A diachronic view of the Zamucoan verb inflection
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This paper presents a comparative analysis of the verb system of the three known Zamucoan languages, namely: Old Zamuco, described by the Jesuit father Ignace Chomé in the first half of the 18th century, plus Ayoreo and Chamacoco, still actively spoken in the Chaco area between Bolivia and Paraguay. The analysis has confirmed the internal consistency of this language family, allowing us to build a plausible reconstruction of the Proto-Zamucoan verb system. The analysis has unsurprisingly pointed out Old Zamuco as the most conservative language among the three; Chamacoco, by contrast, appears to be the most innovative. This notwithstanding, Chamacoco also has conservative features that turn out to be particularly relevant for the purpose of linguistic reconstruction.[1]

1. Introduction

The present paper aims at proposing a plausible reconstruction of the verbal structure of Proto-Zamucoan, based on a comparative description of the exstant Zamucoan languages (Ayoreo and Chamacoco), significantly enriched with substantive data concerning a Zamucoan variety described in the early 18th century (Old Zamuco).

The Zamucoan family consists nowadays of two living languages spoken in Northern Chaco: Ayoreo and Chamacoco. The term *Ayoreo* is the hispanicized version of *ajore* (FS), *ajorej* (MS) '(real) person', as opposed to the outsiders, just like the Chamacoco endonym *i̵ɕir(o)* (MP), *i̵ɕirt̵ɕ* (MS), *i̵ɕi̵ɻɻa* (FS).

The Ayoreo (about 4500 people according to Fabre 2007) traditionally lived a nomadic life in the Northern Chaco area, more precisely in today's Santa Cruz Department of Bolivia and in the Alto Paraguay and Boquerón Department of Paraguay. Although some uncontacted Ayoreo groups still live their traditional nomadic life in the Paraguayan Chaco, most of them now live in rural settlements, with the exception of the community based in Santa Cruz de la Sierra (Bolivia).

The Chamacoco (approximately 2000 people according to DGEEC 2014) mainly live in the Alto Paraguay Department (Paraguay) on the west bank of the Paraguay River, but some live in the suburbs of Asunción and in Brazil (Fabre 2007). The language is divided into two dialects: Ebitoso (or Ɬbi̵toso) and Tomaraho. The data reported in this work refer to the Ebitoso dialect, spoken by the vast majority of the Chamacoco.[2]

The first stable contact with the Zamucoan people was established by Jesuit missionaries. In 1724 they founded the reduction of *San Ignacio de Samucos*, abruptly abandoned in 1745, whose exact location is unknown. During this period, the supposedly dominant dialect spoken by the Zamucoan people present at the mission (here called Old Zamuco) was described by the Jesuit

[1] This paper is largely based on the comparative analysis of Ciucci (2013a). The authors have discussed all details and share responsibility for any claim made. Here is a list of the abbreviations used: AY = Ayoreo; BF = base-form; CH = Chamacoco; DIM = diminutive; ELAT = elative; EXIST = existential; F = feminine; FS = feminine singular; GP = greater plural; IRLS = irrealis; M = masculine; MP = masculine plural; MS = masculine singular; OZ = Old Zamuco; P = plural; PE = plural exclusive; PI = plural inclusive; RLS = realis; S = singular.

[2] The Tomaraho dialect is currently under investigation by Tracey Carro Noya, according to whom the two dialects do not show relevant differences in verb morphology (with one exception to be discussed in Section 4.1.1).

father Ignace Chomé, author of a remarkable *Arte de la lengua zamuca* (Chomé 1958 [*ante* 1745]). Old Zamuco is lexically very close to Ayoreo, although it should not be considered a direct ancestor of the latter but rather a related extinct dialect. The Chamacoco began to establish peaceful relationships with the Hispano-American culture at the turn of the nineteenth century, whereas the Ayoreo did not begin to surrender until the end of the 1940s, so that their level of integration in Bolivian and Paraguayan society remains altogether low.[3]

This study is part of a documentation project started in 2007, which aims at producing a fully-fledged grammar of Ayoreo, Chamacoco and Old Zamuco. The inflectional morphology of the Zamucoan languages has been discussed in detail by Ciucci (2013a). In this paper we focus on verb inflection, with the aim of reconstructing the Proto-Zamucoan verb system. Two companion papers will be devoted to nominal inflection: one for possessive prefixation (Ciucci and Bertinetto, submitted), and one for number and gender suffixation.

In the remainder of this paper, the three Zamucoan languages will be mentioned in abbreviated form: **AY** = Ayoreo, **CH** = Chamacoco, **OZ** = Old Zamuco (see fn. 1 for the full abbreviations list). The OZ, AY and CH examples will be provided in phonemic transcription (with no delimiting slashes) for the ease of the reader. The transcription of OZ words is based on Chomé's orthography.[4] For a discussion of the Zamucoan phonology, see Bertinetto (2009) and Ciucci (2013a).

The structure of the paper is as follows: the rest of Section 1 addresses the structure of the Zamucoan verb paradigms. The following sections describe the verb morphology of OZ (Section 2), AY (Section 3) and CH (Section 4). Section 5 compares the verb morphology of the three Zamucoan languages, while Section 6 proposes a reconstruction of the verb system of Proto-Zamucoan. Finally, Section 7 discusses how some CH innovations came about, and Section 8 concludes.

1.1. The genetic relationship between the Zamucoan languages as illustrated by the verb system

Although AY and CH share no more than 30% of their lexicon — according to the comparison between the respective Swadesh 200-word lists — they show noteworthy morphological similarities confirming that OZ, AY and CH stem from a common ancestor: Proto-Zamucoan (Bertinetto 2011a; Ciucci 2013a). The Zamucoan languages show traces of contact with the surrounding languages (Ciucci 2014),[5] but no other genetically related language has so far been identified. Significantly, the Zamucoan languages are fusional languages surrounded by highly agglutinating ones. Biological studies confirm the common origin of the Zamucoan populations, as well as their genetic distance from all other Native American populations analysed (Demarchi and García Ministro 2008; Rickards *et al.* 1994).[6]

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3 For a detailed account of the history of the Zamucoan people, see Combès (2009).

4 The correspondence between Chomé's orthographic conventions and their phonetic interpretation is in most cases straightforward, based on our knowledge of AY and CH. Since he was inspired by the Spanish orthographic conventions, <qu> and <gu> before front vowels stand, respectively, for /k/ and /g/, while <c> before front-vowels and <z> (alongside <s>) stand for /s/. As for glides, <i> and <u> (or <ü>) after a vowel can stand for /j/ and /w/, while <gu> before a non-front vowel or <gü> before a front vowel stand for /w/. In addition, <ch> stands for /ʧ/, <ñ> for /ɲ/ and <h>, unsurprisingly, for /h/, while vowel nasality is indicated by < ˜ >. In conclusion, since the only possible ambiguities occur when <gu>, <gü>, <i>, <u> or <ü> are used to represent a semivowel, Chomé's orthographic transcription will only be reported in these cases.

5 For instance, Ayoreo and Chamacoco exhibit para-hypotactical structures, which seem to be an areal feature of the Chaco region (Bertinetto and Ciucci 2012). In the course of this paper we shall mention other contact-induced lexical or morphological similarities with other Chaco languages (see Ciucci 2014 for discussion). Comrie *et al.* (2010) pointed out Chaco as a linguistic area, although Campbell and Grondona (2012) expressed reservations.

6 Needless to say, we do not assume that genetic alterity should be understood as equivalent to linguistic alterity. As an

To illustrate the genetic relationship among the Zamucoan family, consider a representative verb paradigm found in all Zamucoan languages (the morphological segmentation will be explained in Section 1.2). Apart from various similarities to be discussed in what follows, one can note that OZ distinguishes between realis and irrealis in the whole paradigm, while AY and CH show complementary distribution of the person paradigm in the irrealis mood (1S/P and 2S/P in AY, 3 in CH). This does not mean that AY and CH stem from OZ, but rather that this language has supposedly preserved the fully-fledged realis vs irrealis distinction which characterized Proto-Zamucoan and which has only partially been preserved in the currently spoken Zamucoan languages. This proves that morphological comparison among the Zamucoan languages allows for interesting diachronic inferences. On the other hand, lexical comparison (not discussed here) indicates that the split of CH from OZ and AY must have occurred long ago (Holman *et al*. 2011; Müller *et al*. 2013).

Table 1. Regular verb paradigms in the Zamucoan languages

	OZ 'to love'		AY 'to want, to prefer'		CH 'to want, to love'	
Person	*Realis*	*Irrealis*	*Realis*	*Irrealis*	*Realis*	*Irrealis*
1S	a-i-mesẽre	tɕ-i-mesẽre	Ø-i-mesẽre	ɲ-i-mesẽre	t-a-m̥ur	–
2S	d-a-mesẽre	Ø-a-mesẽre	m-a-mesẽre	Ø-a-mesẽre	Ø-a-m̥ur	–
3	tɕ-i-mesẽre	d-i-mesẽre	tɕ-i-mesẽre	–	ts-a-m̥ur	n-a-m̥ur
1P	a-i-mesẽ-ko	tɕ-i-mesẽ-ko	Ø-i-mesẽ-ko	ɲ-i-mesẽ-ko	j-a-m̥ur (1PI) j-a-m̥ur-lo (1PI.GP) o-j-am̥ur (1PE)	–
2P	d-a-mesẽ-ɲo	Ø-a-mesẽ-ɲo	m-a-mesẽ-tɕo	Ø-a-mesẽ-tɕo	Ø-a-m̥ur-lo	–
3P	ore tɕ-i-mesẽre	ore d-i-mesẽre	ore tɕ-i-mesẽre	–	o-ts-a-m̥ur	o-n-a-m̥ur

The data used for this study come from Barrios *et. al*. (1995) and Higham *et. al*. (2000) for AY, Ulrich and Ulrich (2000) for CH, and Chomé (1958) for OZ. All AY and CH paradigms have been checked and new data have been added during fieldwork (see Ciucci 2011, 2013c) carried out by Pier Marco Bertinetto in 2008, 2009 and 2011 for AY, and by Luca Ciucci in 2009 and 2014 for AY, and in 2009, 2011 and 2014 for CH. Zamucoan languages exhibit various exceptions concerning verb morphology — beyond the ones discussed here — that are not relevant to the present purpose. They are discussed in detail in Ciucci (2013a).

One can also consult Kelm (1964), who proposes a grammatical and lexical comparison between AY and OZ. Morarie (1980) is an AY pedagogical grammar containing basic information. Sušnik (1957, 1963, 1972) and Sequera (2009) are of limited usefulness. Ciucci (2007/08) and Ciucci (2009) are the first scientifically-oriented attempts at describing the verb inflection of AY and CH. Bertinetto (2009) is a grammatical sketch of AY. Bertinetto (2011a) is the first diachronic proposal on the Zamucoan verb morphology. Fabre (2007) provides an updated linguistic and anthropological bibliography on the Zamucoan family. For a discussion of the linguistic works on these languages, see Ciucci (2013a, 2013b).

1.2. Verb structure

The general structure of verb inflection in the Zamucoan languages is shown in (1) (see also Table 1):

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anonymous referee suggested, it is perfectly plausible for people with human genetic differences to speak related languages and *vice versa*. However, considering the typological diversity of the Zamucoan languages with respect to the surrounding ones, the two factors seem to nicely converge.

(1) PREFIX + THEMATIC VOWEL + ROOT + (SUFFIX)

THEME

With the exception of the root, not all elements occur in each form, while, depending on the language, other components can be added. The root may be preceded by a thematic vowel, which (disregarding quantity and nasality) can be any one of the 5 (OZ and AY) or 6 (CH) vowels composing the vowel inventory: /i e a o u/, plus /ɨ/ in CH. Root plus thematic vowel form the theme. In 2S/P the thematic vowel slot may be filled by a vowel originally belonging to the prefix, replacing the thematic vowel as a result of diachronic change. In this paper we shall use the term 'inflectional vowel' (or, more specifically, 1S-vowel, 2S-vowel, 3-vowel and so on) for any vowel occupying the thematic structural slot, unless we want to specifically refer to the thematic vowel proper. We shall use the locution 'vocalic pattern' to refer to the behavior of the inflectional vowel in the whole paradigm of a given verb. Whenever a verb is cited, the prefix, the inflectional/thematic vowel and the root are indicated in the segmentation, possibly using a Ø symbol to mark the absence of either prefix or thematic vowel. Singular persons are distinguished by their prefix, while plural persons may exhibit a suffix. However, suffixes will only be indicated when necessary for reasons of clarity.

All Zamucoan languages are tenseless (Bertinetto 2014). Temporal reference may be expressed by temporal adverbs or by context redundancy. On the other hand, these languages are mood-prominent (Bertinetto 2009: 50; Ciucci 2012), since they all have a realis vs irrealis distinction over and above its defective expression in AY and CH. The irrealis is used when the event is regarded as potential, hypothetical or negated; for further details, see Bertinetto (2009) and Ciucci (2013a).

From a taxonomic point of view, the third realis plays a central role. This person may have subregularities or irregularities, so that it would often be hard to predict its shape from the rest of the inflectional paradigm. For this reason, the third realis will be used as citation form. Verbs will be divided into three groups depending on the shape of the third realis, which — in order of decreasing overtness — can be formed by:

(a) The prefix and the theme (e.g. CH *ʦɛ-e-ɕer* 'to fish'): PREFIXAL verbs.
(b) The theme (e.g. CH *Ø-i-jem* 'to wait for'): THEMATIC verbs.
(c) The pure root (e.g. CH *Ø-Ø-kaŋ̣ɨr* 'to appreciate'): RADICAL verbs.

By '3.RLS' and '3.IRLS' we shall indicate the third realis and irrealis. When mood distinction is not relevant — as in AY, where the realis vs irrealis distinction has been lost in the third person — we shall speak of '3-person' or simply '3'. As a consequence, when comparing AY with OZ and CH we shall use designations such as 3.(RLS) or 3.(IRLS).

2. Old Zamuco verb inflection

The verb paradigms provided by Chomé are scanty and mostly incomplete, although his grammar offers important information for a better understanding of the verb morphology of the whole Zamucoan family. Indeed, the OZ data are extracted, with very few exceptions, from the examples cited by Chomé, rather than directly and systematically reported by him. As a matter of fact, despite the remarkable quality of Chomé's work, his views were based on the Latin grammars

of his time and thus need thorough reinterpretation. The data presented in this section come from the painstaking data-mining performed by Ciucci (2013a).

The OZ verb classes are summed up in Table 2. We shall first analyse the common features (Section 2.1) and then focus on those depending on the individual classes: *tɕ*-verbs (Section 2.2), *t*-verbs (Section 2.3), thematic verbs (Section 2.4), radical verbs (Section 2.5) and verbs of dubious classification (Section 2.6). The last section (2.7) will address verb suffixation.

Table 2. Verb classes in Old Zamuco

PREFIXAL VERBS		NON-PREFIXAL VERBS	
FIRST CLASS	SECOND CLASS	THIRD CLASS	FOURTH CLASS
tɕ-verbs	*t*-verbs	Thematic verbs	Radical verbs

2.1. Personal inflection

The verb morphology of OZ is illustrated in Table 3. In this section, we only consider the most general morphological features, to be found in all verbs. The realis vs irrealis opposition is manifested in the whole paradigm. Example (2a) reports the realis and (2b) the irrealis paradigm of a representative verb:

Table 3. Old Zamuco verb inflection

Realis	*Irrealis*
a-+V+ROOT (1S)	tɕ-/j-+V+ROOT (1S)
d-+V+ROOT (2S)	Ø+V+ROOT (2S)
tɕ-/t-/Ø+(V)+ROOT (3)	d-/n-/Ø+(V)+ROOT (3)
a-+V+ROOT+SUFF (1P)	tɕ-/j-+V+ROOT+SUFF (1P)
d-+V+ROOT+SUFF (2P)	Ø+V+ROOT+SUFF (2P)

(2) a. RLS: a-i-mesẽre (1S), d-a-mesẽre (2S), tɕ-i-mesẽre (3), a-i-mesẽ-ko (1P), d-a-mesẽ-ɲo (2P) ‘to love’
b. IRLS: tɕ-i-mesẽre (1S), Ø-a-mesẽre (2S), d-i-mesẽre (3), tɕ-i-mesẽ-ko (1P), Ø-a-mesẽ-ɲo (2P) ‘to love’

The personal prefixes are *a-* for the 1.RLS and *d-* for the 2.RLS. The 2.IRLS has no prefix. The 1P and 2P of both realis and irrealis differ from the corresponding singular persons only owing to the suffix. For this reason, we shall only focus on the prefixation of the first three persons, while the suffixation will be discussed in Section 2.7. The 3-person is the same for both singular and plural.

The vocalic pattern is very regular. The thematic vowel is mostly preserved in both the realis and the irrealis paradigm (3a). However, if it is a high vowel (/i u/), it is replaced by /a/ in the 2.RLS (3b-c). The latter vowel originally belonged to the prefix, as confirmed by exceptions such as (3d), where thematic /i/ is preserved after /a/ in the 2-persons:

(3) a. RLS: a-e-jak (1S), d-e-jak (2S), tɕ-e-jak (3) ‘to guide’
b. RLS: a-i-misẽre (1S), d-a-misẽre (2S), tɕ-i-misẽre (3) ‘to fish (with bait)’
c. RLS: a-u-gau (1S), d-a-gau (2S), tɕ-u-gau (3) ‘to thread’
d. RLS: a-i-se (1S), da-i-se (2S), tɕ-i-se (3), a-i-ko (1P), da-i-so (2P) ‘to reach’

In the 1.RLS, thematic /o/ deletes the 1.RLS-prefix *a-*:

(4) RLS: o-ria (1S), d-o-ria (2S), t-o-ria (3); IRLS: Ø-o-ria (2S), t-o-ria (3) ‘to steal’[7]

If thematic /i/ is followed by another vowel, there is /j/-insertion in the 1.RLS in order to avoid the resulting triphthong (5a-b). For the same reason, if a vowel follows thematic /u/, the latter changes to /w/ in the 1.RLS (5c). This phenomenon does not occur in the other Zamucoan languages:

(5) a. RLS: a-ij-asore (1S), d-a-sore (2S), tɕ-i-asore (3) ‘to help, to favour’
b. RLS: a-ij-osotɕere (1S), tɕ-i-osotɕere (3) ‘to win, to exceed’
c. RLS: a-w-agos <aguagoz> (1S), d-a-gos (2S), tɕ-u-agos (3) ‘to hide’

2.2. *tɕ*-verbs

The vast majority of verbs are characterized by the 3-prefix *tɕ-*, as in the example in Table 3. These verbs are generally regular. Since the 1.IRLS-prefix is *tɕ-*, 1.IRLS and 3.RLS coincide. The 3.IRLS takes the prefix *d-* like the 2.RLS, so that these persons also coincide, unless the inflectional vowel makes the difference.

The verb *tɕihi* (6) is irregular, not only in the 1-person (which has /h/ epenthesis), but also in the 2-person (with no trace of the original prefix vowel /a/). This is an extremely rare exception in the whole language family (see Section 5.3.1, ex. (92–93)):

(6) RLS: a-h-i-hi (1S), d-i-hi (2S), tɕ-i-hi (3); IRLS: d-i-hi (3) ‘to make’ (causative verb)

2.3. *t*-verbs

There is a small group of prefixal verbs which take the 3-prefix *t-*, used for both realis and irrealis. These verbs take the prefix *j-* for the 1.IRLS (7a):

(7) a. RLS: t-a-k (3); IRLS: j-a-k (1S), t-a-k (3) ‘to eat’
b. RLS: a-i-bidi (1S), t-i-bidi (3); IRLS: t-i-bidi (3) ‘to call’
c. RLS: o-rã (1S), t-o-rã (3); IRLS: t-o-rã (3) ‘to bring, to take’

2.4. Thematic verbs

The few thematic verbs documented by Chomé show the 1.IRLS-prefix *j-* (8b). The 3.IRLS of *ijage* coincides with the verb root, except that root-initial /j/ undergoes fortition into /tɕ/. *Isi* exhibits an exception in the 1-vowel (9):

(8) RLS: a-i-jage (1S), d-a-jage (2S), Ø-i-jage (3), a-i-jage-go (1P), d-a-jage-o (2P);
IRLS: j-i-jage (1S), Ø-Ø-tɕage (3), j-i-jage-go (1P), Ø-a-j-age-o (2P) ‘to stand up’

(9) RLS: o-si (1S), Ø-i-si (3); IRLS: j-i-si (1S), Ø-a-si (2S) ‘to give’

[7] Some forms of this verb are transcribed by Chomé with the symbol for nasality on the last vowel. This is neglected here, since nasality is not systematically marked by Chomé.

2.5. Radical verbs

The inflectional vowel of radical verbs is /i/ in the 1-person and /a/ in the 2-person. Their 1.IRLS-prefix is *j-*. Some root-initial consonants undergo fortition in the 3-person: e.g. /r/ turns into /d/ (11). The vocalic pattern is the same in both realis and irrealis. The 3.IRLS coincides with the 3.RLS:

(10) a. RLS: a-i-tanãrã (1S), d-a-tanãrã (2S), Ø-Ø-tanãrã (3); IRLS: Ø-Ø-tanãrã (3) 'to tremble'
b. RLS: a-i-tota (1S), Ø-Ø-tota (3), a-i-tota-go (1P), d-a-tota-o (2P); IRLS: j-i-tota (1S), Ø-Ø-tota (3) 'to be blackened'
c. RLS: a-i-toj (1S), Ø-Ø-toj (3); IRLS: j-i-toj (1S), Ø-a-toj (2S), Ø-Ø-toj (3), j-i-to-go-j (1P) 'to die, to be dead'

(11) a. RLS: Ø-Ø-dak (3); IRLS: j-i-rak (1S), Ø-Ø-dak (3) 'to come'
b. RLS: Ø-Ø-dugut (3); IRLS: a-i-rugut (1S), Ø-Ø-dugut (3) 'to be fed up'

2.6. Irregular verbs

According to Chomé (p. 150), there is a group of verbs with the following characteristics: (i) The 3.RLS begins with /s/; (ii) this /s/ is replaced by /n/ in the 3.IRLS; (iii) the 1.IRLS also begins with /s/. Thus, /s/- seems to behave like the 3-prefix *ʦ-*, but since Chomé only provided the example in (12), which also exhibits root-initial consonant irregularities, one cannot establish whether he referred to a consistent group of prefixal verbs in *s-* or to a group of irregular verbs:

(12) RLS: a-horu (1S), so-ru (3S), a-hoko (1P), d-a-hojo (2P); IRLS: soru (1S), no-ru (3) 'to close'

OZ also has strictly irregular verbs, such as *ina* (3.RLS) 'to roll', *i* (3.RLS) 'to go' and *no* (3.RLS) 'to go'. They will be addressed in the comparative sections (5.4.1–5.4.2).

2.7. Old Zamuco verb suffixation

The 1P- and the 2P-person have suffixes which distinguish them from their singular counterparts. The allomorphs used depend on the behavior of the last syllable of the root. When the final syllable (or consonant) is preserved, *-go* (1P) and *-o* (2P) are employed:

(13) a. a-i-tota (1S) → a-i-tota-go (1P), d-a-tota-o (2P) 'to be blackened'
b. a-i-jage (1S) → a-i-jage-go (1P), d-a-jage-o (2P) 'to stand'

By contrast, some root-final syllables (or consonants) are substituted by specific plural suffixes. The replaced element will be called MOBILE SYLLABLE. This peculiar phenomenon is also present in AY (see Section 3.5). The suffixes used with mobile syllables in OZ are: *-ko* or *-ho* for 1P, *-jo*, *-ɲo* or *-ʦo* for 2P. The mobile syllables documented by Chomé are *-re*, *-ru*, *-s*, *-si*, *-su* and *-k*. When the last syllable is *-re* or *-ru*, *-ko* (1P) and *-jo* (2P) are used (14), with the latter possibly nasalizing into *-ɲo* (14b):

(14) a. ahoru (1S) → aho-ko (1P), daho-jo (2P) 'to close'
b. arokore (1S) → aroko-ko (1P), daroko-ɲo (2P) 'to do something slowly'[8]

[8] The presence of /ɲ/ in *darokoɲo* is surprising. Supposedly, Chomé has omitted to mark nasalization on *arocore*.

Root-final *-s* and *-su* are replaced by *-ko* (1P) and *-so* (2P), the latter showing assimilation to the root consonant. With final *-si*, a trace of /i/ is maintained as /j/ after the suffix (15c):

(15) a. aos (1S) → ao-ko (1P), daos-o (2P) 'to cast out'[9]
b. aise (1S) → ai-ko (1P), dai-so (2P) 'to reach'
c. ainusi (1S) → ainu-ko-j (1P), danu-so-j (2P) 'to remember'
d. aipiasu (1S) → aipia-ko (1P), dapia-so (2P) 'to do'

Root-final /k/ is replaced by *-ho* (1P) and *-tɕo* (2P):

(16) aipo-k (1S) → aipo-ho (1P), dapo-tɕo (2P) 'to be ashamed'

This concludes the analysis of the OZ verb paradigms, based on the data reported by Chomé. As the following sections will show, there are several points of contact with the AY and CH verb system, described in Section 3 and Section 4 respectively.

3. Ayoreo verb inflection

This section describes the AY verb inflection. After analysing the personal prefixes (Section 3.1) and the vocalic pattern (Section 3.2), with a focus on prefixal verbs, we shall deal with radical verbs (Section 3.3) — which show many irregularities and subregularities — and subsequently with thematic verbs and further exceptions (Section 3.4). Finally, the plural suffixes will be addressed (Section 3.5), as well as other suffixes not related to personal inflection (Section 3.6).

3.1. Personal inflection

The conservative personal inflection of AY, as shown in Table 4, shows the currently disappearing realis vs irrealis distinction in the 1-person, whereby the 1.RLS has no prefix and the 1.IRLS has *j-* (see Morarie [1980: 6]). The reverse happens in the 2-persons: the 2.RLS takes the prefix *b(a)-*[10] in the singular and *wak(a)-* in the plural, while the 2S/P.IRLS is prefixless. However, the 1.IRLS is nowadays generally also used for the 1.RLS and as such will be listed when reporting the inflectional paradigm of AY verbs. The 1-prefix *j-* and the 2S-prefix *b-* can nasalize into *ɲ-* and *m-*, respectively, owing to nasal harmony, although both allomorphs are often found in one and the same verb (17a). According to Sušnik (1963: 52), the presence or lack of nasalization depends on diatopic variation.[11]

The 1P takes a suffix to distinguish it from the 1S. The 2P also has a suffix, although in the realis it has no functional load, because 2S and 2P have different prefixes. This invites diachronic considerations to which we shall return below (Section 6.4). The plural suffixes are the same for both realis and irrealis and will be discussed in Section 3.6. Since AY has no 3.IRLS, in the whole of this section we shall simply speak of 3-person (or simply 3) for lack of contrast. The 3-person is the same for both singular and plural:

Table 4. Ayoreo verb inflection

Realis	Irrealis

[9] On this verb, see Kelm (1964: 776).
[10] As for /a/ in the 2-person, replacing the thematic vowel, see Section 1.2.
[11] As for prefix nasalization, we shall report the data according to the individual sources.

1S	[Ø-V+ROOT][12]	j-+V + ROOT
2S	b-+V+ROOT	Ø-V+ROOT
3	tɕ- / t- / Ø-+(V)+ROOT	–
1P	[Ø-V+ROOT+ -ko / -go]	j-+V+ROOT+ -ko / -go
2P	wak-+V+ROOT+ -tɕo / -jo	Ø-V+ROOT+ -tɕo / -jo

(17) a. j-/ɲ-a-jona (1S), b-/m-a-jona (2S), tɕ-a-jona (3), j-/ɲ-a-jona-ŋo (1P), wak-a-jona-ɲo (2P) ‘to run after, to chase’
b. j-a-gu (1S), b-a-gu (2S), t-a-gu (3), j-a-ho (1P), wak-a-tɕo (2P) ‘to eat, to bite’

In AY one can distinguish four inflectional classes (see Table 5). The set of prefixal verbs can be divided into two classes: (a) a large class with the 3-prefix *tɕ-*, and (b) a much smaller one characterized by the 3-prefix *t-*. There are also two small classes of thematic and radical verbs, discussed in Sections 3.4 and 3.3 respectively.

Table 5. Verb classes in Ayoreo

PREFIXAL VERBS		NON-PREFIXAL VERBS	
FIRST CLASS	SECOND CLASS	THIRD CLASS	FOURTH CLASS
tɕ-verbs	*t*-verbs	Thematic verbs	Radical verbs

3.2. The thematic vowel

One has to distinguish between high and non-high thematic vowels. Similar to OZ (Section 2.1), non-high thematic vowels (/a e o/) are preserved in the whole paradigm (18a), whereas (/i u/) are replaced by /a/ in the 2-person (18b). The latter inflectional vowel diachronically stems from a prefix vowel, as comparative evidence shows (Section 5.2.1):

(18) a. j-o-hare (1S), b-o-hare (2S), tɕ-o-hare (3), j-o-ha-ko (1P), wak-o-ha-tɕo (2P) ‘to smell’
b. j-u-ga (1S), b-a-ga (2S), tɕ-u-ga (3), j-u-ga-go (1P), wak-a-ga-jo (2P) ‘to sew, to mend’

Although the thematic vowel behaviour is very regular, there are some exceptions. Few verbs, such as *tɕise* (19a) have /e/ rather than /a/ as 2-vowel. Sometimes two vowels can alternate in the paradigm, as in *tɕamata* (19b) or *tɕimata* (19c), possibly owing to diatopic variation. In (19d) there is alternation between /i/ and /u/.[13] The verb *tɕiro* (19e) can have both /a/ and /e/:

(19) a. j-i-se (1S), b-e-se (2S), tɕ-i-se (3), j-i-ko (1P), wak-e-so (2P) ‘to find, to meet, to reach’
b. ɲ-a-mata (1S), b-/m-a-mata (2S), tɕ-a-mata (3), ɲ-a-mata-go (1P), wak-a-mata-jo (2P) ‘to collect’
c. ɲ-i-mata (1S), b-/m-a-mata (2S), tɕ-i-mata (3), ɲ-i-mata-go (1P), wak-a-mata-jo (2P) ‘to collect’
d. j-u-huse / j-i-huse (1S), b-a-huse (2S), tɕ-use / Ø-Ø-suse / tɕ-u-huse (3), j-u-hu-ko / j-i-hu-ko (1P), wak-ahu-so (2P) ‘to care for’

[12] In currently spoken AY, the 1.IRLS is normally used instead of the 1.RLS (see Section 4.2). For this reason, the 1.RLS is indicated in square brackets in the table. The AY 1.RLS and 2.IRLS forms will not be provided in the examples to follow. As for verbs normally used in reflexive or periphrastic constructions, the pronoun or the particle following the verb will not be reported.

[13] The alternation between high thematic vowels is relatively frequent in the CH person prefixation.

e. j-i-ro (1S), b-e-ro / b-a-ro (2S), ʧ-i-ro (3), j-i-ro-go (1P), wak-e-ro-jo / wak-a-ro-jo (2P) ‘to weave’

3.3. Radical verbs

Radical verbs include a small set with exceptions or subregularities mainly concerning the 3-person, the most dynamic element of the system, occasionally undergoing fortition of the root-initial consonant or other changes.

The vocalic pattern of radical verbs is regular. They have /i/ in the 1-person, turning into /u/ for harmonization when the first root-vowel is /u/ (20b). *Keṉa* (20c) exhibits an exceptional alternation /i/ ~ /a/ in the 1-person:

(20) a. ɲ-i-mo (1S), m-a-mo (2S), Ø-Ø-mo (3), ɲ-i-mo-ŋo (1P), wak-a-mo-ɲo (2P) ‘to sleep’
b. ɲ-u-n̪usina (1S), m-a-n̪usina (2P), Ø-Ø-n̪usina (3), ɲ-u-n̪usina-go/-ŋo (1P), wak-a-n̪usina-jo /-ɲo (2P) ‘to remember’
c. j-a-keṉa / j-i-keṉa (1S), b-a-keṉa (2S), Ø-Ø-keṉa (3), j-a-keṉa-ŋo / j-i-keṉa-ŋo (1P), wak-a-keṉa-ɲo (2P) ‘to move, to run’

The following sections will discuss irregular radical verbs, classified according to the root-initial consonant, namely: /b/ or /p/ (Section 3.3.1), /r/ (Section 3.3.2), /ŋ/, /h/ and /n̪/ (Section 3.3.3) and /j/ (Section 3.3.4). There are a few verbs alternating a radical and a prefixal form in the 3-person (Section 3.3.5).

3.3.1. *Radical verbs in bilabial consonant*

A few verbs have /b/ as root-initial consonant, which can devoice into /p/ in the 3-person (21). However, in the majority of radical verbs with /p/ as 3-person initial consonant, this consonant is maintained in the whole paradigm:[14]

(21) j-i-bo (1S), b-a-bo (2S), Ø-Ø-po (3), j-i-bo-go (1P), wak-a-bo-jo (2P) ‘to cry’

3.3.2. *Radical verbs in /r/*

Root-initial /r/ undergoes fortition to /d/ (22a) or /n/ (22b) in word-initial position, i.e. in the 3-person. This must be a phonological rule, since no AY words begin with /r/. In a few cases /n/ alternates with /ɲ/ in the 3-person (22c).

(22) a. ɲ-i-rĩ (1S), m-a-rĩ (2S), Ø-Ø-di (3), ɲ-i-rĩ-ŋo (1P), wak-a-rĩ-ɲo (2P) ‘to arrive’
b. ɲ-i-rĩhi (1S), m-a-rĩhi (2S), Ø-Ø-nihi (3), ɲ-i-rĩhi-ŋo (1P), wak-a-rĩhi-ɲo (2P) ‘to wake up’
c. ɲ-i-rãre (1S), m-a-rãre (2S), Ø-Ø-nare / Ø-Ø-ɲare (3), ɲ-i-rã-ko (1P), wak-a-rã-ʧo (2P) ‘to speak’

3.3.3. *Radical verbs in /ŋ/, /h/ and /n̪/*

[14] There is one exception where, surprisingly, the contrary occurs: root-initial /p/ voices into /b/ in the 3-person: *j-i-pesome* (1P), *wak-a-pesome* (2P), *ore Ø-Ø-besome* (3P) ‘to do together’. This verb is only used in the plural (Higham *et al.* 2000: 360).

In radical verbs with root-initial /ŋ/, this consonant undergoes word-initial fortition owing to general phonotactic constraints, so that the 3-person turns into /k/ (23).

(23) ɲ-i-ŋãra (1S), m-a-ŋãra (2S), Ø-Ø-kãra (3), ɲ-i-ŋarã-ŋo (1P), wak-a-ŋarã-ɲo (2P)
'to have something different'

In some verbs, root-initial /h/ and /n̪/ can turn into /s/ in the 3-person (24a). However, preservation of /n̪/ is also possible (24b):

(24) a. j-i-hu(r)ega (1P), b-a-hu(r)ega (2P), Ø-Ø-su(r)ega / Ø-Ø-hu(r)ega (3), j-u-hu(r)e-ho / j-u-hurega-go (1P), wak-a-hu(r)e-ʦo / wak-a-hurega-jo (2P) 'to permit, to allow'
b. ɲ-u-n̪ue (1S), m-a-n̪ue (2S), Ø-Ø-sue / Ø-Ø-n̪ue (3), ɲ-u-n̪ue-ŋo (1P), wak-a-n̪ue-ɲo (2P) 'to be bigger/greater than'

In a few verbs, root-initial /hi/ or /n̪i/ strengthen into /no/ in the 3-person (25a, 27a):

(25) a. j-i-hiɲo-me (1P), b-a-hiɲo-me (2P), Ø-Ø-noɲo-me (3), j-i-hiɲo-ŋo-me (1P), wak-a-hiɲo-ɲo-me (2P) 'to leave'

3.3.4. *Radical verbs in /j/*

In most radical verbs with root-initial /j/, this undergoes fortition into /ʨ/ in the 3-person (26). This might be explained either by assuming that /ʨ/ is the regular 3-prefix with deletion of the root-initial syllable *-jV-*, or by treating /ʨ/ as the result of fortition. In Section 5.3.4 we shall examine this in the light of comparative data:

(26) j-i-jage (1S), b-a-jage (2S), Ø-Ø-ʨage (3), j-i-jage-go (1P), wak-a-jage-jo (2P) 'to stand up'

3.3.5. *Verbs alternating radical and prefixal 3-person forms*

There are a few verbs for which both a prefixal and a radical 3-form is available (27):

(27) a. j-i-n̪ina (1S), b-a-n̪ina (2S), Ø-Ø-nona / ʨ-i-n̪ina (3), j-i-n̪ina-ŋo (1P), wak-a-n̪ina-ɲo (2P) 'to accompany, to go with'
b. j-i-to-hi (1S), b-a-to-hi (2S), ʨ-i-to-hi / Ø-Ø-to-hi (3), j-i-to-go-hi (1P), wak-a-to-jo-hi (2P) 'stare at'

In the next examples, the prefixal 3-form alternates with the radical form, with root-initial /h/ turning into /s/. In (28a) the root-initial syllable can drop in the prefixal form, so that *ʨuhuse* reduces to *ʨuse*:

(28) a. j-u-huse (1S), b-a-huse (2S), Ø-Ø-suse / ʨ-u-huse / ʨ-use (3), j-u-hu-ko (1P), wak-a-hu-so (2P) 'to care for'
b. j-u-hu(ru) (1S), b-a-hu(ru) (2S), Ø-Ø-su(ru) / ʨ-u-hu(ru) (3), j-u-hu-ko (1P), wak-a-hu-ʨo / wak-a-hu-jo (2P) 'close (in), to shut in'

In (29) one finds three variants of the 3-person: *hose*, *sose* and *ʨose.* The form *ʨose* should probably be considered a 3-prefixal form in which thematic /u/ and root-initial /h/ dropped:

(29) j-i-hose, b-a-hose (2S), Ø-Ø-hose / Ø-Ø-sose / tɕ-ose (3), j-i-ho-ko (1P), wak-a-ho-so (2P) ‘to push (the) back; to squeeze’

3.4. Thematic and irregular verbs

AY thematic verbs are vanishingly rare. The one in (30a) has both a thematic and a radical 3-person:

(30) a. j-a-pa-hi (1S), b-a-pa-hi (2S), Ø-a-pa-hi / tɕ-a-pa-hi (3), j-a-pa-go-hi (1P), wak-a-pa-jo-hi (2P) ‘to stay temporarily in a place’
b. j-u-ɲ̥apego-me (1S), b-a-ɲ̥apego-me (2S), Ø-u-ɲ̥apego-me (3), j-u-ɲ̥ape-ho-me (1P), wak̥-a-ɲ̥ape-tɕo-me (2P) ‘to be able to do, to be apt to’

AY also exhibits completely irregular verbs, such as *ŋ̥o* ‘to go’ and *doj* ‘to bring, to do’, which will be discussed in Section 5.4.2.

3.5. Plural suffixes

AY verbs have a suffix in 1P and 2P. There are two series of suffixes: (i) *-go* (1P), *-jo* (2P), as in (31a), which can respectively nasalize into *-ŋo* and *-ɲo* as in (31b), and (ii) *-ko* (1P), *-tɕo* (2P), as in (31c). The first series is used when there is no change in the root (31a-c), while the second one is used when the final consonant or syllable is replaced, according to the mobile syllable’s mechanism already described for OZ (see Section 2.7 and ex. 31c):

(31) a. j-u-he (1S), b-a-he (2S), tɕ-u-he (3), j-u-he-go (1P), wak-a-he-jo (2P) ‘to kill, to hit’
b. ɲ-o-ɲ̥e (1S), m-o-ɲ̥e (2S), tɕ-o-ɲ̥e (3), ɲ-o-ɲ̥e-ŋo (1P), wak-o-ɲ̥e-ɲo (2P) ‘to pour out, to spill’
c. ɲ-ẽ-ra (1S), m-ẽ-ra (2S), t-ẽ-ra (3), ɲ-ẽ-ko (1P), wak-ẽ-tɕo (2P) ‘to sell’

The spread of nasalization is blocked when a supralaryngeal obstruent is interposed between the nasal element (a nasal vowel or consonant) and the suffix, as /t/ in (32). There are a few exceptions concerning suffix nasalization, which will not be discussed here:

(32) ɲ-ĩ-reta (1S), m-ã-reta (2S), tɕ-ĩ-reta (3), ɲ-ĩ-reta-go (1P), wak-ã-reta-jo (2P) ‘to fill up’

Some root-final syllables or consonants are regularly replaced: *-k* or *-ke, -da, -go, -gu, -ni, -s* or *-se, -t* or *-te*.[15] Some may or may not work as ‘mobile syllables’, depending on the verb: *-di, -ga, -gi, -ŋa, -ŋo, -ŋu, -na,*[16] *-no, -ra, -re, -ri, -ro, -ru, -sa, -si, -su, -so*. When the mobile syllable begins with a velar consonant, the 1P-suffix *-ko* is replaced by the allomorph *-ho* (33):

(33) ɲ-i-ɲ̥oke (1S), m-a-ɲ̥oke (2S), tɕ-i-ɲ̥oke (3), ɲ-i-ɲ̥o-ho (1P), wak-a-ɲ̥o-tɕo (2P) ‘to carry a load’

[15] The syllable *-me* is in most cases a “lexical” syllable (see Section 3.6), not belonging to the root and as such immune from replacement. There is only one case in which it is a mobile syllable. In word-final position the syllables *-ke, -se* and *-te* alternate with final *-k, -s* and *-t* owing to a regular prosodic process consisting in adding the euphonic vocoid [e] to the word’s last consonant, in order to maintain the preferred CV syllabic structure (Bertinetto 2009: 11). This explains why the term ‘mobile syllable’ is also used with respect to final *-k, -s* and *-t* (see Section 2.7).

[16] *-na* occurs very frequently as final syllable and in most cases is not substituted. By contrast, *-re* mostly works as ‘mobile syllable’ and its vowel is generally a euphonic vowel.

When the mobile syllable begins with /s/ (34), the 2P-suffix *-ʧo* is replaced by the allomorph *-so*:

(34) j-i-gase (1S), b-a-gase (2S), ʧ-i-gase (3), j-i-ga-ko (1P), wak-a-ga-so (2P) 'to bite, to sting'

Although the AY verb suffixation is usually regular, there are a few exceptions. For instance, in (35) *-ko* and *-ʧo* do not operate any substitution. In (36) the 2P-suffix *-jo* is unexpected; this could preserve traces of an archaic feature (see Section 6.4, ex. 135). For a detailed discussion of exceptions concerning verb suffixation, see Ciucci (2013a).

(35) j-i-garu (1S), b-a-garu (2), ʧ-i-garu (3), j-i-garu-ko (1P), wak-a-garu-ʧo (2P)
'to tie, to fasten'

(36) j-i-gisare (1S), b-a-gisare (2S), ʧ-i-gisare (3), j-i-gisa-ko (1P), wak-a-gisa-jo (2P)
'to drop fuits (with a stick)'

3.6. Lexical syllables, diminutives, modal and elative suffixes

AY verbs can add one more component to the template described in Section 1.1. Among these, one should mention what we would like to call LEXICAL SYLLABLE (cf. the "lexical" suffixes of Ciucci 2007/08 and Bertinetto 2009: 33), namely an independent lexeme inglobated into the verb to modify its meaning. In such cases, the plural suffix is interposed between the verb root and the lexical syllable (37). The most frequent lexical syllables are *-(o)me*, *-(a)ha*, *-(i)hi* and *-ga(r)i*, which derive from the adpositions *ome, aha, ihi* and *ga(r)i*, with *-(a)ha* and *-(i)hi* often reduced to *-a* and *-i/-j*, as in (38a) derived from (38b):

(37) ɲ-i-ra-me (1S), m-a-ra-me (2S), ʧ-i-ra-me (3), ɲ-i-ra-ŋo-me (1P), wak-a-ra-ɲo-me (2P)
'to turn loose, to set free'

(38) a. j-i-bid-i (1S), b-a-bid-i (2S), t-i-bid-i (3), j-i-bi-ko-j (1P), wak-a-bi-ʧo-j (2P)
'to call, to summon'
b. j-i-bit(e) (1S), b-a-bit(e) (2S), t-i-bit(e) (3), j-i-bi-ko (1P), wak-a-bi-ʧo (2S)
'to yell, to shout'

Other elements that can be inglobated into the verb are the diminutive affixes *-ap* (39a) and *-si* (39b), which conveys an attenuating nuance (Bertinetto 2009: 22), plus the elative suffix *-pis* or *-pus* (39c-d) and the modal suffix *-ras* (39e), often followed by a harmony-governed vowel (Bertinetto 2009: 21):[17]

(39) a. Ø-a-ru-ap (2S.IRLS.to_wash-DIM) 'Please wash'
b. ʧ-u-dudo-si (3.to_hear-DIM) 'He barely hears'
c. j-i-pota-pis-a (1S.to_want-ELAT) 'I strongly desire'
d. ʧ-i-ʧagu-pus-u (3S.to_pierce-ELAT) 'It pierces strongly' (QCCB, II: 50)
e. a-po-ʧo-ras-u (2P.IRLS.to_hide) 'You (PL) would/might hide'.

[17] The diminutive, modal and elative suffixes will not be further discussed here (but cf. Bertinetto [2009: 21–22]; Morarie [1980: 88]).

4. Chamacoco verb inflection

This section describes the CH verb morphology. We shall first illustrate the personal affixes (Section 4.1), with sections 4.1.1 and 4.1.2 respectively devoted to plural suffixes and to the morphological expression of the irrealis. Section 4.2 will then introduce the inflectional classes, consisting of: prefixal (Section 4.3), thematic (Section 4.4) and radical verbs (Section 4.5). Irregular and defective verbs will be discussed in Section 4.6.

4.1. Personal inflection

As Table 6 shows, the irrealis is only preserved in the 3-persons. Example (40) exhibits a representative verb paradigm:

Table 6. Chamacoco verb inflection

	Realis	Irrealis
1S	t-/tVk-+V+ROOT	–
2S	Ø+V+ROOT	–
3	tɕ-/ts-/t-/d-/n-/l-/j-/Ø+(V)+ROOT	d-/n-/t-/Ø+(V)+ROOT
1PI	j-+V+ROOT	–
1PI.GP	j-+V+ROOT+-lo	–
1PE	o-+j-+ROOT	–
2P	Ø+V+ROOT+lo	–
3P	o-+tɕ-/ts-/t-/d-/n-/l-/j-/Ø+(V) + ROOT	o-+d-/n-/t-/Ø+(V)+ROOT

(40) a. t-i-nkija (1S), Ø-e-nkija (2S), tɕ-i-nkija (3.RLS), j-i-nkija (1PI), o-j-i-nkija (1PE),
Ø-e-nkija-lo (2P), o-tɕ-i-nkija (3P.RLS) // n-i-nkija (3.IRLS) ‘to look at; to look properly’

In the 1S one has to distinguish between the prefixes *t-* and *tVk-* (i.e. *tak-*, *tok-*, *tuk-*, *tɨk-*). The vowel of the latter is a copy of the 1-vowel, not necessarily coinciding with the thematic vowel (see the general verb structure in Section 1.2), and is always short (see also Sections 4.4 and 5.3.4).[18] The use of *t-* or *tVk-* does not depend on the phonotactic environment. The only phonetic restriction on the use of *tVk-* is that it never occurs in verbs with root-initial /k/. The use of *t-* or *tVk-* usually depends on the inflectional class, but there are exceptions, so that it is not possible to predict the 1S-allomorph.

The 2S generally takes no prefix, with few exceptions (see Sections 5.4.1–5.4.2). It thus coincides with the theme, except for the possible change in the inflectional vowel, since the 2-person thematic vowel can be replaced by a vowel originally belonging to the prefix (see Section 4.3.1).

The 3-person is used for both singular and plural with non-human subjects and exhibits a remarkable morphological variability, as described in detail below. For taxonomic purposes, whenever the 3-person RLS and IRLS do not coincide, the former is used as the basis for verb classification. There is also a specific form for the 3P, obtained (for both realis and irrealis) by adding *o-* to the 3-person. The 3P is obligatory with human subjects and occasionally with big animals. Since the 3P *o-* expresses plurality, this constitutes a violation of a universal tendency

[18] Unlike the other Zamucoan languages, vowel length is contrastive in CH.

according to which person markers should precede number markers (Trommer 2003; Mayer 2009; see Bertinetto 2011a and Ciucci 2014). However, this can be explained by assuming that the 3P is an innovation (Section 7.3).

CH presents clusivity in the 1P. This feature is found in other languages of the area, but not in AY and in OZ. The 1PI is formed by the theme preceded by the personal prefix *j-*, while the 1PE is obtained by adding *o-* to the 1PI. CH clusivity will be discussed in more detail in Section 7.2 (see also Section 5.1).

4.1.1. *Inflectional suffixes*

The 2P is formed by adding the plural suffix *-lo* to the 2S. Some morphophonological processes can occur at the boundary between root and suffix. If the root ends in a vowel, there are three possibilities concerning the latter: (i) it is preserved; (ii) it reduces to /ɨ/; (iii) it deletes. According to the CH informants, the older speakers tend to preserve the final vowel, while middle-aged speakers prefer either (2) or (3). For instance: *Ø-aː-ta* (2S) → *Ø-aː-tɨ-lo* / *Ø-aː-t-lo* / *Ø-aː-ta-lo* (2P) 'to serve something to drink'; *Ø-eː-na* (2S) → *Ø-eː-nɨ-lo* / *Ø-eː-na-lo* / *Ø-eː-n-lo* (2P) 'to feel, to perceive'. If the verb root ends in a consonant, the latter is preserved and one can optionally add epenthetic /ɨ/ between root and suffix: *Ø-e-ɛ* (2S) → *Ø-e-ɛ-lo* / *Ø-e-ɛ-ɨ-lo* (2P) 'to meet'; *Ø-a-nem* (2S) → *Ø-a-nem-lo* / *Ø-a-nem-ɨ-lo* (2P) 'to wait'.

The 1PI also has a greater plural form (a typological rarity, see Corbett 2000: 30), obtained by adding the suffix *-lo*, the same used for the 2P. When this suffix is added to the 1PI, the same morphophonological processes pointed out for the 2P occur: *ʈɛ-i-ɛ* (3.RLS) 'to meet', *j-i-ɛ* (1PI) → *jiɛ-ɨ-lo* / *jiɛ-lo* (1PI.GP).[19,20]

4.1.2. *The irrealis*

Depending on the inflectional class, the verb may or may not have an opposition between realis and irrealis in the 3-person. In prefixal verbs which maintain such a contrast, this is obtained by adding the prefix *d-* or *l-* (word-initially, *d-* and *l-* are free allomorphs which may nasalize into *n-* in nasal-harmony roots).[21] As shown in Table 6, the 3P.IRLS is obtained by adding *o-* to the 3.IRLS. As to subject-verb agreement, 3.IRLS and 3P.IRLS behave like their realis counterparts (Section 4.1).

4.2. Inflectional classes

The CH verb classes are illustrated in Table 7:

Table 7. Classification of Chamacoco verbs

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[19] *-lo* is also used to form the greater plural in free pronouns (see Section 5.1) and the masculine plural in nominal morphology: e.g. *aː-t* (MS), *aː-lo* (MP) 'body'. According to Comrie *et al.* (2010: 99) the presence of a plural suffix consisting in a lateral consonant optionally followed by a vowel is an areal feature of Chaco languages (see also Ciucci [2013a: 372, 523–526]).

[20] A dialect difference between Ebitoso and Tomaraho seems to emerge here. According to Carro Noya (personal communication) the Ebitoso 1PI and 1PI.GP correspond to a dual and a plural respectively in Tomaraho. Considering that, when the 1PI distinguishes between a minimal and an augmented number, the former is generally a dual and the latter a plural (Cysouw 2003: 85–90), the Ebitoso plural vs greater plural opposition associated with clusivity turns out to be typologically unexpected. The Tomaraho situation might show a more conservative stage.

[21] In this paper we report the form(s) most frequently observed in the field. The same applies to the morphophonological processes involving the suffix *-lo* (see Section 4.1.1). Moreover, for reasons of simplicity, in the CH examples we do not report the greater plural of the 1PI. Finally, the 3P.IRLS form is not provided in verbs maintaining the realis vs irrealis distinction.

FIRST MACRO-CLASS verbs with consonantal prefix in 3.RLS: prefixal verbs (Section 4.3)				SECOND MACRO-CLASS verbs with no consonantal prefix in 3.RLS	
FIRST CLASS		SECOND CLASS			
First subclass *ʧ*-verbs (Section 4.3)	*Second subclass* *ts*- and *ɕ*-verbs (Section 4.3.3)	*Third subclass* *t*-verbs (Section 4.3.4)	*Fourth subclass* *d*-verbs (*d*-, *l*-, *n*, *j*-, Section 4.3.5)	THIRD CLASS thematic verbs (Section 4.4)	FOURTH CLASS radical verbs (Section 4.5)

The verbs with consonantal prefix in the 3.RLS (prefixal verbs) form the first macro-class, while the remaining (thematic and radical) verbs belong to the second macro-class. In the former, one can distinguish two classes: verbs with the 3-prefix *ʧ*- (*ʧ*-verbs) or *ts*- (*ts*-verbs) and verbs with the 3-prefix *t*- (*t*-verbs) or *d*-, *l*-, *n*- and *j*- (*d*-verbs). The members of each class of the first macro-class share salient morphological properties, except for the different consonantal prefix.

The class of *ʧ*- and *ts*-verbs mostly has the 1S-prefix *t*- and always shows the realis vs irrealis contrast in the 3-person (41). In some verbs *ʧ*- and *ts*- may alternate, as in *ʧ-o-wa* or *ts-o-wa* 'to show'.[22] *ts*- turns into *ɕ*- before thematic /i/ or /u/: *ɕ-u:* 'to kill; to make', *ɕ-i-jokõr* 'to do, to make' (see Section 4.3.3):

(41) a. t-ɨ-raha (1S), Ø-e-raha (2S), ʧ-ɨ-raha (3.RLS), j-ɨ-raha (1PI), o-j-ɨ-raha (1PE), Ø-e-raha-lo (2P), o-ʧ-ɨ-raha (3P.RLS) // d-ɨ-raha (3.IRLS) 'to know, to understand'
b. t-a-tɨr (1S), a-tɨr (2S), ts-a-tɨr (3.RLS), j-a-tɨr (1PI), o-j-a-tɨr (1PE), Ø-a-tɨr-lo (2P), o-ts-atɨr (3P.RLS) // l-a-tɨr (3.IRLS) 'to return, to give back'

The verbs of the second class — *t*- (42a) and *d*-verbs (42b) — show opposite features to those of the first class: they usually have the prefix *tVk*- in the 1S-person[23] and do not distinguish realis and irrealis in the 3-person:

(42) a. tak-aː-k (1S), Ø-aː-k (2S), t-aː-k (3.RLS), j-aː-k (1PI), o-j-aː-k (1PE), Ø-aː-kɨ-lo (2P), o-t-aː-k (3P) // t-aː-k (3.IRLS) 'to eat'
b. tak-a-buhu (1S), Ø-e-buhu (2S), d-e-buhu (3.RLS), j-e-buhu (1PI), o-j-e-buhu (1PE), Ø-e-buhu-lo (2P), o-d-ebuhu (3P) // d-e-buhu (3.IRLS) 'to live'

The vast majority of CH verbs belong to *ʧ*-, *ts*- and *t*-verbs. The first two are the most regular. The verbs of the second macro-class, by contrast, have the largest amount of irregularities. They consist of a small group of thematic (43a) and radical verbs (43b), both generally taking the 1S-prefix *tVk*-. Thematic verbs exhibit the realis vs irrealis opposition, not expressed in radical verbs:

(43) a. tɨk-i-jem / t-i-jem (1S), Ø-a-nem (2S), Ø-i-jem (3.RLS), j-i-jem (1PI), o-j-i-jem (1PE), Ø-a-nem-lo (2P), o-jem (3P.RLS) // Ø-Ø-ts-eːm (3.IRLS) 'to wait for'
b. t-ɨ-kĩtkẽr / t-i-kĩtkẽr (1S), Ø-e-kĩtkẽr (2S), Ø-Ø-kẽjtkẽr (3.RLS), j-i-kĩtkẽr (1PI), o-j-i-kĩtkẽr (1PE), Ø-e-kĩtkẽr-lo / Ø-e-kĩtkẽrɨ-lo (2P), o-kẽjtkẽr (3P) // Ø-Ø-kẽjtkẽr (3.IRLS) 'to speak, to talk'

Synchronically, prefixal verbs may be regarded as the classificational benchmark for the other classes. Diachronically, however, the highly irregular second macro-class allows for

[22] In some cases the 3-prefix *ts*- is considered typical of the younger generations.
[23] This is always the case with *d*-verbs.

interesting diachronic insights, to be discussed in Section 5.

4.3. Prefixal verbs

This section deals with some major features of prefixal verbs (first macro-class), such as vocalic pattern (Section 4.3.1) and root allomorphy in the 2-person (Section 4.3.2). Although these features are described with reference to prefixal verbs, the implications will also be relevant to the second macro-class. In the following sections we shall discuss a number of peculiarities of the subclasses included in the first macro-class: *ɕ*-verbs (Section 4.3.3), *t*-verbs (Section 4.3.4) and *d*-verbs (Section 4.4.5).

4.3.1. *Thematic vowel*

This section discusses the vocalic pattern of prefixal verbs. We shall only indicate the vowel filling the thematic vowel slot in the first three persons, because the inflectional vowel of the plural persons normally coincides with that of their singular counterparts; besides, the 3.IRLS vowel always coincides with that of the 3.RLS.

The general rules for the vocalic pattern are in principle also valid for radical and thematic verbs (unless otherwise indicated). The original thematic vowel is usually preserved in the whole paradigm if it is a non-high vowel (44), while it turns into /a/ or /e/ in the 2-person otherwise (45). In the latter case, /a/ and /e/ should diachronically be regarded as (part of the) former prefix which has replaced the original thematic vowel. This is confirmed by the fact that thematic /i/ is occasionally preserved as palatal glide after the 2-vowel /e/ (46).

(44) a. t-a-pur (1S), Ø-a-pur (2S), ts-a-pur (3.RLS), j-a-pur (1PI), o-j-a-pur (1PE), Ø-a-pur-lo (2P), o-ts-a-pur (3P.RLS) // l-a-pur (3.IRLS) ‘to ask for’

(45) a. t-iː-ta (1S), Ø-aː-ta (2S), tɕ-iː-ta (3.RLS), j-iː-ta (1PI), o-j-iː-ta (1PE), Ø-aː-tɨlo (2P), o-tɕ-iː-ta (3P.RLS) // d-iː-ta (3.IRLS) ‘to serve something to drink’
b. tuk-uː-na (1S), Ø-eː-na (2S), tɕ-uː-na (3.RLS), j-uː-na (1PI), o-j-uː-na (1PE), Ø-eː-nɨ-lo (2P), o-tɕ-uː-na (3P.RLS) // n-uː-na (3.IRLS) ‘to perceive, to feel’

(46) t-i-behe (1S), ej-behe (2S), tɕ-i-behe (3.RLS), j-i-behe (1PI), o-j-i-behe (1PE), ej-behe-lo (2P), o-tɕ-i-behe (3P.RLS) // d-i-behe (3.IRLS) ‘to change’

In verbs with thematic /o/, the 2-vowel is /a/ if the root-initial consonant is /b/ or /m/ (47):

(47) t-o-mtɨs (1S), Ø-a-mtɨs (2S), ts-o-mtɨs (3.RLS), j-o-mtɨs (1PI), o-j-o-mtɨs (1PE), Ø-a-mtɨs-lo (2P), o-ts-omtɨs (3P) // n-o-mtɨs (3.IRLS) ‘to turn’

If the verb takes the 1S-prefix *tVk-*, *V* is never /e/. With thematic /e/, the 1S-prefix is *tak-* or *tɨk-* (48a). The vowel /i/ is rarely found in the 1S-prefix *tVk-*, even if it is the thematic vowel in the rest of the paradigm; in such cases, *tɨk-* is the most frequent option (48b):

(48) a. tak-a-jãha / tɨk-ɨ-jãha (1S), Ø-e-jãha (2S), t-e-jãha (3.RLS), j-e-jãha (1PI), o-j-e-jãha (1PE), Ø-e-j-ãha-lo (2P), o-t-e-jãha (3P) // t-e-jãha (3.IRLS) ‘to hunt, to chase’
b. tɨk-i-ja (1S), Ø-e-ja (2S), t-i-ja (3.RLS), j-i-ja (1PI), o-j-i-ja (1PE), Ø-e-j-lo (2P), o-t-i-ja (3P) // t-i-ja (3.IRLS) ‘to buy’

4.3.2. *Root alternation*

In the 2-person of *tɕ*-verbs, some consonantal or vocalic alternations may occur in the root. These morphophonological processes systematically occur if the thematic vowel is /i/ and the 2-vowel is /a/. Comparison with the other Zamucoan languages will show when the 2-person is conservative and when it is not (Section 5.2.2):

(49) t-i-tɕew (1S), Ø-a-tsew (2S), tɕ-i-tɕew (3.RLS), j-i-tɕew (1PI), o-j-i-tɕew (1PE), Ø-a-tsew-lo (2P), o-tɕ-i-tɕew (3P.RLS) // d-i-tɕew (3.IRLS) ‘to pierce; to dig; to write’

Root-initial /j/ alternates with /l/ in the 2-person (50):

(50) t-i-jehi (1S), a-lehi (2S), tɕ-i-jehi (3.RLS), j-i-jehi (1PI), o-j-i-jehi (1PE), Ø-a-lehi-lo (2P), o-tɕ-i-jehi (3P.RLS) // d-i-jehi (3.IRLS) ‘to go often’

If the root-initial consonant is /ɕ/, it alternates with /s/ in the 2-person:

(51) t-i-ɕehe (1S), Ø-a-sehe (2S), tɕ-i-ɕehe (3.RLS), j-i-ɕehe (1PI), o-j-i-ɕehe (1PE), Ø-a-sehe-lo (2P), o-tɕ-i-ɕehe (3P.RLS) // d-i-ɕehe (3.IRLS) ‘to catch (an animal); to rape’

When the first root-vowel follows /h/, it can assimilate to the 2-vowel /a/, as in (52) with the 2-person the alternation /a/ ~ /e/:

(52) t-i-hĩt (1S), Ø-a-hãt / Ø-e-hĩt (2S), tɕ-i-hĩt (3.RLS), j-i-hĩt (1PI), o-j-i-hĩt (1PE), Ø-a-hãti-lo / Ø-a-hãt-lo / Ø-e-hĩt-lo (2P), o-tɕ-ĩ-hit (3P) // n-i-hĩt / d-i-hĩt (3.IRLS) ‘to light, to illuminate’

In (53), root-initial /j/ alternates with /h/ in the 2-person with 2-vowel /a/. By contrast, no root allomorphy occurs with 2-vowel /e/:

(53) t-i-jok (1S), Ø-e-jok / Ø-a-hok (2S), tɕ-i-jok (3.RLS), j-i-jok (1PI), o-j-i-jok (1PE), Ø-e-j̬ok-lo / Ø-a-hok-lo (2P), o-tɕ-i-j̬ok (3P.RLS) // d-i-j̬ok (3.IRLS) ‘to frighten’

The sets of *tɕ*- and *ts*-verbs mostly take the 1S-prefix *t*-, whereas *tVk*- is typical of *t*- and *d*-verbs. There are, however, exceptions such as (54):

(54) tak-a-l̬a (1S), Ø-a-l̬a (2S), ts-a-l̬a (3.RLS), j-a-l̬a (1PI), o-j-a-l̬a (1PE), Ø-a-l̬i-lo (2P), o-ts-a-l̬a (3P.RLS) // d-a-l̬a (3.IRLS) ‘to lend, to rent’

4.3.3. *ɕ-verbs*

These verbs are a small, phonologically justified subgroup of *ts*-verbs (see Section 4.2): *ɕ*- and *ts*- are in complementary distribution, for *ɕ*- occurs before thematic /i/ or /u/ and *ts*- elsewhere. All *ɕ*-verbs with thematic /i/ have 2-vowel /a/ and exhibit root allomorphy in the 2-person, whereby root-initial /j/ alternates with /h/ (55):

(55) t-i-jeru (1S), Ø-a-heru (2S), ɕ-i-jeru (3.RLS), j-i-j̬eru (1PI), o-j-i-j̬eru (1PE), Ø-a-heru-lo (2P),

o-ɕ-i-jeru (3P.RLS) // d-i-jeru (3.IRLS) ‘to close, to tie’

There is only one verb with 3-prefix *ɕ-* and thematic /u/, namely *ɕu:* (56), with the root alternation *-uhu ~ -u:*. It conveys two meanings: ‘to do, to make’ and ‘to kill’. Each meaning has a different form for the 2S and both are irregular. When *ɕu:* means ‘to do, to make’ (56a), it can be used as a causative verb and its 2S is *uhu*. It is the only case where /u/ is preserved in the 2-person. When *ɕu:* means ‘to kill, to hit, to beat’ (56b), its 2S is *tuk*, which should be considered a case of suppletion:

(56) a. t-u: (1S), u-hu (2S), ɕ-u: (3.RLS), j-u-hu (1PI), o-j-u-hu (1PE), u-hu-lo (2P),
o-ɕ-u: (3P.RLS) // d-u-hu (3.IRLS) ‘to make, to do’ (used in causative constructions)
b. t-u: (1S), tuk (2S), ɕ-u: (3.RLS), j-u-hu (1PI), o-j-u-hu (1PE), tuk-lo (2P),
o-ɕ-u: (3P.RLS) // d-u-hu (3.IRLS) ‘to kill, to hit, to beat’

4.3.4. *First person singular of* t-*verbs*

These verbs usually have the 1S-prefix *tVk-* (see Sections 4.1 and 4.3.2). A few verbs with thematic /a/ have *tok-* rather than *tak-*, or both, as in (57):

(57) tok-ã:-tɕa / tak-ã:-tɕa (1S), Ø-ã:-tɕa (2S), t-ã:-tɕa (3.RLS), j-ã:-tɕa (1PI), o-j-ã:-tɕa (1PE),
Ø-a:-tɕĩ-lo (2P), o-t-ã:-tɕa (3P) // t-ã:-tɕa (3.IRLS) ‘to reach, to arrive’

The subclass of *t*-verbs has functional reasons to prefer *tVk-* over *t-*, because the latter prefix coincides with the 3-prefix. This notwithstanding, some *t*-verbs show the 1S-prefix *t-*, so that the 1S coincides with the 3.RLS/IRR (58a), unless an irregular vocalic pattern distinguishes these persons (58b):

(58) a. t-a-kaɕɨm (1S), Ø-a-kaɕɨm (2S), t-a-kaɕɨm (3.RLS), j-a-kaɕɨm (1PI), o-j-a-kaɕɨm (1PE),
Ø-a-kaɕɨm-lo (2P), o-t-a-kaɕɨm (3P) // t-a-kaɕɨm (3.IRLS) ‘to help’
b. t-i:-ta (1S), Ø-a-ta (2S), t-a-ta (3.RLS), j-i:-ta (1PI), o-j-i:-ta (1PE),
Ø-a-ta-lo / Ø-a-tɨ-lo (2P), o-tata (3P) // t-a-ta (3.IRLS) ‘to say, to report’

4.3.5. d-*verbs*

The *d*-subclass includes verbs whose 3-prefix is *d-*, *l-*, *n-* or *j-* (see Section 4.1.2). As already mentioned, /d/ and /l/ are in free variation word-initially and /n/ is their nasal cognate. The verb *jana* (61) is the only one to take *j-* in the 3-person: it fits into the *d*-set because it shares the same morphological properties. This subclass has no realis vs irrealis opposition. Since *d-* is the 3.IRLS-prefix of *ʦɕ-* and *ts*-verbs, it is plausible that in *d*-verbs the original 3.RLS was replaced by the 3.IRLS (see Section 5.3.2). The 1S has the prefix *tVk-*. *Jana* (61) exhibits an irregular vocalic pattern, with /a/ ~ /i/ alternation. This is due to the fact that the 3-person of this verb underwent morphological reinterpretation, as illustrated in Section 5.3.2 (ex. 94–95).

(59) tak-a-buhu (1S), Ø-e-buhu (2S), d-e-buhu (3.RLS), j-e-buhu (1PI), o-j-e-buhu (1PE),
Ø-e-buhu-lo (2P), o-d-ebuhu (3P) // d-e-buhu (3.IRLS) ‘to live’

(60) tɨk-ɨ-na (1S), Ø-e-na (2S), n-ɨ-na (3.RLS), j-ɨna (1PI), o-j-ɨ-na (1PE), Ø- e-nɨ-lo (2P),
o-n-ɨ-na (3P) // n-ɨ-na (3.IRLS) ‘to thank’

(61) tɨk-i-na (1S), Ø-a-na (2S), j-a-na (3.RLS), j-i-na (1PI), o-j-i-na (1PE), Ø-a-nɨ-lo (2P), o-j-ana (3P) // j-a-na (3.IRLS) ‘to laugh’

4.4. Thematic verbs

Thematic verbs include a few verbs exhibiting a number of irregularities which will not be discussed here in detail (see Ciucci 2013a). The 1-person prefix is mostly *tVk-*, possibly alternating with *t-*. The 3-vowel is /i/, /u/ or /ɨ/, but it is not necessarily the actual thematic vowel, because the 3-vowels /i/ or /ɨ/ are often found in verbs showing /o/ in the 1-person and in the 3.IRLS. The 3-vowel is generally replaced by the 3P-morpheme *o-*. The 2-vowel is either /e/ or /a/; when it is /a/, the root-initial consonant may have alternation in 2-person vs 3.RLS: e.g. /l/ ~/j/ (62), /n/ ~/j/ (63); /l̥/ or /n̥/~/j/ (64); /ts/ ~/tɕ/ (65), /s/~/ɕ/ (66). The root-initial consonant of the 1-persons coincides with the one of the 3.RLS after inflectional /i/ (62–63), and with that of the 2-person after inflectional /o/ (64–66). Thematic verbs have different ways to form the irrealis. In most cases they use the irrealis prefix *d-* (64–66). A group of verbs with root-initial /j/, however, have a 3.IRLS consisting of the bare root, with /j/ turning into /ts/ word-initially (62). Finally, there are verbs with the same form for both 3.RLS and 3.IRLS (see *umo* in Section 5.4.1):

(62) tɨk-i-jo (1S), Ø-a-lo (2S), Ø-i-jo (3.RLS), j-i-jo (1PI), o-j-i-jo (1PE), Ø-a-lɨ-lo / Ø-a-lo-lo (2P), o-jo (3P.RLS) // Ø-Ø-tso (3.IRLS) ‘to jump; to fly’

(63) t-i-jem / tik-i-jem / tɨk-i-jem (1S), Ø-a-nem (2S), Ø-i-jem (3.RLS), j-i-jem (1PI), o-j-i-jem (1PE), Ø-a-nem-lo / a-nemɨ-lo (2P), o-jem (3P.RLS) // Ø-Ø-tseːm (3.IRLS) ‘to wait’

(64) tok-o-l̥e (1S), Ø-a-l̥e (2S), Ø-i-je (3.RLS), j-o-l̥e (1PI), o-j-o-l̥e (1PE), Ø-a-l̥ɨ-lo / Ø-a-l̥e-lo (2P), o-j̊e (3P.RLS) // d-o-l̥e (3.IRLS) ‘to be in mourning’

(65) tok-o-tso (1S), Ø-a-tso (2S), Ø-i-tɕo (3.RLS), j-o-tso (1PI), o-j-o-tso (1PE), Ø-a-tsɨ-lo (2P), o-tɕo (3P.RLS) // l-o-tso (3.IRLS) ‘to throw, to shoot’

(66) tok-o-sim (1S), Ø-a-sɨm (2S), Ø-ɨ-ɕɨm (3.RLS), j-o-sɨm (1PI), o-j-osɨm (1PE), Ø-a-sɨm-lo (2P), o-ɕɨm (3P.RLS) // d-o-sɨm (3.IRLS) ‘to give to’

4.5. Radical verbs

CH radical verbs may show a number of irregularities, some of which will not be discussed here (but see Ciucci 2013a). The 1-prefix is in most cases *tVk-*, but *t-* is also used. They have no morphological distinction between 3.RLS and 3.IRLS. Their vocalic pattern is irregular. The 1-vowel is in most cases high, while the 2-vowel is either /a/ or /e/. One often observes root allomorphy: the possibly original first root-vowel is sometimes only found in the 3-person and can reduce to /ɨ/ (67) or delete in the rest of the paradigm (68):

(67) tɨk-ɨ-tɨna (1S), Ø-a-tɨna (2S), Ø-Ø-tana (3.RLS), j-ɨ-tɨna (1PI), o-j-ɨ-tɨna (1PE), a-tɨnɨ-lo (2P), o-tana (3P) // Ø-Ø-tana (3.IRLS) ‘to dive’

(68) tɨk-ɨ-n̥ta (1S), Ø-e-n̥ta (2S), Ø-Ø-n̥eta (3.RLS), j-ɨ-n̥ta (1PI), o-j-ɨ-n̥ta (1PE), Ø-e-n̥tɨ-lo /

Ø-e-n̥te-lo (2P), o-n̥eta (3P) // Ø-Ø-n̥eta (3.IRLS) ‘to be patient with someone’

The 1-vowel (and to a lesser extent the 2-vowel) can harmonize to the original first root-vowel to be found in the 3-person, showing up as /e/ (69) or /o/ (70).

(69) t-e-bɨɕɨ (1S), Ø-e-bɨɕɨ (2S), Ø-Ø-beɕɨ (3.RLS), j-e-bɨɕɨ (1PI), o-j-e-bɨɕɨ (1PE),
Ø-e-bɨɕɨ-lo (2P), o-beɕɨ (3P) // Ø-Ø-beɕɨ (3.IRLS) ‘to fall’

Root-initial consonants can undergo word-initial fortition in the 3-person: e.g. /b/ → /p/ (70) and /r/ → /n/ (71). A few verbs show both prefixal and radical 3-person (71), probably owing to analogical pressure from prefixal verbs:

(70) t-o-bɨter (1S), Ø-a-bɨter (2S), Ø-Ø-poter (3.RLS), j-o-bɨter (1PI), o-j-o-bɨter (1PE),
Ø-a-bɨter-lo (2P), o-poter (3P) // Ø-Ø-poter (3.IRLS) ‘to scold’

(71) t-ɨ-rãha (1S), Ø-e-rãha (2S), tɕ-ɨ-rãha / Ø-Ø-naha (3.RLS), j-ɨ-rãha (1PI), o-j-ɨ-rãha (1PE),
Ø-e-rãha-lo (2P), o-tɕ-ɨ-rãha (3P.RLS) // d-ɨ-rãha / n-ɨ-rãha / Ø-Ø-naha (3.IRLS)[24]
‘to load up’

4.6. Irregular and defective verbs

CH has three utterly irregular verbs which cannot be included in any of the above described inflectional classes: *n̥o* (3.RLS) ‘to go’, *i:* (3.RLS) ‘to get’ and *n̥oj* (3.RLS) ‘to take’. The paradigm of the last verb is reported below, while the others offer themselves for important comparative observations (see Section 5.4.2):

(72) tok-a-hi: / tak-a-hi: (1S), boj (2S), n̥oj (3.RLS), j-u-kwi: / j-u-ki: (1PI), o-j-u-kwi: /
o-j-u-ki: (1PE), boj-lo / bolɨ-lo (2P), o-n̥oj (3P.RLS) // d-oj (3.IRLS) ‘to take’

Equally interesting from the comparative point of view are some members of the set of CH defective verbs, which use the 3.RLS for all persons, only adding the affixes *-lo* and *o-* when required by the context. Here is one example: *kem* (3.RLS), *kemlo* or *kemɨlo* (1PI.GP/2P), *okem* (3P) ‘to realize, to discover’.

5. Comparison

In this section we shall compare the verb inflection of the three Zamucoan languages in order to attempt at reconstructing the verb system of Proto-Zamucoan. First, we shall introduce the free pronouns and propose a reconstruction of the pronoun system of Proto-Zamucoan (Section 5.1), as a preliminary step in the reconstruction of the personal prefix system. Second, we shall show that the vocalic pattern is similar in all Zamucoan languages and that some exceptions have a plausible diachronic explanation (Section 5.2.1). Third, we shall show that the Zamucoan languages have the same major verb types: prefixal, thematic and radical verbs (Section 5.2.2).

5.1. Personal pronouns

[24] The most frequently used form for the irrealis is *nɨraha.*

The following table compares the free personal pronouns in the Zamucoan languages. Personal pronouns and verb prefixes do not coincide, but the similarity is obvious, as shown by the phonemes in bold of Table 8, which coincide with those of the verb prefixes in the respective languages. These similarities will be discussed while reconstructing the verb morphology of Proto-Zamucoan (see Section 6).

Table 8. Free personal pronouns in the Zamucoan languages

	Old Zamuco	Ayoreo	Chamacoco
1S	(u)**j**u	(u)**j**u	jok
2S	(u)w**a** <(u)gua>	(u)**wa**	ow**a**
3S	[wite <güite> / ude (M)] [wate <guate> / uda (F)]	[ude (‘this’ M)] [udak (‘this’ F)] [ute (‘that’ M)] [wate (‘that’ F)]	ɨr(e), [wɨtɕɨ (M), wate (F)]
1P	(u)**j**ok	(u)**j**ok	e**j**ok (PI), ejoklo (GPI) **õ**r**j**ok (PE)
2P	(u)w**a**k <(u)guac>	(u)**wak**	ol**a**k (P), olaklo (GP)
3P	ore	ore	**õ**r, [wɨr]

AY and OZ 1- and 2-pronouns show both a plain and an emphatic form. 2-pronouns are characterized by /a/, as in OZ and AY verb morphology, and by labiality. The latter feature is also detectable in CH, where /l/ in the 2P-pronoun possibly originated from the fortition of /w/. The 3S-pronouns in square brackets are also used as demonstratives or, as in CH, have an ambiguous status between demonstrative and determiner. Thus, the Zamucoan languages have no dedicated 3S-pronouns. Although this is a cross-linguistically relatively frequent feature, it is worth observing that the abundance of alternatives for the 3S-person (by no means exhausting the possibilities of AY and CH demonstratives) suggests a straightforward explanation for the polymorphy of the 3-person verb inflection, as opposed to the remaining persons.

Proto-Zamucoan did not have clusivity, for reasons that will be discussed below (Section 7.2). In all Zamucoan languages /k/ indicates plurality in 1- and 2-pronouns. This marker is not found in nominal morphology. Its presence in the CH 1S-pronoun *jok* suggests that this element was originally a 1P-pronoun. One can surmise that, before acquiring clusivity, the language had an opposition between a plain and an emphatic form in the 1P, i.e. *jok* vs *ejok*, and that the former was at some point reinterpreted as 1S. A possible reconstruction of Proto-Zamucoan personal pronouns is reported in Table 9 (adapted from Bertinetto [2011b: 9]).

Table 9. Proto-Zamucoan free pronouns

1S	*(u)jV_{back}
2S	*(u)wa
3S	[*wite (M)] [*wate (F)]
1P	*(u)jV_{back}k
2P	*(u)wak

3P	*ore

5.2. Vocalic pattern irregularities and root allomorphy

As often observed, irregularity in one language can often correspond to regularity in another. Thus, irregularities can find a diachronic explanation and are useful cues for reconstruction. In this section we shall attempt to show this with respect to the CH vocalic patterns and root allomorphy, two strictly related phenomena.

5.2.1. *The thematic vowel*

Within the Zamucoan family, one can detect thematic vowel correspondences suggesting a diachronic stability that goes back to Proto-Zamucoan. In all languages non-high thematic vowels are generally preserved in the whole paradigm. OZ and AY thematic /a/ may correspond to CH /a/ or /e/, the latter being an innovative feature (73):

(73) AY j-a-huke (1S), b-a-huke (2S), tɕ-a-huke (3), j-a-hu-ho (1P), wak-a-hu-tɕo (2P)
‘to split, to chop’
CH t-e-hek (1S), Ø-e-hek (2S), ts-e-hek (3.RLS), j-e-hek (1PI), o-j-e-hek (1PE),
Ø-e-hek-lo (2P), o-ts-e-hek (3P.RLS) // d-e-hek (3.IRLS) ‘to divide, to split’

The following CH verbs exhibit an irregular vocalic pattern. Comparison proves that the CH 3-person /e/ in (74) and /a/ in (75) are innovations, while the original thematic vowel is in both cases shown by the 1-person:

(74) OZ RLS: a-gu (1S), t-a-gu (3); IRLS: t-a-gu (3) ‘to eat’
AY j-a-gu (1S), b-a-gu (2S), t-a-gu (3), j-a-ho (1P), wak-a-tɕo (2P) ‘to eat, to bite’
CH t-a-w (1S), Ø-e-w (2S), t-e-w (3.RLS), j-a-hu (1PI), o-j-ahu (1PE), Ø-e-w-lo /
Ø-e-lɨ-lo (2P), o-t-e-w (3P) // t-e-w (3.IRLS) ‘to eat’

(75) OZ RLS: o-rã (1S), t-o-rã (3); IRLS: t-o-rã (3) ‘to bring, to take’
AY ɲ-õ-ra (1S), m-õ-ra (2S), t-õ-ra (3), ɲ-õ-ra-ŋo (1P), wak-õ-ra-ɲo (2P) ‘to throw out’
AY j-õ-ra-(h)i (1S), b-õ-ra-(h)i (2S), t-õ-ra-(h)i (3), j-õ-ra-ŋo-(h)i (1P),
wak-õ-ra-ɲo-(h)i (2P) ‘to come from, to leave from’
CH tok-õ-ra (1S), Ø-ã-ra (2S), t-ã-ra (3.RLS), j-ã-ra (1PI), o-j-ã-ra (1PE), Ø-ã-r-lo (2P),
o-t-ã-ra (3P) // t-ã-ra (3.IRLS) ‘to come from; to throw’

AY /i/ can correspond to CH /u/ or vice versa, so that an overall correspondence between the high vowels emerges (76). The vocalic inventory of CH is, however, richer than that of AY and OZ, owing to the presence of /ɨ/. This mostly corresponds to a high vowel in the other languages (77), but can also be the result of vowel reduction (78). The latter point proves that /ɨ/ is a CH innovation:

(76) AY j-i-keta (1S), b-a-keta (2S), tɕ-i-keta (3), j-i-keta-go (1P), wak-a-keta-jo (2P)
‘to heal, to save; to kindle a fire’
CH t-u-kuta (1S), Ø-e-kuta (2S), tɕ-u-kuta (3.RLS), j-u-kuta (1PI), o-j-u-kuta (1PE),
Ø-e-kutɨ-lo (2P), o-tɕ-u-kuta (3P.RLS) // d-u-kuta (3.IRLS) ‘to heal; to catch fire’

(77) OZ RLS: a-u-mate (1S), tɕ-u-mate (3) ‘to finish’

AY ɲ-i-mate (1S), b-a-mate (2S), tɕ-i-mate (3), ɲ-i-ma-ko (1P), wak-a-ma-tɕo (2P)
'to finish, to complete'
CH t-ɨ-mɨt (1S), Ø-e-mɨt (2S), tɕ-ɨ-mɨt (3.RLS), j-ɨ-mɨt (1PI), o-j-ɨ-mɨt (1PE), Ø-e-mɨt-lo (2P), o-tɕ-ɨ-mɨt (3P.RLS) // n-ɨ-mɨt (3.IRLS) 'to finish, to complete'

(78) AY ɲ-a-murase (1S), m-a-murase (2S), tɕ-a-murase (3), ɲ-u-mura-ko (1P), wak-a-mura-so (2P) 'to put down, to take down, to lower, to bring down'
CH t-ɨ-rmas (1S), Ø-e-rmas (2S), tɕ-ɨ-rmas (3.RLS), j-ɨ-rmas (1PI), o-j-ɨ-rmas (1PE), Ø-e-rmas-lo (2P), o-tɕ-ɨ-rmas (3P.RLS) // n-ɨ-rmas (3.IRLS) 'to go down, to come down; to topple'

In the 2-person of all Zamucoan languages, high thematic vowels are replaced by what originally was a prefix-vowel, usually /a/ in OZ and AY and /a/ or /e/ in CH (see the examples above).[25] Although /e/ is more frequent than /a/ in CH, a number of phonological correspondences — to be illustrated in future contributions — between lexically related words, with /a/ in OZ and AY and /e/ in CH, demonstrate that /e/ is a CH innovation:

(79) AY j-i-hotɕa (1S), b-a-hotɕa (2S), tɕ-i-hotɕa (3), j-i-hotɕa-go (1P), wak-a-hotɕa-jo (2P) 'to dig, to carve'
CH t-i-hĩtsa (1S), Ø-a-hãtsa / Ø-e-hĩtsa (2S), tɕ-i-hĩtsa (3.RLS), j-i-hĩtsa (1PI), o-j-i-hĩtsa (1PE), Ø-a-hatsã-lo / Ø-a-hãts-lo / Ø-a-hatsɨ̃-lo / Ø-e-hĩtsɨ-lo (2P), o-tɕ-i-hĩtsa (3P.RLS) // n-i-hitsã (3.IRLS) 'to dig, to excavate'

However, 2-person /e/ is also found in some AY verbs with thematic /i/. This exception is likely due to vowel fusion (/ai/ → /e/), namely to occasional non-application of the thematic vowel replacement mechanism. Evidence for retention of thematic /i/ after 2-person /a/ also stems from OZ *tɕise* (8), confirming the originally prefixal status of /a/:[26]

(80) OZ RLS: a-i-se (1S), da-i-se (2S), tɕ-i-se (3), a-i-ko (1P), da-i-so (2P) 'to reach'
AY j-i-se (1S), b-e-se (2S), tɕ-i-se (3), j-i-ko (1P), wak-e-so (2P) 'to find, to meet, to reach'
CH t-i-ɕ (1S), Ø-e-ɕ (2S), tɕ-i-ɕ (3.RLS), j-i-ɕ (1PI), o-j-i-ɕ (1PE), Ø-e-ɕ-lo / Ø-e-ɕi-lo (2P), o-tɕ-i-ɕ (3P.RLS) // d-i-ɕ (3.IRLS) 'to meet, to reach'

CH *tɕeːs* has an irregular vocalic pattern, but once again comparison with AY shows that CH 3-person /e/ is an innovation:

(81) AY j-i-gas (1S), b-a-gas (2S), tɕ-i-gas (3), j-i-ga-ko (1P), wak-a-ga-so (2P) 'to bite, to sting'
CH t-iː-s (1S), Ø-aː-s (2S), tɕ-eː-s (3.RLS), j-iː-s (1PI), o-j-iː-s (1PE), Ø-aː-s-lo (2P), o-tɕ-eː-s (3P.RLS) // d-iː-s / l-iː-s (3.IRLS) 'to bite, to sting, to criticize'[27]

[25] See Greenberg (1987: 44–48) on the pattern *i-*, *a-*, *i-* of the first three persons in South American languages. The 2S-prefix *a-* is found in some Chaco languages such as Chiquitano (Galeote Tormo 1993: 149-202; Sans 2013: 29), Chorote (Gerzenstein 1979: 87–93), Maká (Gerzenstein 1995: 84–97) and Nivaclé (Fabre 2014: 80, 133–153), see also Viegas Barros (2013b: 315).

[26] The preservation of 2-person /e/ before /i/ in CH *ej-behe* (2S) (Section 4.3.1, ex. 46) suggests that thematic vowel retention occasionally persisted in CH after the general change /a/ → /e/ had taken place. Note that 2-person /e/ in AY *b-e-se* (2S) and CH *ej-behe* (2S) stems from different sources: vowel fusion in *b-e-se* vs thematic vowel retention in *ej-behe*.

[27] This verb has the 3.RLS variants *tɕees* and *tseːs*. According to the informants, the former is preferred by elderly

To sum up, Proto-Zamucoan had five possible thematic vowels: /a e i o u/. At some point a vowel replacement mechanism was adopted, such that high thematic vowels were substituted by the 2-person prefix-vowel /a/. However, this should not be regarded as an exceedingly old phonological process, considering that exceptional cases of thematic vowel retention can be observed in the available data. Finally, comparison shows that 2-person /a/ → /e/ is a CH innovation.

5.2.2. *Root allomorphy*

The preservation of 2-person /a/ in CH is ostensibly related to 2-person root allomorphy, a phenomenon not observed in the other Zamucoan languages. The problem here consists in deciding whether the 2-person root is innovative or conservative with respect to the 1- and 3-persons. We have evidence for both options. In the following examples, cross-linguistic comparison shows that the 3-person root-initial consonants /tɕ/ and /j/ changed into /ts/ (82–83) or /l/ (84–85) in the 2-person. Evidence for these phonological changes can be found, as far as /tɕ/ → /ts/ is concerned, in the morphological correspondences between the OZ and AY class of *tɕ*-verbs and the CH subclass of *ts*-verbs (see Table 11 in Sections 5.3–5.3.1). As far as /j/ → /l/ is concerned, the evidence directly stems from across-the-board lexical comparison, considering that /l/ only exists in CH and mostly corresponds to /d/ in OZ and AY (e.g., OZ and AY *tokade* (3) 'to happen' vs CH *tokole* (3) 'to happen'). In some thematic verbs, even the 1-person may share the same root as the 2-person (83):

(82) AY j-i-tɕagu (1S), b-a-tɕagu (2S), tɕ-i-tɕagu (3), j-i-tɕa-ho (1P), wak-a-tɕa-tɕo (2P)
'to pierce; to stab; to give an injection'
CH t-i-tɕew (1S), Ø-a-tsew (2S), tɕ-i-tɕew (3.RLS), j-i-tɕew (1PI), o-j-i-tɕew (1PE),
Ø-a-tsew-lo (2P), o-tɕ-i-tɕew (3P.RLS) // d-i-tɕew (3.IRLS) 'to pierce; to dig; to write'

(83) AY j-i-tɕo (1S), b-a-tɕo (2S), tɕ-i-tɕo (3), j-i-tɕo-go (1P), wak-a-tɕo-jo (2P) 'to shoot'
CH tok-o-tso (1S), Ø-a-tso (2S), Ø-i-tɕo (3.RLS), j-o-tso (1PI), o-j-otso (1PE),
Ø-a-tsɨ-lo (2P), o-tɕo (3P.RLS) // l-o-tso (3.IRLS) 'to throw, to shoot'

(84) OZ RLS: a-i-jage (1S), d-a-jage (2S), Ø-i-jage (3), a-i-jage-go (1P), d-a-jage-o (2P);
IRLS: j-i-jage (1S.IRLS), Ø-Ø-tɕage (3.IRLS), j-i-jage-go (1P.IRLS), a-jage-o (2P.IRLS)
'to stand up'
AY j-i-jage (1S), b-a-jage (2S), Ø-Ø-tɕage (3), j-i-jage-go (1P), wak-a-jage-jo (2P)
'to stand up'
CH t-i-jehet / tik-i-jehet / tɨk-i-jehet (1S), Ø-a-lehet (2S), Ø-i-jehet (3.RLS), j-i-jehet (1PI),
o-j-i-jehet (1PE), Ø-a-lehetɨ-lo / Ø-a-lehet-lo (2P), o-jehet (3P.RLS) //
Ø-Ø-tsehet (3.IRLS) 'to stand, to stand up'

(85) OZ RLS: a-i-jo (1S) 'to fly'
AY j-i-jo (1S), b-a-jo (2S), Ø-Ø-tɕo (3), j-i-jo-go (1P), wak-a-jo-jo (2P)
'to jump, to leap, to fly'
CH tɨk-i-jo (1S), Ø-a-lo (2S), Ø-i-jo (3.RLS), j-i-jo (1PI), o-j-i-jo (1PE),
Ø-a-lɨ-lo / Ø-a-lo-lo (2P), o-jo (3P.RLS) // Ø-Ø-tso (3.IRLS) 'to jump; to fly'

However, in some cases the CH 2-person root-initial consonant is definitely more conservative than in the rest of the paradigm. For instance, in (86–87) 2-person /a/, owing to its

speakers, the latter by young speakers.

inherent [low] feature, has blocked the palatalization of /s/, as shown by comparison with the other languages:

(86) OZ RLS: a-i-saw <aizau> (1S), d-a-saw <dazau> (2S), tɕ-i-saw <chizau> (3) ‘to take’
AY j-i-sa (1S), b-a-sa (2S), tɕ-i-sa (3), j-i-sa-go (1P), wak-a-sa-jo (2P) ‘to touch, to pick up, to grab, to accept’
CH t-i-ɕew (1S), Ø-a-sew (2S), tɕ-i-ɕew (3.RLS), j-i-ɕew (1PI), o-j-i-ɕew (1PE), Ø-a-sew-lo / Ø-a-si-lo (2P), o-tɕ-i-ɕew (3P.RLS) // d-i-ɕew (3.IRLS) ‘to hold, to take, to grab’

(87) AY j-u-sake (1S), b-a-sake (2S), tɕ-u-sake (3), j-u-sa-ho (1P), wak-a-sa-tɕo (2P) ‘to crack open, to split open’ (with this meaning it is followed by *gaj*)
CH tɨk-ɨ-ɕak / t-i-ɕak (1S), Ø-a-sak (2S), tɕ-i-ɕak (3.RLS), j-i-ɕak (1PI), o-j-i-ɕak (1PE), Ø-e-ɕak-lo / Ø-e-ɕakɨ-lo (2P), o-tɕ-iɕak (3P.RLS) // d-i-ɕak (3.IRLS) ‘to break’

Thus, in at least some verbs with the conservative 2-vowel /a/, the 2-person exhibits the original status of the root. This is also confirmed by (88), where CH has two variants for the 2-person, namely with root-initial /h/ vs /j/, and the former only found in the variant with /a/. The correspondence of AY root-initial /ŋ̊/ and CH /h/ in (88) is also visible in (89). One can suppose that CH /j/ was brought about by the anteriority of the inflectional vowel, while the 2-vowel /a/ preserved the original root-initial consonant /h/:[28]

(88) AY ɲ-i-ŋ̊okãre (1S), m-a-ŋ̊okãre (2S), tɕ-i-ŋ̊okãre (3), ɲ-i-ŋ̊okã-ko (1P), wak-a-ŋ̊okã-tɕo (2P) ‘to frighten’
CH t-i-j̊ok (1S), Ø-a-hok / Ø-e-j̊ok (2S), tɕ-i-j̊ok (3.RLS), j-i-j̊ok (1PI), o-j-i-j̊ok (1PE), Ø-a-hok(ɨ)-lo / Ø-e-j̊ok-lo (2P), o-tɕ-i-j̊ok (3P.RLS) // d-i-j̊ok (3.IRLS) ‘to frighten’

(89) AY j-/ɲ-i-ŋ̊otɕa-me (1S), b-/m-a-ŋ̊otɕa-me (2S), tɕ-i-ŋ̊otɕa-me (3), j-/ɲ-i-ŋ̊otɕa-ŋo-me / j-/ɲ-i-ŋ̊otɕa-go-me (1P), wak-a-ŋ̊otɕa-ɲo-me / wak-a-ŋ̊otɕa-jo-me (2P) ‘to bury’
CH t-i-hitsɨm (1S), Ø-a-hatsɨm / Ø-e-hitsɨm (2S), tɕ-i-hitsɨm (3), j-i-hitsɨm (1PI), o-j-i-hitsɨm (1PE), Ø-a-hatsɨm-lo / Ø-e-hitsɨm-lo (2P), o-tɕ-i-hitsɨm (3P.RLS) // d-i-hitsɨm (3.IRLS) ‘to bury’

The development of CH root allomorphy is summed up in Table 10. As a general remark, one can observe that all CH verbs which preserve — at least in an alternating form — the original 2-person vowel /a/, exhibit in either the 2- or the 3-person clear hints of conservativity also with respect to the root-initial consonant. This finds a natural explanation when the conservative root is to be found in the 2-person with inflectional /a/, which is itself a conservative feature. It is at any rate notable that preservation of 2-person /a/ is always accompanied by symptoms of conservativity even when these are to be found in the 3-person. This indicates that verbs with 2-person /a/ started at some point to be listed in the mental lexicon as irregular, thus triggering further paradigm non-homogeneity:

Table 10. Root-initial consonant and person where it is found

Original consonant		*Innovative consonant*	*Examples*
/tɕ/ (3)	>	/ts/ (2)	(82), (83)

[28] The change /i/ → /a/ in the first root-vowel of *a-hatsɨm* in (89) is due to harmonization to the inflectional vowel; this sort of phonological change, also observed elsewhere (Section 4.3.2, ex. 52), has no morphological relevance.

/j/ (3)	>	/l/ (2)	(84), (85)
/s/ (2)	>	/ɕ/ (3)	(86), (87)
/h/ (2)	>	/j/ (3)	(88)

5.3. Inflectional classes

Based on the 3.(RLS) morphology, all Zamucoan languages exhibited three verb groups: prefixal, thematic and radical. Thematic and radical verbs form a macro-class on its own, while prefixal verbs include *tɕ*- and *t*-verbs classes in OZ and AY, further splitting into two more subclasses in CH: *ts*- and *d*-verbs (Table 11). This suggests the parsimonious hypothesis that Proto-Zamucoan might have had four classes: *tɕ*-, *t*-, thematic and radical verbs. Strong support for this claim comes from the lexical correspondences to be shown below (for more details, see Ciucci 2013a). This is particularly striking in the case of the fairly irregular radical verbs, whose cross-linguistically shared features could hardly be the result of independent evolution. As noted in Section 5.1, the morphological variety found in the 3-person could be due to the lack of a dedicated 3S-pronoun.[29]

In the following sections we shall compare the prefixal verbs, discussing the origin of CH *ts*-(Section 5.3.1) and *d*-verbs (Section 5.3.2), and explaining why there are comparatively more *t*-verbs in CH than in OZ and AY (Section 5.3.3). Next, we shall focus on thematic (Section 5.3.4) and radical verbs (Section 5.3.5).

Table 11. Verb paradigms as based on the 3.(RLS) marker

	FIRST MACRO-CLASS PREFIXAL VERBS				SECOND MACRO-CLASS NON-PREFIXAL	
	FIRST CLASS		SECOND CLASS		THIRD CLASS	FOURTH CLASS
OLD ZAMUCO (OZ)	*tɕ*-verbs		*t*-verbs		Thematic verbs	Radical verbs
AYOREO (AY)	*tɕ*-verbs		*t*-verbs		Thematic verbs	Radical verbs
CHAMACOCO (CH)	First subclass: *tɕ*-verbs	Second subclass: *ts*-verbs	Third subclass: *t*-verbs	Third subclass: *d*-verbs	Thematic verbs (*i*-, *u*-, *i*-)	Radical verbs
PROTO-ZAMUCOAN	**tɕ*-verbs		**t*-verbs		*Thematic verbs	*Radical verbs

5.3.1. tɕ- *and* ts-*verbs*

OZ and AY *tɕ*-verbs correspond to CH *tɕ*- or *ts*-verbs, as in (90). CH *ts*-verbs originated from a split of Proto-Zamucoan *tɕ*-verbs, and indeed *tɕ*- and *ts*- occasionally alternate (see Section 4.2):

(90) OZ RLS: a-w-agos <aguagoz> (1S), d-a-gos (2S), tɕ-u-agos (3) ‘to hide, to conceal’
AY j-a-kose (1S), b-a-kose (2S), tɕ-a-kose (3.RLS), j-a-ko-ko (1P), wak-a-ko-so (2P)
‘to hide, to conceal’

[29] Leaving aside the possible contact origin of the *t*- and *d*-prefixes (Ciucci 2014), on a purely speculative basis one might propose that the realis prefix derived from a Proto-Zamucoan proximal demonstrative while the irrealis prefix came from a distal demonstrative. Needless to say, we have no direct evidence for this: the only thing we can say is that all prefixes contain an apical segment, just like the independent pronouns listed in Table 8.

CH t-a-kɨs (1S), Ø-a-kɨs (2S), ts-a-kɨs (3.RLS), j-a-kɨs (1PI), o-j-akɨs (1PE), Ø-a-kɨs-lo (2P), o-ts-a-kɨs (3P.RLS) // l-a-kɨs (3.IRLS) ‘to hide, to conceal’

The CH 3-prefix *ɕ-* is an allomorph of *ts-* (Section 4.2) and corresponds to OZ and AY *tɕ-* (91–93). AY *tɕuhe* (92) is a regular verb, while CH *ɕu:* (92–93), as pointed out in Section 4.3.3, ex. (56), has the two meanings ‘to kill’ and ‘to make’ (causative), each with its own irregular 2-person. With the latter meaning, *ɕu:* (93) corresponds to the OZ causative verbs *tɕihi* (93).[30] The most striking similarity between these two verbs is that in both cases the 2-vowel coincides with the high thematic vowel. This is a unique exception in Zamucoan verbs:

(91) AY j-i-garu (1S), b-a-garu (2), tɕ-i-garu (3), j-i-garu-ko (1P), wak-a-garu-tɕo (2P) ‘to tie, to fasten’
CH t-i-jeru (1S), Ø-a-heru (2S), ɕ-i-jeru (3), j-i-jeru (1PI), o-j-i-jeru (1PE), Ø-a-heru-lo (2P), o-ɕ-i-jeru (3P.RLS) // d-i-jeru (3.IRLS) ‘to close, to tie’

(92) AY j-u-he (1S), b-a-he (2S), tɕ-u-he (3), j-u-he-go (1P), wak-a-he-jo (2P) ‘to kill, to hit’
CH t-u: (1S), tuk (2S), ɕ-u: (3.RLS), j-u-hu (1PI), o-j-u-hu (1PE), tuk-lo (2P), o-ɕ-u: (3P.RLS) // d-u-hu (3.IRLS) ‘to kill, to hit, to beat’

(93) OZ RLS: ah-i-hi (1S), d-i-hi (2S), tɕ-i-hi (3); IRLS: d-i-hi (3) ‘to make’ (causative verb)
CH t-u: (1S), u-hu (2S), ɕ-u: (3.RLS), j-u-hu (1PI), o-j-u-hu (1PE), u-hu-lo (2P), o-ɕ-u: (3P.RLS) // d-u-hu (3.IRLS) ‘to make’ (used in causative constructions)

As one can see in the above examples, OZ *tɕ-*verbs and CH *tɕ-* and *ts*-verbs mark the 3.IRLS by means of *d-* (see Section 6.3).

5.3.2. d-*verbs*

CH *d*-verbs, with their 3-person allomorphs *d-* (with free variant *l-*, and nasalized cognate *n-*) and *j-*, may stem from two sources. First, on the assumption that radical verbs existed in Proto-Zamucoan, as proved by robust lexical correspondences, one can claim that the CH verbs in (94–95) might have been radical verbs (note that the OZ and AY verbs in (94–95) have root-initial fortition in the 3-person):

(94) AY j-/ɲ-i-ŋana (1S), b-/m-a-ŋana (2S), Ø-Ø-kana (3), j-/ɲ-i-ŋana-ŋo (1P), wak-a-ŋana-ŋo (2P) ‘to laugh’
CH tɨk-i-na (1S), Ø-a-na (2S), j-a-na (3.RLS), j-i-na (1PI), o-j-i-na (1PE), Ø-a-nɨ-lo (2P), o-j-a-na (3P) // j-a-na (3.IRLS) ‘to laugh’

(95) OZ RLS: Ø-Ø-dak (3); IRLS: j-i-rak (1S), Ø-Ø-dak (3) ‘to come’
AY j-i-rik (1S), b-a-rik (2S), Ø-Ø-dik (3), j-i-ri-ho (1P), wak-a-ri-tɕo (2P) ‘to walk’
CH tɨk-ɨ-rk (1S), Ø-e-rk (2S), d-ɨ-rk (3.RLS), j-ɨ-rk (1PI), o-j-ɨ-rk (1PE), Ø-e-rkɨ-lo (2P), o-d-ɨ-rk (3P) // d-ɨ-rk (3.IRLS) ‘to walk’

Some *d*-verbs, however, might have originated from *tɕ-*verbs, as shown by *dohɨr* in (96) corresponding to an AY *tɕ-*verb. One should recall, in this connection, that in CH *tɕ-*verbs the 3.IRLS has *d-*; thus the coincidence of 3.RLS and 3.IRLS in *d*-verbs naturally leads to the

[30] In AY, by contrast, there is no dedicated verb to form causative constructions.

hypothesis that in this class the latter replaced the former:

(96) AY j-o-ru (1S), b-o-ru (2S), tɕ-o-ru (3), j-o-ko (1P), wak-o-tɕo (2P)
'to climb, to mount, to ride'
CH tok-o-hɨr (1S), Ø-o-hɨr (2S), d-o-hɨr (3.RLS), j-o-hɨr (1PI), o-j-o-hɨr (1PE), Ø-o-hɨr-lo (2P), o-d-o-hɨr (3P) // d-o-hɨr (3.IRLS) 'to go up'

5.3.3. t-*verbs*

A few *t*-verbs have precise correspondences in the three languages, thus leading to the conclusion that this class was present in Proto-Zamucoan. This class is fairly reduced in OZ and AY, while it is one of the largest in CH. Since in both OZ and CH *t*-verbs the 3.RLS and the 3.IRLS coincide, one may hypothesize a fairly old state of affairs.[31] As an example:

(97) OZ RLS: a-gari (1S), t-a-gari (3); IRLS: t-a-gari (3) 'to believe
AY ɲ-/j-a-ŋari (1S), m-/b-a-ŋari (2S), t-a-ŋari (3), ɲ-/j-a-ŋa-ko-j (1P), wak-a-ŋa-tɕo-j (2P)
'to listen to, to pay attention to, to obey to'
CH tãk-ɨ̃-r (1S), Ø-ẽ-r (2S), t-ẽ-r (3.RLS), j-ẽ-r (1PI), o-j-ẽ-r (1PE), Ø-ẽ-r-lo (2P), o-t-ẽ-r (3P) // t-ẽ-r (3.IRLS) 'to listen to'

The high number of CH *t*-verbs is probably due to class shift. In some cases they correspond to AY *tɕ*-verbs (98–99). In other cases (100–101), a CH *t*-verb corresponds to an OZ and/or AY radical verb, via reinterpretation of the root-initial consonant /t/ as a 3-prefix:

(98) AY j-u-tɕi (1S), b-a-tɕi (2S), tɕ-u-tɕi (3), j-u-tɕi-go (1P), wak-a-tɕi-jo (2P) 'to defecate'
CH tɨk-ɨ-tɕɨ (1S), Ø-e-tɕɨ (2S), t-ɨ-tɕɨ (3.RLS), j-ɨ-tɕɨ (1PI), o-j-ɨ-tɕɨ (1PE), Ø-e-tɕɨ-lo (2P), o-t-ɨ-tɕɨ (3P) // t-ɨ-tɕɨ (3.IRLS) 'to defecate'

(99) AY j-u-tĩra-ha (1S), b-a-tĩra-ha (2S), tɕ-u-tĩra-ha (3), j-u-tĩ-ko-ha (1P),
wak-a-tĩ-tɕo-ha (2P) 'to spit at/in/on'
CH tɨk-ɨ-tɨrãha (1S), Ø-e-tɨrãha (2S), t-ɨ-tɨrãha (3.RLS), j-ɨ-tɨrãha (1PI), o-j-ɨ-tɨrãha (1PE), Ø-e-tɨrãha-lo (2P), o-t-ɨ-tɨrãha (3P) // t-ɨ-tɨrãha (3.IRLS) 'to spit'

(100) OZ RLS: Ø-Ø-tata (3), a-i-tata-go-a (1P); IRLS: j-i-tata (1S), Ø-a-tata (2S), Ø-Ø-tata (3)
'to say, to tell'
AY j-a-tata (1S), b-a-tata (2S), tɕ-a-tata (3),[32] j-a-tata-go (1P), wak-a-tata-jo (2P)
'to advise; to tell; to inform; to relate; to preach'
CH t-iː-ta (1S), Ø-a-ta (2S), t-a-ta (3.RLS), j-iː-ta (1PI), o-j-iː-ta (1PE), Ø-a-ta-lo / Ø-a-tɨ-lo (2P), o-tata (3P) // t-a-ta (3.IRLS) 'to say, to report'

(101) AY j-i-tiboha (1S), b-a-tiboha (2S), Ø-Ø-tiboha (3), j-i-tiboha-go (1P),
wak-a-tiboha-jo (2P) 'to yawn'
CH tɨk-ɨ-buhu / tuk-ɨ-buhu (1S), Ø-e-buhu (2S), t-ɨ-buhu (3.RLS), j-ɨ-buhu (1PI), o-j-ɨ-buhu (1PE), Ø-e-buhu-lo (2P), o-t-ɨ-buhu (3P) // t-ɨ-buhu (3.IRLS) 'to yawn; to lick'

5.3.4. *Thematic verbs*

[31] As pointed out by Ciucci (2014: 16, 33–34), the prefix *t-* may be due to linguistic contact with other Chaco languages.
[32] AY has regularized this verb, assigning it to the *tɕ*-class.

All Zamucoan languages exhibit a small class of thematic verbs. This class is exceedingly small in AY, to the extent that no OZ thematic verbs (at least among the documented ones), nor any CH thematic verbs, have a thematic cognate in AY.

In the following examples (102–104), the OZ and CH thematic verbs maintain the 3-person realis vs irrealis opposition by means of a radical 3.IRLS. Interestingly, these irrealis forms may correspond to the 3-person of AY radical verbs, suggesting that in these examples the AY 3.RLS was replaced by the 3.IRLS (previous to the general loss of the realis vs irrealis opposition in the 3-person). This might have contributed to the paucity of thematic verbs in AY. In the examples involved, all characterized by thematic vowel /i/, one can note the fortition of word-initial /j/ in the 3.IRLS (or simply 3-person in AY), giving rise to /tɕ/ in OZ and AY and to /ts/ in CH. This hypothesis is partly supported by the frequent affrication into [dʑ] with which syllable-initial /j/ is pronounced in present-day AY and CH. Since these verbs exhibit root-initial /j/ in all Zamucoan languages, this feature might be attributed to Proto-Zamucoan:

(102) OZ RLS: a-i-jage (1S), d-a-jage (2S), Ø-i-jage (3), a-i-jage-go (1P), d-a-jage-o (2P);
IRLS: j-i-jage (1S), Ø-Ø-tɕage (3), j-i-jage-go (1P), a-jage-o (2P) ‘to stand up’
AY j-i-jage (1S), b-a-jage (2S), Ø-Ø-tɕage (3), j-i-jage-go (1P), wak-a-jage-jo (2P) ‘to stand up’
CH t-i-jehet / tik-i-jehet / tɨk-i-jehet (1S), Ø-a-lehet (2S), Ø-i-jehet (3.RLS), j-i-jehet (1PI), o-j-i-jehet (1PE), Ø-a-lehetɨ-lo / Ø-a-lehet-lo (2P), o-jehet (3P.IRLS) // Ø-Ø-tsehet (3.IRLS) ‘to stand, to stand up’

(103) OZ RLS: a-i-jo (1S) ‘to fly’
AY j-i-jo (1S), b-a-jo (2S), Ø-Ø-tɕo (3), j-i-jo-go (1P), wak-a-jo-jo (2P) ‘to jump, to leap, to fly’
CH tɨk-i-jo (1S), Ø-a-lo (2S), Ø-i-jo (3.RLS), j-i-jo (1PI), o-j-i-jo (1PE), Ø-a-lɨ-lo / Ø-a-lo-lo (2P), o-jo (3P.RLS) // Ø-Ø-tso (3.IRLS) ‘to jump; to fly’

(104) OZ RLS: a-i-jaw (1S), Ø-i-jaw (3) ‘to stop, to quit’
AY j-i-ja (1S), b-a-ja (2S), Ø-Ø-tɕa (3), j-i-ja-go (1P), wak-a-ja-jo (2P) ‘to stop, to quit’
CH t-i-jehe / tɨk-i-jehe (1S), Ø-a-lehe (2S), Ø-i-jehe (3.RLS), j-i-jehe (1PI), o-j-i-jehe (1PE), Ø-a-lehe-lo (2P), o-j-ehe (3P.RLS) // Ø-Ø-tsehe (3.IRLS) ‘to stop’

Another interpretation of this phonetic change is possible, however. The examples below (105–107) show the 3.IRLS-prefix *d-* in CH. Supposing that all thematic verbs had such a prefix in the 3.IRLS, one might propose that in any verb with thematic /i/ and root-initial /j/, as in (102–104), the 3.IRLS *d*-prefix underwent a fairly natural process of affrication: /dij/ → /tɕ/. This would have the advantage of yielding a uniform explanation for the whole set of thematic verbs, all of them having the 3.IRLS-prefix *d-*, with prefix affrication before /ij/ (see e.g. 105–107).[33]

However, as (105–107) show, it is not always easy to identify the original thematic vowel in these verbs. In at least one case (107) the irregular vocalic pattern might even have been a fairly old feature, as comparison shows. In any case, the cross-linguistic correspondences indicate that, in a number of instances (as in the examples below), the originally thematic AY verbs underwent analogical leveling to the most regular verb class:

[33] This is further supported by the (admittedly few) AY nominals which have this sort of affrication in the 3-person possessive inflection: e.g. *j-i-jaguej* (1S), *Ø-Ø-tɕaguej* (3) ‘famine’; *j-i-jaripi* (1S), *Ø-Ø-tɕaripi* (3) ‘chair’. The 3-person *d-* possessive marker is indeed a rare, but attested allomorph in AY.

(105) AY j-o-hi (1S), b-o-hi (2S), tɕ-o-hi (3), j-o-hi-go (1P), wak-o-hi-jo (2P) ‘to drink’
CH tok-o-ho (1S), Ø-e-he (2S), Ø-ɨ-hɨ (3.RLS), j-o-ho (1PI), o-j-o-ho (1PE), Ø-e-he-lo (2P), o-ho (3P.RLS) // d-o-ho (3.IRLS) ‘to drink’

(106) AY j-i-tɕo (1S), b-a-tɕo (2S), tɕ-i-tɕo (3), j-i-tɕo-go (1P), wak-a-tɕo-jo (2P) ‘to shoot’
CH tok-o-tso (1S), Ø-a-tso (2S), Ø-i-tɕo (3.RLS), j-o-tso (1PI), o-j-otso (1PE), Ø-a-tsɨ-lo (2P), o-tɕo (3P.RLS) // l-o-tso (3.IRLS) ‘to throw, to shoot’

(107) OZ RLS: o-si (1S), Ø-i-si (3.RLS); IRLS: j-i-si (1S), Ø-a-si (2S) ‘dare’
AY j-i-si (1S), b-a-si (2S), tɕ-i-si (3), j-i-si-go / j-i-si-ŋo (1P), wak-a-si-jo / wak-a-si-ɲo (2P) ‘to give’
CH tok-o-ɕi (1S), Ø-e-ɕi (2S), Ø-ɨ-ɕi (3.RLS), j-o-ɕi (1PI), o-j-o-ɕi (1PE), Ø-e-ɕi-lo (2P), o-ɕi (3P.RLS) // d-o-ɕi (3.IRLS) ‘to pay; to give; to contaminate; to deliver’

5.3.5. *Radical verbs*

In all Zamucoan languages, radical verbs have no realis vs irrealis opposition in the 3-person, although the 3.IRLS might have had a prefix to distinguish it from the radical 3.RLS. Since, however, the absence of contrast is observable in all three languages, there are strong reasons to attribute this feature to the proto-language. The 1-person mostly has thematic vowel /i/ (or possibly /ɨ/ in CH), which can harmonize to the first root-vowel, as in the AY verb in (108):

(108) OZ RLS: a-i-juare (1S), Ø-Ø-juare (3); IRLS: Ø-Ø-juare (3) ‘to cry’
AY j-u-juare (1S), b-a-juare (2S), Ø-Ø-juare (3), j-u-jua-ko (1P), wak-a-jua-tɕo (2P) ‘to wail, to grieve with mournful crises, to lament’
CH tɨk-i-jeɽ (1S), Ø-e-jeɽ (2S), Ø-Ø-jeɽ (3.RLS), j-i-jeɽ (1PI), o-j-i-jeɽ (1PE), Ø-e-jeɽ-lo (2P), o-jeɽ (3P) // Ø-Ø-jeɽ (3.IRLS) ‘to cry’

In all Zamucoan languages, radical verbs may show word-initial fortition in the 3-person. For instance, root-initial /r/ turns into /n/ or /d/. It is thus plausible that this feature was also shared by Proto-Zamucoan radical verbs:

(109) AY ɲ-i-rihi (1S), m-a-rihi (2S), Ø-Ø-nihi (3), ɲ-i-rihi-ŋo (1P), wak-a-rihi-ɲo (2P) ‘to wake up’
CH tɨk-ɨ-rɨ̃hɨ (1S), Ø-e-rɨ̃hɨ (2S), Ø-Ø-nɨhɨ (3.RLS), j-ɨ-rɨ̃hɨ (1PE), o-j-ɨ-rɨ̃hɨ (1PI), Ø-e-rɨ̃hɨ-lo (2P), o-nɨhɨ (3P) // Ø-Ø-nɨhɨ (3.IRLS) ‘to get up’

In CH radical verbs, the original first root-vowel is preserved in the 3-person, while it often reduces or deletes in the rest of the paradigm. This is confirmed by the fact that this vowel often corresponds to the AY first root-vowel, unchanged in the whole paradigm (110). Consequently, the 3-person of CH radical verbs can turn out to be innovative in the root-initial consonant (see Section 4.5), but conservative in the first root-vowel:

(110) AY j-i-todo (1S), b-a-todo (2S), Ø-Ø-todo (3), j-i-todo-go (1P), wak-a-todo-jo (2P) ‘to be afraid of’
CH tɨk-ɨ-tɨla (1S), Ø-a-tɨla (2S), Ø-Ø-tola (3.RLS), j-i-tɨla (1PI), o-j-i-tɨla (1PE), Ø-a-tɨli-lo (2P), o-tola (3P) // Ø-Ø-tola (3.IRLS) ‘to fear, to be afraid of’

In CH, one can detect cases of alternation between radical and prefixal 3-person, e.g. *naha* (RLS=IRLS) vs *tɕ-i-rãha* (RLS), *d-i-rãha* / *n-i-rãha* (IRLS), corresponding to AY *naha* (111). The prefixal form is ostensibly the result of regularization and this might explain why the set of CH radical verbs is smaller than the corresponding AY set:

(111) AY j-i-rã (1S), m-a-rã (2S), Ø-Ø-na-ha (3), j-i-rã-ŋo-ha (1P), wak-a-rã-ŋo-ha (2P) 'to put into'
CH t-i-rãha (1S), Ø-e-rãha (2S), tɕ-i-rãha / Ø-Ø-naha (3.RLS), j-i-rãha (1PI), o-j-i-rãha (1PE), Ø-e-rãha-lo (2P), o-tɕ-i-rãha (3P.RLS) // d-i-rãha / n-i-rãha / Ø-Ø-naha (3.IRLS) 'to load up'

A similar example is the CH regular *tɕ*-verb *tɕukutɨm*, which also has the uninflectable radical form *kutɨm*, used for all persons. The latter corresponds to the AY radical 3-person *kutame*:

(112) AY j-u-kuta-me (1S), b-a-kuta-me (2S), Ø-Ø-kuta-me (3), j-u-kuta-go-me (1P), wak-a-kuta-jo-me (2P) 'fed up with (to be); lazy about doing something (to be); tired of (to be)'
CH t-u-kutɨm (1S), Ø-e-kutɨm (2S), tɕ-u-kutɨm (3.RLS), j-u-kutɨm (1PE), o-j-u-kutɨm (1PI), Ø-e-kutɨm-lo (2P), o-tɕ-u-kutɨm (3P.RLS) // d-u-kutɨm (3.IRLS) 'to increase fire; to refuse to work'[34]

AY *suru* or *tɕuhuru* (corresponding to the irregular OZ *soru*) has both a radical and a prefixal 3-person, the latter being the obvious result of regularization. In these verbs, root-initial /h/ turns into /s/ in the radical 3.(RLS):

(113) OZ RLS: a-horu (1S), soru (3S), a-ho-ko (1P), d-a-ho-jo (2P); IRLS: soru (1S), noru (3) 'to close'
AY j-u-hu(ru) (1S), b-a-hu(ru) (2S), Ø-Ø-su(ru) / tɕ-u-hu(ru) (3), j-u-hu-ko (1P), wak-a-hu-tɕo / wak-a-hu-jo (2P) 'to close (in), to shut in'

5.4. Further irregularities useful for diachronic reconstruction

The present section discusses a few exceptions worth considering in order to reconstruct the Proto-Zamucoan affixes. We shall analyse some irregular CH thematic verbs (Section 5.4.1) as well as verbs that cannot be included in any inflectional class (Section 5.4.2). Finally, we shall compare the defective verbs in the three languages (Section 5.4.3).

5.4.1. *Irregularities in CH thematic verbs*

The CH verb *umo* conveys two meanings: 'to sleep' and 'to see', each with its own 3.IRLS, *umo* (identical to the 3.RLS) and *nomo* respectively. Since this verb corresponds to two AY verbs, one can argue that two phonetically similar CH verbs merged into a single one, only preserving a distinct 3.IRLS. Besides, since AY 'to sleep' is radical, one may assume that CH 'to sleep' was radical too, as also suggested by the fact that 3.RLS and 3.IRLS coincide:[35]

[34] When the form *kutɨm* means 'to refuse to work', it can be used for all persons.
[35] Cf. Maká *-maʔ*, Nivaclé *-ma*, Chorote *-maː*, Wichí *-maʔ* 'to sleep' (Viegas Barros 2013b: 306).

(114) OZ RLS: a-i-mo (1S); IRLS: j-i-mo (1S) ‘to see’
OZ RLS: a-i-mo (1S); IRLS: j-i-mo (1S), j-i-mogo (1P) ‘to sleep’[36]
AY ɲ-i-mo, m-a-mo (2S), ʦ-i-mo (3), ɲ-i-mo-ŋo (1P), wak-a-mo-ɲo (2P) ‘to see’
AY ɲ-i-mo (1S), m-a-mo (2S), Ø-Ø-mo (3), ɲ-i-mo-ŋo (1P), wak-a-mo-ɲo (2P)
‘to sleep’
CH tok-o-mo / tuk-u-mo (1S), Ø-a-mo (2S), Ø-u-mo (3.RLS), j-u-mo (1PI), o-j-u-mo (1PE),
Ø-a-m-lo (2P), o-mo (3P.RLS) ‘to sleep; to see’
‘to sleep’ → Ø-u-mo (3.IRLS), o-mo (3P.IRLS)
‘to see’ → n-o-mo (3.IRLS), o-n-o-mo (3P.IRLS)

The verbs in (115–116) have very interesting irregularities. OZ *ina* and CH *ĩja* are thematic, while their AY cognate has both a prefixal and a radical 3-person (*ʦ-i-n̥ina* / *nona*). The latter corresponds (as also observed in ex. 102–104, Section 5.3.4) to the OZ and CH irrealis form. Comparison shows that the irregular vocalic pattern in (115) is a fairly old feature.

The CH 1P in (115–116) exhibits a rare /kw/-insertion before the syllables *-na* and *-im*, which correspond to lexical syllables in the other Zamucoan languages.[37] This /kw/-insertion is the only observable vestige of the CH 1P-suffix. The fact that it is present in both the 1PI and the 1PE indicates that the clusivity split is a relatively recent innovation in CH. It is also worth noting that the CH 2P-suffix *-lo* follows the original lexical syllables *-na* and *-im*. This indicates that *-lo* (a suffix not to be found in the verb morphology of the other Zamucoan languages) is an innovation following the inglobation of the lexical syllable into the root. By contrast, in OZ and AY the plural suffixes predictably precede the lexical syllables (see 115 for OZ, and 116 for AY):

(115) OZ RLS: o-na (1S), d-o-na (2S), Ø-i-na (3), o-ko-na (1P), d-o-jo-na (2P);
IRLS: j-a-hi-na (1S), m-o-na (2S), n-o-na (3), i-ko-na (1P), m-o-ɲo-na (2P)
‘to roll/to go round’
AY j-i-n̥ina (1S), b-a-n̥ina (2S), Ø-Ø-nona / ʦ-i-n̥ina (3), j-i-n̥ina-ŋo (1P),
wak-a-n̥ina-ɲo (2P) ‘to accompany, to go with’
CH tok-õ-ja (1S), m-e-ja (2S), Ø-ĩ-ja (3.RLS), j-u-kwĩja / j-ũ-ja (1PI), o-j-u-kwĩja /
o-j-ũ-ja (1PE), j-õ-j-lo [ɲojlo] (1PI.GP), m-e-j-lo (2P), õ-ja (3P.RLS) // n-o-ja (3.IRLS)
‘to accompany’

(116) AY j-i-hi(ɲ)o-me (1P), b-a-hi(ɲ)o-me (2P), Ø-Ø-noɲo-me (3), j-i-hi(ɲ)o-ŋo-me (1P),
wak-a-hi(ɲ)o-ɲo-me (2P) ‘to leave’
CH tok-oj-m (1S), m-oj-m (2S), Ø-iː-m (3.RLS), j-u-kwim (1PI), o-j-u-kwim (1PE),
m-oj-m-lo (2P), oj-m (3P.RLS) // n-oj-m (3.IRLS) ‘to leave’

The OZ and CH verbs in the above examples show the 2-prefix *m-* in either realis (CH) or irrealis form (OZ), which is extremely rare in these languages and corresponds to the AY 2.RLS-prefix *b-*/*m-*. In CH this is obviously a relict of the 2.RLS, since the present-day prefixless CH 2-person used to be an irrealis form (see Section 6.2 for the demonstration). In apparent contradiction with this, the CH verb *tejʦɨm* ‘to look’ in (4) has, in addition to the normal 2-person, two irregular forms (only used as imperative) with the prefix *n̥-* (the voiceless counterpart of OZ and AY *m-*).

[36] Unfortunately, there is not enough information on OZ; the same forms are reported for the 1S.RLS, but one does not know to what extent the two paradigms coincided.

[37] The suffix *-na* has been reinterpreted as part of the root in AY, but in OZ it was clearly a lexical syllable. Regrettably, the only observable OZ lexical syllables are in the verbs *ina* (115) and *i* (119). As for the traces of lexical syllables in CH, see (Section 6.5).

This is ostensibly the product of the loss of the realis vs irrealis opposition in the 2-person: the disappearance of the 2.RLS *b-*/*m*-prefix made it possible to occasionally reinterpret this residual morphome as an irrealis marker. A similar reinterpretation must have occasionally occurred in OZ after the 2.RLS *b-*/*m*-prefix was replaced by *d-* (see Section 6.2):

(117) tɨk-e-jtɕɨm / tak-a-tɕɨm (1S), Ø-e-jtɕɨm (2S), t-e-jtɕɨm (3.RLS), j-e-jtɕɨm (1PI),
o-j-e-jtɕɨm (1PE), Ø-e-jetɕɨm-lo (2P), o-t-e-jtɕɨm (3P) // t-e-jtɕɨm (3.IRLS) 'to look at'
m̥-e-jtɕɨm / m̥ej (2S.IMP) / m̥-e-jtɕɨm-lo (2P.IMP)

5.4.2. *Irregular verbs*

In (118) and (119) we offer two verbs with irregular behavior in all Zamucoan languages. Although they represent single cases, these examples are important because, as often observed in historical linguistics, an irregular behavior may be a window into remote stages of the language:[38]

(118)	OZ 'to go'	AY 'to go, to leave'	CH 'to go'
1S	a-i-no	j-i-hi / ji	tak-a-ha
2S		b-a-bo	bo / bu
3S	no	n̥o	n̥o
1P		j-i-ko	j-u-ko
1PE			o-j-u-ko
2P		wak-a-bo-jo	buli-lo / boli-lo
			bulu-lo
			bul-lo / bollo[39]
3P			o-n̥o
1S.IRLS			
2S.IRLS	bo	bo	
3S.IRLS			do
1P.IRLS	j-i-no-go-j		
2P.IRLS	bo-jo[40]	bo-jo	

(119)	OZ 'to go'	AY 'to bring, to do, to get'	CH 'to bring, to do, to get'
1S	o-j	j-i-hi / ji	tak-a-hiˀ
2S	do-j	b-a-be	b-e-j
3	i	do-j	iː
1P	o-ko-j	j-i-ko-j	j-u-kw-iˀ / j-u-k-iˀ
1PE			o-j-u-kw-iˀ / o-j-u-k-iˀ
2P	do-jo-j	wak-a-be-jo-j	b-e-j-lo / b-e-li-lo
3P.RLS			o-j
1S.IRLS	j-a-hi		
2S.IRLS	be	be	
3.IRLS	do-j		do-j

[38] In (118–119), the morphological segmentation is purely tentative, owing to the highly idiosyncratic nature of the irregularities involved.

[39] The consonantal sequence *-ll-* in *bullo* and *bollo* is the result of two abutting consonants due to vowel loss (see Section 4.1.1). CH 2S *bu* does not correspond to any verb form in OZ and AY, but rather to the AY adverb or exclamative particle *bu* 'rapidly, quickly, at once' (Higham *et al.* 2000: 128), which might have been a variant of the 2.IRLS *bo* and is semantically related to the imperative usage of this form.

[40] According to Chomé, OZ 2-person *bo* (2S) and *bojo* (2P) were used as imperative (i.e. in irrealis contexts).

1P.IRLS	i-ko-j	
2P.IRLS	be-jo-j	be-jo-j

In (119), the OZ and CH 3.IRLS *doj* corresponds to the AY 3-person (as also typical of OZ and CH thematic verbs; see Section 5.3.4). In both of the above examples the OZ and AY 2S.IRLS *bo* and *be* correspond to the CH 2S-person *bo/bu* and *bej*. Although /b/ might have been a 2-prefix, in these verbs it was probably reinterpreted as part of the root, yielding a suppletive form. This hypothesis is further supported by the AY 2.RLS *babo* and *babe* in (118–119), where the prefix *b-* plus the inflectional vowel /a/ are added to the suppletive root.[41] Similarly, in CH *bulɨlo, bolɨlo* and *bululo* (118), *-lɨ-* (or *-lu-*) constitute a suppletive, synchronically opaque form of the root, to which the prefix *bV-* was attached.

In (118–119), 1P *-kw-*/*-ko* in CH corresponds to the OZ and AY plural suffix *-ko*.[42] Unlike in OZ and AY, in the course of time this suffix lost its functional justification owing to the different prefixes used for 1S and 1P. However, the CH verbs in (118–119) prove that plural suffixes also existed in ancient CH, so that they can be considered a distinctive feature of Proto-Zamucoan (see Section 6).

In (119), final *-j*/*-i* behaves as a lexical syllable and is the reduced form of *-(i)hi*, to be found in the AY and CH 1S-person.[43] As already mentioned, *-(i)hi* is a lexical syllable in AY and probably had the same role in OZ and CH. Notably, in CH the lexical syllable follows the 1P-suffix (just as in OZ and AY) but precedes the 2P-suffix; the latter case shows that the lexical syllable lost its original status and was reinterpreted as part of the root. In other words, in *belɨlo* the original clitic **=ɨhɨ* has turned into *-lɨ*. By contrast, the 1P *(o-)j-u-kw-iˀ* / *(o-)j-u-k-iˀ* exhibits the original, pan-Zamucoan situation.

5.4.3. *Defective and uninflectable verbs*

All Zamucoan languages exhibit uninflectable and defective verbs, such as those in (120):

(120) a. OZ bek ‘to rain’, AY beke ‘to rain’, CH ɨbɨk ‘to rain’[44]
b. OZ dahat ‘to boil’, AY dahate ‘to boil’, CH dahat ‘to boil’

Some verbs are defective or uninflectable in one language, but exhibit full inflection in another:

(121) AY ɲ-i-poo̱a (1S), m-a-poo̱a (2S), Ø-Ø-poo̱a (3), ɲ-i-poo̱a-ŋo (1P), wak-a-poo̱a-ŋo (2P)
‘to bawl out, to scold’. Also: Ø-Ø-poo̱a (3) ‘to burst, to explode’
CH Ø-Ø-poo̱a (3RLS/IRLS), Ø-Ø-poo̱a-lo (2P/1PI.GP), o-poo̱a (3P)
‘to sprout, to flourish; to burst, to explode’

(122) OZ RLS: a-i-tokade (1S), Ø-Ø-tokade (3), d-a-tokadeo (2P); IRLS: Ø-Ø-tokade (3)
‘to come out, to happen’
AY tokade ‘to come out, to happen’

[41] The irregular behavior of this verb might also be due to the fact that it was possibly borrowed from Nivaclé or Chorote (see Ciucci 2014).
[42] In the case of CH *-kw-*, only found before /i/ (see Sections 5.4.1–5.4.2), /w/ derives from /o/ via raising.
[43] The AY verbs *o̱o* (118) and *doj* (119) share the 1S *jihi* and *ji*. This is an obvious case of paradigm merging. The lexical syllable *-hi* suggests that *jihi* was the original 1S of *doj* and *ji* the 1S of *o̱o*.
[44] Cf. the Kadiwéu noun *ebiki* ‘rain’ (Sandalo 1995: 197).

CH tɨk-i-tokole / tɨk-ɨ-tokole (1S), Ø-a-tokole (2S), Ø-Ø-tokole (3.RLS), j-i-tokole / j-ɨ-tokole (1PI), o-j-i-tokole / o-j-ɨ-tokole (1PE), Ø-a-tokolɨ-lo / Ø-a-tokol-lo (2P), o-tokole (3P) // Ø-Ø-tokole (3.IRLS) ‘to exit, to come out, to happen’

The AY verb in (123) has two alternative forms for the 3-person, one of which is suppletive. The highly irregular CH equivalent only preserves the 3-person, now used for all persons:

(123) AY j-u-gusi (1S), b-a-gusi (2S), dehi / tɕ-u-gusi (3), j-u-gu-ko-j / jugu-ko-hi (1P), wak-a-gu-so-j / wak-a-guso-hi (2P) ‘to be (locative-existential copula)’
CH de (3.RLS) // tɕ-ɨ-hɨ (3.IRLS) ‘to be (locative-existential copula)’[45]

The CH verb *ɨtso* only has the 3-person form, with realis vs irrealis opposition. Comparison with OZ / AY 3.(RLS) *tɕo* and OZ 3.IRLS *do* suggests that *-ts-* and *-l-*, synchronically to be considered as infixes, used to be prefixes:

(124) OZ RLS: o (1S), d-o (2S), tɕ-o (3), o-ko (1P), d-o-jo (2P); IRLS: tɕ-o (1S), o (2S), d-o (3), tɕ-o-ko (1P) o-jo (2P) ‘to look like, to be like’
AY j-o (1S), b-o (2S), tɕ-o (3), j-o-ko (1P), wak-o-jo (2P) ‘to be like, to sound like’
CH ɨtso (3.RLS) // ɨlo (3.IRLS) ‘to be like, to look like’

6. Reconstructing the Proto-Zamucoan verb system

In this section we attempt to reconstruct the verbal system of Proto-Zamucoan. We shall address the following topics: 1-person (Section 6.1), 2-person (Section 6.2), 3-person (Section 6.3), plural suffixes (Section 6.4). Finally, we shall discuss the AY lexical syllables and their CH vestiges, as well as the diminutive and derivational suffixes (Section 6.5).

The Proto-Zamucoan verb inflection may be reconstructed as in the following table. The justification for the individual choices will be discussed below:

Table 12. Reconstruction of Proto-Zamucoan verb inflection

Proto-Zamucoan verb inflection		
	Realis	**Irrealis**
1S [Section 6.1]	***a**-V-ROOT	***j**-V-ROOT *__tɕ__-V-ROOT (only for *tɕ*-verbs) [Section 7.1]
2S [Section 6.2]	***ba-/ma**-V-ROOT (*da-V-ROOT)	***a**-V-ROOT
3 [Section 5.3] [Section 6.3]	*__tɕ__-V-ROOT	*__d__-/__n__-V-ROOT
	***t**-V-ROOT	***t**-V-ROOT
	*Ø-V-ROOT	*Ø-Ø-ROOT (for verbs with 3.RLS in *ij-*) *__d__-/__n__-V-ROOT (/d/ → [l] or [d])
	*Ø-Ø-ROOT	*Ø-Ø-ROOT
1P	***a**-V-ROOT-**ko**	***j**-V-ROOT-**ko**

[45] The CH form *tɕɨhɨ* could be compared with the Wichí existential verb *'ihi* (3) (Viñas Urquiza 1974: I, 73).

[Section 6.1] [Section 6.4]		[***tɕ**-V-ROOT-**ko**] (only for *tɕ*-verbs) [Section 7.1]
2P [Section 6.2] [Section 6.4]	***ba**-/**ma**-V-ROOT-(**j**)**o** (*da-V-ROOT-(j)o)	***a**-V-ROOT-(**j**)**o**

As proposed in Section 5.3, Proto-Zamucoan had four inflectional classes based on 3.(RLS) morphology: *tɕ*-verbs, *t*-verbs, thematic verbs and radical verbs. OZ has the realis vs irrealis distinction in the whole paradigm, while AY only shows this contrast in the 1- and 2-person, and CH only in the 3-person (see Section 1.1 and Table 1). This complementary distribution clearly suggests that Proto-Zamucoan exhibited a fully-fledged realis vs irrealis opposition. Furthermore, Proto-Zamucoan used prefixes to indicate person inflection and suffixes to indicate plurality in the 1- and 2-person. Finally, Proto-Zamucoan had neither clusivity nor 3P inflection, which are CH innovations (Sections 7.2–7.3).

6.1. First person prefixes

The Proto-Zamucoan 1.IRLS-prefix **j-* can be found in AY and in the CH 1PI/PE, in the latter case preceded by /o/. This prefix (crucially present in 1-person pronouns, see Table 8) is also detectable in OZ, with the exception of *tɕ*-verbs, whose 1.IRLS-prefix is *tɕ-*. The fact that *j-* is found in all Zamucoan languages suggests that it must have been a Proto-Zamucoan 1.IRLS-prefix.[46]

The OZ 1.IRLS-prefix *tɕ-* is a puzzling case. It might be an innovation, but one might also interpret it as the distinctive feature of a specific class of verbs. It finds indeed a possible equivalent in the CH prefix *t-*, if the latter is the result of deaffrication. If this is so, OZ *tɕ-* and CH *t-* originally were the 1.IRLS exponents of *tɕ*-verbs, while /j/ was used in the other verb classes. This hypothesis will be further discussed in Section 7.1. If this is so, the 1.IRLS-prefix **tɕ-* must have disappeared from AY, where one only finds /j/-.

The 1S.RLS-prefix *tVk-* is a CH innovation (see Section 7.1). In this form, OZ exhibits the prefix *a-* while AY used to have a zero morpheme, as still observed in the older generation use. Since zero marking for 1-person is very rare cross-linguistically (Cysouw 2003: 58–59), one can suppose that the 1.RLS prefix **a-* was lost in AY via phonetic erosion. Indeed, one can note that the vowel sequences found in the OZ 1.RLS (see the bold characters in 125–128) simplified or disappeared in AY. This must also have happened in CH and can explain why this language shows no trace of the original Proto-Zamucoan 1.RLS, which was completely colonized by the 1.IRLS:

(125) OZ RLS: **a**-**e**kãre (1S), d-**a**-**e**kãre (1S), tɕ-**a**-**e**kãre (3) ‘to change’
AY j-**e**-kãre (1S), b-**e**-kãre (2S), tɕ-**e**-kãre (3), etc. ‘to change, to replace’

(126) OZ RLS: **a**-**ij**-**a**sore (1S), tɕ-**i**-**a**sore (3) ‘to help, to favour’
AY ɲ-**o**-sõre (1S), tɕ-o-sõre (3) etc. ‘to provide comfort by helping, to pity by helping’
CH tok-**o**-sɨr (1S), ts-o-sɨr (3.RLS) etc. // d-**o**-sɨr (3.IRLS) ‘to help, to favour’

(127) OZ RLS: **a**-**w**-**a**gos <aguagoz> (1S), d-a-gos (2S), tɕ-**u**-**a**gos (3) ‘to hide, to conceal’[47]

[46] The phones [ɲ] and [j] are allophones of /j/ in CH, while they correspond to two phonemes in AY, with distribution depending on nasal harmony. The 1-person *j-* is also observed in other Chaco languages, for instance in Chiquitano (Galeote Tormo 1993: 149-202). See also Viegas Barros (2013a: 294, 2013b: 314).

[47] On this verb, see Section 2.1, ex. (5c).

AY j-**a**-kose (1S), b-a-kose (2S), tɕ-**a**-kose (3), j-a-ko-ko (1P), wak-a-ko-so (2P)
'to hide, to conceal'
CH t-**a**-kɨs (1S), Ø-a-kɨs (2S), ts-**a**-kɨs (3.RLS), j-a-kɨs (1PI), o-j-akɨs (1PE), Ø-a-kɨs-lo (2P), o-ts-a-kɨs (3P.RLS) // l-a-kɨs (3.IRLS) 'to hide, to conceal'

As seen in Section 2.1 (ex. 5a-b), the OZ 1.RLS had consonant insertion (/j/) in order to avoid the formation of a triphthong (126, 128). This is not observed in the other Zamucoan languages (126), with the only exception of CH *tsakɨr* (128), which preserves the original thematic vowel /i/ and the glide /j/, as in OZ. Evidently, in both AY and CH the first root-vowel (/a/) — to be found in the OZ root *-akarihi* — was reinterpreted as thematic vowel (except, as said, for the CH 1-persons): cf. the theme *-a-kare* in AY and *-a-kɨr* in CH. Such a CH exception strongly suggests that the original Proto-Zamucoan 1.RLS must have had a shape similar to that of OZ.

(128) OZ RLS: **a-ij-a**karihi (1S) 'to sit'
AY j-**a**-kare (1S), b-a-kare (2S), tɕ-a-kare (3), j-a-ka-go (1P), wak-a-ka-jo (2P)
'to stay, to sit, to stop'
CH t-**ij-a**kɨr (1S), Ø-a-kɨr (2S), ts-a-kɨr (3.RLS), o-j-ij-akɨr (1PE), j-ij-akɨr / j-ij-aːr (1PI), Ø-a-kɨr-lo (2P), o-ts-a-kɨr (3P.RLS) // l-a-kɨhɨr (3.IRLS) 'to sit down, to rest'

6.2. Second person prefixes

The OZ and AY 2.IRLS, as well as the current CH 2.RLS, are prefixless, except that the high thematic vowels are replaced by the original prefix-vowel /a/ (or /e/, see Section 5.2.1). This indicates that the CH 2.RLS originally was the 2.IRLS, before the latter form was lost. The AY 2S.RLS-prefix *b-*/*m-* is not used by the other Zamucoan languages; since, however, it is found in a few irregular verbs (see Sections 5.4.1–5.4.2, ex. 115–119), it presumably was a Proto-Zamucoan feature. Indeed, the presence of /a/ and of labiality characterize (to a greater or lesser extent) the 2-person pronouns in all Zamucoan languages (see Table 8).[48] The 2-prefix **ba-*/*ma-* is thus a candidate for the original realis marker, as opposed to 2.IRLS **a-* (in both cases, as repeatedly observed, in the course of time /a/ replaced the high thematic vowels, or was itself cancelled by the non-high thematic vowels). The fact that such a 2.RLS bilabial prefix can also be found in the 2.IRLS of exceedingly few OZ and CH exceptions (see Sections 5.4.1–5.4.2, ex. 115, 117, 118) does not contradict this hypothesis, since this could easily be the consequence of the blurring of *b-*/*m-* as a 2.RLS marker.

The OZ 2.RLS *d-* is not found in the other languages. It is not a simple matter to decide whether this is an OZ innovation or if it dates back to Proto-Zamucoan **da-*. In the first option, one can suppose that 2.RLS *d-* is the result of assimilation to the 3.IRLS, which mostly exhibits the *d-* prefix. This finds a parallel in the possessive inflection of OZ and CH nouns, where the 2S- and 3-person often share a Ø-prefix. An alternative hypothesis finds at least weak support in the 2.RLS of CH *tɕiwãha* 'to sell' (129), which seems to maintain a trace of the original morpheme /n/ — the nasalized counterpart of /d/ — frozen into a root-initial consonant. Should this be the case, Proto-Zamucoan had two morphemes for the 2.RLS (**ba-*/*ma-* and **da-*/*na-*) alongside the 2.IRLS-prefix **a-*.[49] The two realis prefixes were possibly assigned to different inflectional classes. Interestingly, the only alleged trace of **da-*/*na-* in CH is found in a *tɕ*-verb, while traces of **ba-*/*ma-* are found in

[48] According to Greenberg (1987: 49), /m/ is a widespread 2-person marker in the American languages. See Comrie *et al.* (2010: 106) for the presence of /m/ as 2-person marker in other Chaco languages.

[49] As shown by Ciucci (2014: 15–16), the 2.RSL-prefix *d-* (< **-da*) is a plausible trace of contact with Mataco-Mataguayan.

OZ and CH verbs belonging to other sets. At some point, there must have been a process of paradigm leveling, so that *d-* and *b-* became the only 2.RLS-prefixes in OZ and AY respectively, while CH independently lost the 2-prefix consonant:

(129) CH t-i-wãha (1S), Ø-a-nuwãha (2S), tɕ-i-wãha (3.RLS), j-i-wãha (1PI), o-j-i-wãha (1PE), Ø-a-nuwãha-lo (2P), o-tɕ-i-wãha (3P.RLS) // n-i-wãha (3.IRLS) 'to sell'

Finally, AY has a peculiar distinction between the prefixes of 2S.RLS and 2P.RLS. The latter has the prefix *wak-*, an innovation deriving from the 2P free pronoun *(u)wak* (see Table 8).

6.3. Third person

The Proto-Zamucoan 3-person did not distinguish between singular and plural. The 3P-person is a CH innovation to be discussed in Section 7.3. The 3.RLS morphology has been discussed in Section 5.3 while comparing the different verb groups in the Zamucoan languages. As mentioned, Proto-Zamucoan had four classes: *tɕ*-verbs, *t*-verbs, thematic verbs and radical verbs. Since in all the languages *t*-verbs and radical verbs have the same form for 3.RLS and 3.IRLS, one can propose that such a feature stems from Proto-Zamucoan. By contrast, *tɕ*-verbs showed the irrealis prefix **d-*/*n-*.

As for the Proto-Zamucoan thematic verbs, they could be divided into two groups: (1) verbs with thematic 3.RLS in *ij-* alongside radical 3.IRLS beginning with /tɕ/; (2) the remaining verbs, showing the 3.IRLS-prefix **d-*/*n-*. However (as discussed in Section 5.3.4), this split may be the mere result of phonetic change in the sequence /dij/.

Although the realis vs irrealis opposition has been lost in the 3-person of AY, a trace of it persists in the only AY verb with the 3-prefix *n-*. This must be a relic of the 3.IRLS reanalysed as 3.RLS, a trend already noted for a number of CH *d*-verbs (Section 5.3.4):

(130) AY j-i-raɲi-me (1P), b-a-raɲi-me (2P), n-a-raɲi-me (3), j-i-raɲi-ŋo-me (1P), wak-a-raɲi-ŋo-me (2P) 'to be tired, to be fed up'[50]

6.4. Plural suffixes

Proto-Zamucoan plural suffixes carried a functional load, distinguishing the 1P and 2P from their singular counterparts, characterized by the same personal prefixes, as in OZ and (limited to 1P) in AY.

In OZ and AY, plurality is expressed by two series of suffixes, depending on the interaction with the final syllable (or consonant) of the root, namely on the mechanism of "mobile syllables" (Sections 2.7 and 3.5). The mobile syllables of OZ generally correspond to those of AY, although their inventory is shorter, possibly owing to scarcity of data. Interestingly, the 1P-suffixes *-go* and *-ko* coincide in both languages. The latter is used when there is substitution of the mobile syllable and turns into *-ho* when the latter begins with a velar consonant (Sections 2.7 and 3.5). CH, by contrast, has lost the 1P-suffix as a consequence of the 1S and 1PE/PI having different prefixes, but some exceptional verbs (see Sections 5.4.1–5.4.2) exhibit the relic *-kw-*/*-ko* corresponding to OZ and AY *-ko*. This indicates that **-ko* is a Proto-Zamucoan affix. The velar element is possibly related to the plurality marker of free pronouns (Section 5.1).

The 2P-suffixes seem to be connected with nominal morphology in all three languages, although CH *-lo* does not seem to have the same origin as the OZ and AY suffixes (*-o* and *-jo*,

[50] The vocalic pattern of this verb is irregular.

respectively). Both are also used to pluralize the base-form (BF) in nominal morphology.[51] In both languages, somewhat surprisingly, *-o* is added to masculine nominals with vowel-ending root (131b-c), while *-jo* (or *-io*)[52] is added to masculine nominals with consonant-ending root (131a):

(131) a. OZ erãp (MS.BF) 'mount' → eram-io (MP.BF) 'mounts'
b. OZ gigeda (MS.BF) 'house' → gigeda-o (MP.BF) 'houses'
c. AY tɕaripi (3.MS.BF) 'chair' → tɕaripi-o (3.MP.BF) 'chairs'

OZ uses *-jo*, *-tɕo* or *-so* to replace a mobile syllable, while AY only uses *-tɕo* or *-so*. Diachronically, it is plausible to assume that the only plural suffix was **-jo*, whose interaction with the mobile syllables has yielded all the mentioned allomorphs via a morphophonological mechanism also observed in nominal morphology. In essence, when *-jo* is added to nominal roots ending in *-k* or *-t*, it palatalizes into *-tɕo* (132a-b). This explains the presence of this suffix in OZ verbs in *-k* and in AY verbs in *-k* and *-t* (132c-e). In AY, *-tɕo* has subsequently spread to verbs with different final syllables, such as *-gu* (133a) and *-re* (133b-c), which in OZ preserve *-jo* (→ *ɲo*[53]):

(132) a. OZ daparebek (MS.BF) 'beggar' → daparebetɕo (MP.BF) 'beggars'
b. OZ pit (MS.BF) 'stick' → pitɕo (MP.BF) 'sticks'
c. OZ aipok (1S) → dapotɕo (2P) 'to be ashamed'
d. AY tak(e) (3) → wakatɕo (2P) 'to eat'
e. AY tibit(e) (3) → wakabitɕo (2P) 'to yell, to shout'

(133) a. AY tagu (3) → wakatɕo (2P) 'to eat, to bite'
b. AY tɕohare (3) → wakohatɕo (2P) 'to smell'
c. OZ tɕimetɕẽre (3) → dametɕẽɲo (2P) 'to love'

The same applies to the allomorph *-so*, found in both OZ and AY with roots ending in *-s* or *-sV*. Presumably, the glide of *-jo* merged into /s/ (134a-b), exactly as in the masculine plural of nominals with root ending in *-s* (134c):

(134) a. AY tɕigas(e) (3) → wakagaso (2P) 'to bite, to sting'
b. OZ aos (1S) → daoso (2P) 'to cast out'
c. AY apos (3.MS.BF) 'lamp' → aposo (3.MP.BF) 'lamps'

The AY verb in (135) shows further evidence that *-jo* was the original 2P-suffix used in all cases, including mobile syllable verbs. It exhibits both *-jo* and *-tɕo*, while only the latter would be expected. The former prefix is most probably a relic, as one can see in the corresponding OZ verb, where *-jo* substitutes final *-ru*:

(135) OZ a-horu (1S) → a-ho-ko (1P), d-a-ho-jo (2P) 'to close'
AY j-u-hu(ru) (1S) → j-u-hu-ko (1P), wak-a-hu-tɕo/-jo (2P) 'to cover, to close'

The innovative CH 2P-suffix *-lo* is also used in nominal morphology, as well as in the pronominal system (Section 5.1, Table 8). Diachronically it is a masculine plural full-form (see fn.

[51] The nominal morphology of the Zamucoan languages shows a tripartite system consisting of: base-form, full-form and indeterminate-form. For more information, see Bertinetto (2009) and Ciucci (2013a).
[52] The phonematic interpretation oscillates between /j/ and /i/, owing to the ambiguous status of <i> before a vowel.
[53] Here *-jo* turns into *-ɲo* owing to nasal harmony.

51). The innovative character of *-lo* is suggested by its interaction with the CH remnants of the lexical syllables: as it happens, *-lo* follows the lexical syllables, whereas in OZ and AY the corresponding 2P-suffixes precede the lexical syllables (see Section 5.4.1, ex. 115–116, Section 5.4.2, ex. 119, and Section 6.5). This proves that the OZ and AY lexical syllables behave as clitics, whereas in CH they were reinterpreted as part of the root with marginalization of the 2P-suffix. Interestingly, however, there is one irregular CH verb where the lexical syllable follows the relic of the 1P-suffix (Section 5.4.1, ex. 116). This proves that at an early stage CH behaved exactly like the other languages as far as lexical syllables were concerned. The subsequent change might be interpreted according to the following steps: (i) loss of the original 2P-suffix, giving rise to a reduced morphological pattern similar to present-day English where 2S and 2P coincide; (ii) inglobation of the lexical syllable into the root; (iii) introduction of the new 2P-suffix *-lo*.[54,55] In practice, although the CH 2P exponent is a peculiar innovation, it also derives from a nominal plural suffix, thus preserving the general Zamucoan pattern.

On the analogy to the OZ and AY data, one can hypothesize that the original CH 2P-suffix also was a masculine plural base-form suffix, namely **-(j)o*. One can thus surmise that the 2P-person of Proto-Zamucoan verbs showed the same suffixes as those found in the base form of masculine plural nominals, supposedly: *-o*/*-jo*. The former was possibly added after a vowel (as in nominal morphology) and was lost in AY verbs, while the latter was originally added to roots ending in a consonant.[56] In the course of time, the fusion of some root-final consonant/syllable with the plural suffixes yielded new allomorphs, giving rise to the OZ and AY mobile syllables mechanism.

As already pointed out, the AY 2P-suffix has lost its functional load, since the 2S and 2P-prefixes are different. As shown in Table 4 (Section 3.1), the 2P.RLS-prefix stems from the inglobation of the 2P-pronoun *wak* (see Section 5.1, Table 8). By contrast, the AY 2P.IRLS-suffix carries functional load, just like the 2P-suffix of the other Zamucoan languages. One may thus wonder why AY has preserved its 2P.RLS-suffix, although the prefix would suffice to express the 2S ~ 2P contrast. The most likely explanation lies in the Natural Morphology principle of system congruity (cf. Wurzel's 1984 *Systemenangemessenheit*) as fed by the mobile syllables mechanism: the plural suffix allomorphs — stemming from the fusion of the mobile syllables with the suffix itself — help the speaker maintain the lexical identity over and above the loss of the root-final segment(s) in the plural forms.

6.5. Residual lexical syllables and derivational suffixes in Chamacoco

In a few CH verbs the suffixes *-ɨm*/*-im* and *-ɨhɨ* modify the lexical meaning (136). They correspond to the AY lexical syllables *-(o)me*, *-(i)hi*, *-(a)ha*. The suffix *-ɨm*/*-im*, introducing an indirect object, is a relic deriving from an adposition which has disappeared in CH, while it exists as *ome* in both OZ and AY. The CH clitic counterpart *=ihi* of the AY locative adpositions *ihi/aha*, to be found in (136), is, however, still used as a polyfunctional preposition. As already pointed out, the CH lexical syllables *-ɨm*/*-im* and *-ɨhɨ*, differently from OZ and AY, precede the 2P-suffix (136), showing that they lost their original semantic autonomy to become part of the root (see Section 5.2.2, ex. 89;

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[54] The hypothesis of a phonological change **-jo* ⟶ *-lo* finds little support in the comparative data. The only such correspondence concerns the allomorphy *j*/*l* discussed in Section 5.2.2 (see 84–85). However, this is restricted to low vowel contexts and appears to be of no widespread application.

[55] In very rare cases, *-lo* can be attached to non verbal constituents, e.g., *j-akaha lɨkɨ-lo* (1PI-remain here-GP) 'let's all remain (1PI.GP) here', *akaha lɨkɨ-lo* (2-remain here-P) 'you remain (2P) here'. This further suggests that *-lo* is an innovation in the verb system.

[56] As for the original MP-BF suffix *-o*, it is still observed in CH and there are reasons, not discussed here, to surmise that CH also had the allomorph **-jo* as MP-BF suffix.

Section 5.3.5, ex. 112; Section 5.4.1, ex. 115–116 and Section 5.4.2, ex. 119):

(136) a. CH t-a-ta (3) → Ø-a-ti-lo (2P) ‘to say (something)’, t-a-tɨm (3) → Ø-a-tɨmlo (2P) ‘to tell (someone)’
b. CH Ø-ɨ-ɕi (3.RLS) → Ø-e-ɕi-lo (2P) ‘to pay, to deliver’, Ø-ɨ-ɕɨm (3.RLS) → asɨm-lo (2P) ‘to give something to someone’
c. CH Ø-ɨ-ɕimɨhɨ (3.RLS) → Ø-a-simɨhɨ-lo (2P) ‘to give (as a present)’

As also noted for AY (Section 3.6), the CH diminutive *-ap* (reduced form of *-a:p*) can be added to a verb to convey an attenuative nuance (137):

(137) a. CH tak-a-tɕɨm (1S) ‘to look’ → tak-a-tɕɨm-a:p (1S) ‘to look a little’
b. CH j-e-jtɕɨm (1PI) ‘to look’ → j-e-jtɕɨm-a:p (1PI) ‘to look a little’

In a few exceptions, the diminutive *-ap* or the clitic *=po* have been inglobated into the verb to modify its lexical meaning. In such cases they are separated from the root by the plural suffix, as with the OZ and AY lexical syllables. This is further evidence that CH preserves traces of the original behavior:

(138) a. CH t-ã:-tɕa (3) → a:-tɕĩ-lo (2P) ‘to come, to arrive’
b. CH t-ã:-tɕ-po (3) → a:-tɕĩ-l-po (2P) ‘to come back’

The following verbs have a negative form obtained by adding *-k* (cf. the OZ and AY negative particles *ke* and *ka*). Such a derivational mechanism is no longer productive, but the fact that it is found in both AY and CH suggests that it dates back to Proto-Zamucoan.

(139) a. CH tɕɨraha (3.RLS) ‘to know’ vs tɕɨrahak (3.RLS) ‘not to know’
b. AY tɕiraha (3) ‘to know’ vs tɕirahak (3) ‘not to know’
c. CH tsatso (3.RLS) ‘to be satisfied’ vs tsatsok (3.RLS) ‘not to be satisfied’

7. The evolution of the Chamacoco verb system

As shown by the above morphological comparisons (Section 6), CH presents a number of innovations: the 1S-prefix *tVk-* (Section 7.1), the clusivity split (Section 7.2) and the plural affixes *o-* and *-lo* (Section 7.3). The peculiar morphological manifestation of clusivity and the behavior of the pluralizer *o-* are typologically unexpected, and this suggests that they are innovations. We shall try and reconstruct the phases which have brought about the current CH verbal system, showing that, innovations aside, CH preserves one feature to be found in OZ but not in AY, namely the opposition between two 1S-prefixes depending on the verb class. Presumably this split dates back to Proto-Zamucoan.

7.1. The CH 1S-prefix

The Proto-Zamucoan situation was such that 1.RLS contrasted with 1.IRLS, presumably with two allomorphs in the irrealis mood, depending on the verb class (see Section 6.1). Furthermore, 1S and 1P had the same prefix and were distinguished by the plural suffix **-ko.*

Present-day CH exhibits a fairly different picture, with different prefixes for singular and

plural, although it still exhibits two different allomorphs for the 1S (1S *tVk-*/*t-* vs 1P *j-*). The similarity between the 1S-prefix *tVk-* and the 1S-pronoun *jok* cannot go unnoticed. As claimed in Section 5.1, *jok* and *ejok* were originally the plain and the emphatic 1P-pronoun, before the former was reinterpreted as 1S-pronoun. It is thus likely that the innovative 1S-pronoun was re-used as 1S-prefix, with **jVk-* later turning into *tVk-* for reasons detailed below. A similar phonetic change (**j-* > *t-*) involved the other 1S-prefix. The introduction of dedicated 1S-prefixes had obvious repercussions on the 1P-suffix, which eventually dropped owing to lack of functional motivation (Section 6.4).

The original situation of the CH 1-person, as shown in Table 13, was presumably very similar to that of OZ: the 1.IRLS had the **tɕ-*prefix in *tɕ*-verbs, and **j-* in the remaining verb classes (see Table 12, Section 6; note that, in the rest of this section, by *tɕ*-verbs we refer to the original class now split into *tɕ-* and *ts*-verbs; see Section 5.3.1). As a consequence, in *tɕ*-verbs the 1S.IRLS coincided with the 3.RLS.

Table 13. Original situation in CH

	*1S.RLS	*1P.RLS	*1S.IRLS	*1P.IRLS	*3.RLS
tɕ-verbs	***a***-V-ROOT	***a***-V-ROOT-*ko*	*tɕ*-V-ROOT	*tɕ*-V-ROOT-*ko*	*tɕ*-V-ROOT
non-*tɕ*-verbs	***a***-V-ROOT	***a***-V-ROOT-*ko*	*j*-V-ROOT	*j*-V-ROOT-*ko*	all remaining 3.RLS-forms

The evolution of the CH 1-person, both realis and irrealis, might be reconstructed as follows. For reasons discussed below (Section 7.2), at this early stage the language did not have clusivity:

(i) The 1.RLS **a-* was replaced by the 1.IRLS-allomorphs **tɕ-*/*j-*, with subsequent loss of the realis vs irrealis contrast in the 1-person. This violation of the principle of form/meaning correspondence finds an interesting parallel in the analogous colonization of the 2.RLS by the 2.IRLS (see Section 6.2); further support comes from the recent AY evolution, where the 1.RLS Ø-prefix was replaced by the 1.IRLS-prefix in the young generation speech:

	*1S.RLS	*1P.RLS	*1S.IRLS	*1P.IRLS	*3.RLS
tɕ-verbs	***tɕ***-V-ROOT	***tɕ***-V-ROOT-*ko*	*tɕ*-V-ROOT	*tɕ*-V-ROOT-*ko*	***tɕ***-V-ROOT
non-*tɕ*-verbs	***j***-V-ROOT	***j***-V-ROOT-*ko*	*j*-V-ROOT	*j*-V-ROOT-*ko*	all remaining 3.RLS-forms

(ii) Since in *tɕ*-verbs the innovative 1S.RLS **tɕ*-prefix was also used for the 3.RLS, the former prefix underwent dissimilation, via deaffrication:

	*1S	*1P	*3.RLS
tɕ-verbs	***t***-V-ROOT	***t***-V-ROOT-*ko*	***tɕ***-V-ROOT
non-*tɕ*-verbs	***j***-V-ROOT	***j***-V-ROOT-*ko*	the remaining 3RLS-forms

(iii) The original 1P-pronoun *jok* colonized the 1S-prefix **j-*, giving rise to **jVk-* in the appropriate verb class:

	*1S	*1P	*3.RLS
tɕ-verbs	***t***-V-ROOT	***t***-V-ROOT-*ko*	*tɕ*-V-ROOT
non-*tɕ*-verbs	***jVk***-V-ROOT	***j***-V-ROOT-*ko*	the remaining 3RLS-forms

(iv) Next, the *j*-prefix was identified as the 1P-marker, replacing the competing allomorph **t-* in *tɕ*-verbs. As a consequence, *t-* became the 1S-exponent of *tɕ*-verbs, contrasting with **jVk* in non-*tɕ*-verbs. At this point, the precondition for the 1P-suffix drop was satisfied, although the respective timing of this change and the one described under (v) cannot be determined:

	*1S	*1P	*3.RLS
tɕ-verbs	***t***-V-ROOT	***j***-V-ROOT(-*ko*)	*tɕ*-V-ROOT
non-*tɕ*-verbs	***jVk***-V-ROOT	***j***-V-ROOT(-*ko*)	the remaining 3RLS-forms

(v) Finally, the glide in *jVk-* underwent attraction by the competing allomorph *t-*, giving rise to *tVk-*:

	*1S	*1P	*3.RLS
tɕ-verbs	***t***-V-ROOT	***j***-V-ROOT	*tɕ*-V-ROOT
non-*tɕ*-verbs	***tVk***-V-ROOT	***j***-V-ROOT	the remaining 3RLS-forms

In the course of time, the selection of the *tVk-* and *t-* allomorphs showed some degree of inter-class leakage, possibly as a result of a natural entropic tendency. This fuzziness might have been increased by the phonetic restriction according to which *tVk* does not occur in verbs with root-initial /k/.[57] This explains, for instance, why *t-e-kɨr* (3.RLS/IRLS) 'to go for a walk' shows *t-* in the 1S (*t-e-kɨr*), even though *tVk-* is expected in *t*-verbs. Such examples are especially telling, because in this subclass the use of 1S *t-* generates ambiguity between the 1S and 3-person.

7.2. Chamacoco clusivity

In addition to the typologically rare combination of clusivity and greater plural (see fn. 20), it is worth noting that the morphological expression of CH clusivity is not prototypical. As Daniel (2005) notes, the 1PE should be considered the plural of the 1S, while the 1PI should be regarded as a person on its own (see also Cysouw 2005 and Bickel and Nichols 2005: 51–53). Cross-linguistically, it is very rare that the 1PI derives from the 1S, whereas the 1PE can be expected to derive from the 1S unless it is an independent form. Assuming now for the sake of argument that clusivity was an original feature of the Zamucoan family, the expected situation would likely have looked as follows (with Greek letters standing for dedicated affixes):

(140) Hypothetical Proto-Zamucoan (hypothesis 1)

1S	*α-V-ROOT	
1PE	*α-V-ROOT-Ω	or *γ-V-ROOT
1PI	*β-V-ROOT	

However, contrary to observed typological tendencies, the CH 1PE is obtained by addition of the pre-prefix *o-* to the 1PI, which diachronically used to contrast with the 1S by means of the plural suffix (see 141). Indeed, both the CH 1PI and 1PE show occasional traces of suffixation, as shown by the parenthesis in (141) (see ex. 72 in Section 4.6, 115–116 in Section 5.4.1 and 118–119 in Section 5.4.2). This would hardly find an explanation if these two persons had been derivationally independent of each other, and is also proved by the fact that both the 1PI- and the 1PE-root share occasional irregularities (see ex. 115–116 and 118–119 in Section 5.4.1–5.4.3,). Evidently, clusivity

[57] The 1S *tak-aː-k* of the verb *t-aː-k* (3) 'to eat' (see ex. 42a) is an exception, owing to the fact that /k/ is the only consonant of the root.

emerged after the generalization of *j*- as 1P-prefix (see points i-v in Section 7.1):

(141) CH 1-person evolution
1S t-/tVk-V-ROOT < *j/ʧ-V-ROOT (see Section 7.1)
1PE o-j-V-ROOT-(ko) (< 1PI, with addition of a dedicated morpheme)
1PI j-V-ROOT-(ko) < *j/ʧ-V-ROOT-ko (originally 1P, with no clusivity split)

This conclusively suggests that CH clusivity is an innovation in the Zamucoan family. As Filimonova (2005: 411) states: "[…] the clusivity opposition is one that can be easily innovated either by borrowing or by spontaneous internal development". To further support this conclusion, let us make — again for the sake of argument — the alternative hypothesis that the Proto-Zamucoan starting point was as in (142): namely a typologically normal situation where the 1PE appears to be the plural of the 1S and exhibits a different morphological exponent with respect to the 1PI (for reasons of simplicity, we will neglect the realis vs irrealis opposition in the 1-prefix, see Table 12 and Section 6.1). Now, it is usually the case that, when a language loses the clusivity split, the one form that is reinterpreted as 1P is the 1PI: "Whenever an inclusive-exclusive contrast disappears from a language, it is almost always an inclusive, not an exclusive, form that remains to take over the combined first-person plural reference." (Filimonova 2005: 412). This would mean that, should clusivity have disappeared from OZ and AY rather than having been introduced into CH, the original 1PI-prefix should have been retained in the 1P. However, OZ and AY show the same prefix for 1S/P, contrary to the situation in (142). In addition, the OZ and AY 1P exhibits a suffix, for which there would be no functional motivation in this alleged reconstruction:

(142) Hypothetical Proto-Zamucoan (hypothesis 2)
1S *j-V-ROOT
1PE *j-V-ROOT-ko
1PI *β-V-ROOT (if β- ≠ *j-; but note that OZ/AY 1P-prefix = j-)

To sum up, there is robust evidence that clusivity was a CH innovation. One should at this point address the problem of whether this was due to internal development or to borrowing. Before so doing, we need, however, to discuss the origin of the CH 3P-morpheme, possibly connected with the homophonous 1PE-morpheme (see Section 7.3).

7.3. Plural affixes

Another CH innovation is the introduction of an exponent for the 3P, which is lacking not only in the other Zamucoan languages, but also in other languages of the Chaco area.[58] Note that no Zamucoan language has a 3S vs 3P contrast in the possessive inflection. The very fact that, in the CH verb inflection, the 3P-marker is only obligatory with human subjects proves that it is not completely grammaticalized.

Interestingly, in CH both the 1PE and the 3P exhibit the morpheme *o*-. Although we have no evidence concerning the relative timing of these innovations, one can put forth a number of hypotheses, among which we do not dare to propose a choice:

(A) The morpheme *o*- derives from the CH 3P-pronoun *õr*, corresponding to OZ and AY *ore* (see Table 8), used in OZ and AY to disambiguate the 3S vs 3P subject. The CH 3P-pronoun was supposedly incorporated as *o*- into the verb paradigm to create the 3P-marker. At a later stage, *o*-

[58] See e.g. Guaranì and the Mataco-Mataguayan languages (Chorote, Maká, Nivaklé and Wichí).

was added to the 1PI to create the 1PE.

(B) Clusivity results from language contact. The 1PE-morpheme *o-* might be a morphological borrowing from Guaraní, which has the 1PE-pronoun *ore* and the 1PE verb-prefix *ro-* (see Dietrich 1986, Bertinetto 2006). At a later stage, *o-* was used to create the 3P.

(C) Despite homophony, the 1PE- and the 3P-morpheme *o-* have independent origin. The former might be due to Guaraní influence, while the latter might stem from the CH 3P-pronoun.

Needless to say, it is also possible to imagine convergence among the above hypotheses, such that, for instance, the CH 3P exponent exerted an influence on the formation of the 1PE-marker, by subliminally confusing the autochthonous 3P-pronoun with the Guaraní 1PE-morpheme. There are indeed some hints that the 1PE might be cognitively analysable as "1-person-plus-3P", to underline the exclusion of the addressee. As a matter of fact, in the CH 1PE-pronoun *õrjok* (see Section 5.1, Table 8) one can observe the presence of the 3P-pronoun *õr* (as confirmed by nasalization, to be found in the CH 3P-pronoun but not in Guaraní *ore* or *ro-*): apparently, this pronoun is formed by *õr* (3P = exclusion) plus *jok* (1S) or *ejok* (originally 1P), literally meaning 'they and I = we'.[59,60]

The last CH innovation to be mentioned here is the 2P-suffix *-lo*. As shown above (Section 6.4), *-lo* was originally a nominal suffix indicating the masculine plural full-form and was probably introduced at a stage where the lexical syllables had lost their function. The suffix *-lo* began to be used in the 2P after the loss of the original suffix, and then spread to the 1PE to form the greater plural (i.e. a sort of "plural" of the plural). Indeed, *-lo* shows the same function in free pronouns: *ejok* (1PI) → *ejoklo* (1PI.GP), *olak* (2P) → *olaklo* (2.GP), see Section 5.1, Table 8. Alternatively, one could argue that Proto-Zamucoan **-jo* (see Table 12 and Section 6.4) corresponds to CH *-lo*. However, data from the nominal system (to be dealt with in further work) confirms that *-lo* was a masculine plural full-form suffix, corresponding to the analogous OZ suffix -(*o*)*doe*.

8. Conclusions

In this paper we presented a thorough comparison of the verb systems of OZ, AY and CH, proposing a plausible diachronic reconstruction of the Proto-Zamucoan verb structure. The analysis confirmed the remarkable preservation of a number of shared original features, and also highlighted the CH's comparatively higher degree of innovation, not limited to the most conspicuous features (i.e., 3P-inflection and clusivity split). Nevertheless, CH also exhibits interesting cases of preservation of ancient features, shared by OZ to the exclusion of AY. These features have proved to be particularly useful for reconstruction purposes.

The personal affixes of the Zamucoan languages show a close relationship with the nominal affix system, in particular the possessive markers prefixes, in turn ostensibly related to the independent personal pronouns. For reasons of space, we have to defer this comparison to further work in preparation (Ciucci and Bertinetto, submitted). It is, however, worth mentioning that the polymorphism of the 3-person verbal inflection finds an obvious justification in the lack of a

[59] Something similar is found in Shuswap, a Salish language, where the 1PE derives from the 3-person (van Eijk 2005: 381–397).

[60] The pluralizing morpheme *o-* is also found in Kadiwéu (Guaycuruan), where *o-* precedes the 3S-prefix of unaccusative and transitive verbs in order to form the 3P (Sandalo 1995: 47–49). There are, however, reasons to surmise that Kadiwéu *o-* could be due to language contact with CH (see Ciucci 2014).

dedicated 3S-person pronoun, whose absence was integrated by demonstrative/determiner morphemes.

In the course of the discussion (see fn. 5, 25, 31, 35, 41, 44–46, 48–49 and 60), possible contacts with other languages spoken in the Chaco area were occasionally pointed out. This suggests that, over and above the internal dynamics of the Zamucoan family, contact-induced phenomena should be taken into account as possible sources of change. This topic is specifically addressed in Ciucci (2014). Needless to say, the direction of the influence is hard to define. Although the number of speakers of the surrounding language families largely exceeds the population size of the Zamucoan groups, it would be far-fetched to assume that the receptor-languages should always be identified with the Zamucoan ones. It is also worth pointing out that the internal cohesion of the Zamucoan family is robustly supported by the comparative analysis of the nominal suffixes. This will be the topic of a contribution currently under development, by which we aim to show that, as far as nominal inflection is concerned, the role of diachronically most dynamic language is shared, in an almost complementary way, by both AY and CH.

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