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Wordhood in Chamacoco

Luca Ciucci

1 The Chamacoco language¹

This chapter will address the concept of “word” in Chamacoco. This section introduces the language and its main typological features. Then, the concept of ‘word’ in the Chamacoco culture (§1.1) and the Chamacoco phonological inventory (§1.2) will be examined. After having set the scene, the notion of phonological word in Chamacoco will be analyzed, by identifying its segmental features and phonological rules (§2), and its prosodic features (§3). Then, the Chamacoco grammatical word will be defined (§4) in order to discuss the mismatches between phonological and grammatical word (§5). Such mismatches involve clitics of two types: regular clitics which are cliticized under all circumstances (discussed in §6) and morphemes which can form an independent phonological word or undergo cliticization (discussed in §7). Throughout the chapter, I will also pay attention to historical changes and comparison with related languages, whenever this contributes to the understanding of phonological and grammatical word in present-day Chamacoco.

Chamacoco is spoken by about 2,000 people in the department of Alto Paraguay in Paraguay. It belongs to the Zamucoan family, along with †Old Zamuco and Ayoreo. Chamacoco has two dialects: Ebitoso and Tomaraho. I will refer to the former, spoken by the vast majority of speakers. Diachronic studies (Ciucci and Bertinetto 2015, 2017) show that Chamacoco is the most innovative language of the family, and this is mostly due to language contact (Ciucci 2014, forthcoming b).² Unless indicated otherwise, data for this chapter come from several periods of fieldwork undertaken by the present author between 2009 and 2017. Chamacoco has a practical orthography established by Ulrich and Ulrich (1989), discussed in

Ciucci (2016). However, for clarity, I will use IPA symbols (see §1.2 for the phonological inventory of Chamacoco).³

Chamacoco is a fusional language, with constituent order A-V-O or S-V. There are three large open word classes: nouns, verbs and adjectives, each of which can accept loans (note that recent loanwords have a reduced inflection). Adverbs constitute a semi-open class. Other word classes are: articles, demonstratives, pronouns, number words, prepositions, discourse markers, universal quantifiers, quotatives, ideophones and interjections. The existential = ϵ forms a class on its own. One can also distinguish postpositions and classifiers, but they are morphologically nouns inflected for possessor, which have acquired the function of postpositions and classifiers. Like the other Zamucoan languages, Chamacoco is a tenseless language (Bertinetto 2014b). Verbs express person, number, and a realis vs irrealis distinction which is only preserved in the third person (Ciucci and Bertinetto 2017). Nouns can be divided into possessable and non-possessable, with the former expressing the person of the possessor.

In order to address the notion of ‘word’ in Chamacoco, it is necessary to briefly introduce here the suffixation of nouns and adjectives. I will use the term ‘nominal’ to refer to both of them. Nominal suffixation expresses three categories: (i) gender (masculine or feminine); (ii) number (singular or plural) and (iii) form (predicative form, argument form or indeterminate form). Table 1 features the nominal suffixation of Chamacoco.

<place Table 1 about here>

The distinction between ‘predicative’, ‘argument’ and ‘indeterminate’ form is a unique feature of Zamucoan languages (Bertinetto 2014a; Ciucci 2016; Ciucci and Bertinetto 2019; Bertinetto *et al.* 2019).⁴ The singular predicative form diachronically coincides with the root (or stem) and inflectional or derivational suffixes used to attach to it. This has changed in Chamacoco, where the singular predicative form has often developed a specific suffix and

was even lost in a number of nominals. However, there are nominals where the diminutive suffix is added to a suffixed singular predicative form (see §4, ex. 52b): here the suffixed predicative form has partly maintained its role as base form for morphological operations. In Zamucoan when the NP is in predicative form (singular or plural), it is head of the intransitive predicate (cf. Fijian and Tariana: Dixon 1988; Aikhenvald 2003; Dixon 2010: 163).

(1) owa ɲakɪrbɪt-ak

2sg young_man-M.SG.PF

‘You are a young man.’

Argument form (2) and indeterminate form (3) mark both core and peripheral arguments

(2) ese:=ni ɲo o-tɛ-iteew [**xotsi-t** **balu-t**]=ni {argument
DM=RETR 3.go pl-3-dig hole-M.SG.AF big-M.SG.AF=RETR function
‘Then, they went to dig the deep hole.’ and specific referent}

(3) de:j-tɛ je-t nehe niɛ d-ɪɛ {argument
day-M.SG.AF other-M.SG.AF PROSP EPST 3.IRLS-meet function and
l-abi-tik uxe itso witei non-specific referent}
REFL-husband-M.SG.IF SUB 3.be_like 3.M.SG
‘Someday she will meet a husband who will be like him.’

The basic uses of the forms are similar in all Zamucoan languages, although Chamacoco presents some degree of innovation mostly owing to a prolonged contact with Spanish, so that the distinction between predicative and argument form is disappearing from the language, as

in (4). Indeed, in morphological terms such a distinction has already disappeared in the plural, as one can see in Table 1.

(4) e-jxi-ta	ite	apibita?	/	apibiti-ta
2sg-daughter-F.SG.AF	EMPH	young_woman.F.SG.PF		young_girl-F.SG.AF
‘Your daughter is a young woman.’				

In this chapter I will use the argument form as a citation form for nominals. The citation form for verbs will be the third person realis, which will simply be glossed as third person (3). The reader interested in a detailed analysis of Chamacoco morphology is referred to Ciucci (2016).

1.1 The ‘word’ in Chamacoco culture

Chamacoco has a lexeme for ‘word’: *aʷoɛt* (3.M.SG.AF), with predicative form *aʷos* (3.M.SG.PF) and plural *aʷoso* (3.M.PL). The term is a compound of *aʷo?* (3.M.SG.PF) ‘mouth’ and *oɛt* (M.SG.AF) ‘person’. In compounds *oɛt* also refers to what lives/is in the place designated by the first element of the compound. For instance *po:ʷoɛt* (M.SG.AF) ‘God, divinity’, from *põ:rtɛ* (M.SG.AF) ‘sky’ and *oɛt* (M.SG.AF), is literally ‘the one who lives/is in the sky’; *ojerptoɛt* (M.SG.AF) ‘soldier’, from *ojerpta* (F.SG.AF) ‘barracks’ and *oɛt* (M.SG.AF) is ‘the one who lives/is in the barracks’. Similarly, the ‘word’ is ‘what lives/is in the mouth’.

Morphological evidence that *oɛt* is the second element of the compound is provided by the alternation between /ɛ/ and /s/ in *aʷoɛt* vs. *aʷos* and *aʷoso*. Indeed, such an alternation is rare among nominals, but it is documented in the inflection of *oɛt* (M.SG.AF), which has predicative form *os* (M.SG.PF) and plural *oso* (M.PL).

The plural of ‘word’, *aʷoso*, can be used to refer to ‘language’: the Chamacoco language, for instance, is *iεir(o) aʷoso*, literally meaning ‘the words of the Chamacoco’, from *iεir(o)* (M.PL) ‘Chamacoco people’ and *aʷoso* ‘words’.

The intuitive notion of ‘word’ for Chamacoco speakers coincides with the phonological word. This emerges in my transcription of texts with linguistic consultants, and the same can be observed in Chamacoco texts by different authors, see Ciucci (2016: 42-44) for references. In particular, despite the fact that published Chamacoco texts sharply differ in the quality of the transcription, there are no notable differences concerning the orthographic word, which coincides with the phonological word.

1.2 The phonological inventory of Chamacoco

Chamacoco has six vowels, /a e i o u i/, with phonemic opposition between long and short vowels. Vowel nasalization is a suprasegmental feature. Table 2 features the consonantal phonemes in Chamacoco words of native origin. The status of [z] as a phoneme is problematic (see §2.1). Word-final vowels and approximants can exhibit phonemic laryngealization. Stress is phonologically distinctive (cf. §3.1, ex. 20). Nowadays most Chamacoco are bilingual, and new phonemes from Spanish, such as /k/, /f/ and /g/, can be used in loanwords. Chamacoco has accepted, particularly in the last decades, a high number of Spanish loans, both lexical and function words. In this chapter I will only consider phonologically adapted borrowings.

<place Table 2 about here and the footnote 4 after the heading of the table> ⁵

The most frequent syllable structure is (C)V. Other syllable types are CVC [as in *pit* (M.SG.AF) ‘piece’], and CVCC [as in *poεt* (3.M.SG.AF) ‘food’]. The latter is mostly found word-finally, but there are also examples in non-final position: e.g. *kεjt.kεr* (3) ‘to talk, to

speak’. The consonant clusters documented in coda position are /jt/, /jtɛ/, /lt/, /l̥t/, /nt/, /n̥t/, /rk/, /rm/, /rt/, /rtɛ/, /rz/, /st/ and /ɛt/. This list cannot be exhaustive, because other clusters, such as /rl/ (6c), could emerge owing to syllable restructuring (see ex. 6c-d). Less frequently, one also finds CCVC [as in [ʔ]e.kwit.lo (2pl) ‘to wake up’], and CCVCC [as in *kwiɛt* ‘to break; to happen rapidly’]. When a phonological word begins with a vowel, a glottal stop is preposed (Ulrich and Ulrich 1989: 23) in its canonical realization. This has no phonological value, but it only serves to avoid a null onset, thus forming the preferred syllable structure CV (5a) or also CVC (5b). The presence of [ʔ] can serve to identify the boundary of a phonological word. In some cases, instead of [ʔ], /h/ can be preposed to the word beginning in a vowel, so that *ōr* ‘they’ can alternate with *hōr*.

(5) a. e: [ʔe:]

fruit.F.PL

‘Fruit’

b. i:n [ʔi:n]

3.swallow

‘S/he swallows.’

The syllable nucleus must be a vowel, with the only exception of the coordinative conjunction *ŋ* ‘and’, which alone constitutes a phonological word. An epenthetic vowel /i/ can be added in order to separate adjacent consonants, thus simplifying the syllable structure (6a-b).

(6) a. e-kwitim-lo [ʔ]e.kwi.tim.lo → [ʔ]e.kwi.ti.mi.lo

2-take_advantage/hasten-pl

‘You (pl) take advantage, you hasten.’

b. aṅim-lo [ʔ]a.ṅim.lo → [ʔ]a.ṅi.mi.lo

2.unload-pl

‘You (pl) unload.’

c. e-tîr-lo [ʔ]e.tîr.lo → [ʔ]e.tîrl

2-go_to-pl

‘You (pl) go to...’

d. obexi-ta [ʔ]o.be.xi.ta → [ʔ]o.bex.ta

sheep-F.SG.AF

‘Sheep’

Conversely, an unstressed vowel can be dropped, so that the syllable is restructured. This results in the emergence of a CVCC syllable (6c), or of a CVC-CV syllable sequence (6d).

Vowel dropping is often associated with rapid speech. Owing to it, unusual consonant clusters not attested elsewhere in the language can emerge, such as /xt/ (6d). In (6c) the cluster /rl/ fills the coda position of the syllable, which only occurs after vowel dropping and subsequent syllable restructuring.

2. Segmental features and phonological rules

In this section I will analyze the segmental features which allow us to identify the phonological word. One of these has just been discussed in the previous section, and it is the presence of a glottal stop before words beginning with a vowel (ex. 5-6). Other possible signals which allow us to identify the boundary of a phonological word are the phonetic realizations of some consonants (§2.1) and segmental restrictions (§2.2). Also some consonantal sequences have limited distribution and can serve to identify word boundaries (§2.3): a particular case is gemination resulting from two adjacent consonants, which is only

found in a word-medial position and is a useful criterion to identify clitics (§2.4).

Neutralization and free alternation of some phonemes depend on the context (§2.5). A final vowel can be added to words ending in a consonant (§2.6).

<Place Table 3 about here>

Segmental features and phonological rules are summarized in Table 3, where one can distinguish (i) particular realizations of a phoneme; (ii) the possible occurrence of a given phoneme or phonemic sequence; (iii) free alternations of phonemes or neutralization; (iv) other phenomena involving phonetics or phonology, such as prosthetic [ʔ] before words beginning with a vowel, or epenthetic /e/ or /i/ after words ending in a consonant.

2.1 Phonetic realization of consonants

The realization of some consonantal phonemes can serve to identify their position within the phonological word. Voiceless stops (/p/, /t/ and /k/) can be unreleased ([p̚], [t̚] and [k̚]) at the end of a phonological word. This is also found in Lao (Enfield, present volume). Similarly, /tɕ/ can optionally be realized as [t̚] word-finally.

/k/ can be realized as [g] or [ɣ] word-medially, and in the same context /ts/ can be realized as [dz] or [z].

/d/ and /l/ are in free alternation at the beginning of a phonological word: e.g. *lata* ~ *data* (3.F.SG.AF) ‘mother’; *luhu* ~ *duhu* (3.IRLS) ‘to do’; an exception is however *diɭak* (M.SG.PF) ‘night’, for which **liɭak* is not attested. The only context where /d/ and /l/ can alternate word-internally is when the third person of the verb is preceded by the pluralizer prefix *o-* in order to form the third person plural: *o-luhu* ~ *o-duhu* (3pl.IRLS) ‘to do’. This is due to the fact that *o-* is an innovation in Chamacoco (Ciucci and Bertinetto 2015: 76-82). Across Zamucoan, the presence of /l/ is a Chamacoco innovation.

The phonemic status of [z] is doubtful, because it is often an allophone of /tɛ/ in the sequence /rtɛ/ mostly before a consonant: /'pu:r-tɛ=ɲa/ ['pu:ɹ-zɛ=ɲã] (shadow-M.SG.AF=RETR). However, in a word such as /'tserz/ ['tɛɹz] 's/he wins', [z] occurs word-finally and there is no reason to say that it is an allophone of /tɛ/. As one can see from these examples, /r/ is realized as [ɹ] before /tɛ/ or /z/ (with the former case being very frequent). Before a vowel, the sequence /rtɛ/ is mostly realized as [ɹɹ], with 'reciprocal assimilation' of the two consonants: /tɪm'tɛartɛa/ [tɪm'tɛaɹɹa] 'woman' (F.SG.AF). This is a complex phonological process, where one can hypothesize that [rtɛ] > *[ɹɹ] > [ɹɹ]. In Chamacoco there are no phonological geminates, but sequences of identical consonants, such as [ɹɹ], may arise in a word-medial position. The allophone [ɹ] can only be observed within the phonological word. Word-finally, /tɛ/ is usually realized as /ɣ/ after /r/ (realized as [ɹ]): /ɹ'ɛirtɛ/ [ɹ'ɛiɣ] 'Chamacoco' (M.SG.AF).

In Chamacoco there are other cases of consonant lengthening, which are never distinctive: /s/ can be realized as [s:] in final position: *tsakis* ['tsakis:] (SG.PF) 'wasp'; *wis* [wis:] (M.SG.PF) 'black'.⁶ /p/ can be lengthened word-internally at the end of a consonant cluster: *d-ej-tɛ=pa*² (3-father-M.SG.AF=AUG) [dejtɛ'=p:a²] 'real father'; *ilxa:bi-k=pa*² (evil-M.SG.PF=AUG) [ilxa:bi'k'=p:a²] 's/he is very evil'; *tol=pa*² (3.be_afraid=AUG) ['tɔl=p:a²] 's/he is very afraid'.⁷

2.2 Segmental restrictions

Segmental restrictions are indicative of word boundaries. Not all phonemes can occur word-initially. Chamacoco words cannot begin with /r/, /ɹ/, /z/ (§2.1) and /ɣ/. Since phonological words cannot begin with /r/, root-initial /r/ turns into /n/ in the third person of the verb in (7). This is diachronically the outcome of a complex phonological process consisting in the fortition of /r/ into */d/, and then in its nasalization into /n/ owing to nasal harmony (see §3.2).⁸

(7) ‘to get up’

1sg	tik-irĩhi	1pi	j-irĩhi	1pe	oj-irĩhi
2sg	e-rĩhi	2pl	e-rĩhi-lo		
3	nĩhi	3pl	o-nĩhi	3.IRLS	nĩhi

To these phonemes one could add /j/, /s/ and /w/, which are very rare in this context, since they are found in only a few, low-frequency words. In the case of /s/, this is reflected in the orthography established by Ulrich and Ulrich (1989) along with the Chamacoco indigenous leaders at that time. Indeed <s> is used word-initially to graphically represent /ts/ and /s/: cf. *tsapik* <sapik> (3) ‘to shut up’ ~ *sarpa:pta* <sarpaapta> (F.SG.AF) ‘hummingbird’. This is because /s/ is found word-initially only in a few words known to the speakers (often in possible alternation with /ts/ according to Ulrich and Ulrich 1989: 11), while /ts/ has no restrictions. In other words <s> is almost always to be interpreted as /ts/ word-initially, to the point that Ulrich and Ulrich decided to use <s> also for /ts/, on request of the speakers themselves (Rosemary Ulrich, personal communication). Also in the orthography established by Guillermo Sequera, as an alternative to the one by Ulrich and Ulrich (1989), both /ts/ and /s/ are transcribed with <s> word-initially (see, e.g., Sequera 2006).

There are consonants which cannot occur word-finally: /b/, /d/, /h/, /j/, /m/, /ts/ and /w/; /r/ can, but not its allophone [ɾ]. /l/ is not expected word-finally in the canonical realization of a word, but it is sometimes found word-finally when the final unstressed vowel drops: *ojoʎo* (1pe) ‘to cut’ → *ojoʎ* (1pe) ‘to cut’. Also /x/ is rare word-finally.

Distinctive laryngealization on word-final vowels and non-lateral voiced approximants are only observed in final position: *owaʔ* (F.SG.PF) ‘stream’ ~ *owa* (2sg) ‘you’; *ilaroʔ*

(M/F.SG.PF) ‘old’ ~ *ilaro* (M.PL) ‘old’; *tĩmt̃ear*² (F.SG.PF) ‘woman’ ~ *tĩmt̃ear* ‘woman’ (F.PL); *tĩtew*² (F.SG.PF) ‘heart’ ~ *tĩtew* ‘heart’ (F.PL).

The last segment of a phonological word, be it a consonant or an unstressed vowel, is often dropped: for this reason *ĩĩiro* (M.PL) ‘Chamacoco’ is often pronounced *ĩĩir*, and *ĩĩiro awošo*, the Chamacoco language, is mostly pronounced *ĩĩir awošo*; similarly *ono:ta* (F.SG.AF) ‘river’ can turn into *ono:t* (F.SG.AF), and for what is canonically *ono:ta* (river.F.SG.AF) *baļu:ta* (big.F.SG.AF) ‘sea’ (lit. ‘big river’) I have also documented *ono:t* (F.SG.AF) *baļu:ta* (F.SG.AF) ‘sea’ and *ono:t* (F.SG.AF) *baļu:t* (F.SG.AF) ‘sea’. These variants may partly depend on rapid speech.

2.3 Sequences of phonemes

One can identify sequences of phonemes whose distribution is related to their position within the phonological word. Among the consonant sequences which can appear in a phonological word, those documented in the coda of a syllable (§1.2) can never occur in initial position, but they can occur in internal and final position: /jt/, /jt̃/, /lt/, /l̃t/, /nt/, /ñt/, /rk/, /rm/, /rt/, /rt̃/, /rz/, /st/ and /ɛt/. For most of these sequences, this has to do with the fact that /r/ and /l̃/ cannot occur word-initially (§2.2), while in all other cases the phonotactic constraint concerns any sequence of consonant plus /t/ or /t̃/, such as /ɛt/ (8a) and /st/ (8b). Note, however, that these clusters have different frequency and this can give some indication of the word boundary. For instance /ɛt/ mostly occurs word-finally, while /st/, in general less frequent than /ɛt/ across the language, is only documented word-finally in *nemest* ‘table’ (8a).

- | | | |
|--------|------------------|------------------------------|
| (8) a. | <i>bort̃ie-t</i> | <i>aɛt̃ür-t̃e</i> |
| | clothing-M.SG.AF | 3.rope-M.SG.AF |
| | ‘Clothing’ | ‘His/her/their rope, string’ |

b. wɪs-ta	nemes-t
black-F.SG.AF	table-M.SG.AF
‘Black’	‘Table’

The sequences /kp/ (9a), /mtɛ/ (9b), /pk/ (9c), /sp/ (9d) and /ɛp/ (9e) only occur within the phonological word. The clusters /sd/ (9f), /sn/ and /ɛn/ (9g), as well as /tɛt/ (9h) are infrequent, and can only occur within the phonological word.

(9) a. atsɪkpõr-ta	miɲi-k=paʔ	
white_mosquito-F.SG.AF	bad-M.SG.PF=AUG	
‘White mosquito’	‘It is very bad.’	
b. e-mteaha	timteaq-ɪa	
2sg-put	woman-F.SG.AF	
‘You put.’	‘Woman’	
c. loɛɪpk-a:p	wap=kite	
animal-DIM.M.SG.PF	at_the_beginning=RETR	
‘Small animal’	‘At the beginning’ (long before reference time)	
d. ospib-itɛ	je l-i:s=pe	
hive/honey-M.SG.AF	NEG 3.IRLS-bite=NEG	
‘Hive, honey’	‘It does not bite.’	
e. tɛ-e:ɛpo	u:ɛ=po	
3-come_back	3.run=again	
‘S/he comes back.’	‘S/he runs again.’	
f. dosdar-ak	kasdor-t	osdi:-ta
sad-M.SG.PF	hunter-M.SG.AF	type_of_plant-F.SG.AF

‘Sad’	‘Hunter’	<i>Aechmea distichantha</i> (cf. Sequera 2006, I: 123)
g. awos=ni		ejuw-o=ε=ni
3.word.M.PL=RETR		3.thought-M.PL=EXIST=RETR
‘His/her/their words’		‘He/she/they had thoughts.’
h. a-hute-tik		
		2sg-house-M.SG.IF
		‘Your house’

In this section, I have only considered sequences of different phonemes. There can also be sequences of identical phonemes, which are of particular importance for the definition of phonological word. They are addressed in the next section.

2.4 Adjacent consonants

Chamacoco has no phonological geminates, as already noted in §2.1 with respect to allophonic realizations. However, sequences of identical consonants (such as [ɬɬ], see §2.1) can occur within the phonological word.⁹ Among them there are /tt/ and /ll/, which can originate from vowel deletion. For instance, the irregular verb ‘to go’ has three variants in the second person plural (10). Dropping /u/ or /i/ produces forms with a sequence of two identical phonemes, that is /ll/ pronounced as a long consonant.

- (10) buli-lo / bulu-lo / boli-lo → bul-lo / bol-lo¹⁰
 2.go-pl
 ‘You go.’

Gemination can be the result of a sequence of identical consonants across a morphological boundary, produced by an affix (11a-b) or a clitic (11c). In (11a-b), however, [t] (instead of [t:]) is also a possible pronunciation.

- (11) a. pwert-tik=ihi?
 house-M.SG.IF=INTER
 ‘What/which is the house?’
- b. dekitit-tik=ihi=po?
 person-M.SG.IF=INTER=INTER
 ‘Who is (that/this) person?’
- c. t-irēt=to=ke
 3-come=also=RETR
 ‘S/he also came.’

The sequence /tt/ can also arise as a result of regressive assimilation of /tɛ/, as in (12). The suffix *-tik* attaches to *ahutɛ* ‘house’ yielding *ahutɛ-tik*, which is also a possible realization, and then *ahut-tik* (12). /nn/ is not frequent, and it can be found when the temporal clitic =*ni* is added to a form ending in *-n* (13).

- (12) ahut-tik=ihi?
 2sg.house-M.SG.IF=INTER

‘What/which is your house?’

(13) uxe jok pikiŋin=ni¹¹

SUB 1sg child=RETR

‘When I was a child...’

In *Pohitteuwo* (name of a mythological being, described as a big dog) there is geminated /tɛ/, which is rare. In this word, one can recognize the word for ‘dog’, currently pronounced *pohote/pohite* (M.SG.AF), while *teuwo* is opaque. /tɛ/ can be the result of /tɛ/ + /tɛ/, or of /t/ + /tɛ/. Indeed, in older sources ‘dog’ is *pohit* (Baldus 1932: 401). The term is already transcribed by Sušnik (1970: 191) as <póitčuwô>, to be interpreted as *poitteuwo*.

Another sequence of identical consonants found in word-medial position is /pp/, as in (14-15). In (14) /pp/ originates from the omission of the final vowel of *papa* ‘my father’; in (15) the first person singular of the verb is *takit*, but final /t/ is assimilated by /p/.

(14) pap=po

my_father=again

‘My father again...’

(15) t-akip=po owa

1sg-counsel=again 2sg

‘I counsel you again.’

Although there is no difference in their phonetic realization, /pp/ (14-15) should not be confused with [p:], when the latter is the possible allophonic realization of /p/ as the last

member of a consonant cluster in internal position (see §2.1). What is relevant for the present study is that long consonants only occur in a word-internal position, with the exception of [s:] (see §2.1), which can mark the word boundary. This fact turns out to be a very useful criterion in order to identify cliticization. Indeed, as shown in examples (11c) and (13-15), geminates can arise within the phonological word as an effect of clitic adjunction. Alternatively, they can result from vowel deletion (10) or affixation (11a).

2.5 Free alternation of phonemes and neutralization of /p/ and /b/

Free alternation of phonemes can serve to identify word boundaries. One example is the free alternation of /d/ and /l/ word-initially (§2.1).

In word-final position, /i/ and /e/ can be in free alternation. This mostly concerns a group of regular feminine nominals (16). Their root ends in *-i/*, and the feminine plural suffix is *-e*, which can delete root-final */i/*; subsequent */e/* → */i/* can be explained by vowel reduction, which is very frequent in Chamacoco. However, the fact that the singular predicative form can end in */e/* depends on free alternation with */i/*. In these nominals, only the laryngealization of the word-final vowel can set apart the predicative form from the common plural of predicative and argument form (see Table 1). Another example is the proper noun *Basibiki*, a Chamacoco (male) leader of the past. Proper nouns have no inflection, and the form *Basibiki* alternates with *Basibike*, showing thus final neutralization of */e/* and */i/*.

- (16) a. m̩anti-ta , $\text{m̩ant-e} / \text{m̩ant-i}$, $\text{m̩ante}^? / \text{m̩anti}^?$
 3.fist-F.SG.AF 3.fist-F.PL 3.fist.F.SG.PF
 ‘His/her/their fist’
- b. $\text{nerpi-ta} / \text{nerp-ta}$, $\text{nerp-e} / \text{nerp-i}$, $\text{nerpe}^? / \text{nerpi}^?$
 3.shirt-F.SG.AF 3.shirt-F.PL 3.shirt.F.SG.PF

‘His/her/their shirt’

c. n̥iti-ta,	n̥it-e / n̥it-i,	n̥iteʔ / n̥itiʔ
3.foot-F.SG.AF	3.foot-F.PL	3.foot.F.SG.PF

‘His/her/their foot’

d. obexi-ta,	obex-e / obex-i,	obexeʔ
sheep-F.SG.AF	sheep-F.PL	sheep.F.SG.PF

‘Sheep’ (from Spanish *oveja* ‘sheep’)

Also at the end of the phonological word, free alternation between the sequences /aha/ and /ehe/ (17) often occurs. This possibly developed out of translaryngeal vowel harmony (see §3.3), but at present there is no evidence to say that such an alternation is still ruled by vowel harmony.

(17) a. t-omsaha / t-omsehe

1sg-enter

‘I enter (somewhere).’

b. tɛ-iraha / tɛ-irehe

3-know

‘S/he knows.’

c. o-t-ejãha / o-t-ejêhe

pl-3-hunt

‘They hunt (something).’

Finally, there is neutralization of /p/ and /b/ at the end of the phonological word, where /b/ cannot occur. This can be seen in the diminutive suffix, which is *-a:p* in final

position, *-a:b* in internal position. The same occurs in nominals with singular predicative form ending in /p/, which corresponds to /b/ word-medially (18).

- (18) a. d-eheb-ite, d-ahab-o, d-ahap
 3-brother-M.SG.AF 3-brother-M.PL 3-brother.M.SG.PF
 ‘Her/their brother (brother of a woman)’
- b. l-ecib-ite, l-ecib-o, l-ecap
 3-brother-M.SG.AF 3-brother-M.PL 3-brother.M.SG.PF
 ‘His/their brother (brother of a man)’
- c. ŋakirb-ite, ŋakirb-o, ŋakirap
 man-M.SG.AF man-M.PL man.M.SG.PF
 ‘Man’

What has occurred with nouns such as those in (18) was possibly the convergence of both: (i) voicing of intervocalic /p/ (which elsewhere can be found in medial position), and (ii) word-final devoicing of /b/.¹² The loss of voicing distinction word-finally is a unique feature of /p/ ~ /b/ and does not apply to other voiceless/voiced pairs.

2.6 Addition of word-final vowels

Sometimes a final vowel can be added to phonological words ending in a consonant. This phenomenon, also known as proparalepsis (Trask 1996: 292), is very frequent in Ayoreo and Old Zamuco, less frequent in Chamacoco. Adding a word-final vowel can serve to avoid the weakening or drop of the final consonant. Indeed plosives can be unreleased in word-final position (see §2.1), and the final segments can be dropped (see §2.2). The vowel added word-finally is either /i/ or /e/, as one can see in some forms documented in my corpus (19).

- (19) a. diɦɪrb-it (morning-M.SG.AF) ‘morning’ → diɦɪrb-it-e
 b. diɭak (1pe) → diɭak-e
 c. eŋ ‘when’ → eŋ-i, eŋ-e
 d. ite ‘and’ → ite-i:
 e. je-tik (other-M.SG.IF) ‘other’ → je-tik-i, je-tik-e
 f. jok (1sg) → jok-i, jok-e
 g. nahat ‘until’ → nahat-e
 h. olak (2pl) → olak-e
 i. ɔ̃rjok (1pe) → ɔ̃rjok-e

As shown in (19), the word-final vowel is /e/ if the preceding vowel is /a/. This is so far the only tendency noted for the choice between and /i/ and /e/. Elsewhere, the possible addition of both /i/ or /e/ has possibly to do with the word-final alternation of these vowels (§2.5, ex. 16). Finally, adding a final vowel coexists with the opposite tendency to drop final unstressed vowels (§2.2): this depends on several factors, such as style. The final vowel can be added when a word is pronounced with higher intensity, and this contrasts with rapid speech, often associated with the dropping of final vowels.

3 Prosodic features

After having dealt with segmental features and phonological rules, this section will address three prosodic features providing further criteria to define the phonological word: stress (§3.1), nasal harmony (§3.2) and vowel harmony (§3.3).

(21) a. aḷib-e /'aḷibe/ [ʔaḷibe] → aḷibi-ta /a'ḷibita/ [ʔa'ḷibita]

foam-F.PL

foam-F.SG.AF

'Foam'

'(Chunk of) foam'

b. ṅot-e /'ṅote/ → ṅoti-ta /'ṅotita/

money-F.PL

money-F.SG.AF

'Money'

'(One unit of) money'

(22) a. l-irk /'lirk/ + =ihi → /lir'k=ihi/

3-walk

PREP

'S/he walks in...'

b. je + t-atim /'tatim/ + =pe → /je ta'tim=pe/

NEG 3-tell

NEG

'S/he does not tell (anything).'

c. je + n-ihĩsim /ni'hĩsim/ + =pe → /nihĩ'tsim=pe/

NEG 3.IRLS-bury

NEG

'S/he does not bury (anything).'

The possibility to carry stress applies to all clitics and elements cliticized at the right periphery of a word (cf. ex. 63-64 and 69-70).

3.2 Nasal harmony

Chamacoco is characterized by nasal harmony, a feature in partial decline and not always regular, whose extent is the phonological word. Nasalization as a phonological process is found in a number of Amazonian languages (Aikhenvald 2013: 113-116), where it can help recognize the boundaries of the phonological word. In Zamucoan, nasality is a property of the

root and it can spread in both directions to affixes and clitics. Regressive nasalization occurs, for instance, in the third person irrealis of verbs and in the reflexive person of possessive inflection, which have a homophonous prefix: *d-/l-*, with *d-* and *l-* in free alternation (see §2.1); *d-/l-* can nasalize into *n-* if nasality is in the root (23-24). Nasalization is not always obligatory, and there are numerous paradigms where the oral and nasalized allomorphs can alternate, as in (23a-b), although in these cases the allomorph *n-* is usually preferred by the speakers.

- (23) a. *te-ihĩt* → *n-ihĩt / d-ihĩt*
 3-light_up 3.IRLS-light_up
 ‘S/he lights up (something).’
- b. *te-ihĩtsim* → *n-ihĩtsim / d-ihĩtsim*
 3-bury 3.IRLS-bury
 ‘S/he buries (something).’
- c. *e-ijokõr / e-ijõr* → *n-ijokõr / n-ijõr*
 3-build/make 3.IRLS-build/make
 ‘S/he builds/makes (something).’

- (24) *armis-ta* → *n-armis-ta*
 3.blood-F.SG.AF REFL-blood-F.SG.AF
 ‘His/her/their blood’ ‘His/her/their blood’ (coreferent with the subject)

Some consonants preceding the nasal element in the root can block prefix nasalization, such as /k/ (25a-b), /t/ (25b; 26a-b), /ts/ (25d) and /tɕ/ (25e). A similar mechanism is observed in Ayoreo (Ciucci 2016: 140).

- (25) a. $\text{t}\epsilon\text{-ukutim} \rightarrow \text{d-ukutim}$
 3-increase_fire 3.IRLS-increase_fire
 ‘S/he increases fire (also: s/he refuses to work).’
- b. $\text{t}\epsilon\text{-ikāha} \rightarrow \text{d-ikāha}$
 3-pass_through 3.IRLS-pass_through
 ‘S/he passes through (something).’
- c. $\text{ts-atim} \rightarrow \text{l-atim}$
 3-put_in_charge_of 3.IRLS-put_in_charge_of
 ‘S/he puts (somebody) in charge of (something).’
- d. $\text{ts-atsir} \rightarrow \text{l-atsir}$
 3-scold 3.IRLS-scold
 ‘S/he scolds (also: s/he tells off / quarrels).’
- e. $\text{t}\epsilon\text{-itejēr} \rightarrow \text{d-itejēr}$
 3-graft/plug 3.IRLS-graft/plug
 ‘S/he grafts / plugs (something).’
- (26) a. $\text{ate:m-tea} \rightarrow \text{l-ate:m-tea}$
 2sg.aunt-F.SG.AF REFL-aunt-F.SG.AF
 ‘Your aunt’ ‘His/her/their aunt’ (coreferent with the subject)
- b. $\text{e-tirī:-t} \rightarrow \text{de-tirī:-t}$
 2sg-faint-M.SG.AF REFL-faint-M.SG.AF
 ‘Your faint’ ‘His/her/their faint’ (coreferent with the subject)

Rules are not always rigid, for instance there are some verbs where *n-* and *d-/l-* can alternate, despite the fact that /t/ is between the nasal element and the prefix (27). Here, lack of nasalization is preferred by the speakers.

- (27) a. ts-iteĕta → d-iteĕta / n-iteĕta
 3-measure 3.IRLS-measure
 ‘S/he measures (something).’ ‘S/he would measure (something).’
- b. ts-itijĕr / tĕ-itijĕr → d-itijĕr / n-itijĕr
 3-gather 3.IRLS-gather
 ‘S/he gathers/collects (something).’ ‘S/he would gather/collect (something).’

Other consonants, such as /p/, /z/ and /s/ can optionally block nasalization (28). Often the oral allomorph is preferred. In possessive inflection, the block of nasalization is always observed with /s/ (29).

- (28) a. tĕ-ipã:ĕo → d-ipã:ĕo / n-ipã:ĕo
 3-fold 3.IRLS-fold
 ‘S/he folds (something).’ ‘S/he would fold (something).’
- b. ts-arzĭm → l-arzĭm / n-arzĭm
 3-add 3.IRLS-add
 ‘S/he adds (something).’ ‘S/he would add (something).’
- c. ts-osĩr → d-osĩr / n-osĩr (3.IRLS)
 3-favour 3.IRLS-favour
 ‘S/he favours (somebody).’ ‘S/he would favour (somebody).’

- (29) a. *asĩpsĩr-te* → *l-asĩpsĩr-te*
 3.opponent-M.SG.AF REFL-opponent-M.SG.AF (coreferent with the subject)
 ‘His/her/their opponent in combat’ (non-coreferent / coreferent with the subject)
- b. *osẽ:t* → *l-osẽ:t*
 2sg.gift-M.SG.AF REFL-gift-M.SG.AF
 ‘Your gift’ ‘His/her/their gift’ (coreferent with the subject)

In suffixation, the diminutive suffix is *-a:p* word-finally, *-a:b* in internal position, where /b/ nasalizes under nasal harmony.

- (30) *noĩra?* → *noĩr-a:p*, *noĩr-a:m-it*, *noĩr-a:m-ita*
 one.M/F.SG.PF one-DIM.M/F.SG.PF one-DIM-M.SG.AF one-DIM-F.SG.AF
 ‘One’

In the suffix *-lo* nasalization is no longer productive. This could have to do with the differentiation between /l/ and /d/, which in this context are not in free alternation, since there is no allomorph **-do*. The suffix *-lo* is a pluralizer used in verb inflection, mostly for the second person plural: *e:na* (2sg) ‘to feel, to perceive’ → *e:ni-lo* / *e:na-lo* / *e:n-lo* (2pl). The suffix *-lo* also marks the masculine plural of nominals. This suffix was originally found in all masculine nominals. Nowadays only a few nominals still retain *-lo*. Its cognates *-odoe* (Old Zamuco) and *-ode* (Ayoreo) regularly undergo progressive assimilation (Ciucci 2016: 719-724), but this is no longer the case with Chamacoco *-lo* (31a). Indeed, its nasal allomorph *-no* (cf. Old Zamuco *-onoe*, Ayoreo *-one*) is only preserved in some nominals (31b), including those where it can alternate with *-lo* (31c).

- (31) a. ormi-t → ormi-lo
 woods-M.SG.AF woods-M.PL
 ‘Woods’
- b. koxã-te / koxã-t → koxã-no
 mountain-M.SG.AF mountain-M.PL
 ‘Mountain, stone’
- c. itē:-te → itē:-lo / itē:-no
 3.bed-M.SG.AF 3.bed-M.PL
 ‘Bed, mattress’

Nasal harmony can also be observed when there is a consonantal change within the root. For instance, in some verbs and possessive nouns, /j/ can turn into /l/ in some persons, such as the second singular and plural (32). In the same persons, /l/ turns into /n/ under regressive nasal harmony, as in (33). Although here nasalization involves a root consonant, it never limited to the root, but it can always extend to affixes whenever there are the conditions.

(32) ‘to jump, to fly’

1sg	tik-ijo	1pi	j-ijo	1pe	oj-ijo
2sg	a-lo	2pl	a-li-lo / a-lo-lo		
3	ijo	3pl	o-jo	3.IRLS	tso

(33) ‘to wait’

1sg	t-ijem / tik-ijem / tik-ijem	1pi	j-ijem	1pe	oj-ijem
2sg	a-nem	2pl	a-nem-lo / a-nem-i-lo		
3	i-jem	3pl	o-jem	3.IRLS	tseem

Finally, nasal harmony seems to be still productive, as shown by the phonological adaptation of Spanish borrowings, where Spanish /b/, /l/ or /d/ undergo regressive assimilation by /n/ or /m/.

- (34) a. *manan-ta* (banana-F.SG.AF) ‘banana’, from Spanish *banana* ‘banana’¹⁴
 b. *nimpjo* ‘clean’, from Spanish *limpio* ‘clean’
 c. *nemes-t* (table-M.SG.AF) ‘table’, from Spanish *la mesa* ‘the table’ with regressive vowel assimilation (see §3.3)
 d. *irnonto* ‘round, circular’, from Spanish *redondo* ‘round, circular’

As one can see from the examples in this section, nasal harmony mostly manifests itself as a regressive assimilation, however it is not restricted to that, as shown by the nasalization of the diminutive suffix (30). Nasal spread is blocked by voiceless stops, affricates and sibilants. For this reason it is infrequent in clitics, because most of them begin with these consonants or with nasal consonants (see Table 5, §6). However, that the domain of nasal harmony is the phonological word is evident with the adjective *liɛi* (M.SG) ~ *late* (F.SG) ‘poor’, which is frequently cliticized and undergoes nasal harmony (35a). Also here nasal harmony can be blocked by one of the consonants mentioned above, such as /p/ in (35b).

- (35) a. *jama* *liɛi* [ɲãm'ñɛi]
 1sg.uncle poor.M.SG
 ‘My poor uncle’
- b. *aṅap* *late* [’ãṅãp, late]
 3.granddaughter.F.SG.PF poor.F.SG
 ‘His/her/their poor granddaughter’

In conclusion, Chamacoco shows both regressive and progressive nasal harmony. As in most languages with nasalization as a word-level process, nasalization can be blocked. In Chamacoco this is a general tendency, but in most cases the block of nasal spreading is not obligatory and has to do with individual speech habits. The phonemes which can block nasalization are voiceless plosives, affricates and the sibilants /s/ and /z/.

3.3 Vowel harmony

In Chamacoco one can observe some mechanisms of vowel harmony, whose syntagmatic extent is the phonological word. In nouns inflected for possessor, for instance, a vowel originally belonging to the prefix, such as /e/ in (36), can assimilate the following vowel, if they are separated by /h/. These are instances of translaryngeal vowel harmony (Steriade 1987), as in the Arawak languages Bare, Tariana and Warekena (Aikhenvald 1996, 2013: 116-117).

(36) a. ‘end, age’

1sg p-uhurte 2sg e-herte 3 uhurte

b. ‘urine’

1sg p-ihirbite 2sg e-hirbite / e-herbite 3 ihirbite

c. ‘belt’

1sg p-ihiroct 2sg e-hiroct / e-heroct 3 ihiroct

Vowel assimilation across a glottal fricative is possibly the most frequent type of vowel harmony in Chamacoco (see ex. 37, 42-47), but not the only one (ex. 38-41, 48-49). In nominal suffixation, the feminine plural suffix *-e* can assimilate the previous vowel /a/, if they

are separated by /h/ (37) or /r/ (38). In (37), plural *-e* replaces the root-final vowel /a/ and assimilates the previous vowel. In (38) the same assimilation occurs, but here *-e* just attaches to the root in *-r/*. Here vowel harmony is not always obligatory, but it is preserved even after the drop of *-e*, in forms such as *tĩmt̃er* (38a), *iler* (38b), *ilxer* (38c). The feminine plural forms in (38) are in free variation.

(37) a. kinaha-ta, kĩnaha[?] → kinēh-e / kĩnaha
 strange-F.SG.AF strange.M/F.SG.PF strange-F.PL strange.F.PL
 ‘Strange’

b. kiskaha-ta, kiskaha[?] → kiskēh-e
 radio-F.SG.AF radio.F.SG.PF radio-F.PL
 ‘Radio, telephone’

c. imaha-ta, imaha[?] → imēh-e
 3.enemy-F.SG.AF 3.enemy.M/F.SG.PF 3.enemy-F.PL
 ‘His/her/their enemy’

(38) a. tĩmt̃aᵛ-ᵛa, tĩmt̃ar[?] → tĩmt̃er / tĩmt̃er-e /
 woman-F.SG.AF woman. F.SG.PF woman.F.PL woman-F.PL
 tĩmt̃ar / tĩmt̃ar-e
 woman.F.PL woman-F.PL
 ‘Woman’

b. ilaᵛ-ᵛa, ilar[?] → ilar / ilar-e / iler / iler-e
 old-F.SG.AF old.F.SG.PF old.F.PL old-F.PL old.F.PL old-F.PL
 ‘Old’

c. ilxaᵛ-ᵛa, ilxar[?] → ilxer / ilxer-e /
 3.pocket-F.SG.AF 3.pocket.F.SG.PF 3.pocket.F.PL 3.pocket-F.PL

ilxar / ilxar-e
 3.pocket.F.PL 3.pocket-F.PL
 ‘His/ her/their pocket’

Vowel harmony systematically occurs when *-e* is added to the diminutive suffix *-a:p*, so that /a:/ turns into /e:/: *-a:p + -e → -e:be* (39). These are instances of regressive vowel harmony, which in all cases only spans two syllables.

- (39) a. apibiti-ta, apibit-a:p → apibit-e:b-e
 young_woman-F.SG.AF young_woman-DIM.F.SG.PF young_woman-DIM.F.PL
 ‘Young woman’ ‘Little young woman’ ‘Little young women’
- b. boœœ-ta, boœœ-a:p → boœœ-e:b-e
 girl-F.SG.AF girl/boy-DIM.M/F.SG.PF girl-DIM-F.PL
 ‘Girl’ ‘Little girl/boy’ ‘Little girls’

Other instances of regressive assimilation involve prefixes. For instance, verbs can have the allomorph *tVk-* for first person singular, where *V* is mostly a copy of the following vowel (40). Chamacoco also has few instances of a generic prefix *dVk-* (glossed as GF, see fn. 15), which marks unspecified possessor. Also here *V* harmonizes to the following vowel (41), as in its Ayoreo cognate (Ciucci and Bertinetto 2017: 298).

- (40) a. t-atskir → tak-atskir
 3-fight 1sg-fight
 ‘S/he fights.’ ‘I fight.’
- b. t-ormihi → tok-ormihi

3-grease		1sg-grease
‘S/he greases (something).’		‘I grease (something).’
c. t-urka	→	tuk-urka
3-swing		1sg-swing
‘S/he swings.’		‘I swing.’
d. t-itirāha	→	tik-itirāha
3-spit		1sg-spit
‘S/he spits.’		‘I spit.’

(41) a. iteibi-te	→	dik-iteibi-te
3.spirit-M.SG.AF		GF-spirit-M.SG.AF
‘His/her/their spirit, image’		‘Spirit, image’
b. ihirmi-te	→	dik-ihirmi-te
3.crying-M.SG.AF		GF-crying-M.SG.AF
‘His/her/their crying’		‘Crying’

Historically, one can detect regressive assimilation also in the loanword *nemest* ‘table’, from Spanish *la mesa* (**lamesa* > *nemest*) (ex. 34c).

Vowel harmony is also observable for two clitics, $=(\dot{i})hi$ and $=(\dot{i})ke$. It is not found with other regular clitics or cliticized morphemes. The polyfunctional preposition $=(\dot{i})hi$ (42) is an anticipatory clitic (see §6). If it attaches to a word ending in a vowel, two rules apply: (i) vowel deletion on the clitic boundary (42b), (43); (ii) vowel harmony by the previous vowel (43). The preposition $=(\dot{i})hi$ is homophonous with the interrogative marker $=(\dot{i})hi$, which stems from the former. The interrogative marker attaches to nominals in indeterminate form. Being

homophonous with the preposition, it can also undergo vowel harmony, but since its contexts of use are limited, it only shows the harmonic process after the suffix *-tijo* (M.PL.IF), as in (44).

(42) a. l-irk + ihi → l-irk=hi

3-walk PREP

‘S/he walks in...’

b. u:ei + ihi → u:ei=hi

3.run PREP

‘S/he runs in...’

(43) a. baḷuwa + =hi → baḷuwa=ha

chief/big.M.SG.PF PREP

‘Chief in...’

b. owa + =hi → owa=ha

2sg PREP

‘You in...’

c. watsits-e + =hi → watsits-e=he

fox-F.PL PREP

‘Fox in...’

d. d-ali: + =hi → d-ali:=hi

3-stretch PREP

‘S/he stretches in...’

e. niei: + =hi → niei:=hi

3.arrange PREP

‘S/he arranges (something) in...’

f. ospib-o + =hi → ospib-o=ho

hive/honey-M.PL PREP

‘Hive/honey in...’

g. o-bi-jo + =hi + =tei → o-bi-jo=ho=tei¹⁵

GF-work-M.PL PREP there

‘Work there...’

(44) awo-tijo + =hi → awo-tijo=ho?

3.word-M.PL.IF INTER 3.word-M.PL.IF=INTER

‘Which words?’

These rules are not rigid: if =hi is preceded by /a/, it can turn into =ha, as in (43a-b). Also a sequence of vowel assimilations is possible, so that a=hi > *a=he > e=he, as in (45). In some cases, it is the vowel preceding =hi which is deleted (46). It can also happen that assimilation occurs even though there is no vowel adjacent to =hi (47a), or it is not exerted by the adjacent vowel, as in (47b).

(45) a. o-l-ota + =hi → olote=he

pl-3-play PREP

‘They play in...’

b. eũra + =hi → eũre=he

3.be_born PREP

‘S/he was born in...’

(46) a. ojã:tea + =hi → ojã:te=hi

1pe-arrive PREP

‘I arrive at...’

b. tokole + =hi → tokol=hi

3.exit PREP

‘S/he exits from...’

(47) a. nijōk + =hi + =tei → nijōk=oho=tei

NEG.EXIST PREP there

‘She/he/it is not there.’

b. tuk-umo + =hi → tukumu=hu

1sg-see PREP

‘I see in...’

Similar considerations apply to the retrospective clitic *=ike/=ke*. I use the label ‘retrospective’ to indicate that the event time precedes the reference time, independently of the speech time. When *=ike/=ke* attaches to a word ending in /a/, /o/ or /u/, it undergoes vowel harmony. Here too there are unpredictable exceptions (49).

(48) a. e-raha + =ke → e-raha=ka

2sg-know RETR

‘You knew.’

b. te-ikēra + =ke → te-ikēra=ka

3-dream RETR

‘S/he dreamed (something).’

c. ŋo + =ke → ŋo=ko

3.go RETR

‘S/he went (somewhere).’

d. oj-umo + =ke → oj-umo=ko

1pe-see RETR

‘We saw (something).’

e. d-uhu + =ke → d-uhu=ku

3.IRLS-kill RETR

‘S/he killed (somebody).’

f. oj-ahu + =ke → oj-ahu=ku

1pe-eat RETR

‘We ate (something).’

(49) a. t-ã:tea + =ke → t-ã:tea=ke

3-come RETR

‘S/he came.’

b. ilu: + =ke → ilu:=ke

3.manner.F.PL RETR

‘His/her/their manners.’

In sections 2 and 3 I have defined the phonological word in Chamacoco. First (§2), I have discussed segmental features and phonological rules allowing us to identify a phonological word (see Table 3). To these, one can add three prosodic features described in this section: stress (§3.1), nasal harmony (§3.2) and vowel harmony (§3.3). The next section will examine the grammatical word.

4 The grammatical word

A grammatical word generally consists of a number of elements which occur together in a fixed order, and have a conventionalised meaning (Dixon & Aikhenvald 2002: 19). The details will be addressed below. In its basic definition, the Chamacoco grammatical word is based on the root. In verbs, nouns and adjectives one can distinguish a number of grammatical elements attached to the root in a fixed order, with conventionalized meaning. There is a limited number of nominal compounds which have two roots, and there are compound pronouns/demonstratives, subordinators and complex predicates which consist of two (or more) phonological words, and form one grammatical word. The same applies to cases of reduplication.

The main word classes are verbs, nouns and adjectives (see §1). Their structure is given in Table 4. For an accurate description, see Ciucci (2016). Nouns and adjectives are referred to as nominals, because they share similar properties as far as their morphological structure is concerned. Nouns can be divided into nouns inflected *vs* uninflected for possessor. In the former, all elements of Table 4 can occur, while nouns uninflected for possessor and adjectives can only have positions 3 to 6.

<Place Table 4 about here>

Apart from the root, not all positions listed in Table 4 are necessarily filled. Inflectional affixes are generally obligatory, but their actual phonological realization depends on the inflectional class. Moreover, some verbs or nominals have reduced or defective inflection, and there is a fair number of adjectives, particularly loans, which are uninflectable for gender, number and form. As far as clitics are concerned, there are no restrictions, and a sequence of more than one enclitic is possible in any appropriate position (see Table 4).

The few classifiers and postpositions have the same morphology as nouns inflected for possessor. Personal pronouns, articles and demonstratives are inflected for number, and in

some cases also for gender, but it is not always possible to segment the units expressing a given category. The number word ‘one’ has an inflection similar to adjectives: *nomĩra*² (M/F.SG.PF), *nome-t* (M.SG.AF), *nomã-ta* (F.SG.AF).¹⁶ In the number word ‘two’ root allomorphy distinguishes masculine and feminine: *osijer* (M) ~ *otijer* (F). The quotatives form a special word class with verb-like inflection. All other word classes, including adverbs, conjunctions, discourse markers and ideophones, have no inflection.

Despite the above mentioned limitations, verbs and nominals can be recognized by their set of affixes. There is some overlap in personal prefixes and in number suffixes, but most affixes are unique to verbs or nominals. Moreover, since Chamacoco is a fusional language, and verb categories partly differ from the nominal ones, homophonous affixes never mark exactly the same category. For instance, the prefix *d-/l-* marks the third person irrealis in some verb classes, and it can express the non-reflexive third person and/or the reflexive third person of nouns inflected for possessor, without making a distinction between realis and irrealis. In verbs the suffix *-lo* can mark the plural (for second person) or the greater plural (for first person inclusive); *-lo* is rare in nominals, where it indicates the masculine plural. The diminutive suffix *-a:p* is added to nominals (50a) and much less frequently to verbs (50b-c), where it sounds archaic and conveys a nuance of attenuation and affection. In nominals, *-a:p* derives a new singular predicative form, which can itself be inflected for gender, number and form (50a). This is not possible when *-a:p* is added to verbs (50b), since they have neither gender nor (nominal) form.

- (50) a. *doẽi-t* → *doẽit-a:p*, *doẽit-a:b-it*, *doẽit-a:b-o* (cf. ex. 52)
 fish-M.SG.AF fish-DIM.M.SG.PF fish-DIM-M.SG.AF fish-DIM-M.PL
 ‘Fish’ ‘Small fish’
- b. *j-ejteim* → *j-ejteim-a:p*

1pi-look		1pi-look-DIM	
‘We look.’		‘We look a while (with affection).’	
c. a-m-lo	→	a-m-lo-a:p	/ a-m-a:p-lo
2-sleep-pl		2-sleep-pl-DIM	2-sleep-DIM-pl
‘Sleep!’		‘Please, sleep (with affection).’	

The presence of some affixes allows us to establish the word class. This is particularly useful also for words with limited inflection: for instance *kiñija* has almost no inflection and is translated as ‘many’ by the speakers. It follows the head of an NP, as adjectives do: a syntagm such as *da:lo* (day.M.PL) *kiñija* is translated as ‘many days’ by the speakers. One could conclude that *kiñija* is an adjective. However, the fact that it can take the prefix *o-*, used only in verbs to mark the third person plural for humans and big animals, indicates that *kiñija* is a verb with reduced inflection. Thus, a syntagm such as *da:lo kiñija*, despite its translation ‘many days’, is not an NP, but a short clause, literally meaning ‘the days are many’.

Inflectional affixes are obligatory. An exception is the suffix *-lo* for greater plural, which has relative reference and is only optionally used. Also *o-* is optional with nouns referring to big animals, but it must be used for all verb classes when the third person plural subject is human, as in *a:b-o* (3.child-M.PL) *o-kiñija* (3pl-be_many) ‘his/her children are many’.

From the root of verbs and nominals, one can derive a stem. Inflectional suffixes in Chamacoco nominals follow derivational suffixes. However, in Chamacoco verbs the rare derivational suffixes tend to follow the inflectional ones (see §6, ex. 67-68). But some old derivational suffixes can precede the pluralizer *-lo*, which is (in comparison with them) an innovation. An example is *ieim* ‘to give to’, derived from *ieí* ‘to give’ by adding *-im*, a fossilized adposition for indirect object, then reinterpreted as a derivational marker which now has lost its productivity.

- (51) $i\epsilon i + -(i)m \rightarrow i\epsilon im;$ a-sim-lo
 3.give ADP 3.give_to 2-give_to-pl
 ‘S/he gives (it) to (someone).’ ‘You (pl) give (it) to (someone).’

Also, diminutive *-a:p* can both precede and follow *-lo* (50b). Both *-im* and *-a:p* could be considered exceptions to the rule that elements of a grammatical word occur in a fixed order (Dixon and Aikhenvald 2002: 19), but one has to consider that *-im* is no longer productive, while *-a:p* is nowadays rare with verbs. An important criterion to identify grammatical words is cohesiveness, which implies that all elements of a given word must occur together.¹⁷

Chamacoco nominals involve some marginal cases of double marking of gender, number and form. In Zamucoan, inflectional affixes are attached to the singular predicative form, which, at least diachronically, coincides with the root (or stem). In Chamacoco some changes have occurred. Some predicative forms have disappeared, and some nominals have developed a singular predicative form suffix. For instance, ‘flute, whistle’ has the singular predicative form *obit-ak* (52a), where gender, number and form are overtly marked by the suffix *-ak*. The inflectional morphology underwent some re-organization, so that now the masculine singular argument form suffix *-it* and the masculine plural *-o/-e* are attached to the root, no longer coinciding with the singular predicative form (52a). However, in derivation, the diminutive suffix *-a:p* is still attached to the singular predicative form, so that *-a:p* is added to *obit-ak* and indicates singular predicative form (52b). Since the diminutive predicative form in *-a:p* coincides with the new stem, the inflectional suffixes *-it* (M.SG.AF) and *-o* (M.PL) attach to it (52b). In other words, in the diminutive, the singular predicative form is marked twice: by *-ak* (M.SG.PF) and by *-a:p* (DIM.M/F.SG.PF). Also the masculine gender is overtly marked by *-ak* before the derivational suffix, as well as *-it* and *-o* after *-a:b*.

- (52) a. obit-ak, obit-it, obit-o / obit-e
 flute-M.SG.PF flute-M.SG.AF flute-M.PL
 ‘Flute, whistle’
- b. obit-ak-a:p, obit-ak-a:b-it, obit-ak-a:b-o
 flute-M.SG.PF-DIM.M/F.SG.PF flute-M.SG.PF-DIM-M.SG.AF flute-M.SG.PF-DIM-M.PL
 ‘Small flute, whistle’

Another case of categories marked twice is the indeterminate form. The indeterminate form suffixes in the past were added to the singular predicative form, coinciding with the root, but now they can attach to the root or to the argument form. For instance, in ‘day’ (53a) *de:j-tɛ*,¹⁸ *-tik* is added to the singular argument form, so that both *-tɛ* (M.SG.AF) and *-tik* (M.SG.IF) mark the masculine singular. In the plural, *-ĩr* (M.PL.IF), is added to the root (yielding *de:j-ĩr*), or to the argument form (yielding *de:j-tɛ-ĩr*), so that the masculine is marked by both *-tɛ* (M.SG.AF) and *-ĩr* (M.PL.IF). In the indeterminate form, also the plural can be marked twice. In ‘husband’ (53b), *-ĩr* (M.PL.IF) is added to the masculine plural *abi-jo*, resulting in *abi-j-ĩr* (with deletion of /o/), or to the same plural *abi-jo* plus epenthetic /r/, yielding *abi-jo-r-ĩr*.

- (53) a. *de:j-tɛ* → *de:j-tɛ-tik*, *de:j-tijo*, *de:j-tɛ-ĩr*, *de:j-ĩr*
 day-M.SG.AF day-M.SG.AF-M.SG.IF day-M.PL.IF day-M.SG.AF-M.PL.IF day-M.PL.IF
 ‘Day’
- b. *abi-tɛ*, *abi-jo* → *abi-tik*, *ab-ĩrk*
 3.husband-M.SG.AF 3.husband-M.PL 3.husband-M.SG.IF 3.husband-M.SG.IF
 abi-tijo, *abi-j-ĩr*, *abi-jo-r-ĩr*
 3.husband-M.PL.IF 3.husband-M.PL-M.PL.IF 3.husband-M.PL-EPENT-M.PL.IF

‘Husband’

When a word class has one inflectional system, there should be just one inflectional affix per word (cf. Dixon and Aikhenvald 2002: 22), and indeed in Zamucoan nominals this is the general rule. Chamacoco presents however some exceptions owing to diachronic change. The indeterminate form is an example of this. Indeed, within the general weakening of nominal suffixation, the indeterminate form morphemes are gradually losing their status as suffix. This is possibly related to the fact that the indeterminate form has maintained its productivity and its semantic value even with non-adapted loanwords (Ciucci 2016: 596, ex. 102), so that in this respect the indeterminate form suffixes are more similar to clitics, because they can be attached after the argument form suffix. Another trace of weakening of the inflectional system is that indeterminate form allomorphs were once lexically determined, but are now in free alternation, as seen for instance in the alternation between *-ĩr* (M.PL.IF) and *-tijo* (M.PL.IF) in (53).

5 Grammatical vs. phonological word

Grammatical and phonological word mostly coincide, but there can also be mismatches. As already seen in examples (11-15), (22) and (42-49), the presence of clitics implies that the phonological word can consist of two or more grammatical words. Clitics and other phenomena of cliticization will be discussed in sections 6 and 7, respectively. This section will focus on other cases where grammatical words consist of more than one phonological word. This can occur in conjunctions. For instance, the polyfunctional subordinator *uxe* can combine with other function words in order to form compound subordinators, such as *ante uxe* ‘before’, *asta uxe* ‘until’, *depwe uxe* ‘after that’, *uxe eŋ* ‘when’ and *uxe eŋ japa*: ‘before’ (see Bertinetto and Ciucci 2012: 94-95). *Ante*, *asta* and *depwe* are Spanish borrowings, but

this also involves indigenous words, as in *uxe eŋ* ‘when’ and *uxe eŋ japa*: ‘before’. Often the juxtaposition of two phonological words is redundant, for instance, in *uxe eŋ* ‘when’, *eŋ* is itself a subordinator with identical uses and meanings to those of *uxe eŋ* ‘when’. Similarly, some pronouns, demonstratives and articles can be combined in order to form one grammatical unit consisting of two phonological words. For instance, the third person singular pronoun *ir/ire* can combine with the third person plural pronoun *ōr* giving rise to the third person plural pronoun *ir ōr*. *Wate* (F.SG) can work both as third person pronoun and as an article. In addition, it can combine with the demonstrative *asa* ‘that’ (F.SG) in order to form a compound demonstrative *wate asa* (F.SG) ‘that’. The demonstrative *nahu aŋuwo* (M.PL) ‘these’ consists of two equivalent words: *nahu* (M.PL) ‘these’ and *aŋuwo* (M.PL) ‘these’. Finally, the interrogative adverb *ina:po heke* ‘why’ consists of two phonological words *ina:po* ‘why, how’ and the discourse marker *heke* ‘therefore’.

Some complex predicates could be considered a single grammatical word consisting of two or more phonological words: (54a-b) consist of a support verb plus a noun inflected for possessor. The noun possessor agrees with the verb subject and it is expressed by a free pronoun for first and second person plural. Even though merely morphological criteria allow us to identify two grammatical words (or three, if the free pronoun is included), these nouns have disappeared from the language and are only used in these complex predicates. Since these nouns are semantically opaque, they have lost one element defining their wordhood, that is their specific meaning. By contrast, the complex predicate has its own meaning and its elements occur together in a fixed order. These are idioms, but one does not have to conclude that all idioms are grammatical words made up of multiple phonological words. Indeed, the ambiguity between one or more grammatical words, as in (54a-b), is not the general rule. In idioms, despite the different figurative meaning of the expression, the meaning of each phonological word is generally transparent, as in (55).

(54) a. ‘to spring up, to jump up’, cf. *ts-ehék* (3) ‘to divide’

1sg	t-ehék pota	1pi	j-ehék ejok ota	1pe	oj-ehék òrjok ota
2sg	ehék ota	2pl	ehék olak ota		
3	ts-ehék lota	3pl	o-ts-ehék lota	3.IRLS	d-ehék lota

b. ‘to marvel, to be amazed’, cf. *tɛ-iɛ* (3) ‘to meet, to reach’

1sg	t-iɛ pibe	1pi	j-iɛ ejok ibe	1pe	oj-iɛ òrjok ibe
2sg	a-s abe	2pl	a-s-lo olak ibe		
3	tɛ-iɛ labe	3pl	o-tɛ-iɛ labe	3.IRLS	d-iɛ labe

(55) xe owa owi-tɛ om?

INTER 2sg 2sg.place-M.SG.AF good.M.SG.PF

‘How are you?’ (lit. Is your place good?)

Chamacoco grammatical words consisting of two or more phonological words can be divided into two subgroups: in this section, I have addressed examples resulting from the combination of phonological words different from each other. In the next section, I will discuss full reduplication of phonological words.

5.1 Reduplication

In Chamacoco there are some instances of ‘non-cohering’ reduplication, which result in one grammatical word consisting of a number of phonological words identical to the number of iterations (Dixon 1977: 156; Aikhenvald, present volume). Inherent reduplication is found in ideophones (56). Ideophones in Chamacoco are used as head of an intransitive predicate, so

that this is a clear instance of a grammatical word consisting of more than one phonological word. The adverb *wisik wisik* ‘in a short while’ also involves full reduplication of the same phonological word, and possibly stems from an ideophone. Like ideophones, *wisik wisik* is another instance of inherent reduplication.

- (56) a. (e)tek tek ‘to fall to the ground’
 b. parak parak parak ‘to blink’

Number words and adjectives can be reduplicated in order to express the distribution of a quantity or a quality into equivalent sets (57). These reduplicated forms consist of two grammatical words, which together form another grammatical word but two distinct phonological words. As mentioned above, these are examples of non-cohering reduplication, similar to (57a) is in Yalaku (Ndu), where the reduplication of a number word also has distributive value: *nok* ‘one’ → *nók nók* ‘one by one’ (Aikhenvald, present volume).

- (57) a. *noṃir(aʔ)* (SG.PF) ‘one’ → *noṃir noṃir* ‘one by one’
 b. *osijer* (M) ‘two’ → *osijer osijer* ‘two by two’
 c. *kinah-o* (M.PL) ‘different’ → *kinah-o kinah-o* ‘different from each other’

Finally, (58) features traditional Chamacoco number words. Some reduplication also involved numbers words higher than two, which have now been replaced by Spanish loanwords and are only remembered by old people. They resulted in the combination of three possible elements: *toho* ‘one’, *arĩ* ‘two’ or *ɛarĩ* ‘two’. Each of these number words constitutes one phonological word, but not one of them forms a grammatical word on its own. They are added in order to form the corresponding number word, which is one grammatical word consisting of several

phonological words. The number word *toho* ‘one’ can only occur at the end of the series, *arĩ* ‘two’ is used at the beginning, while *ɛarĩ* ‘two’ is the medial element, which is reduplicated for numbers higher than ‘five’. Since these numbers are now fossilized, synchronically one can consider this inherent reduplication. Diachronically, however, this is not the case, and the reduplication properly involves *arĩ* ‘two’, since *ɛarĩ* ‘two’ is clearly derived by the former, with the addition of *ɛ*, which is possibly what remains of an old conjunction.

(58) *tsomĩra*? / *nomĩra*? ‘one’ (still in use)

osijer ‘two’ (still in use)

arĩ toho ‘three’

arĩ ɛarĩ ‘four’

arĩ ɛarĩ toho ‘five’

arĩ ɛarĩ ɛarĩ ‘six’

arĩ ɛarĩ ɛarĩ toho ‘seven’

arĩ ɛarĩ ɛarĩ ɛarĩ ‘eight’

arĩ ɛarĩ ɛarĩ ɛarĩ toho ‘nine’

In conclusion, full reduplication is responsible for a number of grammatical words consisting of more than one phonological word: this is found in ideophones, in the adverb *wĩsik wĩsik* ‘in a short while’ and in old number words. Reduplication can also be used to convey distributive meaning.

6 Regular clitics

As in many other languages, a frequent mismatch between grammatical and phonological word (§5) is represented by clitics. Chamacoco has two types of clitics, those which are

normally cliticized, which will be discussed in this section, and independent phonological words which can be cliticized (§7).

Chamacoco has no less than 17 regular clitics, which are listed in Table 5.

Phonological words containing clitics behave in the same way as those without clitics, and this makes the criteria of sections 2 and 3 useful to recognize clitics.

<Place Table 5 about here>

In Table 6, clitics are analyzed and compared with suffixes according to the parameters established in Aikhenvald (2002: 42-78).

<Place Table 6 about here>

All clitics are enclitics (A). Their selectivity is generally low (B): clitics can generally attach at least to verbs, nominals and pronouns, with other parts of speech not being necessarily excluded. Augmentative clitics are only documented with verbs and nominals, while the existential clitic is the only one with high selectivity, because it can only occur at the end of a noun phrase. By contrast, suffixes have high selectivity, and only occur with verbs or nominals (with few exceptions). In case the same suffix is found in both verbs and nouns, there are changes in the inflectional features associated with it (see §4, ex. 50). By contrast, clitics always have the same value with all types of host. Some clitics are floating (C): temporal clitics can virtually attach to all constituents of the clause, while *=tei(s)* and negative clitics can float, but they cannot precede the verb. The other clitics are fixed: e.g. *=ε* is noun-phrase final; *=pa²* and *=εip* are predicate final; *=je*, *=to* and *=po* ‘again’ occur on the host verb or noun phrase. Interrogative *=po* attaches to nominals in indeterminate form (like interrogative *=(i)hi*) or to question words. The polyfunctional preposition *=(i)hi* always attaches to the word preceding the NP which it marks. For instance, it can be hosted by the preceding VP (‘3-shout’ in 59) or NP (‘ball’ in 60). Since *=(i)hi* attaches to the preceding word, independently of the syntactic relation, it is an anticipatory clitic (Aikhenvald 2002: 46).

Anticipatory clitics are a rare feature, also found in Yalaku (Ndu) (Aikhenvald, present volume), in the Australian languages Kugu-Nganhcara and Ngiyambaa (Pama-Nyungan), and in two other languages of South America, Yagua (Peba-Yagua) and Chamicuro (Arawak) (see Aikhenvald, present volume, for further references). So far, Chamacoco is the only language where a preposition behaves as an anticipatory clitic. Something similar happens in Old Zamuco (61) and Ayoreo (62) where *ihi*, when used as preposition, can be cliticized on the immediately preceding word. Note however, that unlike *=(i)hi*, *ihi* is not always a clitic, but it can also be an independent phonological word, like the forms discussed in §7.¹⁹

- (59) *tĩmteat-ja* *t-ibite[=ihi* *boeet-t]*
 woman-F.SG.AF 3-shout=PREP boy-M.SG.AF
 ‘The woman shouts at the boy.’

- (60) *boeet-t* *t-ãr* *pĩlot[=ihi* *mintan-ta]*
 boy-M.SG.AF 3-throw ball=PREP window-F.SG.AF
 ‘The boy throws the ball into the window.’

- (61) Old Zamuco (Ignace Chomé 18th century; see Ciucci, forthcoming a)

gue-tie *t-agu* *yu='hi* *ducau-tie* *ique*
 rain-M.SG.AF 3-eat 1sg=ADP distance-M.SG.AF RETR
 ‘It rained along the way.’ (lit. The rain ate me at the distance.)

- (62) Ayoreo (Ciucci, fieldwork)

ore *te-o* *d-e(r)o=hi* *ju=gu*
 3pl 3-consider REFL-leader.F.SG.PF=ADP 1sg=EMPH

‘They chose me as their leader.’

Clitics do not form a phonological word by themselves (D), with some sporadic exceptions in the case of *=po* ‘again’ and *=to* (as turned into *to:*). I do not consider them independent phonological words (which will be dealt with in §7), because they mostly behave as regular clitics. Clitics can be stressed, or they can exert an influence on accent, as one can see in (63), where the retrospective clitic is added, or in (64), where *=(i)hi* plus another clitic are added.

(63) a. /ta'na/ + =ni, =ŋa → /tana'=ni/, /tan'=ni/, /tana'=ŋa/
 tana =ni, =ŋa tana=ni, tan=ni tana=ŋa
 3.dive RETR RETR 3.dive=RETR 3.dive=RETR 3.dive=RETR
 ‘S/he dives.’ ‘S/he dove.’ ‘S/he dove.’ ‘S/he dove.’

b. /'tã:tea/ + =ni, =ŋa → /tã:tea'=ni/, /tã:tea'=ŋa/
 t-ã:tea =ni, =ŋa t-ã:tea=ni t-ã:tea=ŋa
 3-come RETR RETR 3-come=RETR 3-come=RETR
 ‘S/he came.’ ‘S/he came.’ ‘S/he came.’

(64) a. /to'kole/ → /toko'l=ih=tei/
 tokole tokol=ih=tei
 3.come_out 3.come_out=PREP=there
 ‘S/he comes out of there.’

b. /'e:jte/ → /e:jti'k=ih=po/

e:-j-tɛ	e:-j-tik=ihɪ=po?
2sg-name-M.SG.AF	2sg-name-M.SG.IF=INTER=INTER
‘Your name.’	‘What’s your name?’

Clitics are on average longer than suffixes (E): most of them are monosyllabic, with the exception of =ɛ, which only consists of a consonant like several suffixes, while =(i)hi, =(i)ke and =kite are disyllabic. However, =(i)hi²⁰ and =(i)ke show initial /i/ only after consonant. In these very clitics there are comparative reasons to assign /i/ to the clitic: Old Zamuco displays the polyfunctional adposition *ihɪ* and the retrospective marker *ike* <ique>. By contrast, insertion of an epenthetic /i/ can be observed before =ɛ, =pe/=petik and =po. When there is a sequence of consonants within the phonological word, there can be regressive assimilation by the first consonant of the enclitic/suffix (see §2.4, ex. 15). There can be no pause before the clitic (G) (the only exceptions being =po ‘again’ and =to).

Clitics can combine with other types of clitics (H), but not with clitics of the same type (excluding those listed as ‘other adverbs’ in Table 5, which can combine with each other). Interrogative =po has partly the same uses as interrogative =(i)hi, but they can occur together as =ihɪ=po (64b). Existential =ɛ is only attested followed by temporal clitics and cannot combine with =pe, while further combinations are restricted by pragmatic reasons. The other clitics admit more combinations, which follow a fix order (I). However, since in my corpus I have documented sequences up to three clitics, it is difficult to establish detailed rules, because some sequences are theoretically possible (see Table 7) but not found in texts. Augmentative =pa² precedes =po ‘again’ (65a), and both are followed by the reciprocal (65b). The reciprocal is followed by =po and by temporal clitics (65c). The negative enclitic is generally the last element of the sequence (65d). The preposition =(i)hi precedes =tɛi(s)

‘there’, followed by *=po* (65e), or the reciprocal (65f). Finally *=to* ‘also’ precedes the retrospective clitic (65g).

(65) a. *miŋ-ik=pa=po*

bad-M.SG.PF=AUG=again

‘It is bad again.’

b. *its=ɕip=je*

3.be_like=AUG=RECIP

‘They are very similar to each other.’

c. *oj-itkẽr=je=po=ni*

1pi-talk=RECIP=again=RETR

‘We have talked again to each other.’

d. *je o-d-ic=je=po=pe*

NEG pl-3.IRLS-meet=RECIP=again=NEG

‘They do not meet each other again.’

e. *tokol=ihɪ=chɪs=po*

3.come_out=PREP=there=again

‘S/he came out from there again.’

f. *o-t-a:k=ihɪ=je ahɪr*

pl-3-eat=PREP=RECIP 3.with

‘They eat together.’ (lit. They eat with each other.)

g. *t-ã:te=to=ke*

3-arrive=also=RETR

‘S/he has also arrived.’

The clitics order is summed up in Table 7. The fact that two clitics occupy the same slot (e.g. augmentatives and preposition) does not imply that they cannot co-occur, but simply that such a sequence is rare and was not documented so far. The temporal and negative enclitics are very frequent, but never co-occur. This has possibly to do also with the fact that the language only has short sequences of clitics and most of them are both floating clitics, so that it is possible for speakers to avoid their co-occurrence on the same phonological word. At the same time, not all clitics in the same row have been attested together on the same word.

<Place Table 7 about here>

Clitics always follow inflectional and derivational suffixes. Derivational suffixes precede inflectional suffixes. However, derivational suffixes are often added to a suffixed singular predicative form (or a suppletive form), which means that in the same word derivational morphology can both follow and precede inflectional morphology, as in *obit-ak-a:b-it* ‘small flute, whistle’ (52b). There are usually up to three positions for clitics, while after derivational suffixes there is just one position available for inflection. However, the indeterminate form suffix can also occur after the singular argument form suffix, and this is evidence that the indeterminate form is losing its status of suffix.

Most clitics are grammatical words (κ), such as the existential clitic =ε, the reciprocal pronoun =je, the preposition =(i)hi, and the adverbs =po ‘again’, =to ‘also’ and =tei(s) ‘there’. Reciprocal =je inflects for gender (see Table 5), as is possible in pronouns, and this is definitely a feature of grammatical words. Interrogative clitics can be considered adverbs, as well as augmentative clitics. In addition, the latter perform the same function as augmentative *piεt* (§7, ex. 74-78), which can be cliticized and has its own inflection. Temporal clitics have remarkable freedom of movement within the clause, and should be considered adverbs, as noted by Bertinetto (2014b: 156) for Ayoreo. Negative clitics should not be considered grammatical words, because they form part of a multiple negation along with the negative

particle *je*, which occurs before the predicate. *=pe/=petik* can only be used if *je* is present, but not vice-versa.

Clitics have a variable scope: it can be the clause (existential, temporal, interrogative, and negative clitics), the predicate (reciprocal *=je*, *=teĩ(s)* ‘there’), the noun phrase (preposition *=(i)hi*) or the grammatical word (augmentative clitic, *=po* ‘again’ and *=to* ‘also’).

There are a few cases where clitics have been lexicalized (M). For instance, the preposition *=(i)hi* was added to *ieim* (3) ‘to give to’, yielding *ieimihi* (3). Here the second person plural suffix *-lo* follows *ihi* (66). As already noted, in Chamacoco, as well as in Zamucoan, the plural suffix usually stands between the root and the preposition turned into a derivational suffix. The lexicalization of the adposition is common in Ayoreo verbs (Ciucci and Bertinetto 2015: 75-76), much less frequent, although attested, in Chamacoco. Also *=po* ‘again’ can be lexicalized. It can be added to *t-ã:tea* (3) ‘to come, to arrive’ and changes the verb in an unpredictable way (67). Note that here *=po* still follows the second person plural suffix *-l(o)*, although it has lost its function as a clitic, so that here it should rather be considered a derivational suffix. The same reasoning applies to the verb *te:ε(i)* (3) ‘to come back’ (68), which has the same meaning as its derived form *te:εpo*. Here *=po* lexicalized losing its lexical meaning, and turning into a derivational suffix which follows *-lo*.

(66) <i>ieim</i>	+	<i>=ihi</i>	→	<i>ieimihi</i> ,	<i>a-simihi-lo</i>
3.give_to		PREP		3.give_as_a_present	2-give_as_a_present-pl
				‘S/he gives (it) as a present.’ ‘You (pl) give (it) as a present.’	

(67) <i>t-ã:tea</i>	+	<i>=po</i>	→	<i>t-ã:tepo</i> ,	<i>a:teĩ-l-po</i>
3-come		again		3-come	2.come-pl-STEM
				‘S/he comes back.’ ‘You (pl) come back.’	

(68) $t\epsilon\text{-}e:\epsilon$ / $t\epsilon\text{-}e:\epsilon i$ / $t\epsilon\text{-}e:\epsilon po$	\rightarrow	$e:\epsilon\text{-}lo$	/	$e:\epsilon\text{-}lo\text{-}po$
3-come_back		2.come_back-pl		2.come_back-pl-STEM
‘S/he comes back.’		‘You (pl) come back.’		‘You (pl) come back.’

Also some suffixes have been lexicalized. This has occurred with the diminutive suffix $-a:p$, mostly in nominals, or in verbs where no longer productive inflectional suffixes have been reinterpreted as part of the root (Ciucci and Bertinetto 2015).

Clitics have no specific syntactic rules (N). The majority of clitics belong to a specific word class (O). Existential $=\epsilon$ forms a class on its own. Temporal clitics belong to adverbs, as well as $=po$ ‘again’, $=to$ ‘also’, $=t\epsilon i(s)$ ‘there’, augmentative and interrogative clitics. $=(i)hi$ is a preposition. Reciprocal $=je$ is a pronoun. The differences between clitics and suffixes are summarized in Table 6.

7 Cliticization of morphemes

In Chamacoco there are some phonological and grammatical words which should not be considered clitics, but which can undergo a process of cliticization, that is, they can form one accentual unit along with an adjacent word. Evidence for this is provided, for instance, by the presence of long consonants at the boundaries of grammatical words, because long consonants only occur within the phonological word (the only exception being [s:] §2.1). Cliticized elements have the same phonological properties as regular clitics. In Zwicky’s (1977) terms they are ‘simple clitics’, while the regular clitics discussed in §6 are ‘bound words’.

The adjectives *liçi* (M.SG) and *late* (F.SG) ‘poor’ are used to express endearment or commiseration towards someone who died or to whom something bad happened. When

liɛi/late are cliticized to the preceding word ending in /t/, the latter undergoes assimilation by /l/, so that geminate /ll/ arises (69a-b). Also the drop of some segments at the boundaries of the grammatical word can produce /ll/ (69c) or /tt/ (69d). The sequence /tɛl/ is possible, but not particularly frequent in Chamacoco. In the cluster /tɛl/, a complex phonological process consisting in progressive and regressive assimilation gives rise to [ʎʎ] (70).

- (69) a. ijě-t liɛi → [ʔi'jěll=liɛi]
 3.friend-M.SG.AF poor.M.SG
 ‘His/her/their poor friend.’
- b. ilpijo-t liɛi → [ʔilpi,ɔl=liɛi]
 jaguar-M.SG.AF poor.M.SG
 ‘The poor jaguar.’
- c. kole lata → [kol'=lat]
 1sg.grandmother(F.SG) poor.F.SG
 ‘My poor grandmother.’
- d. eku-ta + lata + =to →
 2sg.grandmother-F.SG.AF poor.F.SG also
 eku-t=ta=to → [ʔe'kut=ta=to]
 2sg.grandmother-F.SG.AF=poor.F.SG=also
 ‘Also your poor grandmother.’
- (70) a. d-eki-te + liɛi → [dekiʎ'=liɛi]
 3-grandfather-M.SG.AF poor.M.SG
 ‘His/her/their poor grandfather.’
- b. d-ej-te + liɛi → [dejʎ'=liɛi]

3-father-M.SG.AF poor.M.SG

‘His/her/their poor father.’

c. d-eeib-ite + liei → [deɛibʌ'ɛliei]

3-brother-M.SG.AF poor.M.SG

‘His/her poor brother.’

d. poho-te + liei → [po, hɔʌ'ɛliei]

dog-M.SG.AF poor.M.SG

‘The poor dog.’

The domain of nasalization is the phonological word, and this also applies when *liei/late* are cliticized, since /l/ undergoes nasal harmony, turning into /n/. This shows that nasal harmony also affects clitics.

(71) a. asipsĩr-te + liei → [ʔasip'sĩr=n̄iei]

3.opponent-M.SG.AF poor.M.SG

‘His/her/their poor opponent (in combat).’

b. jama + liei → [jãm=n̄iei]

1sg.uncle(M.SG) poor.M.SG

‘My poor uncle.’

c. n-erm-ite + liei → [nẽrm=n̄iei]

3-uncle-M.SG.AF poor.M.SG

‘His/her/their poor uncle.’

d. p-itermi-tea + late → [pi'tẽ.mĩ=n̄ate]

1sg-aunt-F.SG.AF poor.F.SG

‘My poor aunt.’

- e. p-*inim-itea* + late → [pĩṅĩmĩ='nāte]
 1sg-sister-F.SG.AF poor.F.SG
 ‘My poor sister.’

The conjunction *ite* ‘and’ and the negative particle *je* (NEG) can be procliticized. In (72), the initial consonant of *tukum* assimilates adjacent /t/, yielding /tt/. When *je* (NEG) cliticizes, it can trigger gemination of the initial consonant /t/, as in (73), where [t:] is not the result of two contiguous consonants or of assimilation.

- (72) *ite tuk-um* → [ʔit=tu'kũm]
 and 1sg-see
 ‘And I see.’

- (73) a. *je tak-a_{em}=pe* → [je=t:aya'eĩm=pe]
 NEG 1sg-help=NEG
 ‘I do not help.’
 b. *je tik-iraha* → [je=t:igi'raha]
 NEG 1sg-know
 ‘I do not know.’

Another element which can be cliticized is augmentative *piet*. From a morphological point of view, it should be considered an adjective, since it has the corresponding inflection (74). When it is a phonological word, it agrees in gender and number with the noun or adjective it modifies (75). When it is cliticized, it is the only carrier of the inflectional categories (gender, number and form) (76).

(74) *piɛ-t*, *piɛ*, *piɛ-o* → *piɛ-ta*, *piɛ-iʔ*, *piɛ-i / piɛ-e*
 AUG-M.SG.AF AUG.M.SG.PF AUG-M.PL AUG-F.SG.AF AUG-F.SG.PF AUG-F.PL

(75) *tsɛhe d-iraha* *ejok* *awos-o* *piɛ-o*
 VOL 3.IRLS-know 1pi word-M.PL AUG-M.PL

‘He wants to know our real language.’ (Ciucci 2016: 586, ex. 94a)

(76) *tok-owa* *wa:* *ɲekur=piɛ-ta*
 1sg-show ART.F.SG caraguata_plant=AUG-F.SG.AF

‘I will show you the real caraguata.’ (Ciucci 2016: 586, ex. 94b)²¹

The root of *piɛt*, coinciding with the masculine singular predicative form, is also used with verbs. In such a case, it can be a phonological word (77) or a clitic (78).

(77) *komisarjo* *t-ejɛim* *piɛ-i* *mintana*
 commissary 3-look AUG-PRPL window
 ‘The commissary looked carefully at the window.’

(78) *ieɪɪ-ɪa* *ts-amũr=piɛ* *boteani*
 Chamacoco-F.SG.AF 3-love=AUG Boggiani
 ‘The Chamacoco woman loved Boggiani very much.’ (Ciucci 2016: 587, ex. 94c)

Note that in nominals *piɛ* is the singular masculine predicative form, like the diminutive suffix *-a.p*, while in verbs it is an uninflected form, similar to clitics such as *=ɛip* or *=paʔ*, which can

associate to both nouns and verbs.

8 Conclusions

In this chapter, I have examined wordhood in Chamacoco. Chamacoco culture (§1.1) knows the concept of ‘word’, as shown by the lexeme *aʷoet*, which refers to a phonological word. I have discussed some criteria to identify a phonological word in Chamacoco. There are segmental features and phonological rules (summarized in Table 3), whose distribution is determined by their position in the phonological word. This allows us to identify, directly or indirectly, the boundaries of the phonological word (§2).

The prosodic features which allow the identification of the phonological word are stress, vowel harmony and nasal harmony (§3). They are particularly useful in order to recognize clitics and cliticization of morphemes, since all properties so far observed in the Chamacoco phonological word also apply to clitics. Sequences of identical consonants are also a useful feature to identify clitics, because such cases of gemination occur frequently (although not exclusively) when clitics are added (§2.4 and 7). The differences between regular clitics and suffixes have been illustrated in Table 6. Chamacoco has an anticipatory clitic, the polyfunctional preposition *=(i)hi* (§6). Anticipatory clitics are unusual, but, more interestingly, this is so far the only known case where a preposition behaves as an anticipatory clitic.

The analysis of the grammatical word highlighted a number of grammatical words consisting of two or more phonological words (§5): this can be due to reduplication for ideophones and distributive expressions. Some reduplication was also involved in the traditional number system. Chamacoco also shows compound subordinators, pronouns and demonstratives consisting of more than one phonological word: this strategy often has a functional motivation, because it fills a gap in the language, but it results sometimes in

grammatical words consisting of more phonological words, semantically identical to one component of the sequence. The choice between two semantically equivalent grammatical words consisting of a different number of phonological words has possibly to do with stylistic or pragmatic reasons, which are an interesting topic for further investigation.

Finally, Chamacoco nominals have an inflectional system in which no more than one inflectional affix per word would be expected, and this is an efficient criterion to define a grammatical word in this language (Dixon and Aikhenvald 2002: 22-23). However, Chamacoco nouns display examples of double marking (§4). Comparison with the other Zamucoan languages (Ciucci 2016) suggests that this is due to the diachronic change that occurred in Chamacoco nominal suffixation. The evolution of nominal suffixation in Zamucoan will be the object of future work.

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	Predicative form	Argument form	Indeterminate form
Masculine singular	$-\emptyset, -k, -(j)ak$	$-(i)t, -(i)t\epsilon$	$-tik, -\tilde{i}rk$
Feminine singular	$-\emptyset, -a^?, -e^?, -o^?, -i^?$	$-(i)ta, -(i)t\epsilon a$	$-t\tilde{a}(k), -r\tilde{a}(k)$
Masculine plural	$-(j/w)o, -(j)e, -tso, -t\epsilon o, -lo, -no$		$-tijo, -\tilde{i}r$
Feminine plural	$-(j/w)e$		$-\tilde{i}r$

Table 1. Nominal suffixation in Chamacoco

	labial	dental	retroflex	alveolo-palatal	palatal	velar	glottal
voiceless stop	p	t				k	
voiced stop	b	d					
affricate		ts		tɕ			
fricative		s	(ʒ)	ɕ		x	h
nasal	m	n					
voiceless nasal	ɱ	ɳ					
approximant	w	ɹ			j		
voiceless approximant	ɰ	ɻ			ç		
lateral approximant		l ɭ					

Table 2. Chamacoco consonantal phonemes

	Features	Word-initial	Word-medial	Word-final	Discussed in
(i)	Unreleased voiceless stops	-	-	+	§2.1
	/k/ realized as [g] or [ɣ]	-	+	-	§2.1
	/p/ realized as [p:]	-	+	-	§2.1
	/s/ realized as [s:]	-	-	+	§2.1
	/ts/ realized as [dz] or [z]	-	+	-	§2.1
	/tɕ/ realized as [tʰ] or [ɕ]	-	-	+	§2.1
	/rtɕ/ realized as [ɽ]	-	+	-	§2.1
(ii)	/b/, /d/, /h/, /j/, /m/, /ts/, /w/	+	+	-	§2.2
	/l/, /r/, /ɾ/, /z/	-	+	+	§2.2
	Laryngealization of vowels and voiced approximants (excluding laterals)	-	-	+	§2.2
	/jt/, /jtɕ/, /lt/, /nt/, /nt/, /st/, /ɕt/	-	+	+	§2.3
	/kp/, /pk/, /sp/, /ɕp/, /sd/, /sn/, /ɕn/, /tɕt/	-	+	-	§2.3
	/ll/, /nn/, /pp/, /tt/, /tɕt/	-	+	-	§2.4
(iii)	Free alternation between /d/ and /l/	+	-	-	§2.1
	Free alternation of /i/ and /e/	-	-	+	§2.5
	Free alternation between /aha/ and /ehe/	-	-	+	§2.5
	Neutralization of /p/ and /b/	-	-	+	§2.5
(iv)	Prosthetic [ʔ] before vowel	+	-	-	§1.2
	Dropping of final consonants and final unstressed vowels	-	-	+	§2.2
	Addition of word-final /e/ or /i/ (proparalepsis) after consonant	-	-	+	§2.6
	Fortition of /r/	-	+	-	§2.2

Table 3. Segmental feature and phonological rules of Chamacoco phonological words

Verb structure	<ol style="list-style-type: none"> 1. pluralizer prefix 2. personal prefix 3. thematic vowel 4. root 5. pluralizer suffix 6. derivational suffix (some derivational suffixes can precede position 5) 7. clitics
Nominal structure	<ol style="list-style-type: none"> 1. personal prefix 2. thematic vowel 3. root 4. derivational suffix (when it is added, it can be preceded by a singular predicative form suffix, if the predicative form does not coincide with the root) 5. inflectional suffix (=gender, number and form) 6. enclitics

Table 4. The structure of verbs and nominals in Chamacoco

Augmentative	= <i>pa</i> 'very, really' = <i>ɛip</i> 'very, really'
Existential	= <i>ɛ</i>
Interrogative	=(<i>i</i>) <i>hi</i> , = <i>po</i>
Negative enclitics	= <i>pe</i> (standard negation for realis contexts) = <i>petik</i> 'emphatic negation'
Preposition	=(<i>i</i>) <i>hi</i> (polyfunctional preposition)
Pronouns	= <i>je</i> (M) / = <i>jěr</i> (F) 'reciprocal'
Temporal (retrospective)	=(<i>i</i>) <i>ke</i> (event time close to reference time) < = <i>na</i> < = <i>ni</i> < = <i>kite</i> (event time very distant from reference time)
Other adverbs	= <i>po</i> 'again', = <i>to</i> 'also', = <i>ɛi(s)</i> 'there'

Table 5. Chamacoco clitics.

Properties	Clitics	Suffixes
(A) DIRECTION	enclitic	n.a.
(B) SELECTIVITY	low	high
(C) TYPE OF HOST	floating (temporal, negative clitics and = <i>ti(s)</i>) or fixed	fixed: verbs, nominals, free pronouns (only <i>-lo</i>)
(D) PHONOLOGICAL WORD	no (a few exceptions)	no
(E) SEGMENTAL PROPERTIES	mostly monosyllabic	mostly monosyllabic or consisting of a single segment
(F) PHONOLOGICAL COHESION	possible epenthetic vowel and assimilation of preceding consonant	possible epenthetic vowel and assimilation of preceding consonant
(G) PAUSES	no (a few exceptions)	no
(H) COMBINATION WITH OTHER CLITICS	yes	n.a.
(I) RELATIVE ORDER IN CLITIC STRINGS	fixed position	n.a.
(J) POSITION WITH RESPECT TO WHAT	clitics follow suffixes	inflectional suffixes follow derivational suffixes (exceptions)
(K) GRAMMATICAL WORD	most clitics are grammatical words	no
(L) SYNTACTIC SCOPE	different scope, ranging from the grammatical word to the clause	grammatical word
(M) LEXICALIZATION	possible with some clitics	some cases documented
(N) CLITIC-SPECIFIC SYNTACTIC RULES	no	n.a.
(O) CORRELATION WITH MORPHOLOGICAL CLASSES	most of them belong to a word class	n.a.

Table 6. Properties of Chamacoco clitics compared with suffixes.

augmentative	reciprocal	= <i>po</i> 'also'	temporal
=(<i>i</i>) <i>hi</i> (preposition)			negative enclitic
	= <i>tei</i> (<i>s</i>)		
	= <i>to</i>		

Table 7. Order of clitics in Chamacoco

¹ I would like to express my gratitude to Alexandra Y. Aikhenvald, Pier Marco Bertinetto, R. M. W. Dixon, Brigitta Flick, Emanuele Saiu and Nathan White.

² The reader interested in Zamucoan can consult Ciucci (2016), which covers the whole family. Bertinetto (2014a) is a grammatical sketch of Ayoreo, while Ciucci (2018) offers updated references on Old Zamuco.

³ Data in this chapter will be provided in phonemic transcription with a few adaptations: I will represent /ɪ/ and /i/ as /r/ and /r̥/, respectively. I will indicate /z/ despite its problematic phonemic status (see §2.1). For reasons of clarity, I will also indicate the sequence [ɬ], even though phonologically it is /rɬ/ (§2.1). I will only indicate the accent when the transcription is between slant brackets, and final laryngealization when it distinguishes a minimal pair (§2.2).

⁴ In previous publications a different terminology was used: the predicative was called ‘base form’ and the argument form ‘full form’.

⁵ Hmong (White, present volume) also has voiceless nasals and a voiceless lateral in its phonemic inventory.

⁶ In Chamacoco orthography, the word-final consonant lengthening of /s/ is generally not transcribed. However, Bruno Barras, an indigenous author, often uses <ss> to represent [s:]. For instance, the adjective ‘black’ is transcribed both as <wys> and <wyss> (Barras 2017: 35).

⁷ Boggiani (1894: 101-122) provides many examples of Chamacoco forms with gemination of word-internal /p/.

⁸ Ciucci & Bertinetto (2015: 32, 61) show that the same process also occurs in Ayoreo.

⁹ Leaving apart [s:], which is an allophone of /s/ (see §2.1).

¹⁰ The gemination in *bollo* was already noted by Boggiani (1894: 119).

¹¹ In the example, *pikiñin* ‘child’ is a loan from Spanish *pequeño* ‘little’.

¹² In Proto-Zamucoan, affixes are added to the singular predicative form, so that one could also describe this as (i) voicing of word-medial /p/. If one considers word-final neutralization of /b/ and /p/, the actual process is the opposite: that is (ii) devoicing of /b/ word-finally. The situation however is made more complex by the fact that in Chamacoco morphology final /p/ is always voiced when suffixes are attached (with a few exceptions limited to the sequence /pt/). Since /p/ can occur in all contexts, and there is no reason to surmise that roots can only end in /b/, one can surmise that historically there has been first (ii) devoicing of word-final /b/ into /p/ and then (i) systematic voicing of /p/ word-internally. These processes have blurred the difference between roots originally ending in /p/ and in /b/.

¹³ In this respect Chamacoco is similar to Japanese, where accent is distinctive, but this only emerges in a few minimal pairs (Jarkey, present volume).

¹⁴ Here the Spanish article *la* underwent reanalysis and became part of the word: *la mesa* > **lamesa*; /l/ underwent nasalization, while the first vowel /a/ assimilated to following /e/, so that this is also an example of vowel harmony (cf. §3.3) in a phonologically adapted loanword.

¹⁵ The ‘generic form’ (GF) marks unspecified possessor in possessable nouns.

¹⁶ For the full inflection and uses of this number word, see Ciucci (2016: 673-679).

¹⁷ In the example below, the suffix *-lo*, marking the greater plural of the inclusive person, is not attached to the verb, but to the following determiner.

(i) ejok-lo j-osim wite-lo ese bocee-t erze hut-e
 1pi-gpl 1pi-give ART.M.SG-gpl that.M.SG child-M.SG.AF these.F.PL book-F.PL

‘We (all) give those books to that child.’ (Ciucci 2016: 136)

Note that (i) is rare, being one of the very few examples documented so far. The suffix *-lo* can show the same exceptional behaviour also when it marks the second person plural.

¹⁸ Note that ‘day’ has lost its predicative form. I have chosen a simple case which presents no ambiguity, but the situation can be actually much more complex: see Ciucci (2016: 588-606) for a detailed discussion of the data available.

¹⁹ Example (61), reported in the original orthography, comes from the dictionary by the Jesuit Father Ignace Chomé. He uses sometimes the apostrophe to indicate that two different grammatical words form a phonological word. I use IPA symbols for the Ayoreo example (62).

²⁰ There are reasons to surmise that interrogative $=(\dot{i})hi$ derives from the homophonous preposition, so that, unless told otherwise, while mentioning $=(\dot{i})hi$, I will refer to both.

²¹ This plant, *nekur-ta* (F.SG.AF), is a plant of the Bromeliaceae (Sušnik 1970: 23) similar to *osdi*, mentioned in §2.3, ex. (8e), with which is often confused.