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# Inflectional complexity and verb classes in Chichimec

Enrique L. Palancar and Heriberto Avelino

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## 1. Introduction.<sup>1</sup>

Chichimec (known as *ñizqʔ* by its speakers) is an Oto-Manguean language of Mexico spoken in the community of Misión de Chichimecas, in the state of Guanajuato (see map 1). In this paper, we show that the verbal inflection of Chichimec displays an interesting degree of complexity. Such complexity is created by the intersection of three different inflectional subsystems. One of such systems is the one formed by the inflectional classes of prefixes encoding person of subject and tense/aspect/mood. A second and partially independent subsystem involves a rich array of stem alternation patterns while a third one involves the inflectional use of tone, which is, for the most part, lexically specified.

We base our analysis on a revision of a seminal paper published in 1933 by Jaime de Angulo. In this paper, Angulo presented a grammatical sketch of the Chichimec language which still remains the finest description of the language to date. He proposed the existence of five inflectional classes for verbs based on the selection of different sets of prefixes, but the descriptive material also includes information about other aspects of Chichimec verbal inflection such as stem alternations and tone. While our analysis is based on Angulo (1933), we also use the materials in Lastra (1984), and our own observations from the field, but only for the study of the prefix classes as the information involving other aspects of verbal inflection is scanty.

While the data in Angulo are of excellent quality, both prefix classes and stem patterns are presented in a scattered manner throughout his paper. For example verbs pertaining to different stem patterns may be presented in the same list, while others having the same pattern appear in different lists. This prevents the modern reader from gaining a comprehensive view of the inflectional system of Chichimec verbs, of the actual number of patterns we find and of their internal structure. The goal of this paper is precisely to fill this gap in the literature and to make the morphological structure of the verbal inflection of Chichimec more readily accessible. Furthermore, Angulo's paper does not address other issues which may be of interest to the modern reader, such as for example what the connection is between prefix classes and stem alternation patterns. In this paper, we also go beyond Angulo's (1933) analysis in providing cues as to the phonetic/phonological principles which are used to build the different stems we observe as well as to the internal structure of the stem zones in which those stems are employed.

Chichimec and Pame form the so-called Pamean branch of Oto-Pamean, itself the northmost branch of Oto-Manguean. According to the most recent census by the National Geographical Institute of Mexico (INEGI), there were 1,362 speakers of the language in 2005. However, this figure is an oversimplification as it does not distinguish between fluent speakers and

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those with passive competence. From fieldwork observation, we estimate that the present day number of ʔuząʔ speakers is no more than 1,000.

The structure of the paper is straightforward. In the next section, we introduce our analysis of the inflectional classes we can see in Chichimec verbs when one attends to prefix set selection. When possible we also advance an indication as to the principles behind class membership assignment. In section 3, we study the system of stem alternation patterns and we put them in connection to the inflectional subsystem involving prefix classes. In section 4, we introduce the different tone patterns we have been able to discern in Angulo's data which run partially independently from the other two subsystems. In section 5, we finish with a discussion of our findings and set suggestions for further research.

## 2. Inflectional classes according to prefix set.

Verbs in Chichimec inflect for tense/aspect/mood (TAM) and the person of the subject by means of cumulative prefixes. The examples in (1) illustrate the so-called ‘anterior past’ for the persons of the singular.<sup>2</sup>

- (1) a. **tu-nú**  
1.ANT.PST-see[3OBJ]  
‘I saw it.’
- b. **ki-nú**  
2.ANT.PST-see[3OBJ]  
‘You saw it.’
- c. **u-nú**  
3.ANT.PST-see[3OBJ]  
‘S/he saw it.’

Dual and plural of subject is conveyed by number suffixes. This is indicated in table 1 where the singular forms in (1) are also given for comparison. For the inflection of most verbs, however, there is a dedicated plural stem for a 3rd person plural subject, e.g. the verb in table 1 has *-nú* for all cells except for the 3rd person plural where it requires *-nhú* without further affixation.

Table 1. Anterior past tense of the verb *-nú* ‘see’.

	SG		DU		PL
1 <sup>st</sup>	<i>tu-nú</i>	EXCL	<i>tu-nú-m<sup>p</sup></i>	EXCL	<i>tu-nú-hú</i>
		INCL	<i>tu-nú-s</i>	INCL	<i>tu-nú-n</i>
2 <sup>nd</sup>	<i>ki-nú</i>		<i>ki-nú-s</i>		<i>ki-nú-n</i>
3 <sup>rd</sup>	<i>u-nú</i>		<i>u-nú-s</i>		<i>u-nhú</i>

As the forms for the dual and plural are transparently derived from those of the singular, at least for most verbs,<sup>3</sup> the forms for the singular together with the form for the 3rd person plural could be taken as sufficient to construct the entire paradigm of a verb. The basic cells of the paradigm of the verb *-nú* ‘see’ are given in table 2, slightly modified from the original in Angulo (1933: 165). There are eight TAM categories: a present or incomplete, three past tenses (anterior past, recent past and immediate past), two irrealis values (future and potential) a mood called ‘contemporaneous’ that we prefer to call ‘consecutive’, and a

<sup>2</sup> We follow most of Angulo's transcription conventions:  $v = [\beta]$ ,  $tc = [\widehat{tj}]$ , and  $\ddot{u} = [y]$ .

<sup>3</sup> Other verbs like the ones treated in §2.1.5-2.1.7 further below require a different prefix for the 1st person plural and at times for the dual too.

negative form used regardless of tense or aspect. In all the tables, we introduce the forms for the present, the anterior past and the future together. While we are aware that this grouping may not make sense from a semantic point of view, it is nonetheless a convenient way to capture a number of formal similarities that these three tenses have in common in the inflection of Chichimec.

Table 2. Basic paradigm of the verb *-nú* ‘see’.

	PRS	ANT.PST	FUT	REC.PST	IMM.PST	POT	CONSTV	NEG
1SG	<i>e-nú</i>	<i>tu-nú</i>	<i>ga-nú</i>	<i>ku-nú</i>	<i>u-nú</i>	<i>nu-nú</i>	<i>ra-nú</i>	<i>su-nú</i>
2SG	<i>ki-nú</i>	<i>ki-nú</i>	<i>ki-nú</i>	<i>ki-nú</i>	<i>i-nú</i>	<i>mi-nú</i>	<i>gi-nú</i>	<i>si-nú</i>
3SG	<i>e-nú</i>	<i>u-nú</i>	<i>ga-nú</i>	<i>ku-nú</i>	<i>zu-nú</i>	<i>mu-nú</i>	<i>ru-nú</i>	<i>su-nú</i>
3PL	<i>e-nhú</i>	<i>u-nhú</i>	<i>ga-nhú</i>	<i>ku-nhú</i>	<i>zu-nhú</i>	<i>mi-nhú</i>	<i>ru-nhú</i>	<i>su-nhú</i>

## 2.1. Prefix classes.

Not all verbs in Chichimec select the same prefix set as does *-nú* ‘see’ in table 2. In total there are seven possible sets. Let us see them one by one.

**2.1.1 Class I verbs.** Most verbs in Chinantec behave like the verb *-nú* ‘see’ in table 2: 85 out of 168 in our sample, 50.5%. We take such verbs as forming ‘class I’, given in table 3. The prefixes are not sensitive to the number of the subject, i.e. the same prefix is used for 1st person singular, plural or dual, but there is a dedicated prefix for the 3rd person potential. We have arranged the prefixes in a way that highlights the occasional syncretism between the 1st person and the 3rd person. The same marker *ki-* for 2nd person is used in several tenses.

Table 3. Prefixes selected by class I verbs.

	1	3SG/DU	3PL	2
PRS	<i>e</i>	<i>e</i>	<i>e</i>	<i>ki</i>
ANT.PST	<i>tu</i>	<i>u</i>	<i>u</i>	<i>ki</i>
FUT	<i>ga</i>	<i>ga</i>	<i>ga</i>	<i>ki</i>
REC.PST	<i>ku</i>	<i>ku</i>	<i>ku</i>	<i>ki</i>
IMM.PST	<i>u</i>	<i>zu</i>	<i>zu</i>	<i>i</i>
POT	<i>nu</i>	<i>mu</i>	<i>mi</i>	<i>mi</i>
CONSTV	<i>ra</i>	<i>ru</i>	<i>ru</i>	<i>gi</i>
NEG	<i>su</i>	<i>su</i>	<i>su</i>	<i>si</i>

After Angulo (1933), Lastra (1984) is the next published reference on Chichimec verbal inflection. In her work, Lastra (1984) presents a schematic representation of the prefix classes, but sometimes it is not clear to what extent her data are based on an interpretation of Angulo's paradigms or on her own synchronic observations of Chichimec as it was spoken in the late 70's; about the time where she carried out most of her fieldwork activities for that paper. Our class I is called ‘class 1’ by Lastra too.<sup>4</sup> The only difference between Angulo's account and Lastra's lies in that Lastra reports a prefix *ra-* for the 3rd person consecutive rather than *ru-*. This appears to have resulted as a leveling from the 1st person.

**2.1.2. Class II verbs.** A first deviation from class I is found in verbs that select the set in table 4, which we call ‘class II’. They differ from class I verbs in several respects: (i) the prefixes for the anterior past are now also used for the present, at least for the 1st and the 3rd person;

<sup>4</sup> We prefer letters because our intention is to compare how such classes interact with stem classes which for convenience we annotate with roman numbers given that we use letters to refer to the different stems of a given verb.

(ii) there is a dedicated prefix for the 2nd person present; (ii) and a distinctive prefix for the 1st person future.

*Table 4.* Prefixes selected by class II verbs.

	1	3SG/DU	3PL	2
PRS	<i>tu</i>	<i>u</i>	<i>u</i>	<i>su</i>
ANT.PST	<i>tu</i>	<i>u</i>	<i>u</i>	<i>ki</i>
FUT	<i>gu</i>	<i>ga</i>	<i>ga</i>	<i>ki</i>
REC.PST	<i>ku</i>	<i>ku</i>	<i>ku</i>	<i>ki</i>
IMM.PST	<i>u</i>	<i>zu</i>	<i>zu</i>	<i>i</i>
POT	<i>nu</i>	<i>mu</i>	<i>mi</i>	<i>mi</i>
CONSTV	<i>ra</i>	<i>ru</i>	<i>ru</i>	<i>gi</i>
NEG	<i>su</i>	<i>su</i>	<i>su</i>	<i>si</i>

A sample paradigm of such a class is given in table 5 with the verb *-tsá* ‘do’ (Angulo 1933:171). Notice that in contrast with the verb *-nú* ‘see’ in table 5, this verb has three different stems: *-tshá* for the 3rd person plural, *-tcá* for the 2nd person and *-tsá* for the rest of the cells.

*Table 5.* Basic paradigm of the verb *-tsá* ‘do’.

	PRS	ANT.PST	FUT	REC.PST	IMM.PST	FUT	POT	CONSTV	NEG
1SG	<i>tu-tsá</i>		<i>ku-tsá</i>	<i>gu-tsá</i>	<i>u-tsá</i>	<i>gu-tsá</i>	<i>nu-tsá</i>	<i>ra-tsá</i>	<i>su-tsá</i>
2SG	<i>su-tcá</i>	<i>ki-tcá</i>	<i>ki-tcá</i>	<i>ki-tcá</i>	<i>i-tcá</i>	<i>ki-tcá</i>	<i>mi-tcá</i>	<i>gi-tcá</i>	<i>si-tcá</i>
3SG	<i>u-tsá</i>		<i>ku-tsá</i>	<i>ga-tsá</i>	<i>zu-tsá</i>	<i>ga-tsá</i>	<i>mu-tsá</i>	<i>ru-tsá</i>	<i>su-tsá</i>
3PL	<i>u-tshá</i>		<i>ku-tshá</i>	<i>ga-tshá</i>	<i>zu-tshá</i>	<i>ga-tshá</i>	<i>mi-tshá</i>	<i>ru-tshá</i>	<i>su-tshá</i>

**2.1.3. Class III verbs.** A few verbs, which we treat as ‘class III’, select a prefix set very similar to class II, but with two further idiosyncrasies: (i) they completely neutralize the formal distinction between present and anterior past by using the same markers for all persons; (ii) they require a specific prefix *e-* for a 3rd person plural of the anterior past and the present. The forms are given in table 6, with a sample paradigm in table 7 (Angulo 1933:172).

*Table 6.* Prefixes selected by class III verbs.

	1	3SG/DU	3PL	2
PRS	<i>tu</i>	<i>u</i>	<i>e</i>	<i>su</i>
ANT.PST	<i>tu</i>	<i>u</i>	<i>e</i>	<i>su</i>
FUT	<i>gu</i>	<i>ga</i>	<i>ga</i>	<i>ki</i>
REC.PST	<i>ku</i>	<i>ku</i>	<i>ku</i>	<i>ki</i>
IMM.PST	<i>u</i>	<i>zu</i>	<i>zu</i>	<i>i</i>
POT	<i>nu</i>	<i>mu</i>	<i>mi</i>	<i>mi</i>
CONSTV	<i>ra</i>	<i>ru</i>	<i>ru</i>	<i>gi</i>
NEG	<i>su</i>	<i>su</i>	<i>su</i>	<i>si</i>

*Table 7.* Basic paradigm of the verb *-mén* ‘like, love’.

	PRS	ANT.PST	FUT	REC.PST	IMM.PST	POT	CONSTV	NEG
1SG	<i>tu-mén</i>		<i>gu-mén</i>	<i>ku-mén</i>	<i>u-mén</i>	<i>nu-mén</i>	<i>ra-mén</i>	<i>su-mén</i>
2SG	<i>su-mén</i>		<i>ki-mén</i>	<i>ki-mén</i>	<i>i-mén</i>	<i>mi-mén</i>	<i>gi-mén</i>	<i>si-mén</i>
3SG	<i>u-mén</i>		<i>ga-mén</i>	<i>ku-mén</i>	<i>zu-mén</i>	<i>mu-mén</i>	<i>ru-mén</i>	<i>su-mén</i>
3PL	<i>e-mén</i>		<i>ga-mbén</i>	<i>ku-mbén</i>	<i>zu-mbén</i>	<i>mi-mén</i>	<i>ru-mbén</i>	<i>su-mbén</i>

Lastra's (1984) account of the forms involved in both classes II and III differs from Angulo's in two respects: (i) class II verbs also have prefix *e-* for the 3rd plural present. This could be

interpreted as a reflex of an analogical extension having affected class II verbs to make them more alike class III. Besides, for the consecutive of class II verbs, Lastra reports a split involving the 3rd person by virtue of which class I prefix *ra-* is now used for 3rd person plural, whereas Angulo's *ru-* is used for all other number values. In contrast, verbs of class III use the same prefixes for the consecutive as class I verbs.

**2.1.4. Class IV verbs.** Another small group of verbs in Angulo's sample select the prefix set in table 8. We treat such verbs as 'class IV'. These verbs also have a series of idiosyncrasies. They also have a complete neutralization between the present and the anterior past. Particular to this class is that all CV prefixes for the 2nd person have /a/. The verbs do not have dedicated prefix for the 3rd person plural potential. Lastra's (1984) paradigm for this class differs in certain respects from Angulo's and it is worth mentioning it separately. We have highlighted the areas where both accounts contrast.

Table 8. Prefixes selected by class IV verbs.

	Angulo (1933)			Lastra (1984)		
	1	3	2	1	3	2
PRS	<i>tu</i>	<i>u</i>	<i>ka</i>	<i>tu</i>	<i>u</i>	<i>ka</i>
ANT.PST	<i>tu</i>	<i>u</i>	<i>ka</i>	<i>tu</i>	<i>ku</i>	<i>ka</i>
FUT	<i>ga</i>	<i>ga</i>	<i>ka</i>	<i>ga</i>	<i>ga</i>	<i>ka</i>
REC.PST	<i>ku</i>	<i>ku</i>	<i>e</i>	<i>ku</i>	<i>ku</i>	<i>ka</i>
IMM.PST	<i>u</i>	<i>zu</i>	<i>i</i>	<i>u</i>	<i>e</i>	<i>e</i>
POT	<i>mu</i>	<i>ma</i>	<i>ma</i>	<i>mu</i>	<i>ma</i>	<i>ma</i>
CONSTV	<i>ra</i>	<i>ru</i>	<i>ga</i>	<i>ra</i>	<i>ru</i>	<i>ga</i>
NEG	<i>su</i>	<i>sa</i>	<i>sa</i>	<i>su</i>	<i>sa</i>	<i>sa</i>

A sample paradigm of class IV according to Angulo's account is given in table 9 with the verb *-ngw<sup>é</sup>* 'strike' (p.172).<sup>5</sup> Like the verb *-tsá* 'do' in table 5 above, this verb has also three different stems, but they are distributed in different zones of the paradigm: *-mb<sup>é</sup>* is used for the 3rd person plural, *-mb<sup>é</sup>* for the 3rd person singular y *-ngw<sup>é</sup>* for anything else.

Table 9. Basic paradigm of the verb *-ngw<sup>é</sup>* 'strike'.

	PRS	ANT.PST	FUT	REC.PST	IMM.PST	POT	CONSTV	NEG
1SG	<i>tu-ngw<sup>é</sup></i>		<i>ga-ngw<sup>é</sup></i>	<i>ku-ngw<sup>é</sup></i>	<i>u-ngw<sup>é</sup></i>	<i>mu-ngw<sup>é</sup></i>	<i>ra-ngw<sup>é</sup></i>	<i>su-ngw<sup>é</sup></i>
2SG	<i>ka-ngw<sup>é</sup></i>		<i>ka-ngw<sup>é</sup></i>	<i>e-ngw<sup>é</sup></i>	<i>i-ngw<sup>é</sup></i>	<i>ma-ngw<sup>é</sup></i>	<i>ga-ngw<sup>é</sup></i>	<i>sa-ngw<sup>é</sup></i>
3SG	<i>u-m<sup>é</sup></i>		<i>ga-m<sup>é</sup></i>	<i>ku-m<sup>é</sup></i>	<i>zu-m<sup>é</sup></i>	<i>ma-m<sup>é</sup></i>	<i>ru-m<sup>é</sup></i>	<i>su-m<sup>é</sup></i>
3PL	<i>u-mb<sup>é</sup></i>		<i>ga-mb<sup>é</sup></i>	<i>ku-mb<sup>é</sup></i>	<i>zu-mb<sup>é</sup></i>	<i>ma-mb<sup>é</sup></i>	<i>ru-mb<sup>é</sup></i>	<i>su-mb<sup>é</sup></i>

**2.1.5. Class V verbs.** A few other verbs form the inflectional class we treat as 'class V', which is also the most complex. Verbs of this class have a neutralization between recent past and immediate past. As class I, the characteristic marker for the 2nd person is *ki-*. Likewise, there is syncretism between the 3rd person plural and the 2nd person in the potential. For the 3rd person, the verbs select the same markers as class I in the present, future, and the past tenses. What makes this class special from previous ones is the number split of the the 1st person. The prefixes for the 1st person plural and the 1st person singular are contrastive in all tenses, but for the expression of the dual one uses either the singular or the plural forms, except in the future and the negative.

Table 10. Prefixes selected by class V verbs.

<sup>5</sup> According to Angulo (p.154), superscript vowels like the <é> in *ngw<sup>é</sup>* 'strike' represent so-called 'whispered vowels' of which it is said that "[T]here is apparently a very forcible contraction of the whole larynx and pharynx. A vowel thus produced sounds somewhat like a harsh Arabic *h* plus the timbre of a vowel."

	1pl	1DU	1sg	3SG/DU	3PL	2
PRS	<i>u</i>	<i>e</i>	<i>e</i>	<i>e</i>	<i>e</i>	<i>ki</i>
ANT.PST	<i>ti</i>	<i>ti</i>	<i>ta</i>	<i>u</i>	<i>u</i>	<i>ki</i>
FUT	<i>gu</i>	<i>ti</i>	<i>ta</i>	<i>ga</i>	<i>ga</i>	<i>ki</i>
REC.PST	<i>ki</i>	<i>ki</i>	<i>ka</i>	<i>ku</i>	<i>ku</i>	<i>ki</i>
IMM.PST	<i>ki</i>	<i>ki</i>	<i>ka</i>	<i>ku</i>	<i>ku</i>	<i>ki</i>
POT	<i>mu</i>	<i>ma</i>	<i>ma</i>	<i>ma</i>	<i>mi</i>	<i>mi</i>
CONSTV	<i>nu</i>	<i>na</i>	<i>na</i>	<i>ra</i>	<i>ra</i>	<i>mi</i>
NEG	<i>su</i>	<i>si</i>	<i>sa</i>	<i>si</i>	<i>si</i>	<i>si</i>

Apart from a few minor differences, Lastra's report of this class in (1984) varies considerably little from Angulo's account. The main differences involve: (i) a prefix *ti-* instead of *ta-* is used for the 1st person singular future, suggesting that the split between singular and dual is disappearing for this tense; (ii) a prefix *ma-* instead of *nu-* for 1st person plural consecutive, *mi-* instead of *mu-* for the potential, and *gu-* as an alternative option of *ti-* for the anterior past; and finally (iii) alongside *ra-* the prefix *ma-* is used the 3rd person singular consecutive, making *ra-* become associated with the plural.

The verbs of this class are further special in that they require a plural stem for all persons plus a velar extension for the 2nd person plural. An example paradigm is given in table 11 with the verb *-ndü* 'go'.

Table 11. Basic paradigm of the motion verb *-ndü* 'go'.

	PRS	ANT.PST	REC/IMM.PST	FUT	POT	CONSTV	NEG
1SG	<i>é-ndü</i>	<i>tá-ndü</i>	<i>ká-ndü</i>	<i>tá-ndü</i>	<i>má-ndü</i>	<i>ná-ndü</i>	<i>sá-ndü</i>
2SG	<i>kí-ndü</i>	<i>kí-ndü</i>	<i>kí-ndü</i>	<i>kí-ndü</i>	<i>mí-ndü</i>	<i>mí-ndü</i>	<i>sí-ndü</i>
3SG	<i>é-ndü</i>	<i>ú-ndü</i>	<i>kú-ndü</i>	<i>gá-ndü</i>	<i>má-ndü</i>	<i>rá-ndü</i>	<i>sí-ndü</i>
3PL	<i>é-ndür</i>	<i>ú-ndür</i>	<i>kú-ndür</i>	<i>gá-ndür</i>	<i>má-ndür</i>	<i>rá-ndür</i>	<i>sí-ndür</i>
1PL.INCL	<i>ú-ndür-ín</i>	<i>tí-ndür-ín</i>	<i>kí-ndür-ín</i>	<i>gú-ndür-ín</i>	<i>mú-ndür-ín</i>	<i>nú-ndür-ín</i>	<i>sú-ndür-ín</i>
1DU.INCL	<i>é-ndü-s</i>	<i>tí-ndü-s</i>	<i>kí-ndü-s</i>	<i>tí-ndü-s</i>	<i>má-ndü-s</i>	<i>ná-ndü-s</i>	<i>sá-ndü-s</i>

**2.1.6. Class VI verbs.** A group of four verbs in Angulo form 'class VI' (there is no mention of this class in Lastra 1984). This class resembles class V in that there is also a number split involving the 1st person as well as neutralization between the recent and the immediate past. The verbs further show neutralization between potential and consecutive and between anterior past and future, except for the 1st person plural. The forms for the 1st person singular and those for the 3rd person are completely identical.

Table 12. Prefixes selected by class VI verbs.

	1PL	1DU	1SG	3	2
PRS	<i>u</i>	<i>e</i>	<i>e</i>	<i>e</i>	<i>ki</i>
ANT.PST	<i>ti</i>	<i>ti</i>	<i>ta</i>	<i>ta</i>	<i>sa</i>
FUT	<i>gi</i>	<i>ti</i>	<i>ta</i>	<i>ta</i>	<i>sa</i>
REC.PST	<i>si</i>	<i>si</i>	<i>sa</i>	<i>sa</i>	<i>sa</i>
IMM.PST	<i>si</i>	<i>si</i>	<i>sa</i>	<i>sa</i>	<i>sa</i>
POT	<i>ni</i>	<i>ni</i>	<i>na</i>	<i>na</i>	<i>za</i>
CONSTV	<i>ni</i>	<i>ni</i>	<i>na</i>	<i>na</i>	<i>za</i>
NEG	<i>su</i>	<i>si</i>	<i>si</i>	<i>si</i>	<i>si</i>

A representative class VI verb is *-ngw<sup>e</sup>* ‘be, sit’, whose basic paradigm is given in table 13. As verbs of class V, a plural stem is required for all persons.<sup>6</sup>

Table 13. Basic paradigm of the verb *-ngw<sup>e</sup>* ‘be, sit’.

	PRS	ANT.PST / FUT	REC/IMM.PST	POT/CONSTV	NEG
1SG	<i>é-m<sup>e</sup></i>	<i>ta-ngw<sup>e</sup></i>	<i>na-ngw<sup>e</sup></i>	<i>sa-ngw<sup>e</sup></i>	<i>sí-ngw<sup>e</sup></i>
2SG	<i>kí-m<sup>e</sup></i>	<i>sa-ngw<sup>e</sup></i>	<i>za-ngw<sup>e</sup></i>	<i>sa-ngw<sup>e</sup></i>	<i>sí-ngw<sup>e</sup></i>
3SG	<i>é-m<sup>e</sup></i>	<i>ta-ngw<sup>e</sup></i>	<i>na-ngw<sup>e</sup></i>	<i>sa-ngw<sup>e</sup></i>	<i>sí-ngw<sup>e</sup></i>
3PL	<i>e-gá</i>	<i>ta-ká</i>	<i>na-ká</i>	<i>sa-ká</i>	<i>si-ngan</i>
1PL.INCL	<i>u-g<sup>a</sup>-n</i>	<i>ti-k<sup>a</sup>-n</i>	<i>gi-k<sup>a</sup>-n</i>	<i>si-k<sup>a</sup>-n</i>	<i>su-ngá-n</i>
1DU.INCL	<i>é-m<sup>e</sup>-s</i>	<i>ti-ngw<sup>e</sup>-s</i>	<i>na-ngw<sup>e</sup></i>	<i>si-ngw<sup>e</sup></i>	<i>sí-ngwe-g-ós</i>

**2.1.7. Class VII verbs.** The last prefix class of verbs in Chichimec is shown in table 14. Like verbs of classes V and VI, the verbs of this class also have a number split but only contrasting singular with dual and plural. Like verbs of class VI, they show neutralization between anterior past and future, and between potential and consecutive. For the immediate past and the negative, there are no person distinctions, and there is a high degree of syncretism between the 1st person singular and the 3rd person.

Table 14. Prefixes selected by class VII verbs.

	IPL/DU	1SG	3	2
PRS	<i>ti</i>	<i>tí</i>	<i>i</i>	<i>si</i>
ANT.PST	<i>ti</i>	<i>ta</i>	<i>ta</i>	<i>sa</i>
FUT	<i>ti</i>	<i>ta</i>	<i>ta</i>	<i>sa</i>
REC.PST	<i>si</i>	<i>sa</i>	<i>sa</i>	<i>sa</i>
IMM.PST	<i>i</i>	<i>i</i>	<i>i</i>	<i>i</i>
POT	<i>ní</i>	<i>na</i>	<i>na</i>	<i>za</i>
CONSTV	<i>ní</i>	<i>na</i>	<i>na</i>	<i>za</i>
NEG	<i>si</i>	<i>sí</i>	<i>si</i>	<i>si</i>

Lastra's (1984) report differs from Angulo only in the elision of the number split involving the 1st person. This makes class VII more similar to the default of class I. In table 15 we give the paradigm of the verb *nú* ‘see oneself’ as a typical example of a class VII verb (Angulo 1933: 173-174). This verb is the reflexive pair of its transitive counterpart *nú* ‘see’ of class I, shown in table 4 above.

Table 15. Basic paradigm of the reflexive verb *nú* ‘see oneself’.

	PRS	ANT.PST/FUT	REC.PST	IMM.PST	POT/CONSTV	NEG
1SG	<i>ti-nú</i>	<i>ta-nú</i>	<i>sa-nú</i>	<i>i-nú</i>	<i>na-nú</i>	<i>si-nú</i>
2SG	<i>si-nú</i>	<i>sa-nú</i>	<i>sa-nú</i>	<i>i-nú</i>	<i>za-nú</i>	<i>si-nú</i>
3SG	<i>i-nú</i>	<i>ta-nú</i>	<i>sa-nú</i>	<i>i-nú</i>	<i>na-nú</i>	<i>si-nú</i>
3PL	<i>i-nhú</i>	<i>ta-nhú</i>	<i>sa-nhú</i>	<i>i-nhú</i>	<i>na-nhú</i>	<i>si-nhú</i>
1PL.INCL	<i>ti-nú-n</i>	<i>ti-nú-n</i>	<i>si-nú-n</i>	<i>i-nú-n</i>	<i>ni-nú-n</i>	<i>si-nú-n</i>

## 2.2. Principles of prefix class assignment.

The population of the inflectional classes we have introduced in the previous sections in Angulo's sample of 168 verbs is uneven. Although this sample is small, we take it,

<sup>6</sup> There are other idiosyncrasies involving the marking of 2nd person plural. For further details see Angulo (1933: 175).



nonetheless, to be representative of the general trends organizing the Chichimec verbal lexicon as a whole.<sup>7</sup>

(2)	Class I	85	50.5%
	Class II	15	09.0%
	Class III	6	03.6%
	Class IV	11	06.5%
	Class V	15	09.0%
	Class VI	4	02.4%
	Class VII	32	19.0%
	Total	168	100%

We take class I to be an inflectional default. This is because it is the most populated one and as we will see in §3.8, it is also the one that co-occurs with most types of stem alternation patterns. Being an inflectional default means for us that the adscription of a given verb to class I is not a piece of information that needs to be listed in the lexicon. In other words, as lexemes need to be inflected somehow, in lieu of further specifications, a verbal lexeme is inflected as a class I verb. Some of the inflectional classes we have seen so far could also be understood as variations from the formal core of class I and the class has both transitive and intransitive verbs.

In contrast, the assignment to classes V-VII could be accounted for as partially motivated by the semantics. For example, all verbs of these classes are intransitive. Class VII holds all reflexive counterparts of transitive verbs belonging to other classes. For this reason, we consider reflexive verbs as productively derived by changing the prefix class of a given verb to class VII.<sup>8</sup> Because of this, we have not included in our sample the few reflexive verbs appearing in Angulo, and have only considered those that are basic to class VII. However, despite the predictability of the prefix series a reflexive verb would take, the verb in question may independently involve changes at the stem level which are not predictable from the active counterpart and need to be specified in the lexical entry. However, our data are unfortunately too scanty to be informative about such correlations. This can be seen in table 16 where the stem alternation pattern of the reflexive verb *-ngwon* ‘pierce oneself’ of prefix class VII can be compared with that of the transitive counterpart *-pón* ‘pierce’ of class I in table 17, (Angulo 1933:173).

*Table 16.* Distribution of stems of the reflexive verb *-ngwon* ‘pierce oneself’.

	PRS	ANT.PST	REC.PST	IMM.PST	FUT	POT	CONSTV	NEG
1SG	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>
2SG	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>
3SG	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>	<i>-ngwon</i>
3PL	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>	<i>-pon</i>

*Table 17.* Distribution of stems of the transitive verb *-pón* ‘pierce’.

	PRS	ANT.PST	REC.PST	IMM.PST	FUT	POT	CONSTV	NEG
1SG	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>	<i>-pón</i>
2SG	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>	<i>-ngwón</i>
3SG	<i>-món</i>	<i>-món</i>	<i>-món</i>	<i>-món</i>	<i>-món</i>	<i>-món</i>	<i>-món</i>	<i>-món</i>
3PL	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>	<i>-mbón</i>

<sup>7</sup> There are three verbs which do not fall in these classes but constitute two classes on their own. They are patientive verbs, and we have opted not to include them here for the information at hand is at present very scanty.

<sup>8</sup> Note on 57 the reflexive character is to produce a patientive verb.

Besides reflexive verbs, class VII also includes basic verbs. In our sample there are 32 of such verbs. 10 of such verbs, given in (3), have stative semantics.<sup>9</sup>

(3)	- <i>ʒé</i>	‘be angry’	- <i>ppó</i>	‘be together’
	- <i>kú</i>	‘be together’	- <i>sü</i>	‘be sick’
	- <i>ngwé’n</i>	‘be loaded’	- <i>te</i>	‘be equal’
	- <i>ngwo</i>	‘be ashamed’	- <i>tsü</i>	‘be angry’
	- <i>pár</i>	‘be rich’	- <i>üts</i>	‘be always’

Bearing all reflexive verbs, class VII could be broadly characterized as including verbs with middle semantics. In this light, the remaining 22 verbs of class VII fall into the typical middle situation types associated with middle voice in Kemmer (1993). This is illustrated in table 18, where it is shown that the verbs of class VII in our sample include reciprocal verbs; verbs with self-centered semantics which could be taken to be deponent reflexives; a few motion verbs (of both the translational and the non-translational type including manner verbs); posture verbs; body function actions; affective and cognitive verbs. However, as the class also includes verbs whose semantic type is hard to characterize and as other classes include other verbs which could easily be equally characterized as having middle semantics, class membership to class VII is not motivated by just the semantics.

Table 18. Middle verbs of class VII.

Reciprocal	- <i>sé’n</i>	(intr)	‘agree’
	- <i>tér</i>	(intr)	‘marry’
	- <i>ngwo</i>	(intr)	‘meet’
Self-centered	- <i>hú</i>	(intr)	‘put oneself’
	- <i>tü</i>	(intr)	‘speak to oneself’
Body function	- <i>pü</i>	(intr)	‘defecate’
	- <i>ser</i>	(intr)	‘have diarrhoea’
	- <i>tsün</i>	(intr)	‘urinate’
Motion	- <i>póó</i>	(intr)	‘enter’
	- <i>yúts</i>	(intr)	‘jump’
	- <i>há</i>	(intr)	‘lag behind’
	- <i>ʒü</i>	(intr)	‘pass’
	- <i>mér</i>	(intr)	‘roll’
	- <i>kú’</i>	(intr)	‘run a race’
Postural	- <i>nda</i>	(intr)	‘lie on the ground’
	- <i>hunts</i>	(intr)	‘sit’
Cognitive	- <i>tér</i>	(intr)	‘laugh’
	- <i>mír</i>	(intr)	‘wish’
Other	- <i>múr</i>	(intr)	‘get lost’
	- <i>áʒ</i>	(intr)	‘appear’
	- <i>sa</i>	(intr)	‘measure’

Like class VII, classes V and VI also have a semantic core. As shown in table 19, class V mainly includes motion verbs. Class VI has four members only: two are postural and two motion verbs. However, despite this semantic core, the membership to classes is a lexical matter because neither all motion nor all postural verbs are found in such classes, making class membership again not entirely predictable by the semantics.

<sup>9</sup> The other two verbs with stative semantics in the sample are found in class A (*mʒan* ‘be finished’) and class C (*mé* ‘be late’).

Table 19. Verbs of class V and VI.

Class V	Motion	<i>-ndü</i>	(intr)	‘go’
		<i>-te</i>	(intr)	‘go hither’
		<i>-’un</i>	(intr)	‘go in the lead’
		<i>-kun</i>	(intr)	‘go with’
		<i>-ʔi</i>	(intr)	‘come’
		<i>-pó</i>	(intr)	‘return’
		<i>-kkü</i>	(intr)	‘return, do something again’
		<i>-há</i>	(intr)	‘ascend’
		<i>-tsó</i>	(intr)	‘fall down’
		Actions with a motion component (physical or fictive)	<i>-ndē</i>	(intr)
<i>-rú</i>	(intr)		‘pass away, die’	
<i>-ʔin</i>	(intr)		‘sleep off’	
Class VI	Motion	<i>-tú</i>	(intr)	walk about
		<i>-te</i>	(intr)	go out
Postural	<i>-ngwé</i>	(intr)	sit, be	
	<i>-me</i>	(intr)	stand up	

In contrast, the members of the remaining classes (II, III and IV) do not have any discernible semantic property in common. Membership to such classes is entirely lexically determined. For example, it is neither based on the phonological properties of the stems of the members. This is shown in table 20 where we give the 32 verbs of classes II, III and IV arranged attending to similar onsets are found across different classes. In the table, examples of classes I and VI are given for reference. The data reveal that we cannot pin point to the existence of a phonological conditioning for membership except for verbs with onsets in /g/, /r<sup>h</sup>/, /k<sup>h</sup>/ and /mb/, which only occur in either classes II or III. However, we take this to be an accident of the sample rather than as a phonological property of the classes.

Table 20. Stem onset of stems in classes II-IV.

CLASS I		CLASS II		CLASS III		CLASS IV	
/ʔ/	<i>-ʔi</i> (tr) ‘want/wish’	<i>-ʔi</i> (tr) ‘hang’	<i>-ʔor</i> (tr) ‘appear’	<i>-ʔi</i> (tr) ‘care’			
/m/	<i>-máf</i> (tr) ‘show’	<i>-mé</i> (intr) ‘be late’	<i>-mén</i> (tr) ‘love/like’	<i>-má</i> (tr) ‘think’			
/p/	<i>-pá</i> (tr) ‘find’	<i>-póf</i> (intr) ‘dwindle’	<i>-pór</i> (tr) ‘remove’	<i>-por</i> (tr) ‘change’			
/k/	<i>-ká</i> (tr) ‘take out’	<i>-kó</i> (intr) ‘deny’					
/n/	<i>-nú</i> (tr) ‘see’	<i>-no</i> (intr) ‘arrive’					
		<i>-nov</i> (intr) ‘last’					
/ts/	<i>-tsá</i> (tr) ‘try’	<i>-tsá</i> (tr) ‘do’					
		<i>-tsé</i> (tr) ‘pay’					
		<i>-tsen</i> (tr) ‘pierce’					
		<i>-tsoh</i> (tr) ‘spend’					
/s/	<i>-sa</i> (tr) ‘read’		<i>-seni</i> (tr) ‘remember’	<i>-sá</i> (tr) ‘win’			
/t/	<i>-ta</i> (tr) ‘touch’			<i>-tets</i> (tr) ‘bet’			
CLASS VI							
/ɾ/	<i>rú</i> (intr) ‘die’	<i>-re</i> (tr) ‘breed’					
/ng/	<i>ngwé</i> (intr) ‘sit, be’			<i>-ngwá</i> (intr) ‘go’			
				<i>-ngwiʔi</i> (tr) ‘charge’			
				<i>-ngwa<sup>ás</sup></i> (tr) ‘pay’			
				<i>-ngwé</i> (tr) ‘strike with’			
				<i>-ngwin</i> (intr) ‘adhere’			
				<i>-ngwe</i> (intr) ‘cry’			
/g/		<i>-gá</i> (tr) ‘salute’					
/r <sup>h</sup> /		<i>-rho</i> (tr) ‘finish’					
/k <sup>h</sup> /			<i>khar</i> (tr) ‘possess’				
/mb/			<i>mbe</i> (tr) ‘stone’				

In this section, we have presented how the Chichimec verbal lexicon is divided up into at least seven inflectional classes attending to the prefix series they select for the realization of TAM categories and the person of the subject. The morphological complexity of Chichimec does not stop with prefix selection as verbs also require of stem alternations, at times rather complex, to inflect for the different person and TAM values. We present these patterns in the following section where we also study the interconnection between such stem alternation patterns and the different prefix classes we have studied so far.

### 3. Stem alternation patterns.

In the previous section, we have seen that verbs in Chichimec may have stem alternation patterns. We propose to classify such patterns here in six types. The patterns in question may be morphosyntactically motivated, as for example in table 21 where the verb *ngwé* ‘strike with something’ requires three stems: one which functions as a lexical default and two other ‘special’ stems found in the realization of specific person values, namely the 3rd person singular and dual, and the 3rd person plural. In other cases, the patterns are morphological in character because the selection of the ‘special’ stems does not respond to any coherent morphosyntactic feature value. As an illustration take the verb *-pín* ‘narrate’ in table 22. This verb has up to four different stems. Even if we took the stem *-pín* as the base form, the other three remaining stems *-mbín*, *-ngwín* and *-mín* do not seem to have a clear-cut morphosyntactic distribution and one is forced to propose complex morphological conditions, such as, for example, stem *-ngwín* is used for 2nd person for all TAM values except the present. But the same stem is also found in other cells.

Table 21. Stem alternation pattern of the verb *-ngwé* ‘strike with something’.

	1SG	1DU	1PL	2SG	2 DU	2PL	3SG	3 DU	3PL
PRES	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
ANT.PST	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
FUT	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
REC.PST	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
IMM.PST	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
POT	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
CONSTV	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>
NEG	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-ngwé</i>	<i>-mé</i>	<i>-mé</i>	<i>-mbé</i>

Table 22. Stem alternation pattern of the verb *-pín* ‘narrate’.

	1SG	1DU	1PL	2SG	2 DU	2PL	3SG	3 DU	3PL
PRES	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>
ANT.PST	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-mín</i>	<i>-mbín</i>
FUT	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-mín</i>	<i>-mbín</i>
REC.PST	<i>-mbín</i>	<i>-mbín</i>	<i>-mbín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-mín</i>	<i>-pín</i>
IMM.PST	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>
POT	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>
CONSTV	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>
NEG	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>

In the following subsections, we study the properties of such alternation patterns one by one. We claim that some of the patterns are restricted to the phonological properties of the base stems in question, others are not. Towards the end of the section we link the different patterns to the different prefix classes in search for morphological correlations between the two different subsystems in order to understand how independent they are from each other. Our overall conclusion is that the stem patterns are mainly associated with the default prefix class.

Finally, the stem alternation patterns in tables 21 and 22 involve the distributional properties of stems that contrast segmentally, but which are identical in tone. On top of such segmental differences, verbs may also involve tone alterations. An illustrative example is given in table 23 for the verb *-her* ‘have’, which has three different stems: *-her*, which we consider to be the base form, *-nhér* and *-rhér*. Notice that the base stem *-her* has a lexical low tone (not represented in the orthography), but in the potential the low tone is overwritten by a high tone (indicated by the acute accent). We study such cases in §4.

Table 23. Stem alternation pattern of the verb *-her* ‘have’.

	1SG	1DU	1PL	2SG	2DU	2PL	3SG	3DU	3PL
PRES	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-rhér</i>
ANT.PST	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-rhér</i>
FUT	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-rhér</i>
REC.PST	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-rhér</i>
IMM.PST	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-her</i>	<i>-her</i>	<i>-rhér</i>
POT	<b><i>-hér</i></b>	<b><i>-hér</i></b>	<b><i>-hér</i></b>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<b><i>-hér</i></b>	<b><i>-hér</i></b>	<i>-rhér</i>
CONSTV	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-her</i>	<i>-her</i>	<i>-rhér</i>
NEG	<i>-her</i>	<i>-her</i>	<i>-her</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-nhér</i>	<i>-her</i>	<i>-her</i>	<i>-rhér</i>

### 3.1. The minimal stem pattern: A-stems vs. B-stems.

Most verbs in Chichimec have at least two stems. In the default case, one of such stems is used for all 3rd person plural forms. We will call such a stem ‘B-stem’. The other stem has a wider distribution and we will refer to it as the ‘A-stem’ treating it as a base form which is available for further morphophonological operations.

For the vast majority of the cases, a B-stem is derived from an A-stem by the mutation of the consonantal onset of the A-stem to its aspirated correlate. Table 24 gives an indication of the mechanisms in question organized attending to onset type. Notice that for some of the verbs, there is further lexical specification, i.e. speakers need to remember what the correct outcome is given that there are different options at play. For such cases, we first specify the number of verbs found in the sample with that specific onset. The different options are represented by the small roman numbers together with an indication of their frequency. Cases in the sample without lexically specified options are treated as ‘All’.<sup>10</sup>

Table 24. The building of B-stems.

A-STEM	B-STEM						
Onset	Onset						
/p/	<i>-pá</i>	/m <sup>b</sup> /	<i>-mbá</i>	‘see, find’	(I)	22	(i) 17
	<i>-pan</i>	/p <sup>h</sup> /	<i>-phan</i>	‘heat’	(I)		(ii) 5
/t/	<i>-tá</i>	/t <sup>h</sup> /	<i>-rhá</i>	‘buy’	(I)	21	(i) 16
	<i>-tá</i>	/t <sup>h</sup> /	<i>-thá</i>	‘search for’	(I)		(ii) 3
	<i>-tav</i>	/t <sup>ʔ</sup> /	<i>-rʔav</i>	‘cut’	(I)		(iii) 2
/ts/	<i>-tsá</i>	/ts <sup>h</sup> /	<i>-tshá</i>	‘hurt’	(I)	All	
/ʃ/	<i>-tcon</i>	/z <sup>h</sup> /	<i>-zhon</i>	‘bite’	(I)	All	

<sup>10</sup> Verbs like *sus* ‘split’ in (e/iii) and *máf* ‘show’ in (i/iii) have B-stems such as *tsus* and *páf*, respectively. These cases suggest some constraint on root syllables to have one and only one [spread glottis] feature. As the respective codas in the verb are already specified with [+spread glottis] this prevents aspiration from the initial consonant: \**shus* or \**mháf*. The outcome /ts/ and /p/ in the B-stem is, however, not predictable.

/s/	-sú	/ts <sup>h</sup> /	-tshú	‘take out’	(I)	8	(i)	5
	-sus		-tsus	‘split’	(I)		(ii)	2
	-sú	/s <sup>h</sup> /	-shú	‘peel’	(I)		(iii)	1
/k/	-kq	/k <sup>h</sup> /	-khq	‘take out’	(I)	All		
/ʔ/	-ʔe	/ʔ <sup>h</sup> /	-r-ʔe	‘put’	(I)	All		
/h/	-há	/r <sup>h</sup> /	-r-há	‘drink’	(I)	All		
/r <sup>h</sup> /	-rho	/nt <sup>h</sup> /	-ntho	‘finish’	(II)	All		
/m/	-má	/m <sup>h</sup> /	-mhá	‘speak’	(I)	8	(i)	7
	-máf	/p/	-páf	‘show’	(I)		(ii)	1
/n/	-nef	/n <sup>h</sup> /	-nhéf	‘run’	(I)	All		
/n <sup>d</sup> /	-ndun	/n <sup>dh</sup> /	-ndhun	‘buzz’	(I)	All		
/ng <sup>w</sup> /	-ngwé	/m <sup>b</sup> /	-mbé	‘strike with’	(IV)	6	(i)	4
	-ngwá <sup>ás</sup>	/p <sup>h</sup> /	-pha <sup>ás</sup>	‘pay’	(IV)		(ii)	2
/g/	-gá	/ng/	-ngar	‘salute’	(II)	All		

Verbs of prefix classes VI and VII do not commonly build their B-stems following the mechanisms in table 24. For such verbs, a B-stem is formed by suffixing *-r* to the A-stem. The same happens to the class II verb *rě* ‘breed’ and to some of class V.

(4)	A-STEM	B-STEM	Expected		
	<i>-me</i>	<i>-me-r</i>	*-mhe	‘stand up’	(VI) 3 (out of 4)
	<i>-tsó</i>	<i>-tsó-r</i>	*-tshó	‘fall’	(VII) 11 (out of 15)
	<i>-hú</i>	<i>-hú-r</i>	*-r-hú	‘put oneself’	(V) 3 (out of 32)
	<i>-rẹ</i>	<i>-rẹ-r</i>	*-rhe	‘breed’	(II) 1

At least 5 verbs of class V, one of class VI and another of class IV have B-stems whose forms could be treated as suppletive when compared to their respective A-stems. For the verbs in (4a), the B-stem also bears the suffix *-r*. The form of the B-stems for the verbs in (4c) in reality is that of another stem we call a ‘C-stem’, which we will treat further below in §3.2. Despite their form, the stems in (4c) have the same distribution as B-stems.

(5)	A-STEM	B-STEM	Expected	
a.	<i>-pó<sup>ó</sup></i>	<i>-nhu-r</i>	*-mbó <sup>ó</sup>	‘enter’ (V)
	<i>-ʔi</i>	<i>-nü-r</i>	*-r ʔi	‘pass’ (V)
b.	<i>-hunts</i>	<i>-kants</i>	*-rhunts	‘sit’ (V)
	<i>-ngwé</i>	<i>-ká<sup>á</sup></i>	*-mbé	‘sit, be’ (VI)
c.	<i>-ngwé ʔn</i>	<i>-pé ʔn</i>	*-mbé ʔn	‘be loaded with’ (V)
	<i>-ngwo</i>	<i>-vo</i>	*-mbo	‘meet’ (V)
	<i>-á-ʔi</i>	<i>-á-ti</i>	*-á-r ʔi	‘appear’ (V)
	<i>-ʔi</i>	<i>-tí</i>	*-r ʔi	‘care’ (IV)

**3.1.1. The distribution of B-stems.** For most verbs, the B-stem is used for all cells in the paradigm involving a 3rd person plural. Many verbs have only two stems, and they are distributed according to the stem alternation pattern in table 25, which we treat as pattern 1.a. A typical example of the primary split of the pattern 1 is the verb *-nú* ‘see’.

Table 25. Pattern 1.a: verb *-nú* ‘see’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	-nú	-nú	-nú	-nhú

ANT.PST	A	A	A	B	-nú	-nú	-nú	-nhú
FUT	A	A	A	B	-nú	-nú	-nú	-nhú
REC.PST	A	A	A	B	-nú	-nú	-nú	-nhú
IMM.PST	A	A	A	B	-nú	-nú	-nú	-nhú
POT	A	A	A	B	-nú	-nú	-nú	-nhú
CONSTV	A	A	A	B	-nú	-nú	-nú	-nhú
NEG	A	A	A	B	-nú	-nú	-nú	-nhú

Pattern 1.a is used with most verbs regardless of prefix class, but verbs of prefix class VI and VII are special in that they require a two-way split involving all plural cells regardless of person. For such verbs, the B-stem is used in all cells involving a plural subject. This is pattern 1.b, and it is illustrated in table 26 with the verb *-há* ‘ascend’ of class VII.

Table 26. Pattern 1.b: verb *-há* ‘ascend’.

	SG/DU	PL	SG/DU	PL
PRES	A	B	-há	-há-r
ANT.PST	A	B	-há	-há-r
FUT	A	B	-há	-há-r
REC.PST	A	B	-há	-há-r
IMM.PST	A	B	-há	-há-r
POT	A	B	-há	-há-r
CONSTV	A	B	-há	-há-r
NEG	A	B	-há	-há-r

**3.1.2. Verbs without a B-stem.** Some verbs do not have a B-stem. For the verbs in (6a), one could say that the morphophonology fails to provide a distinctive phonological B-stem. For example, all verbs of class VII build their B-stem by adding suffix *-r*, but as the sequence /CVnr/ is banned by the phonotactics, the B-stem surfaces identical to the A-stem. We tested this observation in contemporary Chichimec. A hypothetical form *ekharer* ‘They possess’ is ungrammatical. The only form accepted is the one similar to the A-stem. This ban affects four verbs of class VII. The ones in (6.b), however, should be accounted as being irregular because in principle they could have a B-stem by means of the default mechanisms proper of their class, but instead they do not.

(6)	Stem A	Stem B		
a.	<i>-khar</i>	—	‘possess’	(III)
	<i>-mben</i>	—	‘stone’	(III)
	<i>-sení</i>	—	‘remember’	(III)
	<i>-tun</i>	—	*-tun-r	‘go in the lead’ (VII)
b.	<i>-hu</i>	—	*-r-hú	‘put, place’ (I)
	<i>-ři</i>	—	*-r-ři	‘hang’ (II)
	<i>-ře</i>	—	*-r-ře	‘do thus’ (II)
	<i>-řor</i>	—	*-r-řor	‘appear’ (III)
	<i>-tshé</i>	—	*-tshé	‘pay’ (II)
	<i>-tú</i>	—	*-thú/*rhú	‘finish’ (II)
	<i>pór</i>	—	*phór/*mbór	‘remove’ (III)

In contrast to the cases in (6), 22 out of the 32 deponent middle verbs of prefix class V do not have a B-stem. This specific lack of a B-stem we treat instead as a morphological

characteristic of class V. In this light, for these 22 verbs of class V one could propose that they instantiate a pattern with no paradigmatic splits, illustrated in table 27 with the verb *tér* ‘laugh’. Alternatively, for such verbs one could still treat such cases as irregular instances of patterns 1.a or 1.b –depending on their prefix class– by arguing that their B-stem is phonologically identical to their A-stem. On the other hand, reflexive verbs of class V derived from transitive verbs inherit some of the stem alternation properties of their source verbs in keeping a B-stem contrast, like for example in tables 16 and 17 above.

Table 27. Pattern 1.c (without stem alternations): verb *-tér* ‘laugh’

	1	2	3	1	2	3
PRES	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
ANT.PST	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
FUT	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
REC.PST	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
IMM.PST	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
POT	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
CONSTV	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>
NEG	A	A	A	<i>-tér</i>	<i>-tér</i>	<i>-tér</i>

Finally, the verb *-mén* ‘love’ of prefix class III displays a hybrid stem alternation pattern between 1.a and 1.c, as illustrated in table 28, which could be called pattern 1.d. Notice that this verb is doubly irregular because its B-stem is also suppletive, i.e. the regular outcome should have been *\*-mhén*.

Table 28. Pattern 1.d: verb *mén* ‘love’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	A	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>
ANT.PST	A	A	A	A	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>
FUT	A	A	A	B	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mbén</i>
REC.PST	A	A	A	B	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mbén</i>
IMM.PST	A	A	A	B	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mbén</i>
POT	A	A	A	A	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>
CONSTV	A	A	A	B	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mbén</i>
NEG	A	A	A	B	<i>-mén</i>	<i>-mén</i>	<i>-mén</i>	<i>-mbén</i>

The distribution of verbs displaying the different subtypes of pattern 1 is given in (7).

(7)	Pattern 1.a	36
	Pattern 1.b	19
	Pattern 1.c	30
	Pattern 1.d	1
	<hr/> Total	<hr/> 86

There are 30 verbs of pattern 1 that do not have a B-stem. The rest (56) abide by a basic stem alternation pattern involving just two stems. Other verbs in Chichimec have more complex stem alternation patterns, which are hierarchical in structure as all of them also require a B-stem in their paradigm structure. We study them in the following sections.

### 3.2. Stem alternation pattern 2.

Besides the minimal stem alternation pattern involving two stems, 19 verbs in our sample display a second stem alternation pattern we call ‘Pattern 2’, which involves a third stem we



treat as the ‘C-stem’. Pattern 2 requires a C-stem for the 3rd person singular and dual. The pattern was already illustrated in table 21 above by the verb *-ngw<sup>é</sup>* ‘strike with something’, but it is given again for convenience in table 29 with the verb *-pan* ‘heat’. Here, like in patterns 1.a and 1.b, the distribution of the stems attends to person values only; that is, it is not sensitive to TAM. Notice that pattern 2 is hierarchically built on pattern 1.a.

Table 29. Pattern 2: verb *-pan* ‘heat’

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
ANT.PST	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
FUT	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
REC.PST	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
IMM.PST	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
POT	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
CONSTV	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
NEG	A	A	C	B	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>

We propose that the building of a C-stem involves an abstract process of ‘sonorization’ of the consonantal onset of an A-stem. The relevant outcomes are given in table 30 with examples. Notice that for some of the outcomes, there is further lexical.

Table 30. The building of C-stems.

A-STEM	C-STEM						
/p/	<i>-pii</i>	/m/	<i>-mii</i>	‘spy’	(I)	18	(i) 14
	<i>-pen</i>	/b/ [β]	<i>-ven</i>	‘weigh’	(I)		(ii) 3
	<i>-pan</i>	/ <sup>n</sup> b/ > [mb]	<i>-mban</i>	‘heat’	(I)		(iii) 1
/t/	<i>-tav</i>	/r/	<i>-rav</i>	‘cut’	(I)	All	
/ts/	<i>-tsó</i>	/z/	<i>-zó</i>	‘scold’	(I)	All	
/ʃ/	<i>-tcon</i>	/z/	<i>-zon</i>	‘bite’	(I)	All	
/s/	<i>-sa</i>	/dz/	<i>-dza</i>	‘read’	(I)	All	
/k/	<i>-kets</i>	/g/	<i>-gets</i>	‘pick up’	(I)	All	
/ʔ/	<i>-ʔán</i>	/n-ʔ/ > [nd]	<i>-n-dán</i>	‘ask’	(I)	All	
/h/	<i>-há</i>	/n-h/	<i>-n-há</i>	‘drink’	(I)	All	
/r <sup>h</sup> /	<i>-rho</i>	/t <sup>h</sup> /	<i>-tho</i>	‘finish’	(II)	All	
/r/	<i>-re</i>	/n-r/ > [nd]	<i>-nde</i>	‘breed’	(II)	All	
/ng <sup>w</sup> /	<i>-ngwé</i>	/m/	<i>-mé</i>	‘strike with’	(IV)	6	(i) 4
	<i>-ngwa<sup>ás</sup></i>	/p/	<i>-pa<sup>ás</sup></i>	‘pay’	(IV)		(ii) 2

As illustrated in table 30, for the simplest of cases a voiceless consonant becomes voiced, e.g. A *-kets* > C *-gets* ‘ask’, but in other cases, the voiced outcome is not the direct expected counterpart of the base form: e.g. A *-tsó* vs. C *-zó* ‘scold’. We interpret this as a phonological constraint because there are no contrastive labial and coronal voiced stops in the inventory of Chichimec: these are produced as prenasalized, fricatives or flaps. Thus, the alternations just described could still be taken to form a natural class at some abstract level. We could offer a preliminary hypothesis to include the default case of whereby an onset *ngw* > *m*. Increasing the sonority of a labialized velar may be achieved by enlarging its inherent rather short vocal tract, as in a plain labial, in which case the overall aerodynamic conditions for sonority (voicing) will be enhanced. Verbs with glottic and rhotic consonants receive a nasal which could be taken as the segmental reflex of a historical nasal prefix that may have once served as the marker to build a C-stem, now disappeared, which was responsible for the sonorization

we observe today. Besides the verbs in table 30, there are two verbs in our sample with an unexpected C-stem built with nasalization of a long nucleus, i.e. A *-paa* > C *-paan* ‘look hither’ or A *-pii* > C *-piin* ‘carry’.

### 3.3. Stem alternation pattern 3.

Three verbs in Angulo's sample display yet another stem pattern that we treat as ‘pattern 3’. This new pattern involves another stem we call the ‘D-stem’. In pattern 3, the D-stem is used for the 2nd person, as illustrated in table 31.<sup>11</sup>

Table 31. Pattern 3: verb *-tsá* ‘do’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
ANT.PST	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
FUT	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
REC.PST	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
IMM.PST	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
POT	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
CONSTV	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>
NEG	A	D	A	B	<i>-tsá</i>	<i>-tcá</i>	<i>-tsá</i>	<i>-tshá</i>

A D-stem is found in other patterns besides pattern 3, but all in all the number of verbs that can have a D-stem is restricted to the ones that have the onsets in table 32. However, not all verbs having such onsets also have a D-stem or pertain to the patterns requiring a D-stem, so within this limited set of possibilities, speakers still need to remember which lexemes undergo which pattern. In contrast to the building mechanisms for B-stems and C-stems, the mutated onset of D-stems is more difficult to be accounted for in terms of a unified morphophonological process. For the verbs with onset  $\widehat{/ts/}$  is palatalization, but for those with a glottal stop onset, the D-stem takes the form of a dental onset, suggesting coronalization turning the glottal gesture into a dentoalveolar one. But verbs with a glottal fricative  $/h/$  lack a dedicated D-stem, and instead use a prenasalization stem that surfaces identical to their C-stem.<sup>12</sup>

Table 32. The building of D-stems.

A-STEM	D-STEM					
$/p/$ <i>-pa</i>	$/ng^w/$ <i>-ngwa</i>	‘cover’	(I)	All		
$\widehat{/ts/}$ <i>-tsó</i>	$/ʃ/$ <i>-tcó</i>	‘scold’	(I)	All		
$/ʔ/$ <i>-ʔán</i>	$/t/$ <i>-tán</i>	‘ask’	(I)	All		
$/h/$ <i>-hü</i>	$/n-h/$ <i>-n-hü</i>	‘burn’	(I)	All		

All stem alternation patterns we have observed so far (except subtype 1.d) involve distributional properties of special stems as conditioned by the person or number of the subject. This means that the distribution of the stem allomorphy can be accounted for as responding to a simple conditioning factor easily spelled out by the morphosyntax, such as for example ‘a B-stem is required in 3rd person plural’ or ‘a D-stem is required for the 2nd person’, etc. There remain, however, three other types of stem alternations which are morphologically more complex in structural terms because the distribution of stems does not respond to a unified morphosyntactic value, hence it is not motivated, and involves a list of specifications, sometimes long, such as for example ‘a C-stem is required for the 3rd person

<sup>11</sup> Besides *-tsá* ‘do’, the two other verbs are *-tsoh* ‘scold’ (B *-thoh/C -tcoh*) and *-tsen* ‘pierce’ (B *-tshen/C -tcen*).

<sup>12</sup> The only noticeable exception is the verb *-ʔü* ‘suck’ (D *-n ʔü*).

singular or dual in all past tenses and the future’, etc, which point to the intrinsic morphological character of such patterns.<sup>13</sup> We treat such more complex patterns in the following sections.

### 3.4. Stem alternation pattern 4.

22 two verbs in Angulo's sample abide by the a stem alternation pattern we treat as ‘pattern 4’. This pattern requires four stems: An A-stem, a B-stem, a C-stem and a fifth type of stem we call the ‘E-stem’, which is used exclusively in this pattern for the recent past of the 1st person. Like pattern 2, this new pattern also requires a C-stem for the 3rd person, but restricted to specific TAM values, as shown in table 33. There are two subtypes. In one, the C-stem is found in the future and in all past tenses; in the other, the immediate past is excluded.<sup>14</sup>

Table 33. Pattern 4: verbs *-pen* ‘weigh’ and *-ker* ‘learn’.

		1	2	3SG/DU	3PL				
Subtype 4.a (19 verbs)	PRES	A	A	A	B	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	<i>-phen</i>
	ANT.PST	A	A	C	B	<i>-pen</i>	<i>-pen</i>	<i>-ven</i>	<i>-phen</i>
	FUT	A	A	C	B	<i>-pen</i>	<i>-pen</i>	<i>-ven</i>	<i>-phen</i>
	REC.PST	E	A	C	B	<i>m<sup>n</sup>ben</i>	<i>-pen</i>	<i>-ven</i>	<i>-phen</i>
	IMM.PST	A	A	C	B	<i>-pen</i>	<i>-pen</i>	<i>-ven</i>	<i>-phen</i>
	POT	A	A	A	B	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	<i>-phen</i>
	CONSTV	A	A	A	B	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	<i>-phen</i>
	NEG	A	A	A	B	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	<i>-phen</i>
Subtype 4.b (3 verbs)	PRES	A	A	A	B	<i>-ker</i>	<i>-kér</i>	<i>-ker</i>	<i>-khér</i>
	ANT.PST	A	A	C	B	<i>-ker</i>	<i>-kér</i>	<i>-gér</i>	<i>-khér</i>
	FUT	A	A	C	B	<i>-ker</i>	<i>-kér</i>	<i>-gér</i>	<i>-khér</i>
	REC.PST	E	A	C	B	<i>-n<sup>n</sup>ger</i>	<i>-kér</i>	<i>-gér</i>	<i>-khér</i>
	IMM.PST	A	A	A	B	<i>-ker</i>	<i>-kér</i>	<i>-ker</i>	<i>-khér</i>
	POT	A	A	A	B	<i>-kér</i>	<i>-kér</i>	<i>-kér</i>	<i>-khér</i>
	CONSTV	A	A	A	B	<i>-ker</i>	<i>-kér</i>	<i>-ker</i>	<i>-khér</i>
	NEG	A	A	A	B	<i>-ker</i>	<i>-kér</i>	<i>-ker</i>	<i>-khér</i>

E-stems only appear in pattern 4 and are phonologically derived from C-stems by means of a nasal prefix.

Table 34. The building of E-stems.

A-STEM	C-STEM	E-STEM				
/p/ <i>-pen</i>	/b/ [β]	<i>-ven</i>	/n-b/	<i>-m<sup>n</sup>ben</i>	‘weigh’	(I) All
/ʃ/ <i>-tcon</i>	/z/	<i>-zon</i>	/n-z/	<i>-n<sup>n</sup>zon</i>	‘bite’	(I) All
/k/ <i>-kuṅ</i>	/g/	<i>-guṅ</i>	/n-g/	<i>-n<sup>n</sup>guṅ</i>	‘look hard’	(I) All
/t/ <i>-tó</i>	/r/	<i>-ró</i>	/n-r/ > [nd]	<i>-n<sup>n</sup>dó</i>	‘watch’	(I) All

### 3.5. Stem alternation pattern 5.

Other 22 verbs in our sample display yet another stem alternation pattern we treat as ‘pattern 5’. This pattern result as a combination of patterns 3 and 4.b: like pattern 3, a D-stem is used for the 2nd person; like pattern 4.b, a C-stem is used for the 3rd person singular and dual of the anterior past, the recent past and the future. The pattern has various subtypes involving

<sup>13</sup> Morphemes in the sense by Aronoff (1993).

<sup>14</sup> The A-stem of the verb *-ker* ‘learn’ receives high tone for the 2 nd person. This tonal pattern and others will be studied in more detail in §4.

the marking of present (subtypes (a) and (b)) and the marking of the 3rd person singular and dual of the consecutive (subtypes (i) and (ii)). Verbs of pattern 5 are characterized phonologically by having an A-stem with a glottal consonant, but there are also three with an alveolar affricative /ts/.<sup>15</sup>

Table 35. Pattern 5: verbs *-ʔi* ‘want’, *-hü* ‘burn’, *-tsó* ‘scold’ and *-ʔer* ‘throw’.

		1	2	3SG/DU	3PL				
Subtype 5.a.i (10 verbs)	PRES	A	A	A	B	<i>-ʔi</i>	<i>-ʔi</i>	<i>-ʔi</i>	<i>-rʔi</i>
	ANT.PST	A	D	C	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rʔi</i>
	FUT	A	D	C	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rʔi</i>
	REC.PST	A	D	C	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rʔi</i>
	IMM.PST	A	D	A	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ʔi</i>	<i>-rʔi</i>
	POT	A	D	A	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ʔi</i>	<i>-rʔi</i>
	CONSTV	A	D	A	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ʔi</i>	<i>-rʔi</i>
	NEG	A	D	A	B	<i>-ʔi</i>	<i>-tí</i>	<i>-ʔi</i>	<i>-rʔi</i>
Subtype 5.a.ii (4 verbs)	PRES	A	A	A	B	<i>-hü</i>	<i>-hü</i>	<i>-hü</i>	<i>-rhü</i>
	ANT.PST	A	D	C	B	<i>-hü</i>	<i>-nhü</i>	<i>-nhü</i>	<i>-rhü</i>
	FUT	A	D	C	B	<i>-hü</i>	<i>-nhü</i>	<i>-nhü</i>	<i>-rhü</i>
	REC.PST	A	D	C	B	<i>-hü</i>	<i>-nhü</i>	<i>-nhü</i>	<i>-rhü</i>
	IMM.PST	A	D	A	B	<i>-hü</i>	<i>-nhü</i>	<i>-hü</i>	<i>-rhü</i>
	POT	A	D	A	B	<i>-hü</i>	<i>-nhü</i>	<i>-hü</i>	<i>-rhü</i>
	CONSTV	A	D	C	B	<i>-hü</i>	<i>-nhü</i>	<i>-nhü</i>	<i>-rhü</i>
	NEG	A	D	A	B	<i>-hü</i>	<i>-nhü</i>	<i>-hü</i>	<i>-rhü</i>
Subtype 5.b.i (3 verbs)	PRES	A	D	A	B	<i>-tsó</i>	<i>-tco</i>	<i>-tsó</i>	<i>-tshó</i>
	ANT.PST	A	D	C	B	<i>-tsó</i>	<i>-tco</i>	<i>-zó</i>	<i>-tshó</i>
	FUT	A	D	C	B	<i>-tsó</i>	<i>-tco</i>	<i>-zó</i>	<i>-tshó</i>
	REC.PST	A	D	C	B	<i>-tsó</i>	<i>-tco</i>	<i>-zó</i>	<i>-tshó</i>
	IMM.PST	A	D	A	B	<i>-tsó</i>	<i>-tco</i>	<i>-tsó</i>	<i>-tshó</i>
	POT	A	D	A	B	<i>-tsó</i>	<i>-tco</i>	<i>-tsó</i>	<i>-tshó</i>
	CONSTV	A	D	A	B	<i>-tsó</i>	<i>-tco</i>	<i>-tsó</i>	<i>-tshó</i>
	NEG	A	D	A	B	<i>-tsó</i>	<i>-tco</i>	<i>-tsó</i>	<i>-tshó</i>
Subtype 5.b.ii (5 verbs)	PRES	A	D	A	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ʔer</i>	<i>-rʔer</i>
	ANT.PST	A	D	C	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ndir</i>	<i>-rʔer</i>
	FUT	A	D	C	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ndir</i>	<i>-rʔer</i>
	REC.PST	A	D	C	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ndir</i>	<i>-rʔer</i>
	IMM.PST	A	D	A	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ʔer</i>	<i>-rʔer</i>
	POT	A	D	A	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ʔer</i>	<i>-rʔer</i>
	CONSTV	A	D	C	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ndir</i>	<i>-rʔer</i>
	NEG	A	D	A	B	<i>-ʔer</i>	<i>-tir</i>	<i>-ʔer</i>	<i>-rʔer</i>

### 3.6. Stem alternation pattern 6.

The last and most complex stem alternation pattern is given in table 36. This pattern shares some structure with the previous patterns. Pattern 6 is like pattern 5.i in having a D-stem for the 2nd person and a C-stem for the 3rd person singular and dual of the anterior past, the recent past and the future. Like pattern 5.a it also requires an A-stem for the present, but this time for all persons. Like pattern 4, the verbs of pattern 6 also require an E-stem for the 1st person of the recent past, but as the verbs in question have a B-stem of class (i) (see table 24 above), thus both stems surface as homophonous.

<sup>15</sup> As pointed out above and indicated in table 32, verbs with an onset /h/ have homophonous C and D-stems. This makes a verb such as *-hü* ‘burn’ appear to have a C-stem for the stem zones where other verbs would have a phonologically distinct D-stem. Positing stem homophony saves the analysis from having to propose another stem alternation pattern, specific for verbs with an onset /h/.

Pattern 6 has its own idiosyncrasies: (a) the verbs do only require a B-stem for the 3rd person plural in the anterior past, the future, and for some verbs also in the consecutive; (b) the forms for the 1st person are built involving three different stems; and (c) the immediate past, the potential and the negative all select a D-stem, except for the 3rd person plural.

Table 36. Pattern 6: verbs *-pín* ‘narrate’ and *-pí* ‘wait’.

		1	2	3SG/DU	3PL				
Subtype 6.a (9 verbs)	PRES	A	A	A	A	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>	<i>-pín</i>
	ANT.PST	A	D	C	B	<i>-pín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-mbín</i>
	FUT	A	D	C	B	<i>-pín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-mbín</i>
	REC.PST	E	D	C	A	<i>-mbín</i>	<i>-ngwín</i>	<i>-mín</i>	<i>-pín</i>
	IMM.PST	D	D	D	A	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>
	POT	D	D	D	A	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>
	CONSTV	A	D	A	A	<i>-pín</i>	<i>-ngwín</i>	<i>-pín</i>	<i>-pín</i>
	NEG	D	D	D	A	<i>-ngwín</i>	<i>-ngwín</i>	<i>-ngwín</i>	<i>-pín</i>
Subtype 6.b (7 verbs)	PRES	A	A	A	A	<i>-pí</i>	<i>-pí</i>	<i>-pí</i>	<i>-pí</i>
	ANT.PST	A	D	C	B	<i>-pí</i>	<i>-ngwí</i>	<i>-mí</i>	<i>-mbí</i>
	FUT	A	D	C	B	<i>-pí</i>	<i>-ngwí</i>	<i>-mí</i>	<i>-mbí</i>
	REC.PST	E	D	C	A	<i>-mbí</i>	<i>-ngwí</i>	<i>-mí</i>	<i>-pí</i>
	IMM.PST	D	D	D	A	<i>-ngwí</i>	<i>-ngwí</i>	<i>-ngwí</i>	<i>-pí</i>
	POT	D	D	D	A	<i>-ngwí</i>	<i>-ngwí</i>	<i>-ngwí</i>	<i>-pí</i>
	CONSTV	A	D	A	B	<i>-pí</i>	<i>-ngwí</i>	<i>-pí</i>	<i>-mbí</i>
	NEG	D	D	D	A	<i>-ngwí</i>	<i>-ngwí</i>	<i>-ngwí</i>	<i>-pí</i>

### 3.7. Other stem alternation patterns.

Three verbs in the sample of pattern 1.b have stem alternation patterns which are idiosyncratic because they require a suppletive stem for either present or the negative or both. These suppletive stems are built on the stem zones proper of pattern 1.b, so that the verbs in question end up having two A-stems and two B-stems. The verbs in question are given in table 37.

Table 37. Irregular verbs *-tú* ‘walk about’, *-te* ‘go out’ and *-ngwé* ‘sit, be’.

	SG/DU	PL	SG/DU	PL	SG/DU	PL
PRES	<i>-tú</i>	<i>-túr</i>	<i>-né</i>	<i>-nér</i>	<i>-me/-ni</i>	<i>-gá/-gün</i>
ANT.PST	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
FUT	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
REC.PST	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
IMM.PST	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
POT	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
CONSTV	<i>-tú</i>	<i>-túr</i>	<i>-te</i>	<i>-ter</i>	<i>-ngwé</i>	<i>-ká</i>
NEG	<i>-nú</i>	<i>-núr</i>	<i>-né</i>	<i>-nér</i>	<i>-ngwé</i>	<i>-ká</i>

After having seen the six different stem alternation patterns observable in our corpus of Chichimec verbs with their different subtypes, a question still remains about predictability: To what extent is it predictable that a given verb will be inflected according to a given pattern? We try to give an answer to this question in the following section.

### 3.8. Membership to the stem alternation patterns.

In order to tackle the issue of predictability of verbs to specific patterns, let us start by considering first verbs of pattern 6. All verbs of pattern 6 have an A-stem with an onset /p/.

However, a quick look at the verbs in our small sample reveals that verbs with a similar onset /p/ pertain to other patterns. This can be seen if we compare the stem patterns of the verbs in table 38: *-pár* ‘be rich’ of pattern 1.c (with no stem alternations); *-pan* ‘heat’ of pattern 2 with B-stem of class (ii) and C-stem of class (iii); *-pa* ‘see, find’ of pattern 4.a with B-stem of class (i) and C-stem of class (ii); and *-pa* ‘cover’ of pattern 6.b with B-stem of class (i) and -stem of class (i).

Table 38. Comparison of the stem alternation patterns of verbs with an onset /p/.

		1	2	3SG/DU	3PL					
PRES	1.c	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	2	<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
ANT.PST		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
FUT		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
REC.PST		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
IMM.PST		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
POT		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
CONSTV		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>
NEG		<i>-pár</i>	<i>-pár</i>	<i>-pár</i>	<i>-pár</i>		<i>-pan</i>	<i>-pan</i>	<i>-mban</i>	<i>-phan</i>

  

		1	2	3SG/DU	3PL					
PRES	4.a	<i>-pá</i>	<i>-pá</i>	<i>-pá</i>	<i>-mbá</i>	6.b	<i>-pa</i>	<i>-pa</i>	<i>-pa</i>	<i>-pa</i>
ANT.PST		<i>-pá</i>	<i>-pá</i>	<i>-vá</i>	<i>-mbá</i>		<i>-pa</i>	<i>-ngwa</i>	<i>-ma</i>	<i>-mba</i>
FUT		<i>-pá</i>	<i>-pá</i>	<i>-vá</i>	<i>-mbá</i>		<i>-pa</i>	<i>-ngwa</i>	<i>-ma</i>	<i>-mba</i>
REC.PST		<i>-mbá</i>	<i>-pá</i>	<i>-vá</i>	<i>-mbá</i>		<i>-mba</i>	<i>-ngwa</i>	<i>-ma</i>	<i>-pa</i>
IMM.PST		<i>-pá</i>	<i>-pá</i>	<i>-vá</i>	<i>-mbá</i>		<i>-ngwa</i>	<i>-ngwa</i>	<i>-ngwa</i>	<i>-pa</i>
POT		<i>-pá</i>	<i>-pá</i>	<i>-pá</i>	<i>-mbá</i>		<i>-ngwa</i>	<i>-ngwa</i>	<i>-ngwa</i>	<i>-pa</i>
CONSTV		<i>-pá</i>	<i>-pá</i>	<i>-pá</i>	<i>-mbá</i>		<i>-pa</i>	<i>-ngwa</i>	<i>-pa</i>	<i>-mpa</i>
NEG		<i>-pá</i>	<i>-pá</i>	<i>-pá</i>	<i>-mbá</i>		<i>-ngwa</i>	<i>-ngwa</i>	<i>ngwa</i>	<i>-pa</i>

The existence of verbs like the ones in table 38 indicate that the stem alternation behaviour of a certain verb cannot be predicted from the phonological shape of its base stem and it needs to be listed in the lexicon. However, from our small sample one can still observe strong tendencies of membership to a given pattern based on the phonological shape of the onsets of the base form. This is indicated in table 39, where we correlate the frequency of type of onset with type of pattern.

Table 39. Type of onset per stem alternation pattern.

	1.a	1.b	1.c	1.d	2	3	4.a	4.b	5.a.i	5.a.ii	5.b.i	5.b.ii	6.a	6.b	Total
/p/	4	1	3		1		3						9	7	28
/t/	3	4	5		1										13
/ts/	2	1			1	3	13	2			3				25
/ʃ/							1								1
/s/	6		6		2										14
/g/					2										2
/k/	1	2	2		4		2	1							12
/k <sup>n</sup> /			1												1
/ʔ/	3	4	4						5	1		6			23
/h/	2	1	1						5	3					12
/m/	8	1	4	1											14
/n/	4														4
/nd/	1	2	1												4
/ngw/	2	1	1		6										10
/r/		1			1										2
/r <sup>n</sup> /					1										1
Other <sup>10</sup>			2												2
Total	36	18	30	1	19	3	19	3	10	4	3	6	9	7	168

<sup>16</sup> The verbs *-úts* ‘be always’ and *-yúts* ‘jump’.

If the figures in table 39 are observed vertically, one can see that some patterns accept more types of onsets than others, for example the membership to patterns 1 and 2 is clearly not phonologically conditioned, whether that to patterns 5 and 6 clearly is. In contrast, if the figures are observed horizontally, one may conclude that predictability for pattern membership is clearer for some type of onsets than for others. If the base form of a verb has onsets such as /p/, /ts/, /ʔ/ or /h/, it is difficult to predict membership. But the number of options is significantly reduced with onsets /t/ and /k/ or even /ngw/. Verbs with a /m/ pertain to pattern 1, mainly due to phonological restrictions in producing other suitable stems to feed the stem zones characteristic of other patterns. On the other hand, we take onset types instantiated in the sample by just one verb as being uninformative.

Another way to tackle the distribution of the patterns across verbs is to study the relation they hold with the prefix classes. Again, our sample is too small to be informative about the Chichimec verbal lexicon in a definite manner, but it nonetheless shows illustrative tendencies, shown in table 40.

Table 40. Prefix class per stem alternation pattern.

	1.a	1.b	1.c	1.d	2	3	4.a	4.b	5.a.i	5.a.ii	5.b.i	5.b.ii	6.a	6.b	Total
I	17				8		19	3	10	4	3	5	9	7	85
II	5		3		4	3									15
III			5	1											6
IV	4				7										11
V		15													15
VI		4													4
VII	10		22												32
Total	36	18	30	1	19	3	19	3	10	4	3	6	9	7	168

If the figures are observed horizontally, one can see that verbs of prefix class I undergo all types of stem alternation patterns (except pattern 3, possibly an accident of the sample). It also means that verbs of other prefix classes are constrained to pattern 1, except for class II, whose verbs may also belong to patterns 2 or 3, or those of class IV which may select pattern 2. This also means that verbs of prefix classes III, V, VI and VII can only be of stem alternation pattern 1. As we have already pointed out in §2.2, two thirds of the verbs of class VII do not have a stem alternation pattern. In a similar way, if the figures are observed vertically one may see that pattern 1 is found in verbs that pertain to a greater number of different prefix classes. The phonological diversity of base stems of pattern 1 as given in table 39, together with the figures in table 40, suggest that both pattern 1 and prefix class I work as inflectional defaults for the inflection of verbs in Chichimec.

In the previous sections we have studied prefix classes, stem alternation patterns and their interconnection. In the next section, we study the role of tone in the making of the inflectional paradigm of verbs in Chichimec.

#### 4. Tone and inflection.

Chichimec has two tones, low (L) and high (H) (marked with an acute accent). While the tone of inflected forms is clearly registered in Angulo (1933), there is not an explicit analysis of tone, so ours is novel although entirely based on Angulo's materials. In the default case, in an inflected form of a verb, tone is lexically assigned to the stem and then prosodically assigned to the prefix as part of the prosodic word. This is done in such a way that the tone of the

prefix ends up receiving the opposite tone of the stem, as illustrated in Table 41, where the same set of prefixes (for example of the 1st person of class I) when associated to two stems bearing a different tone, end up having opposite tone values.

Table 41. 1st person of *-tú* ‘finish’ vs. *-me* ‘place upright’.

PRES	<i>e-tú</i>	<i>é-me</i>	L-H	H-L
ANT.PST	<i>tu-tú</i>	<i>tú-me</i>	L-H	H-L
FUT	<i>ga-tú</i>	<i>gá-me</i>	L-H	H-L
REC.PST	<i>ku-tú</i>	<i>kú-me</i>	L-H	H-L
IMM.PST	<i>u-tú</i>	<i>ú-me</i>	L-H	H-L
POT	<i>nu-tú</i>	<i>nú-me</i>	L-H	H-L
CONSTV	<i>ra-tú</i>	<i>rá-me</i>	L-H	H-L
NEG	<i>su-tú</i>	<i>sú-me</i>	L-H	H-L

#### 4.1. Distribution and idiosyncracies of inflectional tone.

In our sample of 168 verbs, 137 of them (81%) have stems with lexical tone. The verbs in question may undergo stem changes, but tone remains the same across the segmental changes. For the remaining 31 verbs tone has a grammatical function, sometimes as an exponent of person only, sometimes in a combination of person and TAM. Broadly speaking there are three general tendencies: (i) 2nd person receives low tone; (ii) present receives low tone; and (iii) potential receives high tone. However, the role of tone is linked to each verb in such a way that these general tendencies are easily overwritten by lexical tone or other possibilities, making it impossible to conjure a general morphosyntactic rule for tone that works for the system. Because of this, in our presentation of the data, we almost need to proceed verb by verb.

There are four verbs where the forms for the 2nd person have a low tone throughout the paradigm. Two of the verbs (*-sá* ‘win’ and *-sempf* ‘open’) are of pattern 1 and the other two (*-tsó* ‘scold’ and *-tsá* ‘try’) of pattern 3 whose D-stem is used for the 2nd person.

Table 42. Inflectional low tone for 2nd person: verbs *-sá* ‘win’ and *-tsó* ‘scold’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
ANT.PST	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
FUT	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
REC.PST	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
IMM.PST	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
POT.	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
CONSTV	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
NEG	A	A	A	B	<i>sá</i>	<i>sa</i>	<i>sá</i>	<i>tshá</i>	H	L	H	H
PRES	A	D	A	B	<i>tsó</i>	<i>tco</i>	<i>tsó</i>	<i>tshó</i>	H	L	H	H
ANT.PST	A	D	C	B	<i>tsó</i>	<i>tco</i>	<i>zó</i>	<i>tshó</i>	H	L	H	H
FUT	A	D	C	B	<i>tsó</i>	<i>tco</i>	<i>zó</i>	<i>tshó</i>	H	L	H	H
REC.PST	A	D	C	B	<i>tsó</i>	<i>tco</i>	<i>zó</i>	<i>tshó</i>	H	L	H	H
IMM.PST	A	D	A	B	<i>tsó</i>	<i>tco</i>	<i>tsó</i>	<i>tshó</i>	H	L	H	H
POT.	A	D	A	B	<i>tsó</i>	<i>tco</i>	<i>tsó</i>	<i>tshó</i>	H	L	H	H
CONSTV	A	D	A	B	<i>tsó</i>	<i>tco</i>	<i>tsó</i>	<i>tshó</i>	H	L	H	H
NEG	A	D	A	B	<i>tsó</i>	<i>tco</i>	<i>tsó</i>	<i>tshó</i>	H	L	H	H



There are eight verbs that have a different tone conditioned by TAM. One such a verb is *-tú* ‘walk about’ with low tone assigned to the present. As already stated in §3.7 above, this verb is irregular.

Table 43. Tone and TAM for verbs *-tú* ‘walk about’ and *-te* ‘go out’.

	SG/DU	PL	SG/DU	PL	SG/DU	PL
PRES	A	B	<i>tu</i>	<i>tur</i>	L	L
ANT.PST	A	B	<i>tú</i>	<i>túr</i>	H	H
FUT	A	B	<i>tú</i>	<i>túr</i>	H	H
REC.PST	A	B	<i>tu</i>	<i>tur</i>	H	H
IMM.PST	A	B	<i>tú</i>	<i>túr</i>	H	H
POT.	A	B	<i>tú</i>	<i>túr</i>	H	H
CONSTV	A	B	<i>tú</i>	<i>túr</i>	H	H
NEG	A'	B'	<i>nú</i>	<i>núr</i>	H	H

The remaining seven verbs belong to pattern 5 (*-ǵe* ‘give’, *-ǵi* ‘want’, *-ǵo* ‘hear’, *-ǵu* ‘kill’, *-he* ‘leave’, *-her* ‘have’ and *-ho* ‘love’). For such verbs, the potential receives a high tone, as in table 44. On the lexical tier, the A-stem of such verbs is always low, whereas the B-stem is always high. It is likely that these verbs also have low tone for the present, but this is obscured by the fact that their A-stem has a low tone.

Table 44. Inflectional tone for Potential: verbs *-ǵi* ‘want’ and *-he* ‘leave’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>-ǵi</i>	<i>-ǵi</i>	<i>-ǵi</i>	<i>-rǵi</i>	L	L	L	H
ANT.PST	A	D	C	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rǵi</i>	L	H	H	H
FUT	A	D	C	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rǵi</i>	L	H	H	H
REC.PST	A	D	C	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ndí</i>	<i>-rǵi</i>	L	H	H	H
IMM.PST	A	D	A	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ǵi</i>	<i>-rǵi</i>	L	H	L	H
POT.	A	D	A	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ǵi</i>	<i>-rǵi</i>	H	H	H	H
CONSTV	A	D	A	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ǵi</i>	<i>-rǵi</i>	L	H	L	H
NEG	A	D	A	B	<i>-ǵi</i>	<i>-tí</i>	<i>-ǵi</i>	<i>-rǵi</i>	L	H	L	H
PRES	A	A	A	B	<i>-he</i>	<i>-he</i>	<i>-he</i>	<i>rhé</i>	L	L	L	H
ANT.PST	A	C	C	B	<i>-he</i>	<i>nhí</i>	<i>nhí</i>	<i>rhé</i>	L	H	H	H
FUT	A	C	C	B	<i>-he</i>	<i>nhí</i>	<i>nhí</i>	<i>rhé</i>	L	H	H	H
REC.PST	A	C	C	B	<i>-he</i>	<i>nhí</i>	<i>nhí</i>	<i>rhé</i>	L	H	H	H
IMM.PST	A	C	A	B	<i>-he</i>	<i>nhí</i>	<i>-he</i>	<i>rhé</i>	L	H	L	H
POT.	A	C	A	B	<i>-hé</i>	<i>nhí</i>	<i>-hé</i>	<i>rhé</i>	H	H	H	H
CONSTV	A	C	A	B	<i>-he</i>	<i>nhí</i>	<i>-he</i>	<i>rhé</i>	L	H	L	H
NEG	A	C	A	B	<i>-he</i>	<i>nhí</i>	<i>-he</i>	<i>rhé</i>	L	H	L	H

Of the remaining 16 verbs that use tone to mark some inflectional category, they do so displaying a combination of person and TAM. The verbs in question show again idiosyncratic behaviours and we have to treat them separately. For example, the verb *-se* ‘say’ also has low tone in the present, but it is unique in having a low tone for the 1st person.

Table 45. Inflectional tone for the verb *-se* ‘say’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>-se</i>	<i>-se</i>	<i>-se</i>	<i>-tshé</i>	L	L	L	H
ANT.PST	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
FUT	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
REC.PST	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
IMM.PST	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
POT.	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
CONSTV	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H
NEG	A	A	A	B	<i>-se</i>	<i>-sé</i>	<i>-sé</i>	<i>-tshé</i>	L	H	H	H

The verbs *-tsá* ‘hurt’ and *-mĕ́* ‘defend’ both use low tone for the 2nd person. Both verbs have low tone for the potential, but while *-tsá* ‘hurt’ has low tone for the present and the recent past in all persons (and also the future for the 3rd person singular and dual), *-mĕ́* ‘defend’ has high tone for the present.

Table 46. Inflectional tone for the verbs *-tsá* ‘hurt’ and *-mĕ́* ‘defend’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	D	A	B	<i>-tsa</i>	<i>-tca</i>	<i>-tsa</i>	<i>-tsha</i>	L	L	L	L
ANT.PST	A	D	C	B	<i>-tsá</i>	<i>-tca</i>	<i>-zá</i>	<i>-tshá</i>	H	L	H	H
FUT	A	D	C	B	<i>-tsá</i>	<i>-tca</i>	<i>-za</i>	<i>-tshá</i>	H	L	L	H
REC.PST	A	D	C	B	<i>-tsa</i>	<i>-tca</i>	<i>-za</i>	<i>-tsha</i>	L	L	L	L
IMM.PST	A	D	A	B	<i>-tsá</i>	<i>-tca</i>	<i>-tsá</i>	<i>-tshá</i>	H	L	H	H
POT.	A	D	A	B	<i>-tsa</i>	<i>-tca</i>	<i>-tsa</i>	<i>-tsha</i>	L	L	L	L
CONSTV	A	D	A	B	<i>-tsá</i>	<i>-tca</i>	<i>-tsá</i>	<i>-tshá</i>	H	L	H	H
NEG	A	A	A	B	<i>-tsá</i>	<i>-tca</i>	<i>-tsá</i>	<i>-tshá</i>	H	L	H	H

  

PRES	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	H	H	H
ANT.PST	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H
FUT	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H
REC.PST	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H
IMM.PST	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H
POT.	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	L	L	L	H
CONSTV	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H
NEG	A	A	A	B	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mĕ́</i>	<i>-mhĕ́</i>	H	L	H	H

Other verbs, such as *-tán* ‘work’, *-tá* ‘touch’ and *-kér* ‘lean on’ of pattern 4, but also *-hun* ‘throw’ and *-hu* ‘put’ of pattern 5, have a high tone for the 2nd person. All these verbs have high tone for the potential. For verbs of pattern 4, the present has low tone, and their C-stem high tone.

Table 47. Inflectional tone for the verbs *-tán* ‘work’ and *-hun* ‘throw’

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>-tan</i>	<i>-tán</i>	<i>-tan</i>	<i>-rhán</i>	L	H	L	H
ANT.PST	A	A	C	B	<i>-tan</i>	<i>-tán</i>	<i>-rán</i>	<i>-rhán</i>	L	H	H	H
FUT	A	A	C	B	<i>-tan</i>	<i>-tán</i>	<i>-rán</i>	<i>-rhán</i>	L	H	H	H
REC.PST	E	A	C	B	<i>-ndan</i>	<i>-tán</i>	<i>-rán</i>	<i>-rhán</i>	L	H	H	H
IMM.PST	A	A	A	B	<i>-tan</i>	<i>-tán</i>	<i>-tan</i>	<i>-rhán</i>	L	H	L	H
POT.	A	A	A	B	<i>-tán</i>	<i>-tán</i>	<i>-tán</i>	<i>-rhán</i>	H	H	H	H
CONSTV	A	A	A	B	<i>-tan</i>	<i>-tán</i>	<i>-tan</i>	<i>-rhán</i>	L	H	L	H
NEG	A	A	A	B	<i>-tan</i>	<i>-tán</i>	<i>-tan</i>	<i>-rhán</i>	L	H	L	H

  

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	A	<i>-hun</i>	<i>-hun</i>	<i>-hun</i>	<i>-hún</i>	L	L	L	H
ANT.PST	A	D	C	A	<i>-hun</i>	<i>-nhín</i>	<i>-nhin</i>	<i>-hún</i>	L	H	L	H
FUT	A	D	C	A	<i>-hun</i>	<i>-nhín</i>	<i>-nhin</i>	<i>-hún</i>	L	H	L	H
REC.PST	A	D	C	A	<i>-hun</i>	<i>-nhín</i>	<i>-nhin</i>	<i>-hún</i>	L	H	L	H
IMM.PST	A	D	A	A	<i>-hun</i>	<i>-nhín</i>	<i>-hun</i>	<i>-hún</i>	L	H	L	H
POT.	A	D	A	A	<i>-hún</i>	<i>-nhín</i>	<i>-hún</i>	<i>-hún</i>	H	H	H	H
CONSTV	A	D	A	A	<i>-hun</i>	<i>-nhín</i>	<i>-hun</i>	<i>-hún</i>	L	H	L	H
NEG	A	D	A	A	<i>-hun</i>	<i>-nhín</i>	<i>-hun</i>	<i>-hún</i>	L	H	L	H

Such verbs contrast with verbs with no tone changes but with similar stem alternation patterns, like for example the one in table 48.

Table 48. Lack of inflectional tone for the verb *-tan* ‘bathe’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>-tan</i>	<i>-tan</i>	<i>-tan</i>	<i>-rhan</i>	L	L	L	L
ANT.PST	A	A	C	B	<i>-tan</i>	<i>-tan</i>	<i>-ran</i>	<i>-rhan</i>	L	L	L	L
FUT	A	A	C	B	<i>-tan</i>	<i>-tan</i>	<i>-ran</i>	<i>-rhan</i>	L	L	L	L
REC.PST	E	A	C	B	<i>-ndan</i>	<i>-tan</i>	<i>-ran</i>	<i>-rhan</i>	L	L	L	L
IMM.PST	A	A	A	B	<i>-tan</i>	<i>-tan</i>	<i>-tan</i>	<i>-rhan</i>	L	L	L	L
POT.	A	A	A	B	<i>-tan</i>	<i>-tan</i>	<i>-tan</i>	<i>-rhan</i>	L	L	L	L
CONSTV	A	A	A	B	<i>-tan</i>	<i>-tan</i>	<i>-tan</i>	<i>-rhan</i>	L	L	L	L
NEG	A	A	A	B	<i>-tan</i>	<i>-tan</i>	<i>-tan</i>	<i>-rhan</i>	L	L	L	L

For another small set of verbs, including *-pen* ‘play music’, *-pe* ‘hit/fight’, *-pa* ‘cover’, and *-pin* ‘wait’, the 2nd person is again marked with low tone. The present and the recent past have low tone for all persons, but also the consecutive and the negative of the 3rd person singular and dual.

Table 49. Lack of inflectional tone for the verb *-pen* ‘play music’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	A	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	<i>-pen</i>	L	L	L	L
ANT.PST	A	D	C	B	<i>-pén</i>	<i>-ngwen</i>	<i>-mén</i>	<i>-mbén</i>	H	L	H	H
FUT	A	D	C	B	<i>-pén</i>	<i>-ngwen</i>	<i>-mén</i>	<i>-mbén</i>	H	L	H	H
REC.PST	B	D	C	A	<i>-ngwen</i>	<i>-ngwen</i>	<i>-men</i>	<i>-pen</i>	L	L	L	L
IMM.PST	D	D	D	A	<i>-ngwén</i>	<i>-ngwen</i>	<i>-ngwén</i>	<i>-pén</i>	H	L	H	H
POT.	D	D	D	A	<i>-ngwén</i>	<i>-ngwen</i>	<i>-ngwén</i>	<i>-pén</i>	H	L	H	H
CONSTV	A	D	A	B	<i>-pén</i>	<i>-ngwen</i>	<i>-pen</i>	<i>-mbén</i>	H	L	L	H
NEG	D	D	D	A	<i>-ngwén</i>	<i>-ngwen</i>	<i>-ngwen</i>	<i>-pén</i>	H	L	L	H

In contrast, the set of verbs including *-pén* ‘kill’, *-páa* ‘look hither’ and *-píi* ‘bring/carry’ have an almost mirror image of the verbs represented by *-pen* ‘play music’ by virtue of having both the 2nd person and the present marked by high tone.

Table 50. Lack of inflectional tone for the verb *-pén* ‘kill’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	A	<i>-pén</i>	<i>-pén</i>	<i>-pén</i>	<i>-pén</i>	H	H	H	H
ANT.PST	A	D	C	B	<i>-pen</i>	<i>-ngwén</i>	<i>-mén</i>	<i>-mbén</i>	L	H	H	H
FUT	A	D	C	B	<i>-pen</i>	<i>-ngwén</i>	<i>-mén</i>	<i>-mbén</i>	L	H	H	H
REC.PST	B	D	C	A	<i>-mben</i>	<i>-ngwén</i>	<i>-men</i>	<i>-pén</i>	L	H	L	H
IMM.PST	D	D	D	A	<i>-ngwen</i>	<i>-ngwén</i>	<i>-ngwen</i>	<i>-pen</i>	L	H	L	L
POT.	D	D	D	A	<i>-ngwen</i>	<i>-ngwén</i>	<i>-ngwen</i>	<i>-pen</i>	L	H	L	L
CONSTV	A	D	A	B	<i>-pen</i>	<i>-ngwén</i>	<i>-pen</i>	<i>-mbén</i>	L	H	L	H
NEG	D	D	D	A	<i>-ngwen</i>	<i>-ngwén</i>	<i>-ngwen</i>	<i>-pen</i>	L	H	L	L

Finally, the verb *-me* ‘stand up’ also has high tone for the 2nd person, but both present and negative receive a low tone that overwrites the high tone of the 2nd person.

Table 51. Lack of inflectional tone for the verb *-me* ‘stand up’.

	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL	1	2	3SG/DU	3PL
PRES	A	A	A	B	<i>-me</i>	<i>-me</i>	<i>-me</i>	<i>-mer</i>	L	L	L	L
ANT.PST	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
FUT	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
REC.PST	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
IMM.PST	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
POT.	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
CONSTV	A	A	A	B	<i>-me</i>	<i>-mé</i>	<i>-me</i>	<i>-mer</i>	L	H	L	L
NEG	A	A	A	B	<i>-me</i>	<i>-me</i>	<i>-me</i>	<i>-mer</i>	L	L	L	L

## 5. Conclusions.

In this paper, we have revised the conjugation classes proposed by Jaime de Angulo in 1933 for the Chichimec language of Mexico and have proposed new ways to organize the complexities of its verbal inflection. In general, verb inflection in Chichimec displays a high degree of morphological complexity which cannot be reduced to phonological/phonetic processes nor responds to any morphosyntactic requirements, and thus only respond to an autonomous morphological level in the language.

While there are a number of tendencies in the selection of a given stem alternation pattern and in the selection of a certain set of prefix class, there are many exceptions, making the tendencies probabilistic in character so that all verbs need to be listed for class membership and tone pattern.

Tone inflection seems to operate in number of levels: At a lexical level, verbs are assigned an underlying tone. However, in some conjugations, TAM and person categories have associated tone specifications. Complex tone patterns occur in a small set of verbs, but these coincide with morphological complexity at other levels, such as stem alternation patterns.

The Chichimec data is theoretically relevant as it is an instance in which tone assignment depends on multiple factors that have to be computed simultaneously to yield the correct surface form. It is a matter of further research to understand the processes by which a native speaker factors out the relevance of the categories expressed by tone for each verb conjugation.

Overall, regardless of the paucity of the data analysed, our findings show a general pattern of inflection consistent with other Oto-Manguean languages. Most conspicuously the inflectional idiosyncrasies and the complexity of different morphological subsystems.