|-----------------|---|
| (185) | a. | i-ɛnma-n<br>1Abs-path-Poss                      | tʉnman          | ‘my path’                               |
|       | b. | k-ɔd-ɛmia-gurugɛ-da<br>1Erg-Refl-hand-wash-Near | tʉdɛmiagurugɛda | ‘I am going to wash my own hand (near)’ |
|       | c. | in-dɛkɛ-lu<br>1Erg-write-Rec                    | tʉndɛkɛlu       | ‘I wrote it’                            |
|       | d. | tʉrik-kɔm-bɛ<br>big-Pl-Adjr                     | tʉrik-kɔm-bɛ    | ‘they are big’                          |

Like the ludlings formed of two phonemes, and unlike /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first CV syllable, as in (185b) above. And like all of the prefixed ludlings, except for /pɔ-/, the ludlingant here deletes identical vowels in a prefix:

- |       |                                     |            |                   |
|-------|-------------------------------------|------------|-------------------|
| (186) | ugu-ptʃi-n-gɔm<br>12Abs-leg-Poss-Pl | tʉptʃingɔm | ‘our (incl.) leg’ |
|-------|-------------------------------------|------------|-------------------|

And like all of the ludlings, /tɔ-/ also occurs in sentences.

- |       |   |                    |               |               |     |
|-------|---|--------------------|---------------|---------------|-----|
|       | O   | V                  | Oblique       |               |     |
| (187) | tɔ-ra   | in-wɔ-tkɛ-lu       | tɔ-gɔnɲɛ      | tɔ-ukara      | bɔk |
|       | LUD-macaw.(sp.)   | 1Erg-kill-Iter-Rec | LUD-yesterday | LUD-inga.tree | on  |
|       | ‘I repeatedly killed macaws yesterday in the inga tree’ |                    |               |               |     |

- |       |                       |            |            |
|-------|-----------------------|------------|------------|
|       | AP                    |            | S          |
| (188) | tʉrik-kom-bɛ          | (tɔ-tɔ)    | tɔ-upɜ     |
|       | LUD-big-Pl-Adjr       | hesitation | LUD-banana |
|       | ‘the bananas are big’ |            |            |

Like the other ludlings, the ludling /tɔ-/ also shows the devoicing process of stops.

- |       |    |        |          |                     |
|-------|----|--------|----------|---------------------|
| (189) | a. | pilʉɲɔ | tʉpilʉɲɔ | ‘bird hind quarter’ |
|       | b. | pɔu    | tʉbɔu    | ‘small peccary’     |

And like the ludlings formed of two phonemes, there is no example with variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following examples:

(190)	a.	takui	<u>t</u> akui	‘manioc flour’
	b.	tawe	<u>t</u> awe	‘capuchin monkey’
	c.	tamgo	<u>t</u> amgo	‘old man, grandfather’
	d.	tuktə	<u>t</u> uktə	‘cultivated field’
	e.	kuɗen	<u>t</u> ɗen	‘cassava’
	f.	kəʃi	<u>t</u> əʃi	‘a fish’

Yet, like the other prefixed ludlings formed of two phonemes, there are examples of deletion of the palatal affricate [tʃ].

(191)	a.	tʃelɔ	<u>t</u> ɔlɔ	‘sister’
	b.	tʃamit	<u>t</u> omit	‘squirrel monkey’

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(192)	a.	V	<u>a</u> .ɛ	<u>t</u> ɛ	‘a wasp’
	b.	CV	<u>k</u> u.ɗen	<u>t</u> ɗen	‘cassava’
	c.	VC	<u>i</u> k.pa	<u>t</u> kpa	‘mud’
	d.	CVC	<u>k</u> ut.kut	<u>t</u> tkut	‘night monkey’

There are homonyms in this Arara language game resulting from the addition of the ludlingant /tə-/ and from the phonemic processes the base words undergo.

(193)	a.	ɛmuru	/tə-ɛmuru/	→	tə-Ømuru	[ <u>t</u> ɔmuru]	‘his testicles’
	b.	amuru	/tə-amuru/	→	tə-Ømuru	[ <u>t</u> ɔmuru]	‘alcoholic drink’

#### 4.2.8 *Small Bird Talk*

Small birds, including macaws, parrots, orange-cheeked parrots, and parakeets are, respectively, called [kara (awu, karaja, karaum)], [tʃarəktʃarə], [kui], and [eridak] in Arara. The ludling for these species of small birds is labeled in Arara [kara (awu, karaja, karaum), tʃarəktʃarə, kui, eridak pene lumbanbət] ‘to make the tongue of macaws, parrots, orange-cheeked parrots, and parakeets’. The morphological process used by the Arara people to build these small birds’ ludling is the addition of an /eɲna-/ prefix.

(194)	a.	nu	<u>eɲ</u> nanu	‘abcess, tumor’
	b.	wət	<u>eɲ</u> nawət	‘fish’
	c.	kək	<u>eɲ</u> nagək	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the prefixed ludlings already analyzed. However, it is much more similar to the

patterns of those ludlings formed of two phonemes (see these ludlings above). Thus, example (194) illustrates the ludlingant /eɣna-/ in monosyllabic words. In (195) below there are examples of this ludling attached to polysyllabic words, resulting in a haplology process: /eɣna-(C)V/ → [eɣna(∅)∅].<sup>75</sup> Here are some examples:

(195)	a.	eɣna-aɛ	→	eɣna-∅ɛ	[eɣnaɛ]	‘a wasp’
	b.	eɣna-taupa	→	eɣna-∅∅upa	[eɣnaupa]	‘a banana’
	c.	eɣna-ɔɛt	→	eɣna-∅ɛt	[eɣnaɛt]	‘rubber tree’
	d.	eɣna-abat	→	eɣna-∅bat	[eɣnabat]	‘manioc bread’
	e.	eɣna-onat	→	eɣna-∅nat	[eɣnanat]	‘corn’
	f.	eɣna-jɛmɛ	→	eɣna-∅∅mɛ	[eɣname]	‘mom, my mother’
	g.	eɣna-pɔmu	→	eɣna-∅∅mu	[eɣnamu]	‘a beetle’
	h.	eɣna-ɔɾɛmi	→	eɣna-∅ɾɛmi	[eɣnaɾɛmi]	‘a fish’
	i.	eɣna-muniɲmɔ	→	eɣna-∅∅niɲmɔ	[eɣnaniɲmɔ]	‘my brothers’

Like the other prefixed ludlings formed of two phonemes, this ludlingant does not extend deletion to an /r/-initial syllable. And like all the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(196)	a.	eɣna-ɛnben	→	eɣna-∅nben	[eɣnanben]	‘his penis’
	b.	eɣna-ikpa	→	eɣna-∅kpa	[eɣnakpa]	‘mud’
	c.	eɣna-ɔtpidɔ	→	eɣna-∅tpidɔ	[eɣnatpidɔ]	‘armadillo’
	d.	eɣna-kutkut	→	eɣna-∅∅tkut	[eɣnatkut]	‘night monkey’
	e.	eɣna-womjum	→	eɣna-∅∅mjum	[eɣnamium]	‘banana’

Like /tɔ-/ , the haplology process triggered by the ludlingant /eɣna-/ seems not to apply in base words starting with labial consonants.<sup>76</sup>

(197)	a.	muni	→	eɣna-muni	[eɣnamuni] <sup>77</sup>	‘brother’
	b.	mate	→	eɣna-mate	[eɣnamate]	‘let’s go!’
	c.	muda	→	eɣna-muda	[eɣnamuda]	‘wait!’
	d.	malɔn	→	eɣna-malɔn	[eɣnamalɔn]	‘that’s okay’
	e.	mananɲ	→	eɣna-mananɲ	[eɣnamananɲ]	‘a coconut bug’
	f.	pilunɔ	→	eɣna-pilunɔ	[eɣnapilunɔ]	‘bird hind quarter’
	g.	pɔu	→	eɣna-pou	[eɣnabou]	‘small peccary’
	h.	pɔrat	→	eɣna-pɔrat	[eɣnabɔrat]	‘catfish’

<sup>75</sup> There is one example of deletion of a second vowel (haplology, since it also deletes the onset of this vowel) in a monomorphemic word: /eɣna-enarut/ → eɣna-∅∅∅rut → [eɣnarut] ‘his sister’.

<sup>76</sup> But there are exceptions, such as: /eɣna-pɔmu/ → eɣna-∅∅mu [eɣnamu] ‘beetle’ (see example (195g)) and /eɣna-womjum/ → eɣna-∅∅mjum [eɣnamium] ‘banana’ (see example (196e)).

<sup>77</sup> However, there is a form [eɣnaniɲmɔ] ‘brothers’ in Appendix 3. This example is in (195i).

There are similar examples, with bilabial stops, where the deletion process does

apply:

- |       |    |        |                |            |
|-------|----|--------|----------------|------------|
| (198) | a. | pʉarak | <u>ɛɲ</u> arak | ‘an arrow’ |
|       | b. | pɛra   | <u>ɛɲ</u> ara  | ‘a fruit’  |

The ludlingant /ɛɲna-/, like any other, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (199) below (see Appendices 3 and 4).

- |       |    |   |                           |   |
|-------|----|---|---------------------------|---|
| (199) | a. | i-ɛnma-n<br>1Abs-path-Poss                      | <u>ɛɲ</u> nanman          | ‘my path’                               |
|       | b. | k-ɔd-ɛmia-gurugɛ-da<br>1Erg-Refl-hand-wash-Near | <u>ɛɲ</u> naɔɛmiagurugɛda | ‘I am going to wash my own hand (near)’ |
|       | c. | in-dɛkɛ-lu<br>1Erg-write-Rec                    | <u>ɛɲ</u> nandɛkɛlu       | ‘I wrote it’                            |
|       | d. | tɔrik-kɔm-bɛ<br>big-Pl-Adjr                     | <u>ɛɲ</u> narik-kɔm-bɛ    | ‘they are big’                          |

Like the ludlings formed of two phonemes, and unlike /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first CV syllable, as in (199b) above. And like all of the prefixed ludlings, except for /pɔ-/, the ludlingant here deletes identical vowels in a prefix:

- |       |                                     |                      |                   |
|-------|-------------------------------------|----------------------|-------------------|
| (200) | ugu-ptʃi-n-gɔm<br>12Abs-leg-Poss-Pl | <u>ɛɲ</u> naptʃingɔm | ‘our (incl.) leg’ |
|-------|-------------------------------------|----------------------|-------------------|

And like all of the ludlings, /ɛɲna-/ also occurs in sentences.

- |       |                            |                                    |                             |   |
|-------|----------------------------|------------------------------------|-----------------------------|---|
|       | O                          | V                                  | Oblique                     |   |
| (201) | ɛɲna-ra<br>LUD-macaw.(sp.) | in-wɔ-tkɛ-lu<br>1Erg-kill-Iter-Rec | ɛɲna-gɔnɲɛ<br>LUD-yesterday | ɛɲna-ukara bɔk<br>LUD-inga.tree on                      |
|       |                            |                                    |                             | ‘I repeatedly killed macaws yesterday in the inga tree’ |

- |       |                             |                                   |  |
|-------|-----------------------------|-----------------------------------|--|
|       | Adv:Manner                  | V                                 | Oblique: Source                                |
| (202) | ɛɲna-pɔrɛ<br>LUD-empty very | tagiɛ w-ɛbu-lu<br>1Erg-arrive-Rec | ɛɲna-dua-n-dubɔ-p<br>LUD-forest-Ela-Former-now |
|       |                             |                                   | ‘I arrived from the forest without any load’   |

Like the other ludlings, the ludling /ɛɲna-/ also shows the devoicing process of stops.

- |       |    |        |                    |                     |
|-------|----|--------|--------------------|---------------------|
| (203) | a. | pilʉɲɔ | <u>ɛɲ</u> napilʉɲɔ | ‘bird hind quarter’ |
|       | b. | pɔu    | <u>ɛɲ</u> nabɔu    | ‘small peccary’     |

And like the ludlings formed of two phonemes, there is no example with variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following examples:

(204)	a.	takui	<u>eŋ</u> nakui	‘manioc flour’
	b.	tawe	<u>eŋ</u> nawe	‘capuchin monkey’
	c.	tamgə	<u>eŋ</u> namgə	‘old man, grandfather’
	d.	tuktə	<u>eŋ</u> naktə	‘cultivated field’
	e.	kuden	<u>eŋ</u> naden	‘cassava’
	f.	kətʃi	<u>eŋ</u> natʃi	‘a fish’

Yet, like the other prefixed ludlings formed of two phonemes, there are examples of deletion of the palatal affricate [tʃ].

(205)	a.	tʃelw	<u>eŋ</u> nalw	‘sister’
	b.	tʃamit	<u>eŋ</u> namit	‘squirrel monkey’

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(206)	a.	V	a.ɛ	<u>eŋ</u> naɛ	‘a wasp’
	b.	CV	ku.den	<u>eŋ</u> naden	‘cassava’
	c.	VC	ik.pa	<u>eŋ</u> nakpa	‘mud’
	d.	CVC	kut.kut	<u>eŋ</u> natkut	‘night monkey’

There are homonyms in this Arara language game resulting from the addition of the ludlingant /eŋna-/ and from the phonemic process the base words undergo.

(207)	a.	eŋna-emuru	→	eŋna-Ømuru	[ <u>eŋ</u> namuru]	‘his testicles’
	b.	eŋna-amuru	→	eŋna-Ømuru	[ <u>eŋ</u> namuru]	‘alcoholic drink’

#### 4.2.9 Toucan Talk

Toucans are called [tuapko] in Arara. They can also receive specific names like [pilik], [kagak] and [tʃirɔ]. The ludling for these species of birds is labeled in Arara [tuapko lumbanbət] ‘to make the tongue of the toucans’. The morphological process used by the Arara people to build the toucans’ ludling is the addition of an /eŋnara-/ prefix.

(208)	a.	nu	<u>eŋ</u> naranu	‘abcess, tumor’
	b.	wət	<u>eŋ</u> narawət	‘fish’
	c.	kək	<u>eŋ</u> naragək	‘night, evening’

The phonological patterns of this ludling work almost exactly the same way as those of the prefixed ludlings already analyzed. However, it is much more similar to the patterns of those ludlings formed of two phonemes (see these ludlings above). Thus, example (198) illustrates the ludlingant /eɲna-/ in monosyllabic words. In (209) below there are examples of this ludling attached to polysyllabic words, resulting in a haplology process: /eɲnara-(C)V/ → [eɲnaraØØ].<sup>78</sup> Here are some examples:

(209) a.	eɲnara-æ	→ eɲnara-Øε	[eɲnaraε]	‘a wasp’
b.	eɲnara-taupa	→ eɲnara-ØØupa	[eɲnaraupa]	‘a banana’
c.	eɲnara-ɔet	→ eɲnara-Øet	[eɲnaraet]	‘rubber tree’
d.	eɲnara-abat	→ eɲnara-Øbat	[eɲnarabat]	‘manioc bread’
e.	eɲnara-ɔnat	→ eɲnara-Ønat	[eɲnaranat]	‘corn’
f.	eɲnara-jeme	→ eɲnara-ØØme	[eɲnarame]	‘mom, my mother’
g.	eɲnara-pɔmu	→ eɲnara-ØØmu	[eɲnaramu]	‘a beetle’
h.	eɲnara-ɔremi	→ eɲnara-Øremi	[eɲnararemi]	‘a fish’
i.	eɲnara-kurɔ-kurɔ	→ eɲnara-ØØrɔ-kurɔ	[eɲnararɔkurɔ]	‘a bird’
j.	eɲnara-muni	→ eɲnara-ØØni	[eɲnaraniɲmɔ]	‘my brothers’

Like the prefixed ludlings formed of two phonemes, this ludlingant does not extend deletion to an /r/-initial syllable. And like all the other (V)CV prefixed ludlings, it does not extend deletion to the coda of a vowel to be deleted.

(210) a.	eɲnara-ɛnben	→ [eɲnaranben]	‘his penis’
b.	eɲnara-ikpa	→ [eɲnarakpa]	‘mud’
c.	eɲnara-ɔtpidɔ	→ [eɲnaratpidɔ]	‘armadillo’
d.	eɲnara-kutkut	→ [eɲnaratkut]	‘night monkey’
e.	eɲnara-womjum	→ [eɲnaramium]	‘banana’

The haplology process triggered by the ludlingant /eɲnara-/, unlike /tɔ-/ and /eɲna-/ (see Sections 4.2.7 and 4.2.8), applies in base words starting with labial consonants:

(211) a.	eɲnara-mate	→ [eɲnarate]	‘wait’
b.	eɲnara-manarɲ	→ [eɲnaranarɲ]	‘a coconut bug’

<sup>78</sup> There is one example of deletion of a second vowel in a monomorphemic word: /eɲnara-enarut/ → eɲnara-ØØØrut → [eɲnararut] ‘his sister’; and there is an example where the last vowel of the ludlingant is deleted /eɲnara-jɔru/ → eɲnara-ØØØru → [eɲnaru] ‘tortoise’. Here the two /r/’s merge into just one, presumably due to the violation of the OCP.



- c.  $\varepsilon\eta\eta\text{ara-pu}\text{arak}$  →  $\varepsilon\eta\eta\text{ararak}$  ‘an arrow’  
 d.  $\varepsilon\eta\eta\text{ara-pe}\text{ra}$  →  $\varepsilon\eta\eta\text{arara}$  ‘a fruit’

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (212) below (see Appendices 3 and 4).

- (212) a.  $i\text{-}\varepsilon\eta\eta\text{a-n}$   $\varepsilon\eta\eta\text{aranman}$  ‘my path’  
 1Abs-path-Poss  
 b.  $k\text{-}\text{ɔd-}\varepsilon\eta\eta\text{a-gurug}\text{-da}$   $\varepsilon\eta\eta\text{arademiagurug}\text{eda}$  ‘I am going to wash  
 1Erg-Refl-hand-wash-Near my own hand (near)’  
 c.  $i\text{-n-dek}\text{e-lu}$   $\varepsilon\eta\eta\text{arandek}\text{elu}$  ‘I wrote it’  
 1Erg-write-Rec  
 d.  $t\text{ɔrik-k}\text{ɔm-be}$   $\varepsilon\eta\eta\text{ararik-k}\text{ɔm-be}$  ‘they are big’  
 big-Pl-Adj

Like the ludlings formed of two phonemes, and unlike /idi-/, the deletion here does not act over the personal and reflexive prefixes, only over the first CV syllable, as in (212b) above. And like all of the prefixed ludlings, except for /pɔ-/, the ludlingant here deletes identical vowels in a prefix:

- (213)  $u\text{gu-pt}\text{ʃi-n-g}\text{ɔm}$   $\varepsilon\eta\eta\text{arapt}\text{ʃing}\text{ɔm}$  ‘our (incl.) leg’  
 12Abs-leg-Poss-Pl

And like all of the ludlings, / $\varepsilon\eta\eta\text{ara-}$ / also occurs in sentences.

- (214) O V Oblique  
 $\varepsilon\eta\eta\text{ara-ra}$   $i\text{-n-w}\text{ɔ-tk}\text{e-lu}$   $\varepsilon\eta\eta\text{ara-g}\text{ɔn}\eta\text{e}$   $\varepsilon\eta\eta\text{ara-ukara}$   $b\text{ɔk}$   
 LUD-macaw.(sp.) 1Erg-kill-Iter-Rec LUD-yesterday LUD-inga.tree on  
 ‘I repeatedly killed macaws yesterday in the inga tree’

- (215) Adv:Manner V Oblique: Source  
 $\varepsilon\eta\eta\text{ara-p}\text{ɔr}\text{e tagi}\varepsilon$   $w\text{-}\varepsilon\text{bu-lu}$   $\varepsilon\eta\eta\text{ara-dua-n-dub}\text{ɔ-p}$   
 LUD-empty very 1Erg-arrive-Rec LUD-forest-Ela-Former-now  
 ‘I arrived from the forest without any load’

Like the other ludlings, the ludling / $\varepsilon\eta\eta\text{ara-}$ / also shows the devoicing process of stops.

- (216) a.  $p\text{ilun}\text{ɔ}$   $\varepsilon\eta\eta\text{arapilun}\text{ɔ}$  ‘bird hind quarter’  
 b.  $p\text{ɔu}$   $\varepsilon\eta\eta\text{arabou}$  ‘small peccary’

And like the ludlings formed of two phonemes, there is no example with variation of voicing between the alveolar [t] and [d], and velar [k] and [g], mainly because of the deletion process over the CV syllable word-initially, such as in the following examples:

(217)	a.	takui	<u>ɛŋnarakui</u>	‘manioc flour’
	b.	tawe	<u>ɛŋnarawe</u>	‘capuchin monkey’
	c.	tamgɔ	<u>ɛŋnaramgɔ</u>	‘old man, grandfather’
	d.	tuktɔ	<u>ɛŋnaraktɔ</u>	‘cultivated field’
	e.	kudɛn	<u>ɛŋnaradɛn</u>	‘cassava’
	f.	kɔtʃi	<u>ɛŋnaratʃi</u>	‘a fish’

This deletion process is also true of the palatal affricate [tʃ].

(218)	a.	tʃɛlu	<u>ɛŋnaralu</u>	‘sister’
	b.	tʃamit	<u>ɛŋnaramit</u>	‘squirrel monkey’

Like the other ludlings, the general data show that this ludling occurs with all syllable types:

(219)	a.	V	a.ɛ	<u>ɛŋnaraɛ</u>	‘a wasp’
	b.	CV	<u>ku</u> .dɛn	<u>ɛŋnaradɛn</u>	‘cassava’
	c.	VC	<u>ik</u> .pa	<u>ɛŋnarakpa</u>	‘mud’
	d.	CVC	<u>kut</u> .kut	<u>ɛŋnaratkut</u>	‘night monkey’

There are homonyms in this Arara language game resulting from the addition of the ludlingant /ɛŋnara-/ and from the phonemic process the base words undergo.

(220)	a.	ɛŋnara-ɛmuru	→	ɛŋnara-Ømuru	[ <u>ɛŋnaramuru</u> ]	‘his testicles’
	b.	ɛŋnara-amuru	→	ɛŋnara-Ømuru	[ <u>ɛŋnaramuru</u> ]	‘alcoholic drink’

#### 4.2.10 Spider Monkey Talk

Spider monkeys are called [woŋoum] in Arara. The ludling for these species of monkeys is labeled in Arara [woŋoum lumbanbɔt] ‘to make the tongue of the spider monkey’. The morphological process used by the Arara people to build the spider monkey’s ludling is the addition of an /un-/ prefix.

(221)	a.	un-nu	<u>unu</u>	‘abcess, tumor’
	b.	un-wɔt	<u>unwɔt</u>	‘fish’
	c.	un-kɔk	<u>ungɔk</u>	‘night, evening’

We can see in the data above that there is no morphophonological process when [un-] is attached to a monosyllabic word, except if the base word starts with an alveolar

consonant, as in (221a). In this case, the alveolar consonant is deleted (see below for more examples of this process). But deletion also does not occur in some polysyllabic words. For example, there is no deletion when the base word starts with /m/.<sup>79</sup>

(222)	a.	muni	<u>un</u> muni	‘brother’
	b.	muda	<u>un</u> muda	‘wait!’
	c.	mate	<u>un</u> mate	‘go!’
	d.	malon	<u>un</u> malon	‘that’s okay’
	e.	mudaimo	<u>un</u> mudaimo	‘a fish’
	f.	murei	<u>un</u> murei	‘bench’
	g.	manan	<u>un</u> manan <sup>80</sup>	‘a coconut bug’

Also no deletion occurs if the ludlingant /un-/ is added to a word that starts with a closed syllable: un-(C)VC.<sup>81</sup>

(223)	a.	un-kutkut	→ [un]kutkut]	‘night monkey’
	b.	un-ɔtɔpidɔ	→ [unɔtɔpidɔ]	‘armadillo’
	c.	un-ɔtkoimo	→ [unɔtkoimɔ̃]	‘armadillo’
	d.	un-ikpa	→ [un]ikpa]	‘mud’
	e.	un-ambamba	→ [unambamba]	‘sting ray’
	f.	un-enben	→ [unenben]	‘his testicles’
	g.	un-wɔmjum	→ [unwɔmjum] <sup>82</sup>	‘banana’

However, some deletions occur as a result of the addition of the ludlingant /un-/ in polysyllabic words. One deletion occurs when this ludlingant is added to a word starting with an alveolar consonant. In this case, the alveolar consonant is deleted: un-C<sub>[Cor]</sub> → un-∅.<sup>83</sup>

<sup>79</sup> Here deletion has scope only over bilabial nasals and not over bilabial consonants in general, similar to what happens with /tɔ-/ and /ɛŋna-/ (see Sections 4.2.7 and 4.2.8).

<sup>80</sup> The form /uŋ-/ for this ludlingant, is a speaker variant.

<sup>81</sup> There are exceptions: /pɔtɔpuri/ → [un]buuri] ‘wood tick’, /ɔnma/ → [un]ma] ‘path’.

<sup>82</sup> The form [uŋmjum] was also attested (datum from 2010).

<sup>83</sup> There is one exception: /un-tʃamit/ → un-∅∅mit → [un]mit] ‘squirrel monkey’, instead of the expected form: \*[un]amit].

(224)	a.	un-nu	→	un-Øu	[ <u>unu</u> ]	‘abcess, tumor’
	b.	un-tawɛ	→	un-Øawɛ	[ <u>unawɛ</u> ] <sup>84</sup>	‘capuchin monkey’
	c.	un-napkɔ	→	un-Øapkɔ	[ <u>unapkɔ</u> ]	‘let it there’
	d.	un-tʃɛlu	→	un-Øɛlu	[ <u>unɛlu</u> ]	‘sister’
	e.	un-tuktɔ	→	un-Øuktɔ	[ <u>uniktɔ</u> ] <sup>85</sup>	‘cultivated field’
	f.	un-taupɑ	→	un-Øaupɑ	[ <u>unaupɑ</u> ]	‘a banana’
	g.	un-taukɑrɑ	→	un-Øaukɑrɑ	[ <u>unaukɑrɑ</u> ]	‘inga tree’
	h.	un-nabiɔt	→	un-Øbiɔt	[ <u>unabiɔt</u> ] <sup>86</sup>	‘sweet potato’
	i.	un-takwi	→	un-Øakwi	[ <u>unakwi</u> ] <sup>87</sup>	‘manioc flour’
	j.	un-tamɡɔ	→	un-Øamɡɔ	[ <u>unamɡɔ</u> ]	‘old man, grandfather’

It is noteworthy that some words can be input to different phonological processes when the ludlingant /un-/ is added. For example, /nu/ ‘abcess, tumor’, as a monosyllabic word, can be an input to the deletion blocking process. At the same time, it can undergo deletion, since it is a word that starts with an alveolar consonant. As can be seen, the deletion does apply (see (221a) and (224a) above). Neither \*[unnun] nor \*[un:un] are attested.

Another deletion occurs when the ludlingant /un-/ is attached to a word whose first two vowels are identical, except if the first syllable has a coda (see examples in (223) above). In this case, the syllable of the first vowel is deleted (haplology): /un-

(C)V<sub>i</sub>CV<sub>i</sub>/ → [un-ØØCV].<sup>88</sup>

(225)	a.	/un-abat/	→	un-Øbat	[ <u>unbat</u> ]	‘manioc bread’
	b.	/un-ibirinda/	→	un-Øbirinda	[ <u>inbirinda</u> ] <sup>89</sup>	‘companion’
	c.	/un-jemɛ/	→	un-ØØme	[ <u>unme</u> ]	‘mom’
	d.	/un-papa/	→	un-ØØpa	[ <u>unba</u> ]	‘dad’

<sup>84</sup> There also exists the form [undawɛ], collected at the same time (January 2003) as [unawɛ].

<sup>85</sup> Here the speaker changed the high round back vowel /u/ to /i/.

<sup>86</sup> The form [unbiɔt] was recorded as well. Besides deleting the vowel /a/, there is an unexpected change in the place of articulation of the nasal consonant from the prefix.

<sup>87</sup> The form [unɡwi] is also attested.

<sup>88</sup> There are exceptions such as /un-kara/ → [ungara] ‘macaw (spp.)’ and /un-kamap/ → [ungamap] ‘gourd container’ where no deletion occurs.

<sup>89</sup> The expected form was [unbirinda].

e.	/un-kəkɔ/	→ un-∅∅kɔ	[ <u>ung</u> ɔ]	‘uncle’
f.	/un-upu/	→ un-∅pu	[ <u>umb</u> u] <sup>90</sup>	‘yam’

It is noteworthy that the stops in (225d-f) are voiced after a nasal consonant, as occurs in the normal language (see Section 3.1.1, examples (14) and (15)). Again it is noteworthy to see that some words can be input to different phonological processes when the ludlingant /un-/ is added. For example, /manaŋ/ ‘a coconut bug’ can be an input to the blocking process or to the deletion triggered by the addition of /un-/ before a word whose first two vowels are identical. However, only the blocking process applies (see (222g) above). The form \*[unanaŋ] is not attested.

It was seen that deletion is blocked in some words: monosyllabic words, words that do not start with bilabial nasal, and words that do not start with a closed syllable. It was also seen that some words undergo deletion: words that start with an alveolar consonant and words whose first two vowels are identical. For other words, their behavior is not always consistent. For example, there are some cases where no phonological process occurs even though the first two vowels of the base word are different.

(226)	a.	/un-æ/	[ <u>un</u> æ]	‘a wasp’
	b.	/un-arun/	[ <u>un</u> arun] <sup>91</sup>	‘howler monkey’
	c.	/un-ɔremi/	[ <u>un</u> ɔremi]	‘a fish’
	d.	/un-ɔnat/	[ <u>un</u> onət] <sup>92</sup>	‘corn’
	e.	/un-pɔu/	[ <u>un</u> bɔu] <sup>93</sup>	‘small peccary’
	f.	/un-pɔmu/	[ <u>un</u> bɔmu]	‘a beetle’
	g.	/un-pɛra/	[ <u>un</u> bera]	‘a fruit’
	h.	/un-purak/	[ <u>un</u> burak]	‘an arrow’
	i.	/un-pwlepte/	[ <u>un</u> bwlepte]	‘knife’
	j.	/un-kurɔkurɔ/	[ <u>un</u> gurɔkurɔ]	‘a bird’

<sup>90</sup> Here the nasal assimilates to the place of articulation of the following consonant. As can be seen from the other examples, this assimilation is not a general process among the ludlings.

<sup>91</sup> In the data I recorded with an elderly man the following alternative forms appear: [unum], [unrun], and [unirun].

<sup>92</sup> The form [unat] was also attested (/un-ɔnat/ → un-∅nat → un-∅∅at).

<sup>93</sup> Here and elsewhere, only voiced obstruents occur after a nasal consonant (see Section 3.1.1, examples (14) and (15)).

However, similar words undergo deletion.

(227) a.	/un-ɔɛt/	→ un-Øɛt	[ <u>un</u> ɛt]	‘rubber tree’
b.	/un-ɔmiaɛgu/	→ un-Ømiaɛgu	[ <u>un</u> miɛgu]	‘manioc bread’
c.	/un-pɔrat/	→ un-Øɔrat	[ <u>un</u> ɔrat]	‘catfish’
d.	/un-idua/	→ un-Ødua	[ <u>un</u> dua]	‘forest’
e.	/un-apon/	→ un-Øpon	[ <u>un</u> bon]	‘club’
f.	/un-agulu/	→ un-Øgulu	[ <u>un</u> gulu]	‘I ate it’
g.	/un-kɔtʃi/	→ un-Øtʃi	[ <u>un</u> dʒi]	‘a fish’
h.	/un-kudɛn/	→ un-Ødɛn	[ <u>un</u> dɛn]	‘cassava’

Therefore, there is no general pattern for these data, from (226) and (227) above.

Other variations by the speaker can also be found. There is a change from a back vowel to a front vowel in the prefix /un-/, either into [in-] or [en-]:

(228) a.	/un-idamuru/	[ <u>in</u> damuru]	‘his grandson/granddaughter’
b.	/un-ikamaburu/	[ <u>in</u> gamaburu]	‘a gourd container’
c.	/un-ipun/	[ <u>in</u> bun]	‘his/her foot’
d.	/un-ɛmuru/	[ <u>en</u> emuru]	‘his testicles’

Also there is an example with /i/ epenthesis:

(229)	/kufʃamit/	→ un-kufʃamit	[ <u>un</u> itʃamit]	‘duski titi monkey’
-------	------------	---------------	----------------------	---------------------

There are examples with vowel mutation in the base word, from /e/ to [i] and /u/ to [i], respectively:

(230) a.	/ɛnarut/	→ un-ɛnarut	[ <u>un</u> inarut]	‘his sister’
b.	/tukto/	→ un-tukto	[ <u>un</u> iktɔ]	‘cultivated field’

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (231) below (see Appendices 3 and 4).

(231) a.	i-ɛnma-n 1Abs-path-Poss	<u>un</u> man	‘my path’
b.	k-ɔd-ɛmia-gurugɛ-da 1Erg-Refl-hand-wash-Near	<u>un</u> dɛmiagurugɛda	‘I am going to wash my own hand (near)’
c.	in-dɛkɛ-lu 1Erg-write-Rec	<u>un</u> dɛkɛlu	‘I wrote it’
d.	kuɛ-p good-Adj	<u>un</u> guɛp	‘they are big’

It can be seen above that the ludlingant /un-/ occurs word-initially in polymorphemic words, as it does in monomorphemic ones. Here the deletion process can also be

extended over two vowels word-initially. However, like the other prefixed ludlings, this deletion process occurs only if the first vowel is part of a prefix, as in (231a) above. Similar to the other ludlings that are prefixes, except /pɔ-/, this ludlingant deletes a whole prefix when it is formed of two identical vowels:

- (232) ugu-ptʃi-n-gɔm                      unbuʃingɔm                      ‘our (incl.) leg’  
           12Abs-leg-Poss-Pl

However, in order to fit into Arara syllable structure, the stem used here is the one that occurs after a noun, *buʃingɔm*, and not the one that occurs with prefixes *-ptʃingom* (see the vowel deletion process that occurs here in section 3.1.5). And like all of the ludlings, /un-/ also occurs in sentences:

- |       |   |                    |               |               |     |
|-------|---|--------------------|---------------|---------------|-----|
|       | O   | V                  | Oblique       |               |     |
| (233) | un-gara   | in-wɔ-tkɛ-lu       | un-gɔgɔŋɛ     | un-aukara     | bɔk |
|       | LUD-macaw.(sp.)   | 1Erg-kill-Iter-Rec | LUD-yesterday | LUD-inga.tree | on  |
|       | ‘I repeatedly killed macaws yesterday in the inga tree’ |                    |               |               |     |

- |       |  |                 |                           |  |
|-------|--|-----------------|---------------------------|--|
|       | Adv:Manner                                   | V               | Oblique: Source           |  |
| (234) | un-bɔrɛ                                      | tagiz w-ɛbu-lu  | un-dua-n-dubɔ-p           |  |
|       | LUD-empty very                               | 1Erg-arrive-Rec | LUD-forest-Ela-Former-now |  |
|       | ‘I arrived from the forest without any load’ |                 |                           |  |

As seen above (231d-h), all obstruents are voiced after the ludlingant /un-/. Here are some more examples:

- |       |    |          |                               |                        |
|-------|----|----------|-------------------------------|------------------------|
| (235) | a. | un-papa  | <u>un</u> ba                  | ‘dad’                  |
|       | b. | un-kɔkɔ  | <u>un</u> gɔ                  | ‘old man, grandfather’ |
|       | c. | un-ɔpu   | [ <u>umb</u> ɔ] <sup>94</sup> | ‘yam’                  |
|       | d. | un-kɔtʃi | <u>un</u> dʒi                 | ‘a fish’               |

The general data show that the present ludling occurs with all syllable types:

- |       |    |     |                 |                  |                |
|-------|----|-----|-----------------|------------------|----------------|
| (236) | a. | V   | <u>a</u> .ɛ     | <u>un</u> aɛ     | ‘a wasp’       |
|       | b. | CV  | <u>pu</u> .rak  | <u>un</u> burak  | ‘an arrow’     |
|       | c. | VC  | <u>ik</u> .pa   | <u>un</u> ikpa   | ‘mud’          |
|       | d. | CVC | <u>kut</u> .kut | <u>un</u> gutkut | ‘night monkey’ |

<sup>94</sup> Here the nasal assimilates to the place of articulation of the following consonant. As can be seen from the other examples, this assimilation is not a general process in the ludlings.

#### 4.2.11 Squirrel Monkey Talk

Squirrel monkeys are called [tʃamit] in Arara. The ludling for these species of monkeys is called in Arara [tʃamit lumbanbət] ‘to make the tongue of a squirrel monkey’.

The morphological process used by the Arara people to build the squirrel monkey’s ludling is the addition of an infix /-pt-/ after the first vowel of the base word.

(237)	a.	nu	n <u>u</u> ptu	‘abcess, tumor’
	b.	wət	w <u>ə</u> ptət	‘fish’
	c.	kək	k <u>ə</u> ptək	‘night, evening’

As seen above, when the ludlingant [-pt-] is inserted into a monosyllabic word, the vowel from the syllable nucleus is repeated after the addition of the infix. This seems to happen so that the output forms can accommodate Arara syllable structure. Without this repetition these output forms would present consonant clusters, such as \*nupt, \*wəptt, and \*kəptk, respectively, not licensed by the CVC Arara canonical pattern.

When this ludlingant occurs in words with a vowel sequence in the two first syllables, it simply separates the two vowels: /(C)VV(C)/ → [(C)V-pt-V(C)].

(238)	a.	aε	a-pt-ε	[a <u>p</u> tε]	‘a wasp’
	b.	ɔεt	ɔ-pt-εt	[ɔ <u>p</u> tεt]	‘rubber tree’
	c.	pɔu	pɔ-pt-u	[p <u>o</u> ptu]	‘small peccary’
	d.	taupa	ta-pt-upa	[ta <u>p</u> tupa] <sup>95</sup>	‘a banana’

If the first vowel in the word is followed by a consonant, the ludlingant replaces this consonant: /(C)V-C-V(C)/ → [(C)V-pt-V(C)].

(239)	a.	/kəkə/	→ kɔ-pt-ɔ	[k <u>ə</u> ptɔ]	‘my uncle’
	b.	/jεmε/	→ jε-pt-ε	[j <u>ε</u> ptε]	‘mom’
	c.	/papa/	→ pa-pt-a	[p <u>a</u> pta]	‘dad’
	d.	/abat/	→ a-pt-at	[a <u>p</u> tat]	‘manioc bread’
	e.	/tʃεlɯ/	→ tʃε-pt-ɯ	[tʃ <u>ε</u> ptɯ]	‘sister’
	f.	/ɔrɛmi/	→ ɔ-pt-ɛmi	[ɔ <u>p</u> tɛmi]	‘a fish’
	g.	/ɔnat/	→ ɔ-pt-at	[ɔ <u>p</u> tat]	‘corn’
	h.	/pitət/	→ pi-pt-ət	[p <u>i</u> ptət]	‘a fruit’
	i.	/muda/	→ mu-pt-a	[m <u>u</u> pta]	‘wait!’

<sup>95</sup> This example is in Appendix 3, example (12), line C. In that appendix, in the sentence section, example (20), line C, the speaker gave the form [tapta], with the ludlingant after the second vowel.



If there are two consonants following the vowel, both of them will be replaced by the ludlingant /-pt-/. Thus we can have /((C)V-CC-V(C))/ → [(C)V-pt-V(C)], as can be seen in the examples below.

(240)	a.	/ɛnbɛn/	→	ɛ-pt-ɛn	[eptɛn]	‘his penis’
	b.	/ɔnma/	→	ɔ-pt-a	[opta]	‘path’
	c.	/ɔtpa/	→	ɔ-pt-a	[opta]	‘a fish’
	d.	/ikpa/	→	i-pt-a	[ipta]	‘mud’
	e.	/tamgɔ/	→	ta-pt-ɔ	[taptɔ]	‘old man, grandpa’
	f.	/kutkut/	→	ku-pt-ut	[kuptut]	‘night monkey’

There are other examples that support this hypothesis. Similar, but not identical to /idi-/ (see Section 4.2.2, example (118)), if the next consonant in the sequence of phonemes is a flap and the vowel following the flap is identical to the one before it, the replacement extends until the flap: /((C)V-CV<sub>i</sub>r-V<sub>i</sub>)/ → [(C)V-pt-V<sub>i</sub>].

(241)	a.	/ibirinda/	→	i-pt-inda	[iptinda]	‘companion’
	b.	/ibara/	→	i-pt-a	[ipta]	‘nothing’
	c.	/amuru/	→	a-pt-u	[aptu]	‘alcoholic drink’

The only other ludlingant that causes this kind of deletion is /idi-/, for duski titi monkeys talk (see Section 4.2.2). On the other hand, a palatal affricate does not delete.

(242)	a.	/kɔtʃi/	→	kɔ-pt-tʃi	kɔ-p∅-tʃi	[kɔptʃi]	‘a fish’
	b.	/ɛmtʃin/	→	ɛ-pt-tʃin	ɛ-p∅-tʃin	[eptʃin]	‘his daughter’

Since the ludlingant /-pt-/ ends in an alveolar stop, and the contiguous affricate begins with a similar stop, the OCP is violated with a consequent deletion of the alveolar stop from the ludlingant (for OCP see Section 3.1.5). This is the only example of a ludlingant undergoing a phonemic process. However, there is an example where the affricate is replaced.

(243)	ugu-ptʃi-n-gɔm	→	ugu-pt-ingɔm	[uguptingom]	‘our (incl.) leg’
	12Abs-leg-Poss-Pl				

Different from the normal language, this ludling does not palatalize an alveolar stop before the vowel /i/ (see Section 3.1.1, examples (7b and c)).

(244)	a.	/ɔtpidɔ/	→	ɔ-pt-idɔ	[ɔptidɔ]	‘armadillo’
	b.	/ɔmiaɛgu/	→	ɔ-pt-iaɛgu	[optiaɛgu]	‘a fish’

c.	/wɔmjum/	→ wɔ-pt-ium	[wɔptium]	‘banana’
d.	/nabiɔt/	→ na-pt-ɔt	[naptɔt]	‘sweet potato’
e.	/ibirinda/	→ i-pt-inda	[iptinda]	‘companion’
f.	/ibin/	→ i-pt-in	[iptin]	‘her brother’
g.	/ibit/	→ i-pt-it	[iptit]	‘her younger sister’

The ludlingant [-pt-] has other variants, such as [-kt-] and [-tt-].

(245) a.	/uun/	→ u-kt-un	[uktun]	‘my food’
b.	/ugɔngɔm/	→ u-kt-ɔngɔm	[uktɔngɔm] <sup>96</sup>	‘men’
c.	/itutun/	→ i-tt-un <sup>97</sup>	[itun]	‘her vagina’

Other variants seem to be systematic, being allomorphs of [-pt-]. One of them is [-ht-], which occurs in few a words that have an alveolar consonant, such as /d/, /l/, /n/, and /t/, following the first vowel of the base word:<sup>98</sup>

(246) a.	/mate/	→ ma-ht-ε	[mahte]	‘let’s go!’
b.	/kudɛn/	→ ku-ht-ɛn	[kuhtɛn]	‘cassava’
c.	/malɔn/	→ ma-ht-ɔn	[mahtɔn] <sup>99</sup>	‘that’s ok’
d.	/muni/	→ mu-ht-i	[muhti] <sup>100</sup>	‘brother’

But as can be seen above (example (239e-i)), alveolar consonants, such as /l/, /r/, /n/, /t/, and /d/, are also replaced by the form /-pt-/. One other variant is that the voiced coronal stop /d/ also occurs replacing alveolar consonants, such as /r/ and /l/.

(247) a.	/arun/	→ a-d-un	[adun]	‘howler monkey’
b.	/jɔru/	→ jɔ-d-u	[jɔdu]	‘tortoise’
c.	/malon/	→ ma-d-on	[madon] <sup>101</sup>	‘that’s okay’

Here the alveolar consonants are liquids. But as was seen, there are liquids which are replaced by the form /-pt-/ as well (see (239e and f)). Again the motivation to the

<sup>96</sup> Here the speaker used [ɜ] instead of [o].

<sup>97</sup> In this example an extra syllable deletes. The expected form is [iptutun]. This is the only example where the OPC violation does not result in deletion from the first consonant onward.

<sup>98</sup> However, there are examples where alveolar consonants are replaced by [-pt-], such as /mate/ → [mapte] ‘you can go’, /wɔtɔmɔ/ → [wɔptɔmɔ] ‘tapir’, /ɛduet/ → [eptuɛt] ‘his/her hammock’, /manaŋ/ → [maptaŋ] ‘a coconut bug’.

<sup>99</sup> The form [madon] was also attested (see example (247c) below).

<sup>100</sup> In Appendix 3, example (10), line C, there also exists the form [muptiŋmɔ] ‘brothers’.

<sup>101</sup> The form [mahtɔn] was also attested (see example (246c)).

replacement triggered by the form /-d-/ instead of /-pt-/ seems not to be phonemic. There are also examples where two replacements take place within a word:

- (248) a. /i-ɛnarut/ → iɛ-pt-a-d-ut [iɛptadut] ‘my (man) sister’  
 1Abs-sister  
 b. /i-manɔ/ → i-pt-a-d-ɔ [iptadɔ] ‘his younger  
 3Abs-brother brother’

In this case, the first replacement is with /-pt-/, which replaces the consonant that follows the first syllabic nucleus of the base word; the second replacement is with the segment /-d-/, which replaces the alveolar sonorant that follows the second vowel of the base word. It is not clear when the form /-d-/ has a primary or a secondary role.

The data presented so far are mainly monomorphemic. But this ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (249) below (see Appendices 3 and 4).

- (249) a. i-ɛnma-n iɛ-pt-an ‘my path’  
 1Abs-path-Poss  
 b. k-ɔd-ɛmia-gurugɛ-da kɔ-pt-ɛmiagurugɛda ‘I am going to wash  
 1Erg-Refl-hand-wash-Near my own hand (near)’  
 c. in-dɛkɛ-lu i-pt-ɛkelu ‘I wrote it’  
 1Erg-write-Rec  
 d. wuɾuɾp-pɛ wuɾ-pt-uɾpɛ ‘it is bad’  
 bad-Adjr

It can be seen above that the ludlingant /-pt-/ occurs in polymorphemic words, as it does in monomorphemic ones, i.e., after the first syllabic nucleus of the base word. In this sense, a vocalic sequence can be read as one vocalic cluster, if the first vowel of this sequence is a prefix. If this first vowel is part of the stem, it is not considered a cluster together with the following vowel (see example (238) above). Similarly to the other ludlings, except for /pɔ-/, this ludlingant treats a prefix formed by two identical vowels as one whole, being added after the last vowel of the prefix:

- (250) ugu-ptʃi-n-gɔm                      ugu-pt-ingɔm                      ‘our (incl.) leg’  
 12-Abs-leg-Poss-Pl

And like all of the ludlings, /-pt-/ also occurs in sentences:

- |       |   |  |                    |  |                |  |                             |
|-------|---|--|--------------------|--|----------------|--|-----------------------------|
|       | O   |  | V                  |  | Oblique        |  |                             |
| (251) | ka-pt-a   |  | in-wɔ-tkɛ-lu       |  | kɔ-pt-ɔŋɛ      |  | tau-pt-a <sup>102</sup> bɔk |
|       | ma-LUD-caw.(sp.)  |  | 1Erg-kill-Iter-Rec |  | yes-LUD-terday |  | inga-LUD-tree on            |
|       | ‘I repeatedly killed macaws yesterday in the inga tree’ |  |                    |  |                |  |                             |

- |       |  |  |                 |  |                                |
|-------|--|--|-----------------|--|--------------------------------|
|       | Adv:Manner                                   |  | V               |  | Oblique: Source                |
| (252) | ta-pt-ɔɾɜ                                    |  | tagiɛ           |  | w-ɛbu-lu      i-pt-ua-n-dubɔ-p |
|       | em-LUD-pty very                              |  | 1Erg-arrive-Rec |  | for-LUD-est-Ela-Former-now     |
|       | ‘I arrived from the forest without any load’ |  |                 |  |                                |

Like the other ludlings, the general data show that this ludling occurs with all syllable

types:

- |       |    |     |         |        |                |
|-------|----|-----|---------|--------|----------------|
| (253) | a. | V   | a.ɛ     | apte   | ‘a wasp’       |
|       | b. | CV  | ku.den  | kuhten | ‘cassava’      |
|       | c. | VC  | ik.pa   | ipta   | ‘mud’          |
|       | d. | CVC | kut.kut | kuptut | ‘night monkey’ |

There are homonyms in this Arara language game resulting from the addition of the

ludlingant /-pt-/ and from the phonemic process the base words undergo.

- |       |    |         |   |        |        |           |
|-------|----|---------|---|--------|--------|-----------|
| (254) | a. | /ɔnma/  | → | ɔ-pt-a | [ɔpta] | ‘path’    |
|       | b. | /ɔtpa/  | → | ɔ-pt-a | [ɔpta] | ‘a fish’  |
| (255) | a. | /ikpa/  | → | i-pt-a | [ipta] | ‘mud’     |
|       | b. | /ibara/ | → | i-pt-a | [ipta] | ‘nothing’ |

#### 4.2.12 Howler Monkey Talk

Howler monkeys are called [arun] in Arara. The ludling for this species of monkeys is labeled in Arara [arun lumbanbɔt] ‘to make the tongue of a howler monkey’. The linguistic process the Arara people use to build the howler monkey’s ludling is phonological, i.e., the placement of nasalization on the vowels of the base words:

<sup>102</sup> The expected form is [taptupa] (see Appendix 3, example (352d)).

	Base Language	Ludling		English Gloss
(256) a.	nu	→ /nu, [nas]/	[nũʔ] <sup>103</sup>	‘abcess, tumor’
b.	wɔt	→ /wɔt, [nas]/	[wɔ̃t]	‘fish’
c.	kɔk	→ /kɔk, [nas]/	[kɔ̃k]	‘night’
d.	aɛ	→ /aɛ, [nas]/	[ãɛ]	‘a wasp’
e.	kuɔɛn	→ /kuɔɛn, [nas]/	[kũɔɛ̃n]	‘manioc flour’
f.	ikpa	→ /ikpa, [nas]/	[ĩkpã]	‘mud’
g.	kutkut	→ /kutkut, [nas]/	[kũtkũt]	‘night monkey’
h.	abat	→ /abat, [nas]/	[ãbãt]	‘manioc bread’
i.	eduɛt	→ /eduɛt, [nas]/	[ẽdũɛ̃t]	‘hammock’
j.	jɔru	→ /jɔru, [nas]/	[jɔ̃rũ]	‘tortoise’
k.	uɔpu	→ /uɔpu, [nas]/	[ũɔpũ]	‘yam’

To my ear, the nasalization here is slightly weaker than the (allophonic) nasalization that occurs on a vowel after a nasal consonant and before silence (see Section 3.1.1).

This ludlingant, like the other ones, can occur within polymorphemic words, such as nouns, verbs, and adjectives, as can be seen in (257) below (see Appendices 3 and 4).

(257) a.	i-ɛnma-n, [nas] 1Abs-path-Poss, LUD	[ĩɛnmã]	‘my path’
b.	k-ɔɔɛ-ɛmia-gurugɛ-da, [nas] 1Erg-Refl-hand-wash-Near, LUD	[kɔ̃ɔ̃ɛmĩãgũrũgɛdã]	‘I am going to wash my own hand (near)’
c.	in-deke-lu, [nas] 1Erg-write-Rec, LUD	[ĩndɛkɛlũ]	‘I wrote it’
d.	wuɔrup-pe, [nas] big-Adj, LUD	[wũrũpɛ]	‘it is bad’

Besides occurring in polymorphemic words, like all of the ludlingants, this ludlingant occurs in sentences:

(258) a.	O kãrã macaw.(sp.), LUD Oblique	V ĩn-wɔ̃-tkɛ-lũ 1Erg-kill-Iter-Rec, LUD	
b.	kɔ̃gɔ̃nɲɛ yesterday, LUD	tãũkãrã inga.tree, LUD	bɔ̃k on, LUD ‘I repeatedly killed macaws yesterday in the inga tree’

<sup>103</sup> CV content monosyllabic words in Arara are very rare. When they are spoken in isolation, a final glottal stop is added.

	Adv:Manner		V		Oblique: Source
(259)	tãpõrẽ	tãgĩẽ	ũ-eẽbũ-lũ	ĩdũã-n-dũbõ-p	
	empty, LUD	very, LUD	1Erg-arrive-Rec, LUD	forest-Ela-Former-now, LUD	
	'I arrived from the forest without any load'				

As can be seen above, the nasalization spreads across the whole utterance. Since this ludling spreads nasalization over a whole utterance, it occurs with all syllable types from the base language:

(260)	a.	V	<u>a</u> .ɛ	ãẽ	'a wasp'
	b.	CV	<u>ku</u> .den	kũdẽn	'cassava'
	c.	VC	ĩ <u>k</u> .pa	ĩkpã	'mud'
	d.	CVC	<u>ku</u> t.kut	kũtkũt	'night monkey'

#### 4.2.13 Tortoise Talk

Tortoise are called [joru] in Arara. The ludling for this species of animals is labeled in Arara [joru lumbanbot] 'to make the tongue of a tortoise'. There is no morphological process to form this ludling. Instead, there are two phonological processes used by the Arara people to build the tortoise's ludling: murmuring the whole base word, plus lowering and/or fronting the first vowel, some vowels, or even all the vowels. In this case, the optimal vowel to be achieved in Arara is [æ], which is at the same time the most advanced and the lowest vowel. It is interesting to note that this vowel is not part of the Arara phonemic inventory. Here are some examples:

(261)	a.	nu	→ [næ] (murmured)	'abcess, tumor'
	b.	kək	→ [kæk] (murmured)	'night'
	c.	aɛ	→ [æɛ] (murmured)	'a wasp'
	d.	ikpa	→ [ikpæ] (murmured)	'mud'
	e.	abat	→ [æbæt] (murmured)	'manioc bread'
	f.	kuɔden	→ [kɛdæn] (murmured)	'cassava'
	g.	kəkɔ	→ [kækæ] (murmured)	'my uncle'
	h.	muni	→ [mɔni] (murmured)	'brother'
	i.	kutkut	→ [kækæt] (murmured)	'night monkey'
	j.	tʃɛlu	→ [tʃæle] (murmured)	'sister'
	k.	ɛmuru	→ [ɛmɔru] (murmured)	'his testicles'

This ludlingant, like the other ones, can occur within polymorphic words, such as nouns, verbs, and adjectives, as can be seen in (262) below (see Appendices 3 and 4).

- (262) a. i-ɛnma-n [iænmæn] (Mur) ‘my path’  
 1Abs-path-Poss, LUD
- b. k-ɔd-ɛmia-gurugɛ-da [kædæmiægɛrɛgɛdæ] (Mur) ‘I am going to wash my own hand (near)’  
 1Erg-Refl-hand-wash-Near, LUD
- c. in-dɛkɛ-lu [indækælə] (Mur) ‘I wrote it’  
 1Erg-write-Rec, LUD
- d. wuɾuɾ-pɛ wæræpɛ (Mur) ‘it is bad’  
 big-Adjr, LUD

Besides occurring in polymorphemic words, like all of the ludlingants, this ludlingant occurs in sentences:

- (263) a. O V  
 kæræ in-wa-tkɛ-lɛ  
 macaw.(sp.), LUD 1Erg-kill-Iter-Rec, LUD  
 Oblique
- b. kɛgɛnɲɛ tækæræ bɛk (Mur)  
 yesterday, LUD inga.tree, LUD on, LUD  
 ‘I repeatedly killed macaws yesterday in the inga tree’

- Adv:Manner V Oblique: Source  
 (264) tæpɛræ tægɪɛ w-æbɛ-lɛ ɛduaɛ-n-dubɛ-p (Mur)  
 empty, LUD very, LUD 1Erg-arrive-Rec, LUD forest-Ela-Former-now, LUD  
 ‘I arrived from the forest without any load’

As can be seen above, this ludlingant spreads across the whole utterance. Since this ludling spreads frontness and murmuring over a whole utterance, it occurs with all syllable types from the base language:

- (265) a. V a.ɛ æɛ ‘a wasp’  
 b. CV kɔ.kɔ kækæ ‘my uncle’  
 c. VC ik.pa ikpæ ‘mud’  
 d. CVC kut.kut kætkaet ‘night monkey’

### 4.3 Summary of the Ludlings

In the Arara ludling constructions surveyed above, the most frequently used strategy is to add prefixes to the base words, in a total of nine out of thirteen cases. Among the other four strategies, two involve the addition of an infix, one the addition of nasalization, and the last one the lowering and fronting of vowels, as well as murmuring. Below a

summary of all the ludlings described above is presented, with /abat/ ‘manioc bread’ as the base word.

	<b>abat</b>	<b>‘manioc bread’</b>
(266) a.	[abagat]	‘capuchin monkey’
b.	[idibat]	‘duski titi monkey’
c.	[wibat]	‘large birds: chicken, muscovy duck, Brazilian merganser, guan, and curassow’
d.	[pɔbat]	‘trumpeter and woodpecker’
e.	[nubat]	‘coati’
f.	[pibat]	‘agouti’
g.	[tɔbat]	‘peccary and dog’
h.	[eɲnabat]	‘small birds: macaw, parrot, orange-cheeked parrot, and parakeet’
i.	[eɲnarabat]	‘toucan’
j.	[unbat]	‘spider monkey’
k.	[aptat]	‘squirrel monkey’
l.	[ãbāt]	‘howler monkey’
m.	[æbæt] (murmured)	‘tortoise’

A summary of some of the phonological processes triggered by the addition of the ludlingants to the base language forms is also presented. Some of these processes include voice-voiceless contrast, neutralization of a voicing contrast, haplology, and quasi-absence of haplology.

(267)	Voice-Voiceless Contrast	Neutralization of Voicing Contrast	Haplology		Few Haplology
	idi- wi- pɔ- nu- pi- tɔ- eɲna- eɲnara-	un-	wi- pɔ- nu- pi- tɔ- eɲna- eɲnara-	idi-	un-

Ludlingant prefixes ending in a vowel show contrast among voice and voiceless stops at the beginning of the following root. The ludlingant prefix ending in a nasal consonant (/un-/) neutralizes this contrast, as can be seen in the first two columns in the chart above. Ludlingants ending in a vowel, except /idi-/, trigger haplology. The ludlingant ending in a



nasal consonant (/un-/), with rare exceptions, does not feed haplology. The ludlingant /idi-/ does not trigger haplology like the other ludlingant prefixes ending in a vowel do. However, it has more examples triggering haplology than /un-/ does. To show this, it is placed between the column that causes haplology and the one which usually does not. The other ludlingants are not crucial for these phonological processes.

## CHAPTER 5

### CONCLUSION

In this thesis I have described thirteen different ludlings extant in the Arara language. As can be seen, they are used only by some elderly Arara people living in the village of Laranjal. And despite their large number, the ludlings fulfill a very restricted sociolinguistic purpose: speaking to pets.

All ludlingants seem to occur with different word classes of the Arara base language. There is even an example of /-gV-/ in an auxiliary word: *kɔgɔlone nitʃaqah* ‘leave it for tomorrow’. In future research I intend to directly attempt to elicit ludlings in conjunction with functional parts of speech such as postpositions, interjections, etc.

Based on the descriptions presented in this thesis, the ludlingants can be grouped in six different ways:

(V)CV-	un-	-gV-	-pt-	nasalization	fronting/murmuring
--------	-----	------	------	--------------	--------------------

The first form above includes all of the prefixes except /un-/: /idi-/, /wi-/, /pɔ-/, /nu-/, /pi-/, /tɔ-/, /eɲna-/, and /eɲnara-/. These eight prefixes are grouped together because they form a specific ludling class that shares a similar deletion process triggered on the stems of the base language. The addition of the other five types of ludlingants also triggers deletion and other phonological processes on the stems of the base language. Some of these processes include copying of vowels, nasalization, murmur, and lateralization of taps.

Sherzer (1982) claims that there are similarities and differences among the linguistic structures of play languages vs. ordinary languages. In Arara, these similarities include stress, syllable patterns, word order, ergativity, restrictions on consonant occurrence, etc. For the sake of illustration, the addition of the ludlingant /-pt-/ on monosyllabic words, such as /nu/, /wɔt/, and /kɔk/, would result in the unacceptable forms \*nupt, \*wɔptt, and \*kɔptk, respectively. However, for these forms to accommodate the canonical Arara syllable pattern, the vowel from the syllable nucleus is copied directly after the ludlingant /-pt-/, resulting in /nuptu/, /wɔptɔt/, and /kɔptɔk/, respectively. Another example is the use of the allomorph *bʉʉʉŋgɔm* ‘our (incl.) leg’ instead of the allomorph *-pʉʉʉŋgɔm*. Using the latter would result in a sequence of three consonants, \*[nptʃ] and the consequently unacceptable form \**unpʉʉʉŋgɔm*, which violates Arara syllable structure. However, the use of the first allomorph produces the acceptable form [unbuʉʉʉŋgɔm]. In addition to this, the ludling for capuchin monkeys has the same child speech substitution of a flap for a lateral, such as in /jɔru/ → [jɔlu] ‘tortoise’ (as stated above it was through this similarity that I came to know about these Arara ludlings).

Another important conclusion is that the Arara ludlings are different from the base language. For example, the alveolar stop of the ludlingant /-pt-/, used to address squirrel monkeys, does not undergo palatalization before the vowel /i/, as occurs in the base language. This can be illustrated with the base word /ibirinda/ ‘companion’, which after the addition of the ludlingant is realized as [iptinda], not \*[iptʃinda]. Furthermore, in the normal Arara language there is no front low vowel [æ]. However, in the tortoise ludling this is the optimal vowel to be achieved.

Perhaps the Arara ludlings were developed in the early Arara culture because in their mythic past, animals played an important part, the capuchin monkey being the most

important. He did many things as the Arara mythic hero, including transforming the kapok tree branches into manioc and transforming a vine nodule into his younger brother. He and his younger brother are referred to as [pamdaŋmɔ], for which name I do not have a translation. I only know that the suffix [-ŋmɔ] marks the plural form. The agouti was the sister of the capuchin monkey; the tapir was his relative; the vulture was his friend.

In the mythic past, it was believed that the Arara people reproduced through eggs, like birds do. But Pamdaŋmɔ made them understand that there was another way. So it is not a surprise that the Arara people are extremely connected to their pets, even to the point of inventing a specialized way to address them.

## APPENDICES

## Appendix 1

### Contrast Among Consonants

- [p] and [b]:

- |     |    |          |                        |
|-----|----|----------|------------------------|
| (1) | a. | [ɯpɯ]    | ‘yam’                  |
|     | b. | [ɯbɯ]    | ‘stone’                |
| (2) | a. | [tapɔre] | ‘without load/baggage’ |
|     | b. | [tabɔre] | ‘open arm/wing’        |

- [p] and [m]:

- |     |    |         |                       |
|-----|----|---------|-----------------------|
| (3) | a. | [ɔrepi] | ‘bare-faced curassow’ |
|     | b. | [ɔremĩ] | ‘a fish’              |
| (4) | a. | [pɔbu]  | ‘a palm tree’         |
|     | b. | [mɔbu]  | ‘mahogany, canoe’     |

- [p] and [w]:

- |     |    |          |                |
|-----|----|----------|----------------|
| (5) | a. | [marapa] | ‘paddle’       |
|     | b. | [karawa] | ‘manioc root’  |
| (6) | a. | [pera]   | ‘a wild fruit’ |
|     | b. | [werɔ]   | ‘wild cat’     |

- [b] and [m]:

- |     |    |        |                      |
|-----|----|--------|----------------------|
| (7) | a. | [ibit] | ‘her younger sister’ |
|     | b. | [imit] | ‘its root’           |
| (8) | a. | [ɯbɯ]  | ‘stone’              |
|     | b. | [imɯ]  | ‘his/her father’     |

- [b] and [w]:

- |      |    |         |                     |
|------|----|---------|---------------------|
| (9)  | a. | [ibet]  | ‘his/her leg’       |
|      | b. | [iwet]  | ‘his/her excrement’ |
| (10) | a. | [abelɯ] | ‘it dried’          |
|      | b. | [ewelɯ] | ‘his/her necklace’  |

- [m] and [n]:
- (11) a. [mɔk] 'that one (animate)'  
b. [nɔk] 'who?'
- (12) a. [imun] 'his son'  
b. [inun] 'his/her kidney'
- (13) a. [mumbɔ] 'a wild fruit'  
b. [munbɔ] 'rat, mouse'
- (14) a. [ɔgum] 'wasp'  
b. [ugɔn] 'man'
- [m] and [ŋ]:
- (15) a. [ɛmuru] 'his testicles'  
b. [ɛŋuru] 'his/her eye'
- (16) a. [inmɛ] 's/he does not want/like it'  
b. [inŋɛ] 'it is sour'
- (17) a. [imɯ] 'his/her father'  
b. [uŋɯ] 'grub, larva'
- [m] and [w]:
- (18) a. [mɔk] 'that one (animate)'  
b. [wɔk] 'a medicinal vine'
- (19) a. [amɯ] 'head louse'  
b. [awɯ] 'blue-and-yellow macaw'
- [t] and [d]:
- (20) a. [muɬa] 'monkey'  
b. [muɬa] 'wait!'
- (21) a. [karatɔ] 'gourd container'  
b. [aratɔ] 'bamboo'
- [t] and [tʃ]:
- (22) a. [muɬa] 'monkey'  
b. [muɬʃaŋ] 'skin ulcer'
- (23) a. [karatʃu] 'spoon'  
b. [kajatʃu] 'peach fronted parakeet'
- [t] and [n]:
- (24) a. [muɬa] 'monkey'  
b. [muɬna] 'over there (in that direction)'

- (25) a. [tuna] 'a proper name for a boy'  
 b. [nunɔ] 'moon'
- (26) a. [iput] 'his/her hair'  
 b. [ipun] 'his/her foot'
- [t] and [r]:
- (27) a. [kutɔ] 'a toad'  
 b. [urɔ] 'I'
- (28) a. [kutɯ] 'a proper name for a woman'  
 b. [jurɯ] 'puddle'
- [t] and [l]:
- (29) a. [patɯ] 'porcupine, coendou'  
 b. [alɯ] 'core, the one from inside'
- (30) a. [tagat tagat] 'flute (type of)'  
 b. [lagat] 'lizard'
- [d] and [n]:
- (31) a. [idun] 'his/her jealousy'  
 b. [inun] 'his/her liver'
- (32) a. [amdet] 'handle, strap'  
 b. [amnet] 'blood vessel, vein'
- [d] and [r]:
- (33) a. [adɔ] 'fish'  
 b. [arɔ] 'his, her lung'
- (34) a. [adɯlɯ] 's/he tore it'  
 b. [arɯlɯ] 's/he looked at it'
- [d] and [l]:
- (35) a. [adɯ] 'a small wild fruit'  
 b. [alɯ] 'core, the one from inside'
- (36) a. [warada] 'a honey'  
 b. [warala] 'a palm tree'
- [tʃ] and [j]:
- (37) a. [karatʃu] 'spoon'  
 b. [kuruju] 'small gourd container'
- (38) a. [tʃaga] 'food cooked in palm leaves'  
 b. [jɔgɔ] 'bee'



- [tʃ] and [r]:
- (39) a. [muʃʔaŋ] 'skin ulcer'  
b. [juran] 'pepper'
- (40) a. [karatʃu] 'spoon'  
b. [turu] 'a tree'
- [n] and [ŋ]:
- (41) a. [manan] 'a herbaceous plant'  
b. [manaŋ] 'a coconut bug'
- (42) a. [tʃʔanɔ] 'a poison'  
b. [wɔŋɔ] 'game, meat'
- (43) a. [aŋna] 'mortar'  
b. [onŋon] 'cacao'
- [n] and [r]:
- (44) a. [pɔnat] 'a palm tree'  
b. [pɔrat] 'catfish'
- (45) a. [ɔnon] 'barbasco plant'  
b. [ɔrɔt] 'wild cashew'
- [l] and [r]:
- (46) a. [ilu] 'his/her tongue'  
b. [iru] 'his older brother'
- (47) a. [walɔ] 'a hawk'  
b. [arɔ] 'lung'
- [k] and [g]:
- (48) a. [akulu] 'it darkened'  
b. [agulu] 'he ate it'
- (49) a. [wakat] 'alligator, cayman'  
b. [waga] 'vulture'
- [g] and [ŋ]:
- (50) a. [eguru] 'its stain, spot'  
b. [eŋuru] 'his/her eye'
- (51) a. [agon] 'graze it, clear it (field)!'  
b. [aŋon] 'fallen on the ground (fruit)'
- [g] and [w]:
- (52) a. [tagi] 'cricket'  
b. [pawi] 'curassow'

- (53) a. [egw] 'throat, cartilage from the curassow's throat  
to its anus'  
b. [aww] 'blue-and-yellow macaw'

## Appendix 2

### Contrast Among Vowels

- [i] and [e] (and [ɛ])
- (1) a. [kubi] 'a fish'  
b. [kube] 'arrow (type of)'
- (2) a. [itkɔ] 'lay down!'  
b. [etkɔ] 'take it, catch it!'
- (3) a. [erin] 'an insect'  
b. [ɛrɛn] 'his/her liver'
- (4) a. [ibit] 'her younger sister'  
b. [ibet] 'his/her leg'
- [i] and [u]
- (5) a. [pawi] 'curassow'  
b. [awu] 'blue-and-yellow macaw'
- (6) a. [ibit] 'her younger sister'  
b. [ibuut] 'his wife'
- (7) a. [niba] 'let him/her take a bath'  
b. [nuuba] 'let him/her give him/her a bath'
- (8) a. [ibuuru] 'his arrow'  
b. [ubuuru] 'my arrow'
- [u] and [ɔ]
- (9) a. [kutkut] 'monkey'  
b. [kɔtkɔt] 'bird'
- (10) a. [ɔgum] 'wasp'  
b. [ɔgɔm] 'blind-snake'
- (11) a. [kui] 'a parakeet'  
b. [koi] 'leaf that dogs eat to become brave'
- (12) a. [tudɔ] 'an awl'  
b. [tɔdɔ] 'leporinus fish'

- [u] and [ʊ]
- (13) a. [ʊwɛlu] 'my flashlight'  
 b. [ʊwɛlʊ] 'my necklace'
- (14) a. [imu] 'its egg'  
 b. [imʊ] 'his/her father'
- (15) a. [muan] 'an insect'  
 b. [muʌŋ] 'a fish'
- [a] and [e] (or [ɛ])
- (16) a. [kuba] 'an armadillo'  
 b. [kubɛ] 'an arrow'
- (17) a. [pawi] 'curassow'  
 b. [pɛwit] 'a hawk'
- (18) a. [amuru] 'manioc beer'  
 b. [ɛmuru] 'his testicles'
- [a] and [ɔ]
- (19) a. [waga] 'vulture'  
 b. [wagɔ] 'a sloth'
- (20) a. [pʊrək] 'arrow (with four points)'  
 b. [pʊrɔk] 'a parakeet'
- (21) a. [tarik] 'big'  
 b. [tɔrik] 'several'

### Appendix 3

#### Chart with Ludlings

In this appendix I present examples of ludling data in three large charts, with all ludlingants using the same base words or sentences, to show all ludlings present in the Arara language. I obtained these data through a broad phonetic transcription that I made in 2010 on location in Laranjal village (see Chapter one and Chapter two). I recorded the data from Tjimi Arara, a 73 year old male, after being authorized by him to do so. Since he does not know how to read or write, I read aloud an Informed Consent document to him. He agreed with the terms presented in the document and impressed his thumbprint on it. We had several meetings. In the process of eliciting these data, I told him a base word or a base sentence and asked him to say each ludling for that word or sentence. I repeated the base word or sentence each time he was going to say a ludling. So these big charts are formed from elicited data. Consequently, a few variations in the speaker's pronunciation were attested in this material, such as for the word 'tree', which seems not to follow any pattern. I did not record these charts electronically, as I did for Appendix 4. For each base word or sentence in the charts, there is a gloss. In this appendix there is a table with isolated nominals, a table with isolated verbs, and a table with sentences.

#### Isolated Nominals

(1)	Gloss	a fish	path	my path	rubber tree
	Base Word	kɔʃi	ɔnma	ieman	ɔɛt
A	Capuchin Monkey	kɔʃigi	ɔnamaga	ienamagan	ɔɛɛt
B	Titi Monkey	idigɔʃi	idinma	idinman	idiet
C	Squirrel Monkey	kɔʃi	ɔpta	ieptan	ɔptɛt
D	Curassow	wiʃi	winma	winman	wiɛt

E	Trumpeter	pətʃi	pənma	pənman	pəet
F	Coati	nutʃi	nunma	nunman	nuet
G	Agouti	pitʃi	pinma	pinman	piet
H	Pecarry, Dog	tətʃi	tənma	tənman	təet
I	Macaw	eɲnatʃi	eɲanma	eɲnanman	eɲnaet
J	Toucan	eɲaratʃi	eɲnaranma	eɲnaranman	eɲnaraet
K	Spider Monkey	unʃi	unma	unman	unet
L	Howler Monkey	kɔʃi	ɔnmā	ĩenmān	ɔ̃et
M	Tortoise	kætʃe	ænmae	iaenmæn	aet

(2)	Gloss	fish	my fish	a fish	a fish
	Base Word	wət	uwət	ɔremi	ɔtpa
A	Capuchin Monkey	wəgət	uwəgət	ɔremigi	ɔtpaga
B	Titi Monkey	idiwət	idiwət	idimi	iditpa
C	Squirrel Monkey	wəptət	uptət	ɔptemi	ɔpta
D	Curassow	wiwət	wiwət	wiremi	witpa
E	Trumpeter	pəwət	pəwət	pɔremi	pɔtpa
F	Coati	nuwət	nuwət	nuremi	nutpa
G	Agouti	piwət	piwət	piremi	pitpa
H	Peccary, Dog	təwət	təwət	tɔremi	tɔtpa
I	Macaw	eɲnawət	eɲnawət	eɲaremi	eɲnatpa
J	Toucan	eɲarawət	eɲnarawət	eɲararemi	eɲaratpa
K	Spider Monkey	unwət	unuwət	unaremi	unba/?unotpa
L	Howler Monkey	wɔt	ũwɔt	õrẽmĩ	ɔ̃tpã
M	Tortoise	wæt	ewæt	æræme	etpæ

(3)	Gloss	mud	we all	night	abcess
	Base Word	ikpa	ugɔrɔŋmɔ	kək	nu
A	Capuchin Monkey	ikpaga	ugɔrɔŋmɔgɔ	kɔgɔk	nugu
B	Titi Monkey	idikpa	idigɔrɔŋmɔ	idigɔk	idinu
C	Squirrel Monkey	ipta	uptɔŋmɔ	koptɔk	nuptu
D	Curassow	wikpa	wigɔrɔŋmɔ	wigɔk	winu
E	Trumpeter	pəkpa	pɔgɔrɔŋmɔ	pɔgɔk	pɔnu
F	Coati	nuukpa	nuugɔrɔŋmɔ	nuugɔk	nuunu
G	Agouti	pikpa	pigɔrɔŋmɔ	pigɔk	pinu
H	Peccary, Dog	təkpa	tɔgɔrɔŋmɔ	tɔgɔk	tɔnu
I	Macaw	eɲnakpa	eɲnagɔrɔŋmɔ	eɲnagɔk	eɲnanu
J	Toucan	eɲnarakpa	eɲnaragɔrɔŋmɔ	eɲnaragɔk	eɲnaranu
K	Spider Monkey	unikpa	ungɔrɔŋmɔ	ungɔk	unu
L	Howler Monkey	ĩkpã	ũgɔrɔŋmɔ	kɔk	nũ
M	Tortoise	ikpæ	ugerɛŋme	kak	næ

(4)	Gloss	my clothes	forest	tree	small peccary
	Base Word	iabɔi	idua	iei	pɔu
A	Capuchin Monkey	iabɔigi	iduaɣa	ieiɣi	pɔugu
B	Titi Monkey	idibɔi	ididua	idijei	idibɔu
C	Squirrel Monkey	iaptɔi	iptua	jeptei	pɔptu
D	Curassow	wibɔi	widua	wijei	wibɔu
E	Trumpeter	pɔbɔi	pɔdua	pɔjei	pɔbɔu
F	Coati	nubɔi	nudua	nueei/nuei	nubɔu
G	Agouti	pibɔi	pidua	piuei	pibɔu
H	Peccary, Dog	tɔbɔi	tɔdua	tɔjei	tɔbɔu
I	Macaw	eɣnabɔi	eɣnadua	eɣnawi	eɣnabɔu
J	Toucan	eɣnarabɔi	eɣnaradua	eɣnarai	eɣnarabɔu
K	Spider Monkey	unbɔi	undua	unei	unbɔu
L	Howler Monkey	ĩãbõĩ	ĩdũã	ĩẽĩ	põũ
M	Tortoise	iæbɔi	eduaæ	iæi	pæu

(5)	Gloss	bench	a fish	a fish	stingray
	Base Word	murei	omiaegu	mudaimɔ	ambamba
A	Capuchin Monkey	mureigi	omiaegugu	mudaimɔɔ	ambambaga
B	Titi Monkey	idimurei	idimiaegu	idimudaimɔ	idimbamba
C	Squirrel Monkey	muptei	ɔptiaegu	muptaimɔ	aptamba
D	Curassow	wimerei	wimiaegu	widaimɔ	wimbamba
E	Trumpeter	pɔmerei	pɔmiaegu	pɔdaimɔ	pɔmbamba
F	Coati	numerei	numiaegu	nudaimɔ	numbamba
G	Agouti	pimerei	pimiaegu	pidaimɔ	pimbamba
H	Peccary, Dog	tɔmerei	tɔmiaegu	tɔdaimɔ	tɔmbamba
I	Macaw	eɣnamurei	eɣnamiaegu	eɣnadaimɔ	eɣnambamba
J	Toucan	eɣnaramurei	eɣnaramiaegu	eɣnaradaimɔ	eɣnarambamba
K	Spider Monkey	unmerei	unmiaegu	unmudaimɔ	unambamba
L	Howler Monkey	mũrẽĩ	unõmĩãẽgũ	mũdãĩmõ	ãmbãmbã
M	Tortoise	meræi	æmiaegu	mædeimæ	æmbæmbæ

(6)	Gloss	knife	armadillo	a bird	night monkey
	Base Word	pulepte	ɔtpidɔ	kɔtkɔt	kutkut
A	Capuchin Monkey	pulepteɣe	ɔtpidɔɔ	kɔtkɔɔt	kutkugut
B	Titi Monkey	idibulepte	iditpidɔ	iditkɔt	iditkut
C	Squirrel Monkey	puptete	ɔptidɔ	kɔptɔt	kuptut
D	Curassow	wilepte	witpidɔ	witkɔt	witkut
E	Trumpeter	pɔlepte	pɔtpidɔ	pɔtkɔt	pɔtkut
F	Coati	nulepte	nutpidɔ	mutkɔt	mutkut
G	Agouti	pilepte	pitpidɔ	pitkɔt	pitkut
H	Peccary, Dog	tɔlepte	tɔtpidɔ	tɔtkɔt	tɔtkut

I	Macaw	eɲnalepte	eɲnatpidɔ	eɲnatkɔt	eɲnatkut
J	Toucan	eɲnaralepte	eɲnaratpidɔ	eɲnaratkɔt	eɲnaratkut
K	Spider Monkey	unbulepte	unɔtpidɔ	ungɔtkɔt	ungutkut
L	Howler Monkey	pũlẽptẽ	ɔtpĩdɔ̃	kɔ̃tkɔ̃t	kũtkũt
M	Tortoise	pelepte	ætpidæ	kætkæt	kætkæt

(7)	Gloss	armadillo	penis	head	a fruit
	Base Word	ɔtkɔimɔ	enben	imumɔɟi	pɛra
A	Capuchin Monkey	ɔtkɔimɔɔ	enbegen	imumɔɟigi	pɛlaga
B	Titi Monkey	iditkɔimɔ	idinben	idimumɔɟi	idibera
C	Squirrel Monkey	ɔptɔimɔ	epten	iptupti	pɛpta
D	Curassow	witkɔimɔ	winben	wimumɔɟi	wira
E	Trumpeter	pɔtkɔimɔ	pɔnben	pɔmumɔɟi	pɔra
F	Coati	nutkɔimɔ	nunben	numumɔɟi	nura
G	Agouti	pitkɔimɔ	pinben	pimumɔɟi	pira
H	Peccary, Dog	tɔtkɔimɔ	tɔnben	tɔmumɔɟi	tɔra
I	Macaw	eɲnatkɔimɔ	eɲnanben	eɲnamumɔɟi	eɲnara
J	Toucan	eɲnaratkɔimɔ	eɲnaranben	eɲnaramumɔɟi	eɲnarara
K	Spider Monkey	unɔtkɔimɔ	unenben	unmumɔɟi	unbera
L	Howler Monkey	ɔ̃tkɔ̃imɔ̃	ẽnbẽn	ĩmũmɔ̃ɟi	pẽrã
M	Tortoise	ætkæimæ	ænbæn	æmɔmɔɟi	pɛræ

(8)	Gloss	a beetle	uncles	an arrow	wood tick
	Base Word	pɔmu	kɔkɔɲmɔ	pɔurak	pɔtpɔuri
A	Capuchin Monkey	pɔmugu	kɔkɔɲmɔɔ	pɔuragak	pɔtpɔurigi
B	Titi Monkey	idimu	idikɔɲmɔ	idiburak	iditpɔuri
C	Squirrel Monkey	pɔptu	kɔptɔɲmɔ	pɔuptak	pɔpti
D	Curassow	wimu	wikɔɲmɔ	wirak	witpɔuri
E	Trumpeter	pɔmu	pɔkɔɲmɔ	pɔrak	pɔtpɔuri
F	Coati	numu	nukɔɲmɔ	nurak	nutpɔuri
G	Agouti	pimu	pikɔɲmɔ	pirak	pitpɔuri
H	Peccary, Dog	tɔmu	tɔkɔɲmɔ	tɔrak	tɔtpɔuri
I	Macaw	eɲnamu	eɲnakɔɲmɔ	eɲnarak	eɲnatpɔuri
J	Toucan	eɲnaramu	eɲnarakɔɲmɔ	eɲnarak	eɲnatpɔuri
K	Spider Monkey	unbɔmu	ungɔɲmɔ	unburak	unbɔuri
L	Howler Monkey	pɔmũ	kɔ̃kɔ̃ɲmɔ̃	pũrãk	pɔ̃tpũrĩ
M	Tortoise	pamu	kækæɲmæ	pɛræk	pɛtpɛri

(9)	Gloss	her vagina	club	his wife	wasp
	Base Word	itutun	apon	ibut	æ
A	Capuchin Monkey	itutugun	apogon	ibugut	æge
B	Titi Monkey	iditutun	idipon	idibut	idie
C	Squirrel Monkey	ittun	apton	iptut	apte
D	Curassow	witutun	wipon	wibut	wie



E	Trumpeter	pətutun	pəpon	pəbut	pəe
F	Coati	nututun	nupon	nubut	nue
G	Agouti	pitutun	pipon	pibut	pie
H	Peccary, Dog	tətutun	təpon	təbut	təe
I	Macaw	eɣnatutun	eɣnapon	eɣnabut	eɣnae
J	Toucan	eɣnaratutun	eɣnarapon	eɣnarabut	eɣnarae
K	Spider Monkey	unitutun	unbon	unbut	unae
L	Howler Monkey	ĩtũtũn	ãpõn	ĩbũt	ãẽ
M	Tortoise	eteten	æpen	ebæt	æe

(10)	Gloss	brothers	bird hind quarter	his bird hind quarter	catfish
	Base Word	muniɣmɔ	pilunɔ	ipilun	pɔrat
A	Capuchin Monkey	muniɣmɔɔ	pilunɔɔ	ipilugun	pɔragat
B	Titi Monkey	idimuniɣmɔ	idipilunɔ	idipilun	idibɔrat
C	Squirrel Monkey	muptiɣmɔ	piptunɔ	iptilun	pɔptat
D	Curassow	winiɣmɔ	wipilunɔ	wipilun	wibɔrat
E	Trumpeter	pɔniɣmɔ	pɔpilunɔ	pɔpilun	pɔbɔrat
F	Coati	nuniɣmɔ	nupilunɔ	nupilun	nubɔrat
G	Agouti	piniɣmɔ	pipilunɔ	pipilun	pibɔrat
H	Peccary, Dog	tɔniɣmɔ	tɔpilunɔ	tɔpilun	tɔbɔrat
I	Macaw	eɣnaniɣmɔ	eɣnapilunɔ	eɣnapilun	eɣnabɔrat
J	Toucan	eɣnaraniɣmɔ	eɣnarapilunɔ	eɣnarapilun	eɣnarabɔrat
K	Spider Monkey	unmuniɣmɔ	unbilunɔ	unbilun	unɔrat
L	Howler Monkey	mũniɣmɔ̃	pĩlũnɔ̃	ĩpĩlũn	pɔ̃rãt
M	Tortoise	mæniɣmæ	pelenɣæ	epelun	peræt

(11)	Gloss	bird	macaw spp.	deceased father	gourd
	Base Word	kurɔkuro	kara	papamgeni	kamap
A	Capuchin Monkey	kurɔkuroɔ	karaga	papagamgeni	kamagap
B	Titi Monkey	idirɔkuro	idigara	idipamgeni	idimap
C	Squirrel Monkey	kuptɔkuro	kapta	paptamgeni	kaptap
D	Curassow	wirɔkuro	wira	wipamgeni	wimap
E	Trumpeter	pɔrɔkuro	pɔra	pɔpamgeni	pɔmap
F	Coati	nurɔkuro	nura	nupamgeni	numap
G	Agouti	pirɔkuro	pira	pipamgeni	pimap
H	Peccary, Dog	tɔrɔkuro	tɔra	tɔpamgeni	tɔmap
I	Macaw	eɣnarɔkuro	eɣnara	eɣnapamgeni	eɣnamap
J	Toucan	eɣnararɔkuro	eɣnarara	eɣnarapamgeni	eɣnaramap
K	Spider Monkey	ungurɔkuro	ungara	unbamgeni	ungamap
L	Howler Monkey	kũrɔ̃kũrɔ̃	kãrã	pãpãmgẽni	kãmãp
M	Tortoise	kærækæræ	kæræ	pæpæmgeni	kæmæp

(12)	Gloss	my food	men	banana (type of)	banana
	Base Word	uun	ugongom	taupa	womjum
A	Capuchin Monkey	uugun	ugongogom	taupaga	womjugum
B	Titi Monkey	idiun	idigongom	idiupa	idimium
C	Squirrel Monkey	uktun	uktəngom	taptupa	wəptium
D	Curassow	wiun	wigəngom	wiupa	wimium
E	Trumpeter	pəun	pəgəngom	pəupa	pəmium
F	Coati	nuun	negəngəm	nuupa	numium
G	Agouti	piun	piɡənbə	piupa	pimium
H	Peccary, Dog	təun	təgəngom	təupa	təmium
I	Macaw	ɛɲnaun	ɛɲnagəngom	ɛɲnaupa	ɛɲnamium
J	Toucan	ɛɲnaraun	ɛɲnaragongom	ɛɲnaraupa	ɛɲnaramium
K	Spider Monkey	unəun	unəngənbə	unaupa	uɲmium
L	Howler Monkey	ũũn	ugənbē	tāũpā	wōmǰũm
M	Tortoise	ɛun	ugəngəm	tæpæ	wəmjəm

(13)	Gloss	our (all) leg
	Base Word	uguptʃingəm
A	Capuchin Monkey	uguptʃingəgəm
B	Titi Monkey	idiptʃingəm
C	Squirrel Monkey	uguptingəm
D	Curassow	wiptʃingəm
E	Trumpeter	pəgəptʃingəm
F	Coati	nuptʃingəm
G	Agouti	piptʃingəm
H	Peccary, Dog	təptʃingəm
I	Macaw	ɛɲnaptʃingəm
J	Toucan	ɛɲnaraptʃingəm
K	Spider Monkey	unbuptʃingəm
L	Howler Monkey	ũgũptʃingəm
M	Tortoise	ɛguptʃingəm

#### Isolated Verbs and Adjectives

(14)	Gloss	slept	I'm going to sleep (near)	make her/him sleep
	Base Word	təwungut	ɹwunguda	iungunəpkə
A	Capuchin Monkey	təwungugut	ɹwungudaga	iungunəpkəgə
B	Titi Monkey	idiwungut	idiwunguda	idiwungunəpkə
C	Squirrel Monkey	təptungut	ɹptunguda	iuptungunəpkə
D	Curassow	wiwungut	wiwunguda	wiwungunəpkə
E	Trumpeter	pəwungut	pəwunguda	pəwungunəpkə
F	Coati	nəwungut	nɹwunguda	nɹwungunəpkə
G	Agouti	piwungut	piwunguda	piwungunəpkə

H	Peccary, Dog	təwʊŋɡʊt	təwʊŋɡʊdɑ	təwʊŋɡʊnɔpkɔ
I	Macaw	ɛŋnawʊŋɡʊt	ɛŋnawʊŋɡʊdɑ	ɛŋnawʊŋɡʊnɔpkɔ
J	Toucan	ɛŋnarawʊŋɡʊt	ɛŋnarawʊŋɡʊdɑ	ɛŋnarawʊŋɡʊnɔpkɔ
K	Spider Monkey	unʊŋɡʊt	unʊŋɡʊdɑ	unʊŋɡʊnɔpkɔ
L	Howler Monkey	tɔwũŋɡũt	ũwũŋɡũdɑ	ĩũŋɡũnɔpkɔ
M	Tortoise	tæwænɡet	urwæŋɡædæ	iæŋɡænæpkæ

(15)	Gloss	s/he ate	for her/him	I wrote
	Base Word	agulu	urwuna	indekelu
A	Capuchin Monkey	aguluɡu	urwunaga	indekeluɡu
B	Titi Monkey	idigulu	idiwuna	idindekelu
C	Squirrel Monkey	aptulu/aktulu	urptuna	iptekelu
D	Curassow	wigulu	wiwuna	windekelu
E	Trumpeter	pɔɡulu	pɔwuna	pɔndekelu
F	Coati	nugulu	nurwuna	numdekeli
G	Agouti	pigulu	piwuna	pindekeli
H	Peccary, Dog	tɔɡulu	tɔwuna	tɔndekeli
I	Macaw	ɛŋnagulu	ɛŋnawuna	ɛŋnandekeli
J	Toucan	ɛŋnaragulu	ɛŋnarawuna	ɛŋnarandekeli
K	Spider Monkey	ungulu	unurwuna	undekeli
L	Howler Monkey	ãɡũlũ	ũwũnã	ĩndẽkẽlũ
M	Tortoise	ægule	urwænæ	indækælæ

(16)	Gloss	I'm going to wash my own hand	it's good	it's bad
	Base Word	kɔdemiagurugeda	kurep	wurupe
A	Capuchin Monkey	kɔdemiagurugedaga	kurɛɡep	wurupeɡe
B	Titi Monkey	idimiagurugeda	idirep	idirupe
C	Squirrel Monkey	kɔptemiagurugeda	kuptep	wuptupe
D	Curassow	widemiagurugeda	wirep	wirupe
E	Trumpeter	pɔdemiagurugeda	pɔrep	pɔrupe
F	Coati	nudemiagurugeda	nurep	nurupe
G	Agouti	pidemiagurugeda	pirep	pirupe
H	Peccary, Dog	tɔdemiagurugeda	tɔrep	tɔrupe
I	Macaw	ɛŋnademiagurugeda	ɛŋnarep	ɛŋnarupe
J	Toucan	ɛŋnarademiagurugeda	ɛŋnararep	ɛŋnararupe
K	Spider Monkey	undemiagurugeda	ungurep	unurupe
L	Howler Monkey	kɔdẽmiãɡũrũɡẽdã	kũrẽp	wũrũpẽ
M	Tortoise	kædæmiægeregedæ	kuræp	wæræpæ

Sentences

(17)	Gloss	I came from the forest without any load
	Base Sentence	tapɔrɛ tagiɛ wɛbʉlʉ iduandubɔp
A	Capuchin Monkey	tapɔrɛgɛ tagiɛ wɛbʉlʉ iduandubɔgɔp
B	Titi Monkey	idipɔrɛ tagiɛ wɛbʉlʉ ididuandubɔp
C	Squirrel Monkey	taptɔrɛ tagiɛ wɛbʉlʉ iptuandubɔp
D	Curassow	wipɔrɛ tagiɛ wɛbʉlʉ widuandubɔp
E	Trumpeter	pɔpɔrɛ tagiɛ wɛbʉlʉ pɔduandubɔp
F	Coati	nʉpɔrɛ tagiɛ wɛbʉlʉ nʉduandubɔp
G	Agouti	pipɔrɛ tagiɛ wɛbʉlʉ piduandubɔp
H	Peccary, Dog	tɔpɔrɛ tagiɛ wɛbʉlʉ tɔduandubɔp
I	Macaw	ɛɲnapɔrɛ tagiɛ wɛbʉlʉ ɛɲnaduandubɔp
J	Toucan	ɛɲnarapɔrɛ tagiɛ wɛbʉlʉ ɛɲnaraduandubɔp
K	Spider Monkey	unbɔrɛ tagiɛ wɛbʉlʉ unduandubɔp
L	Howler Monkey	t̩ãp̩ɔr̩ɛ t̩ãg̩ɛ̃ w̩ɛb̩ʉl̩ʉ̃ ãd̩ũãnd̩ũb̩ɔp̩
M	Tortoise	tæpɛræ tægɛ wæbele ɛduændubɛp

(18)	Gloss	my deceased father ate the tropical fruit (spp.)
	Base Sentence	pitɔt jemilʉ papamgeni
A	Capuchin Monkey	pitɔgɔtʃemilʉ papagamgeni
B	Titi Monkey	iditɔtʃemilʉ idipamgeni
C	Squirrel Monkey	piptɔtʃemilʉ paptamgeni
D	Curassow	witɔtʃemilʉ wipamgeni
E	Trumpeter	pɔtɔtʃemilʉ pɔpamgeni
F	Coati	nʉutɔtʃemilʉ nʉpamgeni
G	Agouti	pitɔtʃemilʉ pipamgeni
H	Peccary, Dog	tɔtɔtʃemilʉ tɔpamgeni
I	Macaw	ɛɲnatɔtʃemilʉ ɛɲnapamgeni
J	Toucan	ɛɲnaratɔtʃemilʉ ɛɲnarapamgeni
K	Spider Monkey	unbitɔtʃemilʉ unbamgeni
L	Howler Monkey	p̩t̩ɔt̩ʃ̩ɛ̩m̩il̩ʉ̩ p̩ãp̩ãmg̩ɛ̩n̩ĩ
M	Tortoise	petatʃemile pæpæmgeni

(19)	Gloss	the tayra did not eat the tropical fruit (spp.)
	Base Sentence	pitɔt jemibʉra gumʉk wajʉgɔ
A	Capuchin Monkey	pitɔgɔtʃemibʉra gumʉk wajʉgɔgɔ
B	Titi Monkey	iditɔtʃemibʉra gumʉk idiwajʉgɔ
C	Squirrel Monkey	piptɔtʃemibʉra gumʉk waptʉgɔ
D	Curassow	witɔtʃemibʉra gumʉk wiʉgɔ
E	Trumpeter	pɔtɔtʃemibʉra gumʉk pɔʉgɔ
F	Coati	nʉutɔtʃemibʉra gumʉk nʉʉgɔ
G	Agouti	pitɔtʃemibʉra gumʉk piʉgɔ
H	Peccary, Dog	tɔtɔtʃemibʉra gumʉk tɔʉgɔ
I	Macaw	ɛɲnatɔtʃemibʉra gumʉk ɛɲnajʉgɔ

J	Toucan	eḡnaratəʃemibura gumuuk eḡarajugə
K	Spider Monkey	unbitəʃemibura gumuuk unwajugə
L	Howler Monkey	pītəʃemībūrā gūmūik wājūgə
M	Tortoise	petatʃemiberæ gumek wəjuga

(20)	Gloss	I killed repeatedly macaws yesterday on the inga tree
	Base Sentence	kara inwətkelw kəgəŋe taukara bək
A	Capuchin Monkey	kalaga inwətkelw kəgəŋege taupalaga bək
B	Titi Monkey	idiara inwətkelw idigəŋe idiukara bək
C	Squirrel Monkey	kaptə inwətkelw kəptəŋe tauptə bək
D	Curassow	wira inwətkelw wigəŋe wiukara bək
E	Trumpeter	pəra inwətkelw pəgəŋe pəukara bək
F	Coati	nura inwətkelw nuɡəŋe nuukara bək
G	Agouti	pira inwətkelw pigəŋe piukara bək
H	Peccary, Dog	təra inwətkelw təgəŋe təkara bək
I	Macaw	eḡnara inwətkelw eḡnəgəŋe eḡnaukara bək
J	Toucan	eḡnarara inwətkelw eḡnarəgəŋe eḡnaraukara bək
K	Spider Monkey	ungara inwətkelw unɡəgəŋe unaukara bək
L	Howler Monkey	kārā ĩnwətkēlū kəgəŋe tāūkārā bək
M	Tortoise	kæræ inwatkele keɡeŋe tækæræ bek

## Appendix 4

### Recording of Ludlings

In this appendix I present examples of ludling data in the context of larger syntactic units, including phrases, clauses, sentences, and discourse. I have transcribed (phonetically) these data based on recordings I made in 2010 on location in Laranjal village (see Introduction and Chapter one). The recordings were made using the program Audacity; the microphone used was a Galaxy Audio on an HDR2 (handheld digital recorder). The speaker is Tjimi Arara, a 73 year old male. I asked him to make up one story or conversation about each of the different ludlings. I suggested that he use the Arara base word /taupa/ ‘species of banana’ as a consistent topic for each one of these texts. Each ludling story in this appendix is separated into its own distinct table. Glosses of each individual morpheme appear right below the Arara forms (in the same cell), and a free translation is given in the column to the right. When I could not make out certain words that Tjimi said in the recordings, I use numbers in the free translation column to refer to the location in the Audacity file where that portion of speech occurs.

It is noteworthy that Tjimi is the only Arara speaker who still remembers all thirteen ludling forms. Furthermore, he appears to be the only speaker who can fluently put these words together into larger utterances of this type, i.e., conversations. However, it is very evident in these recordings that he frequently hesitates, as though he finds the task difficult. In addition, the ludling which he hesitates with the most is the squirrel monkey ludling (see the third section below “Squirrel monkeys ludling”). All other Arara

speakers familiar with this ludling consistently form it by infixing /-pt-/ after the first vowel. Nevertheless, while Tjimi uses /-pt-/ in most cases, such as in this appendix, he sometimes changes this empty morpheme to /-kt-/ , or even /-tt-/ , as in Appendix 3.

Capuchin Monkey ludling: /-gV-/; /t/ > [l] (see Section 4.2.1)

(1)	taupa-ga dəŋ banana-LUD be	'it is a banana'
(2)	təupə	'banana'
(3)	taupa-ga banana-LUD	'banana'
(4)	tələk-kom-bɛ-ge tagie tərəŋ dərəŋ dədə: big-Pl-Adj-LUD very Ideoph Ideoph Ideoph	'they are very big, very big, very big'
(5)	i-enba-ga-n 1Abs-food-LUD-Poss	'it is my (soft) food'
(6)	i-nba-n 2Abs-food-Poss	'it is your food'
(7)	i-enba-ga-n 1Abs-food-LUD-Poss	'it is my food'
(8)	ũhũ, i-enba-n biget (matu) Ideoph 1Abs-food-Poss few ?	'yes, it is my little bit of food (matu: speech error?)'
(9)	(m)-enep-təmɛ-ge mondo lon (2Erg)-bring-Fut-LUD there Emph	'you will bring it from there'
(10)	imbala-ga ja Neg?-LUD Emph?	'no (emphatic)' (location in the file: 15)
(11)	ug-enba-ga-n-gom dəŋ 12Abs-food-LUD-Poss-Pl be	'it is our food' (change in the order of the ludlingant)
(12)	enŋa (hʒhʒ) agreement (hesitation)	'good idea!'
(13)	taupa-ga tərɪk-kom-be-ge tahie kumuuk banana-LUD big-Pl-Adj-LUD emph Rem.Imperf	'the bananas were very big' (fricativization of /g/: tahie)
(14)	u: tan budek an pe-ge pa darik ka gumuuk Ideoph here like ? ? ? big Q Rem	'(location in the file: 24-28)'
(15)	kun-ge buła it-taŋ-gur Rem-say ? Aux?-Uni-Imperf?	'(location in the file: 25-30)'
(16)	man m-an-enep... attention 2Erg-Inc-bring	'look, you start bringing...'
(17)	m-an-enep-tome (ũh) 2Erg-Inc-bring-fut (hesitation)	'you will start bringing them'

(18)	m-enep-tome-ge 2Erg-bring-Fut-LUD	‘you will bring them’
(19)	kəgəlone n-itʃ-a-gah tomorrow Abs-Aux-Perm-LUD	‘leave it for tomorrow’ (extra /h/ in the ludlingant)
(20)	heŋa (hũ) agreement (hesitation)	‘good idea!’ (extra /h/ in the word for agreement)

Titi monkeys ludling: /idi-/ (see Section 4.2.2)

(21)	idi-upa LUD-banana	‘banana’
(22)	taupa	‘banana’
(23)	idi-upa (hũhũ) LUD-banana (hesitation)	‘banana’
(24)	idi-əmjum-urru LUD-banana-field	‘banana field’
(25)	həhə ədə əmjum-urru ? ? banana-field	‘banana field’
(26)	malən-ne to-bin-de enough-only T-ripe-Nmlz	‘(in the field there are) only ripened (yellow) ones’
(27)	eʃid edare-ge-n ? ?	‘(location in the file: 49- 50)’
(28)	idi-rik-kom-be tagie LUD-big-Pl-Adjr very	‘they (bananas) are very big’
(29)	ka-am-buura wuna dite... high-Loc-Neg ? ?	‘they (the trees) are short, ...’
(30)	m-an-enep-tə(me) 2Erg-Inc-bring-Fut	‘you will start bringing (them)’
(31)	m-an-enep-təme botkun 2Erg-Inc-bring-Fut very	‘you will start bringing (them, emphatic)’
(32)	idi-nakta LUD-?	‘(location in the file: 57)’
(33)	idi-gələne n-itʃ-ə tetʃiŋ LUD-tomorrow 3-Aux-Perm ?	‘leave it for tomorrow’
(34)	malon urə tēkete hũ enough I ? babbling	‘(location in the file: 1:00- 1:05)’
(35)	n-eneb-a wu-ge-naŋuru... 3Abs-bring-Perm 1Erg-say-Prog	‘let him bring (them), I say’
(36)	idi-βe-ta-nbom LUD-bring?-Dist-later	‘you bring (them) later’
(37)	idi-rə lən LUD-? Emph	‘(location in the file: 1:06.0)’



(38)	idi-upa      tɜrik-kom-be tɜ(gie) LUD-banana big-pl-Adjr    very	‘the bananas are very big’
------	---	----------------------------

Squirrel monkeys ludling: /-pt-/ or /-kt-/ (see Section 3.2.11)

(39)	ta-pt-ɔpa                      (hũ) banana-LUD-banana (hesitation)	‘banana’
(40)	tɜmhɛp tɔ-biu-n-de      a-wɔmjum-urru ?      T-bridge-?-? 3Abs-banana-field	‘? .... his banana field’
(41)	ta-pt-ɔpa                      lɜn      undik-kom-be tagalia banana-LUD-banana Emph big-Pl-Adjr    very?	‘the bananas themselves are very big’
(42)	lili (w)adi(te) ? how.is.it	‘? .... oh boy! (lit.:how is it)? (location in the file: 1:20-1:25)’
(43)	ẽ,      womjum-urru-p    tarik-kom Ideoph banana-field-Adjr big-Pl	‘yes, the banana field is big’
(44)	womjum tɔp tarik-kom-be kun-ɔga-du-k, ehe banana    ?    big-pl-Adjr Rem-say-Pl-?    yes	‘yes, they say that the bananas are big’
(45)	tɜ-pt-ɔpa banana-LUD-banana u-wɜ-pt-jum-urru-p 1Abs-banana-LUD-banana-field-Adjr	‘it is a banana, my banana field’
(46)	ũhũ;      malon      kun-it-ta-g                      lɜn Ideoph enough Rem-Aux-always-?    Emph	‘yes, it is always good’
(47)	tan'dakpomamiŋ      tarik-kom matanaŋ gaje ?                      big-Pl      ?      ?	‘(location in the file: 1:34.0-1:35.0)’
(48)	i-ɛp-tome ... 1Erg-come-Fut	‘I will come ...’
(49)	ẽhũhũ    i-enba-n Ideoph 1Abs-food-Poss	‘yes, my food’
(50)	i-enba-n                      m-an-enep-tome 1Abs-food-Poss 2Erg-Inc-bring-Fut	‘you will start bringing my food’
(51)	i-enep-tome 1Erg-bring-Fut	‘I will bring (it)’

Curassows, chicken, hen, muscovy ducks, Brazilian merganser, guans ludling: /wi-/ (see Section 4.2.3)

(52)	(wi-u)                      wi-upa (LUD-bana...) LUD-banana	‘(bana...), banana’
(53)	taupa	‘banana’
(54)	wi-upa      wi-rik-kom-be      da(gie) LUD-banana LUD-big-Pl-Adjr    very	‘the bananas are very big’

(55)	wɛ-rɛgɜn LUD-Ideoph	'they are standing up'
(56)	e: kɜ-ɜm-buura gun-it-ta-k ? high-Loc-Neg Rem-Aux-always-?	'it (the tree) is always short'
(57)	puurɛptadatpuamo ?	'(location in the file: 1:52.0-1:53.0)'
(58)	we-rik-kom-be LUD-big-Pl-Adjr	'they are big' (/we-/ instead of /wi-/ 'LUD')
(59)	wi-mɔ... wi-m... LUD-bana LUD-bana	'bana(na), ba(nana)'
(60)	wi-womjum-uru LUD-banana-field	'the banana field'
(61)	ũhũ malon-ne Ideoph enough-only	'yes, that's good'
(62)	i-enba-n m-an-enep-ta-nbom 1Abs-food-Poss 2Erg-Inc-bring-Dist-later	'later you start bringing my food'
(63)	i-enep-ta 1Erg-bring-Dist	'I am going to bring it (from there)'
(64)	wi-nep-ta-nbom LUD-bring-Dist-later	'later I will bring it (from there)'
(65)	wi-nɛrɛɲ LUD-Ideoph	'it (the stalk) is hanging down'
(66)	wi-mom-ɕji bɔk LUD-head-Poss on	'(bring them) on your head'
(67)	odu-ba- pan-ba .... what-doubt ?	'oh boy!'
(68)	m-enep-ta-nbom botkun 2Erg-bring-Dist-later very	'later you will bring it (emphatically)'
(69)	i-enep-ta	'I am going to bring it (from there)'
(70)	wi-dɜ duud wi-it-tup LUD-go want LUD-Aux-if	'if you want to go'
(71)	wi-kpu-a wi-bara kumug ja LUD-good-Perm LUD-Neg Rem.Imperf Emph?	'let it get ripe; it was not ripe'
(72)	n-akpu-a bohtkun anumere pɜtpɛʃin 3Abs-good-Perm Emph ? ?	'let it get ripe (emphatically)' (extra h)

Trumpeters and woodpeckers ludling: /pɔ-/ (see Section 4.2.4)

(73)	pɔ-upa LUD-banana	‘banana’
(74)	taupa	‘banana’
(75)	pɔ-upa pɔ-rik-kom-be tagie LUD-banana LUD-big-Pl-Adjr very	‘the bananas are very big’
(76)	pɔ-nereŋ LUD-Ideoph	‘it (the stalk) is hanging straight down’
(77)	hēhē kɜ-ɜm-mura tu-mɜrɜŋ Ideoph high-Loc-Neg T-?	‘they (the banana trees) are short’ ([mura] instead of [bura])
(78)	uŋ-enba-n ūhū 12Abs-food-Poss Ideoph	‘yes, it is our food’
(79)	pɔ-g-ɜnba-n ga-k ... LUD-12?-food-Poss Q-3	‘is it our food ...?’
(80)	pɔ-upa tarik-kom-be pɔ-rik-kom-be tagie LUD-banana big-Pl-Adjr LUD-big-Pl-Adjr very	‘the bananas are big, very big’
(81)	pɔ-nereŋ LUD-Ideoph	‘it (the stalk) is hanging straight down’
(82)	(pɔ-) pɔ-m-bura tagihe LUD LUD-Loc-Neg very	‘they (the banana trees) are very short (extra [h] in “tagie”)’
(83)	ka-am-bura gun-it-tɜ-k high-Loc-Neg Rem-Aux-always-?	‘they are always short’
(84)	tɜdɜŋbɔ aptandakpɔ-ŋmɔ emi-am ? ?-Pl hand-Loc	‘? ... in the hand’ (location in the file: 2:42.0)
(85)	pɔ-lɔnɔ pɔ-tɜŋ LUD-? LUD-?	‘?’ (location in the file: 2:45.0-2:46.0)
(86)	m-on-ip-tome 2Erg-Inc-come?-Fut	‘you will start coming’
(87)	wini ni-pigagun-de-Nmlz-naŋurru ? 3Abs-ripe-Verb-Caus-Prog	‘it (something) is causing it to become ripe (yellow)’
(88)	i-nba-(n) lɜn 2Abs-food-Poss Emph	‘it is your own food’
(89)	hū pɔ-nba-(n) lɜn dɜŋ-gu Ideoph LUD-food-Poss Emph be-Imperf	‘yes, it was my food, later’
(90)	pɔ-da-nbom LUD-?-later	‘later ... (hesitation?)’ (location in the file: 2:50)
(91)	pɔ-gɔlɜne n-itʃ-ɜ LUD-tomorrow 3Abs-Aux-Perm	‘leave it for tomorrow’
(92)	enŋe agreement	‘good idea!’

(93)	idə tət itkəβəz ũ ũ ũ go want ? hesitation	'? if (you) want to go ...' (location in the file: 2:55)
------	---	---

Coati ludling: /nu-/ or /ne-/ (see Section 4.2.5)

(94)	nə-upə hǎ LUD-banana hesitation	'banana'
(95)	ne-wəmjum-wuh ulənəmu LUD-banana-? ?	'banana'
(96)	tarik-kom-be ga-k big-Pl-Adjr Q-3	'are they big?'
(97)	ni-rīk-kəm-be gəŋ LUD-big-Pl-Adjr be?	'they are big (location in the file: 3:05)'
(98)	enen-da see-Dist	'go there to see (them)'
(99)	nereŋ ũ Ideoph hesitation	'it (the stalk) is hanging straight down'
(100)	(i)-mara-ŋmə igana tərīk-kom-be te 3-small-Pl ? big-Pl-adjr ?	'are they small, or big ...?' (location in the file: 3:10)
(101)	nə-rik-kom-be LUD-big-Pl-Adjr	'they are big'
(102)	nə-upa ne-mi-am LUD-banana LUD-hand-Loc nə-rik-kom-be tah LUD-big-Pl-Adjr very?	'the bananas in his/her hand are very big'
(103)	nəhnəɾəh te ?	'?' (location in the file: 3:15)
(104)	i-enba-n m-enep-ta m-enep-ta-nbom 1Abs-food-Poss 2Erg-bring-Dist 2Erg-bring-Dist- later	'later you will bring my food'
(105)	idə te it-tu(p) go want Aux-if	'if s/he wants to go' (missing /t/ in [te])
(106)	idə te(t) m-it-tup wəŋpə hǎ go want 2Erg-Aux-if ? hesitation	'if you want to go ...'
(107)	ug-eremak-tadam-ane-ba 2Erg.1Abs-hurry-Iter-Admon-Aff	'do not hurry me!'
(108)	n-eŋab-a 3Abs-eat-Perm	'let her/him eat it' (different word for 'eat')
(109)	ne-gələne n-itʃ-a LUD-tomorwo 3-Aux-Perm	'leave it for tomorrow'
(110)	enŋa kəgələn agreement tomorrow	'good idea, tomorrow!'

(111)	kəgəɫən-ne (n)-i-gune-lu mon tomorrow-only by-3Abs-sweat-Rec Aux	'only tomorrow it will have gotten hot'
(112)	udu i-pə ...pə tʃitʃi be.careful 3-Adjr ? sun	'be careful; it is sunny' (if you carry bananas on it) (location in the file: 3:30)
(113)	o-mum-ɕi-kpə-taŋ 2Abs-head-Poss-sore-Fut	'your head will be sore' (location in the file: 3:35)
(114)	iu-məm-ɕi ?-head-Poss	'my head'
(115)	nə-mum-ɕi muren mum-ɕi-kpə-tane LUD-head-Poss small head-Poss-sore-Admon	'my little head can get sore!'
(116)	ehe edu Ideoph be.careful	'hey, be careful'
(117)	abudu-p gumuk-pa mum-ɕi-kpə-nbə-ŋə sore-Adjr Rem-Aff head-Poss-sore-Nmlz.Past-?	'usually our head gets sore (if we carry something on it)'

Agoutis ludling: rodents: /pi-/ (see Section 4.2.6)

(118)	pi-upa LUD-banana	'banana'
(119)	taupa	'banana'
(120)	pi-upa ʒh̃ LUD-banana babbling	'banana'
(121)	pi-wəmjum-uru LUD-banana-field	'banana field'
(122)	pi-nɜrɜŋ LUD-Ideoph	'it (the stalk) is hanging straight down'
(123)	tɜ:rik-kom-be gun-it-ta-k-p(a) erə h̃ big-Pl-Adjr Rem-Aux-always-Aff this babbling	'they are always big'
(124)	pɛ-rik-kɜm-βɛ LUD-big-Pl-Adjr	'they are big'
(125)	(pi-ɔ) pi-ɔmjum-uru (LUD-) LUD-banana-field	'banana field'
(126)	pi-tanbə LUD-?	'?' (location in the file: 40:0)
(127)	m-enep-təme botkuun 2Erg-bring-Fut very	'you will bring them (emphatically)'
(128)	n-ipigagun-de-Nmlz-taŋduβuda 3Abs-ripen-Verb-Caus-?	'let it get ripe (yellow)'
(129)	pi-pigɜ lən-ne LUD-? even-only	'?' (location in the file: 4:0-4:05)

(130)	pi-nba-(n) lən dəŋ-gu LUD-food-(Gen) even be-Imperf	‘it was my food’
(131)	nɛ-kuba-p kumuuk-pa LUD-beer-Purp Rem-Aff	‘it (the banana) is good for making beer’ (different LUD)
(132)	pi-kuba dəŋ-gu LUD-beer be-Imperf	‘it was beer’
(133)	pi-nba-n LUD-food-Poss	‘it was my food’
(134)	ɛ̃nɛ agreement	‘yes, that’s right’
(135)	m-etamu hũ kəhẽ 2Erg-? ? ?	‘?you ...’ (location in the file: 4:10)
(136)	lalale mapilo ? ?	‘?’ (location in the file: 4:10-4:15)
(137)	pi-ra lən bep-tome LUD-? even ?-Fut	‘?’ (location in the file: 4:15)
(138)	pi-tʃiŋ LUD-?	‘?’ (location in the file: 4:15-4:20)

Peccary and Dog ludling: /tɔ-/ (see Section 4.2.7)

(139)	tɔ-upa LUD-banana	‘banana’
(140)	taupa	‘banana’
(141)	tɔ-upa dəŋ LUD-banana	‘it is a banana’
(142)	tɔ-mjum-wuru-p tɔ-rik-kom-be ta(gie) LUD-banan-field-Purp LUD-big-Pl-Adjr very	‘the banana field is very big’
(143)	dɔ-nɛrɛŋ LUD-Ideoph	‘it (the stalk) is hanging down’
(144)	tarik-kom-be gun-it-ta-k-pa ɛrɔ big-Pl-Adjr Rem-Aux-always-?-Aff this	‘these (bananas) are always very big’
(145)	tɔ-rik-kom-be (tɔ-tɔ) tɔ-upɜ LUD-big-Pl-Adjr (LUD-LUD) LUD-banana	‘the bananas are big’
(146)	taupa endɔ-du(du)-k-pa-nba edet banana here-PL(Pl)-?-Aff-also name	‘what else? banana is its name’
(147)	tɔ-upa lən LUD-banana even	‘banana itself (is its name)’
(148)	ũ malən botkuun Ideoph enough very	‘? yes, that’s it (emphatic)’
(149)	lənba ɔgɜraumɔ wɔ taupa hẽ also Arara? for banana even	‘also for the Arara (its name) is banana’

(150)	ũ malɜn Ideoph enough	‘yes, that’s it’
(151)	nu-meŋərə kure-p ku(mu)k-p(a) uade-koβa-p ?-drink? good-Adjr Rem-Aff ?-beer-Purp	‘it has been good ...’ (location in the file: 4:45)
(152)	tɜrek tɔn tɔ-wɔ:gu-ruu gede-h kiubagan many be? self-drink-Poss 3? ? ?	‘there is a lot to be drunk ...’ (location in the file: 4:45)
(153)	koba: eŋ m-enep-tɔmɛ botkuun ? ? 2Erg-bring-Fut very	‘... you will bring it (emphatic) (location in the file: 4:50)’
(154)	inɜmne nu-dɔmɛ iħiħi ? ?-Fut hesitation	‘? ....’ (location in the file: 4:50-4:55)’
(155)	uktɔmenin:abuɽu tɔtɜnbɔ ? ?	‘? ....’ (location in the file: 4:55)
(156)	tɔ-gɜlɜn-ne tɜ-tʃiŋ LUD-tomorrow-only LUD-?	‘only tomorrow ...’ (location in the file: 4:55- 5:00)

Macaws ludling: /eŋna-/ (see Section 4.2.8)

(157)	en-ɜpɜ hɜ LUD-banana	‘banana’
(158)	taupa	‘banana’
(159)	en-ɜpɜ LUD-banana	‘banana’
(160)	(eŋ)nara-umjum LUD-banana	‘banana’ (different ludlingant)
(161)	unama-umjum-urru-p LUD?-banana-field-Adjr	‘it is a banana field’
(162)	malɜn dɜŋ ɔmjum-urru-p lɜn-nũ enough be banana-field-Adjr even-?	‘that’s right, it is a banana field (emphatically)’
(163)	nep eŋnara-tɜ wadite ? LUD-? how.is.it	‘? ...., how could it be?’ (location in the file: 5:10)’ (different ludling)
(164)	(iŋ)na-ta-nba LUD?-fetch-also	‘you will fetch it’
(165)	hiŋna-ta-n(ba) LUD?-fetch-also	‘you will fetch it’ (extra [h] in the ludlingant)
(166)	m-et-ta ... wu-gi-ɜŋ 2Erg-fetch-Dist 1Erg-say-Uni	‘I said, “you will fetch it there”’ (incomplete sentence)
(167)	nekup neŋnara-kuβa-dandizŋ ? ?-	‘? ....’ (location in the file: 5:20)’

(168)	enṇa agreement	‘yes, that’s right’
(169)	m-et-ta            mūtkūn 2Erg-fetch-Dist very?	‘you will fetch it (emphatically)’ (incomplete sentence)
(170)	tə-nielumeptan-de bəra T-?-Nmlz            Neg	‘?’ (location in the file: 5:25)
(171)	inarag nənəkomiṇe ?            ?	‘?’ (location in the file: 5:25)
(172)	eṇna-kuβa dəṅ-gu-nba LUD-beer be-Imperf-also	‘it is also beer’
(173)	enṇa agreement	‘yes, that’s right’
(174)	unba lən    u-wəgu-ru    lən also    even 1Abs-drink-Poss even	‘it is also (emphatic) my drink (emphatic)’
(175)	wadite-βa-nba hǎ how.is.it-uncertain-also	‘how could it be?’

Toucans ludling: /eṇnara-/ (see Section 4.2.9)

(176)	(eṇ)nara-upa hǎ LUD-banana hesitation	‘banana’
(177)	taupa	‘banana’
(178)	(eṇ)nara-upa LUD-banana	‘banana’
(179)	eṇnara-de hū LUD-?    hesitation	‘? ... (location in the file: 5:40)’
(180)	(eṇ)na-rek-kom-be tahie unara-upə    ūhū LUD-big-Pl-Adjr    very LUD-banana Ideoph	‘yes, the bananas are very big’ (/unara/ - different ludlingant)
(181)	i-mara-ṅma    iedadut kəbənītək 3Abs-small-Pl ?            ?	‘they are small ... (location in the file: 5:45)’
(182)	(eṇ)na(ra)-lik-kəm-bə LUD-big-Pl-Adjr	‘they are big’
(183)	(eṇ)nara-wəmjum-uru hū LUD-banana-field            hesitation	‘it is a banana field’
(184)	əmjum-uru lən    məwə wənə-p-pa banana-field even it            what.for-Adjr-uncertain	‘oh boy, it (itself) is a banana field’
(185)	m-enep-tə            ndarata-nbə 2Erg-bring-Dist ?-also	‘you will also bring ...’ (location in the file: 5:50- 5:55)
(186)	(eṇ)nara-tʃiṅ LUD-?	‘?’ (location in the file: 5:55)



(187)	ēhē jumpak Ideoph ?	‘yes, ... (location in the file: 5:55)’
(188)	n-ep-tomə botkuun hū 3-come-Fut very hesitation	‘let him come back’
(189)	(eŋ)nara-təm (eŋ)nara-upa LUD-? LUD-banana	‘... the banana (location in the file: 6:00)’
(190)	ūhū Ideoph	‘yes, that’s okay (hesitation for: [eŋa])’
(191)	n-akpu-t (eŋ)nara-kpu-t potkuun 3Abs-ri(pe)-Nmlz LUD-ripe-Nmlz very	‘let it get ripe, very ripe (yellow)’
(192)	ha akpu-lu wadite-βə hū hesitation ripe-Rec how.is.ti-uncertain ?	‘it got ripe; how could that be?’
(193)	m-et-təmə botkuun (eŋ)nara-təm 2Erg-fetch-Fut very LUD-?	‘you will fetch it (emphatically) ... (location in the file: 6:05)’

Spider monkeys ludling: /un-/ (see Section 4.2.10)

(194)	un-aupa LUD-banana	‘banana’
(195)	taupa	‘banana’
(196)	un-aupə LUD-banana	‘banana’
(197)	kəmben nunderə ? ?	‘?’ (location in the file: 6:15-6:20)
(198)	kəmbən itakpuerə ũ ? ? hesitation	‘?’ (location in the file: 6:20)
(199)	uɖu un-ɔpa e-unan wəmjum-urru be.careful LUD-banana ?-? banana-field	‘be careful, the banana, ... it is a banana field’ (location in the file: 6:20-6:25)
(200)	malon enough	‘that’s okay’
(201)	m-enep-ta-n(bom) 2Erg-bring-Dist-later	‘later you will bring it (from there)’
(202)	num-et-ta-nbəh LUD?-Fecth-Dist-later	‘later I will bring it’ (different ludlingant; /h/ instead of /m/)
(203)	uŋ-utʃi LUD-?	‘?’ (location in the file: 6:25-6:30)
(204)	əhē-(e)ŋə Ideoph-agreement	‘yes, that’s right’
(205)	idə tet it-tu(p) elið... go want Aux-if? ?	‘if s/he wants to go ...’

(206)	(w)tə tet it-tuh go want Aux-if	‘if s/he wants to go’ (/h/ instead /p/)
(207)	udə go	‘go!’
(208)	(w)-udə-nəŋərə kəkə 1Erg-go-Prog ?	‘I am going .... (location in the file: 6:30-6:35)’
(209)	un-tə lən-ne udə LUD-go even-only go	‘then go, go!’
(210)	nəhɛ: Ideoph	‘yes’
(211)	m-et-tomɛ 2Erg-fetch-Fut	‘you will fetch it’
(212)	ɔ-(w)ɔgu-ru lən 2Abs-drink-Poss even	‘it (itself) is your drink’
(213)	omərə e-wetʃi-(p) moŋ-ne un-əmgu βək you 3-addict-Adjr Aux-Rem LUD-beer on	‘you usually are addicted to beer’
(214)	nə-muru waditi tək LUD-beer how ?	‘the other kind of beer, how could that be?’
(215)	ne-wəgɜ-rə LUD?-drink-Poss	‘your drink’
(216)	un-wəgɜ-ru dehɛ LUD-drink-Poss be-Imperf	‘it was my drink’
(217)	ɔ-wəgu-ru lən wanə-p-pa 2Abs-drink-Poss even what.for-Adjr-uncertain	‘your drink (itself), oh boy’
(218)	m-enep-ta-nbom botkuun 2Erg-bring-Dist-later very	‘later you will bring it (from there)’ (emphatically)
(219)	n-anane tegere hū LUD-one? very? hesitation	‘only a bit’

Howler monkeys ludling: nasalization of vowels (see Section 4.2.12)

(220)	taup̃	‘banana’
(221)	taupa	‘banana’
(222)	tāup̃ ...	‘banana...’
(223)	wōmjūm na: lən hū banana ? even hesitation	‘it is a/the banana (itself)’
(224)	ne-kom-be an te-k pene big?-Pl-Adjr Rhet be-3 also	‘isn’t it also big? (rhetorical question)’ (variation of pronunciation)
(225)	nɛ-kəm-b(e) uā: hūɛ tōup̃ big?-Pl?-Adjr Rhet? ? banana	‘isn’t the banana big?’ (variation of pronunciation)
(226)	m-et-təmu 2Erg-fetch-Fut	‘you will fetch it’

(227)	ẽ: i-et-tã-nbõm Idioph 1Erg-fetch-Dist-later	‘yes, later I will fetch it’ (variation of pronunciation)
(228)	ɔ-wɔgu-ruu lɛn paru wetʃi-(p) 2Abs-drink-Poss even water addict-Adjr moŋ-ne Aux-Rem	‘it is your drink (itself); you usually are addicted to water’
(229)	ũ-wɔgu-ruu lɛn hũ 1Abs-drink-Poss even babbling	‘it (itself) is my drink’
(230)	i-et-tã-mbɜm bə 1Erg-fetch-Dist-later ?	‘later I will fetch it’ (/mb/ instead /nb/)
(231)	jẽmẽ n-ĩŋnõβũ-lũ mom by-prepare-Rec	‘it is to be prepared by mom’
(232)	hẽɲɜ n-ĩŋnop-ta-g-a agreement 3Abs-prepare-Perm-Imp-Perm	‘that’s right, let her prepare it’ (new structure: [-ta-g-a])
(233)	wanɔ-p-pa hũ what.for-Adjr-uncertain hesitation	‘oh boy’
(234)	m-enep-tomɛ-wɜ 2Erg-bring-Fut-then	‘then you will bring it’
(235)	ẽ i-et-ta-nbom Ideoph 1Erg-fetch-Dist-later	‘yes, later I will fetch it’
(236)	tupu pigen ʃɔŋ ? small? Ideoph?	‘... small ...’ (location in the file: 7:25)
(237)	hẽɛ malɛn hũ Ideoph enough hesitation	‘yes, that’s okay’

Land tutles ludling: towards [æ] (see Section 4.2.13)

(238)	tɛɛpæ	‘banana’
(239)	daupa	‘banana’ (voicing process)
(240)	tɛɛpɜ dɜŋ banana be	‘it a is banana’
(241)	wamjum	‘banana’
(242)	tẽ:ĩ ga dɜk have Q be	‘is there any?’ (Portuguese word: <i>tem</i> ‘have’)
(243)	tɜmɛ darik-kɜm-be una tahik ga dɜk itɛ:ra ? big-Pl-Adjr ? ? Q be ?	‘... big (location in the file: 7:40)’
(244)	keh tɛupɜ hesitation banana	‘it is a banana’
(245)	malon	‘that’s okay’
(246)	m-enep-tomɛ u-wɔgu-ruu bu:ra 2Erg-bring-Fut 1Abs-drink-Poss Neg	‘you will bring it; there is nothing for me to drink’
(247)	ɛ-wagɛ-rɛ tẽ fadof padua 1Abs-drink-Poss ? ? banana	‘it is my drink ... banana’

(248)	jækofa beer	'it is beer'
(249)	enŋa agreement	'that's right'
(250)	jakuba-p ku(mu)k ... kure-p kumuk-p(ɜ) beer-Purp Rem ? good-Adjr Rem-Aff	'usually, it is good for making beer'
(251)	i-et-tæ-nbɜm jɛmɛ n-eŋnɜbu-lu 1Erg-fetch-Dist-later mom by-make-Rec	'later I will fetch it for mom to make some'

## Appendix 5:

### Flora and Fauna Identification

In this appendix I present the flora and fauna mentioned in this thesis in alphabetical order by the Arara term. The second column gives an English gloss, the third column a probable (but not certain) scientific identification, and the fourth column the local Portuguese terms. The scientific names are not the result of scientific studies nor were they provided by an expert, but rather based on my personal research using the internet, comparing photographs and descriptions there with my personal experience in the Arara area. They should not be taken as certain identifications but simply as aids for future researchers.

<b>Arara</b>	<b>English Gloss</b>	<b>Scientific names</b>	<b>Portuguese</b>
[abianã]	a peccary	<i>Tayassu albirostris</i>	queixada, porco do mato
[adɔ]	a fish	<i>Pimelodus</i> sp.	mandi
[amu]	head louse	<i>Pediculus humanus</i>	piolho
[arun]	a howler monkey	<i>Allouatta</i> sp.	macaco guariba
[awu]	blue-and-yellow macaw	<i>Ara arauna</i>	arara canindé
[erin]	a small cicada	Cicadidae	cigarra pequena
[jarambi]	Brazilian merganser	<i>Mergus octosetaceus</i>	carará, mergulhão
[iebereburu]	woodpeckers	Picidae	pica-pau
[jaguri]	an agouti	<i>Dasyprocta</i> sp.	cutia
[jɔgɔ]	honey, honey bee	<i>Apis</i> sp.	mel, abelha
[jɔru]	turtles	<i>Geochelone</i> sp.	jabuti
[kagak]	a toucan	<i>Ramphastos</i> sp.	tucano
[kajatu]	peach-fronted parakeet	<i>Aratinga aurea</i>	periquito maracanã
[kara]	a red and green macaw	<i>Ara chloropterus</i>	arara
[karaja]	a scarlet macaw	<i>Arara macao</i>	arara vermelha
[karatɔ]	a bottle gourd, gourd container	<i>Lagenaria</i> sp.	cabaça
[karaum]	a blue macaw	<i>Anodorhynchus</i> sp.	arara azul

[karawa]	non-edible cassava/manioc	<i>Manihot</i> sp.	mandioca braba
[kariamũ]	a deer	<i>Mazama</i> sp.	veado
[kətkət]	yellow-rumped cacique	<i>Cacicus cela</i>	japu, japurá, rescongo
[kəʃi]	a leporinus fish	<i>Leporinus</i> sp.	piau
[kuba]	an armadillo	<i>Cabassous unicinctus</i>	tatu rabo de couro
[kubi]	a fish	Ctenoluciidae	bicudo, caibu, agulhão
[kui]	a parakeet	<i>Brotogeris</i> sp.	curica
[kuŋɕi]	a quail	<i>Odontophorus capoeira</i>	uru
[kuruju]	small squash or gourd	<i>Cucurbita</i> sp.	cabacinha
[kutkut]	a night monkey	<i>Aotus</i> sp.	macaco da noite
[kutɔ]	a toad	Bufonidae	sapo
[kuʃamit]	a titi monkey	<i>Callicebus</i> sp.	macaco zogue- zogue
[kuɗen]	sweet manioc/edible cassava	<i>Manihot</i> sp.	macacheira, aipim, mandioca doce
[kuderai ebw]	kapok tree	<i>Ceiba pentrandia</i>	samaúma
[mak keni]	muscovy duck	<i>Cairina maschata</i>	pato
[manan]	a herbaceous plant	<i>Ischnosiphon aruma</i>	arumã
[mɔβɛ]	a fruit	<i>Spondias mombin</i>	cajá, taperebá
[mɔɛ]	a toad	Bufonidae	sapo cururu
[muarŋ]	a biting midge	<i>Culicoides</i> sp.	maruim
[mulik]	a bird of the cuckoo family	<i>Crotophaga</i> sp.	anu preto
[mumbɔ]	a tree/fruit	<i>Bagassa guianensis</i>	tatajuba
[muɗaimɔ]	a large predatory fish	<i>Hoplias</i> sp.	trairão
[muta]	a small monkey	Callitrichidae	macaco suim
[nabiɔt]	sweet potato	<i>Ipomoea batatas</i>	batata doce
[ɔet]	rubber tree	<i>Hevea brasiliensis</i>	seringa
[ɔgɔm]	blind snake	<i>Scolecophidia</i>	cobra cega
[ɔgum]	wasp	Vespidae	marimbondo
[omiaegu]	a small predatory fish	<i>Hoplias</i> sp.	traíra
[onŋon]	cacao tree/fruit	<i>Theobroma cacao</i>	cacau
[ɔnon]	the barbasco plant	<i>Lonchocarpus urucu</i>	urucu
[ɔremĩ]	a spotted fish	<i>Pseudoplatystoma</i> sp.	surubim
[ɔrepĩ]	bare-faced curassow	<i>Crax fasciolata</i>	mutum pinima
[ɔrɔt]	native cashew tree/fruit	<i>Anacardium</i> sp.	caju silvestre
[ɔrɔtʃum]	cultivated cashew tree/fruit	<i>Anacardium</i> sp.	caju cultivado
[ɔtkɔi'mɔ]	giant armadillo	<i>Priodontes maximus</i>	tatu canastra
[ɔtpa]	a catfish	<i>Hoplosternum littorale</i>	tamoatá, cascudo
[ɔtpidɔ]	an armadillo	Dasypodidae	tatu

[patut]	porcupine	<i>Coendu</i> sp.	quando
[pawi]	curassow	Cracidae	mutum
[pewit]	a raptor	Falconiforme	gavião
[pilik]	a toucan	<i>Ramphastos</i> sp.	tucano
[pəmũ]	a beetle	Coleoptera	besouro
[ponē]	piranha	<i>Serrasalmus</i> sp.	piranha
[pōrat]	a catfish	<i>Baryancistrus</i> sp.	cari, cascudo
[pou]	a small peccary	<i>Tayassu tajacu</i>	caititu
[puwək]	a parakeet	<i>Brotogeris</i> sp.	periquito
[tagi]	cricket	Gryllidae	grilo
[taukara]	inga tree/fruit	Ingeae	ingá
[tawē]	capuchin monkey	<i>Cebus</i> sp.	macaco prego
[tomgem]	a black biting fly	<i>Simulium</i> sp.	pium
[toŋɟiri]	a lizard	<i>Tropidurus</i> sp.;	calango
		<i>Ameiva</i> sp.	
[tōrōmō]	Brazil nut tree/fruit	<i>Bertholletia excelsa</i>	castanha do Pará
[tʃamit]	squirrel monkey	<i>Saimiri</i> sp.	macaco mão-de-ouro
			papagaio
[tʃarəkʃarɔ]	parrot		tucano
[tʃirɔ]	a toucan	<i>Ramphastos</i> sp.	quati
[tʃiruka]	coati	Procyonidae	piáu listrado
[tɔdɔ]	a banded leporinus fish	<i>Anostomidae</i> sp.	coruja
[tudɔ]	an owl	<i>Strigiformes</i>	tucano
[tuapkɔ]	a toucan	<i>Ramphastos</i> sp.	urubu de cabeça
[waga]	a bald vulture	<i>Cathartidae</i>	pelada
			bicho-preguiça
[wagɔ]	a sloth	Folivora	jacu
[wagwak]	a bird	<i>Penelope</i> sp.	jacaré
[wakat]	alligator, cayman	Alligatoridae	gavião
[walɔ]	a raptor	Falconiforme	embabaúba
[waŋwa]	a tree	<i>Cecropia</i> sp.	jacamim
[warakina]	trumpeter bird	<i>Psophia</i> sp.	bacaba
[wauri]	a palm tree/fruit	<i>Oenocarpus</i> sp.	gato maracajá
[werɔ]	a small wild cat	<i>Leopardus</i> sp.	jacu
[wogaraum]	a guan bird	<i>Penelope</i> sp.	macaco capelão
[wɔŋɔum]	a spider monkey	<i>Ateles</i> sp.	anta
[wotomō]	tapir	<i>Tapirus terrestris</i>	cará
[upw]	yam	Dioscoreaceae	

## BIBLIOGRAPHY

- Bagemihl, Bruce. 1996. Language Games and Related Areas. *Handbook of phonological theory*. John Goldsmith (ed). Massachusetts: Blackwell. (697-712)
- Botne, Robert & Davis, Stuart. 2000. Language Games, Segment Imposition, and the Syllable. *Studies in Languages*. vol. 24, n. 2. John Benjamins Publishing Company. (319-344)
- Cahill, Michael. 2008. Word Games as Experimental Linguistics. *SIL forum for language fieldwork 2008-008*, September. <http://www.sil.org/silepubs/Pubs/50507/SILForum2008-008.pdf>. Accessed on June 7, 2010.
- Carneiro, B. 1981. O longo, difícil, e perigoso namoro do Brasil civilizado com os arredios índios Arara. *Atualidade Indígena*. n. 21, Julho/Agosto. Brasília: FUNAI. (7-17)
- Comrie, Bernard. 1989. *Language Universals and Linguistic Typology*. 2<sup>nd</sup> Ed. Chicago: The University of Chicago Press.
- Coudreau, Henri. 1977. *Viagem ao Xingu*. Belo Horizonte: Editora Itatiaia Ltda.
- Crystal, David. 1997. *The Cambridge encyclopedia of language*. 2<sup>nd</sup> Edition. Great Britain: Cambridge University Press.
- Dryer, Matthew S. 2008. Order of Subject, Object and Verb. In: Haspelmath, Martin & Dryer, Matthew S. & Gil, David & Comrie, Bernard (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, Chapter 81. Available online at: <http://wals.info/feature/81>. (7/11/2010)
- Durbin, M. 1977. A survey of the Carib language family. *Carib-Speaking indians: culture, society and language*. Anthropological Papers of the University of Arizona, n. 28, Ellen B. Basso 9<sup>th</sup> edition). Tucson: The University of Arizona Press. (23-38)
- Durand, Jacques. 1990. *Generative and Non-Linear Phonology*. London and New York: Longman.
- Ehrenreich, P. 1895. Die Sprach der Apiaka (Para). *Materialien zur Sprachenkunde Brasilians V*. Zeitschrift für Ethnologie, n. 27. Berlin. (168-176)
- Emmerich, C. 1980. A fonologia segmental da língua txikão. *Publicações avulsas do Museu Nacional*, n. 64. Linguística X. Rio de Janeiro: Museu Nacional.
- Frazier, Melissa & Gil, Eduardo. 2007. Language Game Evidence for Prosodic Principles and Output-Output Faithfulness. *UNC-CH Spring linguistics colloquium*. Chapel Hill: University of North Carolina. March 24. (7/20/2008)
- Gabas Jr., Nilson. Karo. [www.institutosocioambiental.org.br/pib/epienglish/karo.shtm](http://www.institutosocioambiental.org.br/pib/epienglish/karo.shtm) (7/19/2008).
- Gordon, Raymond G., Jr. (ed.). 2005. *Ethnologue: Languages of the world*. 15<sup>th</sup> Edition. Dallas: SIL International. Online Version: <http://www.ethnologue.com>.



- Green, Diana. 1998. O que podemos aprender de jogos de palavras tradicionais. (What we can learn from traditional word games). *Educação bilíngüe bicultural: princípios, métodos e práticas*. SIL 1997, 2nd ed. (p. 10). ms.
- Haas, Mary R. 1967. *A taxonomy of disguised speech*. Paper presented to the Linguistic Society of America. Quoted by Sherzer 1982, Play languages: with a note on ritual languages.
- Laycock, Donald. 1969. Sublanguages in Buin: play, poetry, and preservation. *Pacific linguistics* (Series A) 22:1-23.
- Meira, Sérgio. 2006. A família lingüística caribe (karíb). *Revista de estudos e pesquisas*, v. 3, n. 1/2, (157-174). [www.etnolingüística.Org/Artigo:Meira-2006](http://www.etnolingüística.Org/Artigo:Meira-2006) (2/22/2010)
- Menget, Patrick. 2001. *Em nome dos outros – classificação das relações sociais entre os Txicáo do Alto Xingu*. Trad. Gonçalo Praça. Lisboa: Museu Nacional de Etnologia/Assírio & Alvim.
- Nimuendaju, Curt. 1914. Vocabular der Paririsprache. *Zeitschrift für Ethnologie*. n. 46. Berlin. (619-625)
- Nimuendaju, Curt. 1932a. Idiomas indígenas del Brasil. *Revista del instituto de etnología de la Universidad Nacional de Tucumán*. n. 2. Tucumán. (543-618)
- Nimuendaju, Curt. 1932b. Wortlisten aus Amazonien: Pariri. *Journal de la Société des Americanistes*. n. 24. Paris. (117-119)
- Padilha, Lindomar. Apolinas-Arara. [www.amazonlink.org/amazonia/culturas\\_indigenas/povos/apolina\\_arara.html](http://www.amazonlink.org/amazonia/culturas_indigenas/povos/apolina_arara.html) (7/19/2008).
- Rodrigues, Aryon Dall’Igna. 1986. *Línguas brasileiras – Para o conhecimento das línguas indígenas*. São Paulo: Edições Loyola.
- Sanders, Nathan. 2000. Intra-Representational Correspondence and the Realization of Empty Morphemes. ROA. (7/20/2008)
- Sherzer, Joel. 1982. Play Languages: With a Note on Ritual Languages. *Exceptional Language and Linguistics*. Edited by Loraine K. Obler & Lise Menn. New York: Academic Press.
- Souza, Isaac. 1988. *Contribuição para a Fonologia da Língua Arara (Karib)*. Campinas, Brazil: Unicamp Thesis.
- Souza, Isaac. In progress. Onomástica Arara.
- Souza, Isaac. In progress. Etnohistórias dos Ugoro’gmo: Pequeno Ensaio.
- Souza, Isaac. 2004. Ugoro’gmo: uma auto-designação como jogo de indeterminação. Brasília: ALEM-SIL. ms.
- Souza, Shirley Dias Cardoso de. 1993. *Alguns aspectos morfológicos da língua Arara (Karib)*. Brasília, Brazil: Unb Thesis.

- Tomlin, Russell S. 1986. The Frequency of the Basic Constituent Orders. *Basic Word Order – Functional Principles*. London: Croom Helm. (17-36)
- Whaley, Lindsay J. 1997. *Introduction to typology – the unity and diversity of language*. London: SAGE Publications.
- Zorzetti, Laerte Antonio. 1997. *Os Coletivizadores na Língua Arara do Pará*. Altamira, Brazil: Ufpa Final Monography.