

A mixed system of agreement in the suffix classes of Lealao Chinantec

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Abstract

In Lealao Chinantec, an Oto-Manguean language of Mexico, verbs receive a set of suffixes which index person and number of the subject. There are various sets of such affixes producing the sort of allomorphy that is typical of inflectional classes. In this paper, I study the distribution of such suffixes in a large sample of verbs from Rupp and Rupp's (1996) dictionary and show that the allomorphy is largely morphosyntactically motivated for a group of verbs that have two paradigms, animate and inanimate. For many other verbs this morphosyntactic mapping fails and the allomorphy we observe is essentially morphological in nature. This allomorphy reflects the interaction of what I treat as two competing systems of agreement. One such system is a more canonical agreement system based on subject (S/A), the other is based on animacy agreement with the absolutive argument (S/O) (also found in other Chinantecan languages). These two systems and the way they talk to each other has important consequences for the morphology-syntax interface of Lealao Chinantec.

Keywords

Chinantec, Oto-Manguean, inflectional classes, animacy, agreement

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1. Introduction

The Chinantecan languages (Oto-Manguean) of Mexico have started to awaken interest in word-and-paradigm approaches to morphology. This can be seen in a number of recent publications, such as for example Baerman (2013b), Baerman and Palancar (forthcoming); Baerman (2014a); Brown and Evans (2013); Corbett and Baerman (2006); Finkel and Stump (2007, 2009); Palancar 2014); Stump and Finkel (2013), etc.

Such an interest is justified. It is based on a growing acknowledgement –sometimes not without a tinge of bewilderment– that the inflection of Chinantecan languages ranks amongst the most intricate in the world's languages. This is mainly due to the fact that inflected forms in these languages result from the interaction of multiple systems of classification, which are for the most part mutually independent from each other. Typical such systems in the family are the prosodic classes (made by tone and stress) and the stem alternation patterns, but the language known as Lealao Chinantec is remarkable within this family in also having different sets of person and number suffixes. These suffixes add yet another layer of complexity to the inflectional system because some verbs take a given set, as for example the verb in (1), while other verbs take a different set, as for example the verb in (2).¹ For convenience, the examples illustrate only singular forms in the future tense.²

(1)	ʔi ⁴ nuu ⁴ (tr) 'hear something' FUT	(2)	ʔi ⁴ xieé ² y (tr) 'deduct something' FUT
1SG	ʔi ² -nuu ⁴² -y	1SG	ʔi ² -xiaa ¹ -á ²
2SG	ʔi ² -nuu ³ -y	2SG	ʔi ² -xiaa ⁴ -u ³
3SG	ʔi ⁴ -nuu ⁴ -Ø	3SG	ʔi ⁴ -xieé ² -y

The Lealao Chinantec verbs in (1) and (2) could be said to belong to two different inflectional classes because they select different suffix sets: the class selecting -y/-y/-Ø and the class selecting -á²/-u³/-y.³ Rupp & Rupp (1996) identify four such classes, given in (3), but I argue in §3.1 that in reality we can talk of six. The classes have a different membership size: some contain hundreds of verbs, some just a handful.

(3)	Class I	Class II	Class III	Class IV
1SG	-y	-á ⁴	-á ⁴	-y
2SG	-y	-u ³	-y	-u ³
3SG	-Ø	-y	-Ø	-Ø/-ʔ

¹ Tone is indicated by numbers. There are four level tones (very high 1, high 2, mid 3 and low 4) and two ascending contour tones (mid-high 32 and low-high 42). Acute stress indicates 'ballistic stress' treated in §2.1 A nasal vowel is represented as an underlined vowel.

² Abbreviations: AN: animate; Cl.: class; CPL: completive; DEICT: deictic; EXCL: exclusive; FUT: future; INAN: inanimate; INCL: inclusive; INCPL: incompletive; INFL: inflectional; intr: intransitive; IRR: irrealis; PL: plural; PRF: perfect; PRS: present; PST: past; RELAT: relational; SG: singular; SUB: subject; tr: transitive.

³ As we will see in §3.1, the suffix -y is a palatal consonant that cannot bear tone.

In this paper, I show that these suffix classes constitute an interesting object of study for morphological theory because they instantiate a type of inflection mixing two systems of verbal agreement, one involving person-number agreement with subject (S/A) and another animacy agreement with the S/O argument. Different verbs make use of such systems differently.

The lexicographic tradition of the SIL treats animacy agreement as a lexical phenomenon that involves two different verbs which are given their own independent entry in the dictionaries: one being the inanimate verb, the other the animate one as in an animacy pair. An example of such a pair is given in (4-5). The treatment of these verbs as being two lexical items has been justified by them having different prosodic inflection, but in this paper I argue that the forms involved could be alternatively viewed as instantiating two different paradigms of the same verbal lexeme.

(4)	ʔi ⁴ láʔ ² (tr) 'get something down' FUT	(5)	ʔi ⁴ láyʔ ⁴ (tr) 'get an animate entity down' FUT
1SG	ʔi ² -lá<y>ʔ ⁴	1SG	ʔi ² -láʔ ⁴² -á ²
2SG	ʔi ² -lá<y>ʔ ²	2SG	ʔi ² -láʔ ¹ -u ³
3SG	ʔi ⁴ -láʔ ² -Ø	3SG	ʔi ⁴ -lá<y>ʔ ⁴

Besides prosodic formatives, the animacy pair in (4-5) also contrasts in the affix set they select. Like (1) and (2), the verb in (4) would belong to Class I given in (3), while (5) would belong to Class II.⁴ I argue in §4 that the selection of the suffix sets responds to the morphosyntactic machinery of animacy agreement, and for such verbs there is no need to understand the suffix sets as having inflectional class organization. However, I also show in §5 that such machinery ceases to be operational when one zooms out from this core into the lexicon at large, where the distribution of the suffixes with inanimate verbs such as (3) becomes less predictable and should be better accounted for as a lexical matter, which justifies in turn their organization in inflectional classes. Notice for example that the verb in (2) has an inanimate O just like the verbs in (1) or (4), but receives the same suffixes as the animate verb in (5). In this respect, I claim that the set in (2) and to a large extent in (4) responds to the other agreement system at play and signals person-number agreement of subject, instead of animacy.

The paper has the following structure. In the next section, I introduce basic notions about both verbal inflection and animacy gender in Lealao Chinantec. This leads in §3 to introducing the classes as the object of study together with the sample I use. As a great deal of the allomorphy we observe involving the selection of subject suffixes has to do with animacy agreement, in §4 I study in detail the verbs of the sample in the relation they hold to animacy and the suffixes they select. It then becomes clear that for the verbs with two animacy paradigms, the distribution of the suffixes selected talks about the presence of a functional

⁴ In the 1st and 2nd person in (4) and in the 3rd person in (5), the suffix -y is realized as an infix. When this happens, the affix is indicated within angle brackets following the Leipzig Glossing Rules convention. The reason for this infixation is given in §3.1.

morphosyntactic mapping, which I develop in §5.1. In §5.2., I further suggest that when the system is taken as a whole, the default class is used to index subject agreement. Section six sums up and concludes.

2. Overview of the verbal inflection of Lealao Chinantec.

Lealao Chinantec is spoken in Mexico by approximately 2,000 people in the village of San Juan Lealao in the state of Oaxaca. Lealao Chinantec –called *Fáʔ⁴-hmi⁴²* by its speakers (lit. language-Chinantec)– is one of a dozen mutually unintelligible languages that form the Chinantecan branch of Oto-Manguean; itself one of the most diverse linguistic phyla in the Americas. Lealao Chinantec is spoken at the southern borders of the Chinantla (the traditional region inhabited by the Chinantecan people), and because of this it is a geographical outlier with respect to other Chinantecan languages.

Lealao Chinantec is a typical Chinantecan language in many respects. In this section, I elaborate on two aspects of the verbal inflection of this language that are important in understanding the suffix classes as the object of the study. One is the role of tone and stress in the general making of verbal inflection, although I also mention in passing stem alternation patterns, and the other is animacy agreement.

2.1. Prosodic inflection and stem alternation patterns.

Chinantecan languages are tone languages. Lealao Chinantec has up to six tonal contrasts; five of which are used in inflection. Tones are linked to morae mainly in vocalic nuclei. There are twelve vowels (six oral and six nasal) and five diphthongs. Vowels can be short and long. Syllables are always open. Syllables of the type /CVʔ/ (e.g. stem *laʔ⁴²* in the 1SG.FUT form *ʔ²-laʔ⁴²-á²* in (4)), /CVj/ (e.g. stem plus the suffix *-y /nuuj⁴²/* in the 1SG.FUT form *ʔ²-nuu⁴²-y* in (1)), or even /CVjʔ/ (e.g. stem plus infix *-y /lájʔ⁴/* in the 1SG.FUT form *ʔ²-lá<y>ʔ⁴* in (3)) could be treated as complex nuclei. Besides tone, every syllable receives one of two phonation types, traditionally talked about in terms of stress as ‘ballistic stress’ (represented with an acute accent) and ‘control stress’ (non represented). “Ballistic syllables are characterized by an initial surge and rapid decay of intensity, with a resulting fortis articulation of the consonantal onset”, while “controlled syllables generally display a more gradual surge and decay of stress, as well as a longer duration of the maximum stress.” (Foris 2000: 16, but also in Rench 1978, amongst others).⁵

Prosodic features are exploited by the morphology to realize a great range of inflectional distinctions in verbs (and to a certain extent also in nouns). I refer to the use of such features (tone and stress type together) as ‘prosodic inflection’. As an illustration of how prosodic inflection works, consider the partial paradigm in (6) for the transitive verb *ʔ²tiuu²á²* ‘spill something’, (Rupp and Rupp 1996: 458).

⁵ The received view on ballistic stress is acoustic in nature. Alternatively, ballistic stress has also been characterized in articulatory terms as a reflection of laryngeal phonation either by an increased sub-glottal pressure in Mugele (1982) or by a laryngeal abduction in Silverman (1994).

(6) $\text{ʔi}^2\text{tiuu}^2\text{a}^2$ (tr) ‘spill something’

	Three grammatical tenses			INFL STEMS		
	PRS	PRF	FUT	INCPL	CPL	IRR
1SG	$\text{tuu}^4\text{-y}$	$\text{ma}^3\text{-tuú}^4\text{-y}$	$\text{ʔi}^2\text{-tuu}^{42}\text{-y}$	tuu^4	tuú^4	tuu^{42}
2SG	$\text{tuu}^3\text{-y}$	$\text{ma}^3\text{-tiuú}^1\text{-y}$	$\text{ʔi}^2\text{-tuu}^3\text{-y}$	tuu^3	tiuú^1	tuu^3
3SG	$\text{tiuu}^4\text{-}\emptyset$	$\text{ma}^3\text{-tiuú}^3\text{-}\emptyset$	$\text{ʔi}^4\text{-tiuú}^4\text{-}\emptyset$	tiuu^4	tiuú^3	tiuú^4
1PL.INCL	$\text{tiuu}^{42}\text{-a}^2$	$\text{ma}^3\text{-tiuú}^2\text{-a}^2$	$\text{ʔi}^2\text{-tiuú}^2\text{-a}^2$	tiuu^{42}	tiuú^2	tiuú^2

The linguistic literature on Chinantecan languages commonly acknowledges that the twelve cells in (6) are sufficient to derive the other cells in the paradigm through complex sets of referral rules.⁶ In (6), we may see that prefixes encode tense values: a bare stem is used for the tense called ‘Present’, $\text{ʔi}^2\text{-}$ for the ‘Future’ ($\text{ʔi}^4\text{-}$ for 3SG/FUT) and $\text{ma}^3\text{-}$ for the ‘Perfect’. There are many such tenses encoded by other similar prefixes. All tenses are built on stems which are often further inflected by means of prosodic features for aspect (incompletive, completive) and mood (irrealis), sometimes also conflating information about the person-number of the subject. There are also verbs with invariant stems throughout the paradigm. Because stems play a crucial role for the verbal inflection of Lealao Chinantec, it is convenient to keep them visually separated from other inflected forms at least for some of the examples. For this reason, the inflected stems appear under the heading ‘INFL STEMS’.

While the inflection of stems is carried out by prosodic features, there is no consistent one-to-one mapping between form and meaning (for details, see Baerman and Palancar, forthcoming). In other words, there is not a single tone that may be consistently associated with the realization of a specific morphosyntactic value. For example, in the inflected stems of the verb in (6) tone 4 is used for 1SG/INCPL and 1SG/CPL, but also for 3SG/INCPL and 3SG/IRR; tone 42 for 1SG/IRR but also for 1PL/INCPL, etc. Similarly, ballistic stress (marked by the acute accent) is used for the CPL in all singular persons in (5), but also for 3SG/IRR. Other verbs have other prosodic patterns, and there are many of them, making verbs fall into a great number of inflectional classes defined by these prosodic distinctions (i.e. tone and ballistic stress together). Notice for instance the inflected stems of the transitive verb $\text{ʔi}^2\text{la}^1\text{a}^2$ (tr) ‘get something down’ in (7) –also in (4) above– which belongs to a different prosodic class than $\text{ʔi}^2\text{tiuu}^2\text{a}^2$ ‘spill something’. I use shading in (7) to highlight the contrasts in prosody with (6).

(7) $\text{ʔi}^2\text{la}^1\text{a}^2$ (tr) ‘get something down’

	Three grammatical tenses			INFL STEMS		
	PRS	PRF	FUT	INCPL	CPL	IRR
1SG	$\text{lá}\langle\text{y}\rangle\text{ʔ}^4$	$\text{ma}^3\text{-lá}\langle\text{y}\rangle\text{ʔ}^4$	$\text{ʔi}^2\text{-lá}\langle\text{y}\rangle\text{ʔ}^4$	$\text{lá}\text{ʔ}^4$	$\text{lá}\text{ʔ}^4$	$\text{lá}\text{ʔ}^4$
2SG	$\text{la}\langle\text{y}\rangle\text{ʔ}^{32}$	$\text{ma}^3\text{-la}\langle\text{y}\rangle\text{ʔ}^1$	$\text{ʔi}^2\text{-la}\langle\text{y}\rangle\text{ʔ}^2$	$\text{la}\text{ʔ}^{32}$	$\text{la}\text{ʔ}^1$	$\text{la}\text{ʔ}^2$
3SG	$\text{la}\text{ʔ}^{32}\text{-}\emptyset$	$\text{ma}^3\text{-lá}\text{ʔ}^2\text{-}\emptyset$	$\text{ʔi}^4\text{-lá}\text{ʔ}^2\text{-}\emptyset$	$\text{la}\text{ʔ}^{32}$	$\text{lá}\text{ʔ}^2$	$\text{lá}\text{ʔ}^2$
1PL.INCL	$\text{la}\text{ʔ}^{32}\text{-a}^2$	$\text{ma}^3\text{-la}\text{ʔ}^1\text{-a}^2$	$\text{ʔi}^2\text{-la}\text{ʔ}^1\text{-a}^2$	$\text{la}\text{ʔ}^{32}$	$\text{la}\text{ʔ}^1$	$\text{la}\text{ʔ}^1$

⁶ Contrary to the received view, Foris (2000) stipulates that a greater number of cells involving the third person is indeed needed to reconstruct the full paradigm of a verb.

Besides prosodic distinctions, verbs may further contrast in having different segmental stems in their paradigm which are arrayed in several stem alternation patterns. For this purpose compare the segmental part of the stems in the partial paradigm of the verb $\text{?i}^2\text{niuu}^2\text{a}^2$ (tr) ‘hear something’ in (8) with those of $\text{i}^2\text{tiuu}^2\text{a}^2$ ‘spill something’ in (6), (Rupp and Rupp 1996: 457).

(8) $\text{?i}^2\text{niuu}^2\text{a}^2$ (tr) ‘hear something’

	INFL STEMS					
	PRS	PRF	FUT	INCPL	CPL	IRR
1SG	$\text{nuu}^4\text{-y}$	$\text{ma}^3\text{-nuu}^4\text{-y}$	$\text{?i}^2\text{-nuu}^4\text{-y}$	nuu^4	nuu^4	nuu^4
2SG	$\text{nuu}^3\text{-y}$	$\text{ma}^3\text{-niu}^3\text{-y}$	$\text{?i}^2\text{-nuu}^3\text{-y}$	nuu^3	niu^3	nuu^3
3SG	$\text{nuu}^3\text{-}\emptyset$	$\text{ma}^3\text{-nuu}^4\text{-}\emptyset$	$\text{?i}^4\text{-nuu}^4\text{-}\emptyset$	nuu^3	nuu^4	nuu^4
1PL.INCL	$\text{nuu}^{32}\text{-a}^2$	$\text{ma}^3\text{-niu}^2\text{-a}^2$	$\text{?i}^2\text{-niu}^2\text{-a}^2$	nuu^{32}	niu^2	niu^2

Both verbs require two stems with fundamentally the same shape: a non-palatalized one (tuu/nuu) vs. a palatalized one (tiuu/niu). However they differ in requiring the palatalized stem in different cells. Verbs like (6) use a palatalized stem for the 2SG/CPL and all aspectual stems involving 3SG and 1PL. Verbs like (8) require the palatalized stem only in three cells: 2SG/CPL, 1PL/CPL and 1PL/IRR. Such patterns are commonly independent of prosodic classes. In other words, knowing the prosodic class of a verb is generally uninformative of whether the verb undergoes stem alternations, and if it does of which type (but see Baerman, 2014a, for trends in the correlations).

2.2. Animacy agreement.

2.2.1. Nouns and gender based on animacy.

Similarly, like a Chinantecan language nouns in Lealao Chinantec fall into one of two gender classes: inanimate vs. animate. There is no morphological indication of gender class on nouns, but gender class assignment is mostly based on semantics: nouns denoting animal life, including humans, are classified as animate whereas nouns referring to other entities are inanimate. This is coherent with what is typologically expected of a gender system of this type (Corbett 1991). There are a handful of exceptions to this assignment: nouns for certain atmospheric phenomena (rainbow, lightning, meteor, etc.) and astronomic entities (sun, moon, star, etc.) are animate.⁷ In the nominal domain within the NP, agreement in gender may target descriptive adjectives, anaphoric deictic determiners, alienable possession markers, quantifiers and numerals. In formal terms, the encoding of inanimate agreement is left unmarked, while the forms involved in the realization of animate agreement take various forms depending on the language. In Comaltepec Chinantec, animate agreement involves nasalization of the nuclear vowel or a postnuclear nasal consonant. This is shown by the contrasts in the two examples in (9) from Anderson (1989: 56-7).

⁷ In other Chinantecan languages like Comaltepec Chinantec (Anderson 1989: 57), inanimate nouns can be upgraded to animate to make them more salient under certain discourse circumstances.

(9) Comaltepec Chinantec

- a. ʔe^{M} hi^{L} né^{M} ké^{M} dó^{M}
 that.INAN orange(INAN) yellow.INAN of.1SG DEICT
 ‘that yellow orange of mine’.
- b. ʔi^{L} hi^{L} ná.n^{M} ké^{M} dó^{M}
 that.AN wasp(AN) yellow.AN of.1SG DEICT
 ‘that yellow wasp of mine’

In Lealao Chinantec, animate marking may also involve nasalization (indicated by underlining), but for the most part the stem in animate targets also features a suffix -y. This is shown in (10) from Rupp (1989: 63), glosses mine.

(10) Lealao Chinantec

- a. ni^3 $\text{mi}^{\text{ʔ}3}$ tíaa^3 ké^4 $\text{ʔi}^3\text{-ni}^3$
 three.INAN basket(INAN) white.INAN of.INAN.1SG RELAT-that.INAN
 ‘Those three white baskets of mine.’
- b. $\text{aa}^3\text{-y}$ laa^4 $\text{tieé}^4\text{-y}$ kiáá^2 $\text{ʔi}^3\text{-ni}^{\text{32}}\text{-y}$
 three.AN-AN mule(AN) white.AN-AN of.AN.1SG RELAT-that.AN-AN
 ‘Those three white mules of mine.’

The morphology involved in animacy agreement within the nominal domain involves strategies including prosodic formatives (e.g. demonstratives: $\text{ní}^{\text{ʔ}}$ ‘that.INAN’ vs. $\text{ní}^{\text{ʔ2}}$ ‘that.AN’), stem apophony (e.g. possessive relationals: ké^4 ‘of.mine.INAN’ vs. kiáá^2 ‘of.mine.AN’), and even occasional lexical differences (e.g. numerals: $\text{ní}^{\text{ʔ}}$ ‘three.INAN’ vs. aay^3 ‘three.AN’),⁸ but most notably there is also the suffix -y in the animate form of the adjective ‘white’ and in the relational element used for possession. This suffix is undoubtedly cognate of the suffix -y that encodes 3SG in forms such as $\text{ʔi}^{\text{ʔ}}\text{láy}^{\text{ʔ}}$ ‘s/he’ll get an animate entity down’ in (5) above. This has important consequences for the understanding of the distribution of this suffix and others like it that appear in the classes of Lealao Chinantec.

2.2.2. *Animacy agreement in verbs.*

In the Chinantecan literature verbs are also talked about as agreeing in gender with one of their nominal arguments (for example, Anderson 1989, Rupp 1989, Merrifield 1968, etc.). The agreement pattern is ergative, as first pointed out explicitly by Foris (2000): intransitive verbs are said to agree in gender with their subject while transitive verbs agree with their object.⁹ In my opinion, the term ‘gender agreement’ raises expectations about the Chinantec system to be like the more canonical gender systems known in Indo-European languages

⁸ The examples in (9) and (10) further illustrate that Chinantecan languages also differ as to targets for animate gender. This can be seen in the difference between the elements involving possession in the examples.

⁹ In this, like in other typological configurations like the use of a morphological inverse, Chinantecan is typologically very similar to Algonquian. Whether animacy agreement and inversion are to be treated as implicational features is an open question.

where assignment is not semantically transparent for a large portion of the nominal lexicon. Because of this, I prefer using the term ‘animacy agreement’.

Animacy agreement is at its clearest in verbs that inflect both as animate and inanimate depending on the animacy of one of its core arguments. For example, the intransitive verb in (10). When a verb behaves like this, I refer to it as representing an animacy pair.

- (11) a. $\text{ʔi}^4\text{-kíʔ}^4$
FUT-fall.IRR.3[3SG]
‘It’ll fall over.’
- b. $\text{ʔi}^4\text{-kí}\langle\text{y}\rangle\text{ʔ}^4$
FUT-fall.IRR.3<3SG>
‘He’ll fall over.’

As we will see in more detail in §4, the animate and the inanimate paradigms of verbs more often than not involve differences in prosodic inflection, such as for example the case of the verb in (12).

- (12) a. chiaá^3
[PRS]cook_in_pot.INAN.INCPL.3[3SG]
‘It’s cooking (i.e. the vegetable).’
- b. $\text{chieé}^{32}\text{-y}$
[PRS]cook_in_pot.AN.INCPL.3-3SG
‘It’s cooking (i.e. the chicken).’

When discussing examples (4-5) above, I have already pointed out that animacy agreement is important to understand the selection of the suffix classes, and I claim in §5 it plays a crucial role in keeping animate and inanimate paradigms distinct for verbs of the type in (11) and (12). In this direction, Rupp (1989:20) points out that animate agreement in intransitive verbs often involves “a syllable-final *i*”. In reality, he is referring to cases where the affix -y is used to index a 3SG animate subject as in (11b) and (12b), whereas using a bare stem (i.e., with no exponent) in (11a) and (11b) encodes 3SG inanimate subject. Such an analysis appears to be correct because inflected forms such as (13) are ungrammatical because they use agreement morphology which points to the wrong animacy value of the intended subject.

- (13) a. $*\text{chiaá}^3\text{-y}$
[PRS]cook_in_pot.INAN.INCPL.3-3SG
Intended reading: ‘It’s cooking (i.e. the vegetable).’
- b. $*\text{chieé}^{32}$
[PRS]cook_in_pot.AN.INCPL.3[3SG]
Intended reading: ‘It’s cooking (i.e. the chicken).’

However, I will also show in §4.2 that things are far from being that clear when other verbs are involved, and for this reason I have refrained so far from using labels such as 3SG.INAN or 3SG.AN in the glosses so far.

The forms in (11) and (12) are treated in Rupp and Rupp's (1996) dictionary as instantiating two different verbal entries; that is, as being two different, but semantically and formally related, lexemes. Under this view, the differences in form we observe are accounted for as stemming from derivation (i.e., they represent lexical pairs, each with their own inflectional properties). Alternatively, in this paper I prefer to see the contrasts in (11) and (12) as representing inflected forms of two distinct paradigms of the same verbal lexeme. Under such a view, the differences in form stem from inflection (i.e., it is one lexeme whose paradigm includes cells contrasting in an animacy value).

As we will see in §4, only a portion of the Lealao Chinantec lexicon behaves like the pairs in (11) and (12). For expository purposes, I find it useful to talk about the animate and the inanimate paradigms in terms of 'animacy pairs' because the concept of 'a pair' evokes this inherent duality. Seeing the phenomenon as agreement also has advantages for the analysis I pursue in this paper, as I claim in §4.2 that the suffix sets in (3) play an important role in keeping the morphosyntax of animacy agreement working which is particularly important for verbs with two animacy paradigms.

In this section, I presented a general overview of the inflection of verbs in Lealao Chinantec involving prosodic features and stem alteration patterns. I have also introduced the notion of animacy agreement. With this background, it seems like a good point to introduce the suffix classes in further detail.

3. Introducing the suffix classes of Lealao Chinantec.

3.1. A quick look at the classes

We have seen in §1 that the inflection of a verb in Lealao Chinantec includes a series of suffixes that Rupp (1989) analyzes as encoding the person-number of the subject. Rupp & Rupp (1996) propose that verbs fall into the four inflectional classes given above in (3) attending to the suffix set they select. The classes in question are given in full in (14) with examples. The class Rupp & Rupp (1996) treats as Class IV includes verbs that take $-\emptyset$ for the third person and others that take $-ʔ$. This formal difference suggests that this Class IV can be further subdivided into two different classes, which for the moment I treat as 'Class IVa' and 'Class IVb'. All verbs in (14) appear in the future tense.¹⁰

¹⁰ Verbs fall into other inflectional classes attending to the marker they select for the future tense. A group of verbs (only considering dynamic verbs) take the prefix \mathcal{N}^2 - for all persons except the third person, marked by \mathcal{N}^4 -. Another large group of verbs (including stative verbs but not only) take \mathcal{N}^4 - for all persons. A third class takes dsa^3 - for all persons except for the third person, which is marked by dsa^4 -.

(14)	$\text{ʔi}^2\tilde{\text{n}}\text{uu}^2\text{a}^2$ (tr) 'tie something'	$\text{ʔi}^2\text{heé}^2\text{a}^2$ (tr) 'run animate over'	$\text{ʔi}^2\text{hmee}\text{ʔ}^2\text{a}^2$ (tr) 'treat animate'	$\text{ʔi}^4\text{hi}^4\text{a}^2$ (intr) 'for animate to be ashamed'	$\text{ʔi}^4\text{gwii}^3\text{a}^2$ (intr) 'for animate to be cold'
	Class I	Class II	Class III	Class IVa	Class IVb
1SG	$\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}\text{-y}^{42}$	$\text{ʔi}^2\text{-heé}^2\text{-}\acute{\text{a}}^4$	$\text{ʔi}^2\text{-hmee}\text{ʔ}^4\text{-}\acute{\text{a}}^4$	$\text{ʔi}^4\text{-hii}\text{-y}^4$	$\text{ʔi}^4\text{-gwii}\text{-y}^4$
2SG	$\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}\text{-y}^3$	$\text{ʔi}^2\text{-heé}^2\text{-u}^3$	$\text{ʔi}^2\text{-hmee}\langle\text{y}\rangle\text{ʔ}^1$	$\text{ʔi}^4\text{-hii}^4\text{-u}^3$	$\text{ʔi}^4\text{-gwii}^2\text{-u}^3$
3SG	$\text{ʔi}^4\text{-}\tilde{\text{n}}\text{u}\acute{\text{u}}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-heé}\text{-y}^2$	$\text{ʔi}^4\text{-hmee}\text{ʔ}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-hii}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-gwii}\text{-}\text{ʔ}^4$
1PL.INCL	$\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}^2\text{-a}^2$	$\text{ʔi}^2\text{-heé}^2\text{-a}^2$	$\text{ʔi}^2\text{-hmee}\text{ʔ}^2\text{-a}^2$	$\text{ʔi}^4\text{-hii}^4\text{-a}^2$	$\text{ʔi}^4\text{-gwii}^3\text{-a}^2$
1PL.EXCL	$\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}^2\text{-a}\text{ʔ}^1$	$\text{ʔi}^2\text{-heé}^2\text{-a}\text{ʔ}^1$	$\text{ʔi}^2\text{-hmee}\text{ʔ}^2\text{-a}\text{ʔ}^1$	$\text{ʔi}^4\text{-hii}^4\text{-a}\text{ʔ}^1$	$\text{ʔi}^4\text{-gwii}^3\text{-a}\text{ʔ}^1$
2PL	$\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}^3\text{-a}\text{ʔ}^3$	$\text{ʔi}^2\text{-heé}^2\text{-a}\text{ʔ}^3$	$\text{ʔi}^2\text{-hmee}\text{ʔ}^1\text{-a}\text{ʔ}^3$	$\text{ʔi}^4\text{-hii}^4\text{-a}\text{ʔ}^3$	$\text{ʔi}^4\text{-gwii}^2\text{-a}\text{ʔ}^3$
3PL	$\text{ʔi}^4\text{-da}\text{ʔ}^2\text{-}\tilde{\text{n}}\text{u}\acute{\text{u}}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-da}\text{ʔ}^2\text{-heé}\text{-y}^2$	$\text{ʔi}^4\text{-da}\text{ʔ}^2\text{-hmee}\text{ʔ}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-da}\text{ʔ}^2\text{-hii}^4\text{-}\emptyset$	$\text{ʔi}^4\text{-da}\text{ʔ}^2\text{-gwii}\text{-}\text{ʔ}^4$

Before analyzing the classes in (14) further, a couple of comments about the forms are in order:

- First, the suffix $-\text{y}$ in forms such as $\text{ʔi}^2\tilde{\text{n}}\text{uu}\text{y}^{42}$ 'I'll tie something' or $\text{ʔi}^4\text{heé}\text{y}^2$ 'he will run somebody over' is a palatal sonorant /j/ that does not receive tone.¹¹ It also occurs in a phonological position that Rupp (1990) treats as the 'post-nuclear margin'.¹² When the stem has a glottalic nucleus /Vʔ/, the combination /Vʔj/ (e.g. $^*\text{hmee}\text{ʔ}\text{y}^1$ $^*/\text{m}\ddot{\text{e}}:\text{ʔj}^1/$) is not phonotactically possible, and there is metathesis of the palatal element resulting in infixation (e.g. $\text{hmee}\langle\text{y}\rangle\text{ʔ}^1$ $^*/\text{m}\ddot{\text{e}}:\text{j}\text{ʔ}^1/$).¹³
- The zero suffix in forms such as $\text{ʔi}^4\tilde{\text{n}}\text{u}\acute{\text{u}}^4\text{-}\emptyset$ 'he will tie something' represents a stem (i.e. $\tilde{\text{n}}\text{u}\acute{\text{u}}^4$) used by its own (i.e., bare) to encode a third person.
- Plural marking is invariant across the different classes: $-\text{a}^2$ for 1PL.INCL; $-\text{a}\text{ʔ}^1$ for 1PL.EXCL and $-\text{a}\text{ʔ}^3$ for 2PL. The form for 3PL is based on the stem used for 3SG and is derived from it by means of the number prefix $\text{da}\text{ʔ}^2$ - (itself the morphologization of the plural determiner $\text{diá}\text{ʔ}^4$ found in NPs).

All this leaves us with the singular forms in (15) (a slightly modified version of (3) above), as the only ones which are relevant for the analysis.

¹¹ I follow in (14) Rupp and Rupp's notion of tone as a superscript that appears at the end of the syllable. This notation can give the impression that tone 42 is associated with the suffix $-\text{y}$ in forms such as $\text{ʔi}^2\tilde{\text{n}}\text{uu}\text{y}^{42}$ 'I'll tie something', when in reality it is linked to the vocalic nucleus, i.e. $/\text{ʔi}^2\text{j}\text{u}:\text{a}^{42}\text{j}/$. I write tone associated with a vocalic nucleus when examples are segmented, i.e. $\text{ʔi}^2\text{-}\tilde{\text{n}}\text{uu}^{42}\text{-y}$.

¹² Palatal codas are very common in lexical words (e.g. $\text{kwa}\text{y}^1\text{ná}^2$ 'result (n)'; $\text{chie}\text{é}\text{y}^1$ 'with', etc.).

¹³ The elements $-\text{y}$ and $-\text{ʔ}$ could be alternatively treated as stem extensions in the fashion of stem-based analyses such as for example the papers in Bonami (2012). However, for this particular case, such an analysis would perhaps not work on a distributional basis because the occurrence of these exponents is mutually exclusive with other more uncontroversial suffixes such as $-\acute{\text{a}}^4$, $-\text{u}^3$, etc.

(15)	Class I	Class II	Class III	Class IV.a	Class IV.b
1SG	-y	-á ⁴	-á ⁴	-y	-y
2SG	-y	-u ³	-y	-u ³	-u ³
3SG	-Ø	-y	-Ø	-Ø	-ʔ

The classes in (15) result from the combination of the five affixes in (16) (counting -Ø for convenience as an affix). Notice that in the mapping of form to meaning, only -y is used to encode all singular persons.¹⁴

(16)	1SG	2SG	3SG
-y	✓	✓	✓
-á ⁴	✓	-	-
-u ³	-	✓	-
-ʔ	-	-	✓
-Ø	-	-	✓

From the potential combinations of the encoding strategies in (16), we could in principle produce the 12 sets in (17), organized in four groups attending to the strategy used to encode 1SG and 2SG (i.e., -y/-y; -á⁴/-u³; -á⁴/-y; and -y/-u³) along with three sets each attending to the marking of 3SG (i.e., -Ø/-y/-ʔ). In the next section, I show that not all of these logical possibilities are indeed attested in the language.

(17)	1SG			2SG			3SG					
1SG	-y	-y	-y	-á ⁴	-á ⁴	-á ⁴	-á ⁴	-á ⁴	-á ⁴	-y	-y	-y
2SG	-y	-y	-y	-u ³	-u ³	-u ³	-y	-y	-y	-u ³	-u ³	-u ³
3SG	-Ø	-y	-ʔ	-Ø	-y	-ʔ	-Ø	-y	-ʔ	-Ø	-y	-ʔ

3.2. The classes in more detail.

My analysis of the suffix classes of Lealao Chinantec is based on the study of a sample of verbs from the dictionary by Rupp & Rupp (1996). This is a large dictionary with over 1,500 verbal entries.¹⁵ For the purposes of the present study, I have considered only 1,166 such entries. In reality, if we take each animacy pair in the dictionary to instantiate one and only one lexeme (i.e., not two), the sample consists of a total of 991 verbal lexemes. Not included in the sample are over a hundred compound verbs and a large number of stative and passive forms about which little information is given in the source.

Rupp & Rupp (1996) provide information about class membership for each of the 1,166 entries, but for certain ones, they encode deviating behavior for 3SG. For example, for the entry of the verb *ʔi²chiaá⁴a²* (tr) ‘mix something’, while the dictionary informs the user that the verb is a Class II verb, there is further warning that it also inflects as a Class I for 3SG.

¹⁴ The affix for 1SG has two shapes: -á⁴ and -á². Although the rules behind their distribution appear to be mostly morphophonological, it is not entirely clear in Rupp & Rupp (1996) what the rules are for verbs. All the suffixes are used to mark possessor in nouns (p. 400). It appears that -á⁴ is the default realization, whereas -á² is used when the stem has a tone /1/ or tone /42/.

¹⁵ These data will be freely accessible online from the spring of 2015 as part of the Surrey Morphology Group databases at the University of Surrey (<http://www.surrey.ac.uk/englishandlanguages/research/smg>).

This means that for a verb such as $\text{ʔi}^2\text{chia}^4\text{a}^2$, 3SG has no affixal exponent, whereas other verbs of Class II would select $-\text{y}$. I take this to mean that the verb $\text{ʔi}^2\text{chia}^4\text{a}^2$ belongs to a different inflectional class from Class I or Class II. To avoid the treatment of this new class as a subclass of one of the other two, I have opted to rename Rupp & Rupp's classes altogether this time using Arabic numbers. The new notation is given in Table 1. In the table, I also give the population size of each class from a subtotal of 848 entries out of the total of 1,166 which can inflect for all persons (i.e., excluding verbs with inanimate or animal subjects). The reason why the paradigms in Table 1 are arranged in four blocks of three paradigms each is to keep it consistent with the array presented in (17).

My notation:	1			2			3			4			5			6		
R&R classes:	I			II			III			IV.a			IV.b					
1SG	-y	-y	-y	$-\acute{a}^4$	$-\acute{a}^4$	$-\acute{a}^4$	$-\acute{a}^4$	$-\acute{a}^4$	$-\acute{a}^4$	-y	-y	-y	-y	-y	-y			
2SG	-y	-y	-y	$-\text{u}^3$	$-\text{u}^3$	$-\text{u}^3$	-y	-y	-y	$-\text{u}^3$	$-\text{u}^3$	$-\text{u}^3$	$-\text{u}^3$	$-\text{u}^3$	$-\text{u}^3$			
3SG	$-\emptyset$	-y	$-\text{ʔ}$	$-\emptyset$	-y	$-\text{ʔ}$	$-\emptyset$	-y	$-\text{ʔ}$	$-\emptyset$	-y	$-\text{ʔ}$	$-\emptyset$	-y	$-\text{ʔ}$			
Total	848	210	-	-	77	532	-	-	9	-	-	17	-	-	3			
%	100%	24.7%	-	-	9.3%	62.7%	-	-	1%	-	-	2%	-	-	0.3%			

Table 1. The suffix classes of Lealao Chinantec with an indication of population size.

Table 1 shows that only certain of the logical combinations in (17) are exploited in the inflection of Lealao Chinantec verbs. 97% of the 848 verbs that inflect for all person values belong to one of three classes: 1, 2 or 3. This means that for 1SG/2SG the greater bulk of the verbs either select $-\text{y}$ for both values or $-\acute{a}^4$ and $-\text{u}^3$, respectively. The remaining three classes (Classes 4-6) are examples of heteroclites (Stump, 2006) because they are smaller subclasses of lexemes that recombine exponents used in other larger classes. One may also observe that 3SG is largely encoded without an exponent, that is, by using a bare stem, except for verbs of Class 3 and 6 which select $-\text{y}$ and $-\text{ʔ}$, respectively. This means that if $-\text{y}$ is used for the 3SG of a given verb, it can be predicted that the verb will always also select $-\acute{a}^4$ and $-\text{u}^3$ for 1SG and 2SG (i.e. no verb allows $-\text{y}$ to realize all person values). Additionally, more than half of the verbs in the sample belong to Class 3, which suggests that this class is a default from the point of view of population size.

Since Aronoff's (1994) seminal book on the autonomy of morphology, inflectional classes like the ones we observe in Table 1 are now seen as purely morphological constructs in word-and-paradigm approaches to morphology. Because of their morphological nature, inflectional classes are an interesting object of study for morphological theory, and they continue to inspire a body of work from different perspectives which is aimed at understanding their typology and internal structure, to mention just a few Ackerman *et al.* (2009), Baerman (2012, 2014b), Finkel & Stump (2013), Brown & Hippisley (2012, Chap. 3), Müller (2007) among others. Following this trend of thought and basing himself on the principles of canonical typology laid out in Corbett (2007), Corbett (2009) argues that a canonical inflectional class is not motivated by any other levels of grammar. This lack of motivation makes inflectional classes useless in functional terms, and in being so, they introduce a layer of morphological complexity into the inflectional system which speakers need to contend with (Baerman *et al.* 2010, Baerman 2013a). However, in order to be able to assert that classes such as the ones in Lealao Chinantec constitute a case of morphological

allomorphy, one needs to explore possible motivations and evaluate the degree of their impact on the system as a whole. One obvious place to start is the phonology.

In this direction, I have not been able to find pairs of verbs belonging to the major classes with a homophonous stem. Even if I had (or if such cases existed), the homophony should in any case be handled with caution because the citation forms in the dictionary are themselves inflected forms (i.e. mostly 1st person plural future, but also 3rd person singular for inanimate verbs). As verbal inflection is made up of prosodic classes and stem alternations, the prosodic and segmental features in the entries themselves often reflect inflectional distinctions of their respective paradigms, and only after careful scrutiny one may end up having comparable phonological shapes to study prosodic features at a lexical level.

Nevertheless, one may still scan a representative list of partial homophones such as the list of entries in (18) to test if the phonology gives us clues as to the selection of at least some of the allomorphy in Table 1. For consistency, all examples in (18) represent 1st person plural future forms.

(18)	1PL.FUT			
a.	ʔi ² -chiaa ⁴² -a ²	‘We’ll keep it’	(tr., inanimate object)	Class 1
	ʔi ² -chiaá ⁴ -a ²	‘We’ll mix it’	(tr., inanimate object)	Class 2
b.	ʔi ² -ʔeeʔ ⁴² -a ²	‘We’ll burp’	(intr., animate subject)	Class 1
	ʔi ² -ʔeeʔ ⁴ -a ²	‘We’ll nail it’	(tr., inanimate object)	Class 2
c.	ʔi ² -niuu ² -a ²	‘We’ll listen to it’	(tr., inanimate object)	Class 1
	ʔi ² -niúú ⁴ -a ²	‘We’ll mud it up’	(tr., inanimate object)	Class 2
d.	ʔi ² -taa ⁴² -a ²	‘We’ll chop it’	(tr., inanimate object)	Class 1
	ʔi ² -taá ³ -a ²	‘We’ll believe it’	(tr., inanimate object)	Class 2
e.	ʔi ² -tiaa ² -a ²	‘We’ll help him’	(tr., animate object)	Class 1
	ʔi ² -tiaá ⁴² -a ²	‘We’ll mend it’	(tr., inanimate object)	Class 2
f.	ʔi ² -sií ⁴² -a ²	‘We’ll dip it in sauce’	(tr., inanimate object)	Class 1
	ʔi ² -siíʔ ⁴ -a ²	‘We’ll gnaw it’	(tr., inanimate object)	Class 2
g.	ʔi ² -xaaʔ ² -a ²	‘We’ll grab it for him’	(dtr., inanimate object)	Class 1
	ʔi ² -xaa ³² -a ²	‘We’ll be rich’	(intr., animate subject)	Class 2

In all the contrastive pairs in (18) –except those in (e) and (g)– the stem of a Class 2 verb carries ballistic stress (indicated by the acute accent), while all Class 1 stems carry control stress. How shall we interpret this? We can take stress distinction as a possible motivating factor for the allomorphy. Restricting ourselves for consistency to the stems in 812 citation forms instantiating 1st person plural future forms in the three major classes, the correlations involving ballistic/control stress we obtain are given in Table 2.

	Ballistic stress in {1PL, FUT}	Controlled stress in {1PL, FUT}	Total
Class 1	3	207	210
	1.4%	98.6%	100%
Class 2	37	37	74
	50%	50%	100%
Class 3	156	372	528
	29.5%	70.5%	100%

Table 2. Correlations involving stress type and forms for {1PL, FUT}.

The figures in Table 2 suggest that if a verb belongs to Class 1, it has controlled stress at least for the form of the 1st person plural future. Alternatively, one can say the same differently. If the form for 1st person plural future has ballistic stress, the verb is NOT of Class 1 (except for three verbs). Beyond this point, phonology does not help us further.

I have pointed out in §2.2.2 that the morphology involved in the classes has to do with the dimension of animacy. In this light, the obvious next step to take is visit the sample of verbs according to their inflectional behavior with respect to this dimension. This is what I do in the next section where I show that there are indeed correlations, to such an extent that for verbs with two animacy paradigms there is a fully functional morphosyntactic mapping involving a mixed agreement system of person-number of subject S/A with animacy of S/O.

4. The verbs in the sample and their relation to animacy.

The verbs in the sample could be said to fall into two main groups. In one group, we find verbs that can be inflected animate or inanimate attending to agreement in animacy with the S/O argument. I refer to such verbs as ‘paired-verbs’. The other group is formed by verbs that can only be animate or inanimate, which I call ‘non-paired verbs’. Table 3 gives an indication of the population size of the two groups in the sample attending to verbal entries.¹⁶

	non-paired 816		paired 175 lexemes (=350 entries)	Total		Lex. Entries
	inanimate	animate	inanimate/animate	Lex.	Entries	
intr/S	226	212	53 106 entries	491	544	Lex. Entries
tr/O	257	121	122 244 entries	500	622	Lex. Entries
Total	483	333	175 350 entries	991	1,166	Lex. Entries

Table 3. Verbs in the sample attending to their ability to enter in animacy pairs.

¹⁶ There are a few entries in the dictionary I have opted to classify as non-paired verbs because the stem of the animate entry has a prefix *bi*³- and appears derived, e.g. *?i²-bi³-na⁴a²* ‘for someone to be absent’ vs. *?i⁴na⁴* ‘something lacking’; or *?i²-bi³-ca⁴a¹a²* ‘play with someone’ vs. *?i⁴ca⁴a¹a²* ‘play with something’; *?i²-bi³-?in⁴a²* ‘forget someone’ vs. *?i⁴-?in⁴* ‘forget something’; or *?i²-bi³-fi⁴a²* ‘increase the amount of an animate entity’ vs. *?i²-fi⁴a²* ‘pile up something’. This prefix also appears in the stems of some paired verbs.

Let us see these verbs in more detail investigating their animacy value in relation to their prosodic inflection and the suffix class they select. I introduce first non-paired verbs where I show that the system points out remnants of a motivated core involving animacy agreement, which is still functional with paired verbs.

4.1. Non-paired verbs.

4.1.1. Non-paired verbs, prosodic inflection and animacy.

In general, when one studies these verbs it is difficult, if not utterly impossible, to determine whether a given one is inanimate or animate if one were to just look at the prosodic features of its inflection. This is because the verbs in Lealao Chinantec can fall into a very large number of prosodic classes, with many such classes having only one member. To show the (absence of) correlations between prosodic inflection and animacy, I compared the prosodic marking involved in all non-paired. Following Baerman and Palancar (forthcoming) that propose that in Chinantec verbal inflection it is convenient to deal with 3rd person forms independently from the inflection of other persons, I have treated the different classes involved in the marking of a 3rd person apart from the classes used to encode other person values (i.e., 1SG, 1PL, 2). The actual forms used for these many prosodic classes are given in the Appendix. The verbs in classes labeled /1/, /'2/, etc. all belong to one large class which does not have prosodic inflection. The notation for these verbs indicate the actual phonology of the stem –the apostrophe indicates ballistic stress. I have included them here to show that lexical phonology of a given stem is not really informative about animacy value. I use shading in the table to highlight prosodic classes aligned with a specific animacy value.¹⁷

¹⁷ The angle bracket > indicates an ‘act on’-type of transitive relation between an A argument and an O argument, it should for example be read as ‘1SG/2/1PL act on INAN O’.

Cl.	3		Cl.	1SG/2/1PL		Cl.	1SG/2/1PL	
	INAN	AN		>INAN	>AN		>INAN	>AN
a		2	1	20	24	37	1	
b	2		2	9	7	38	1	1
c	1	2	3	3	1	39		2
d	2	2	4		1	40	2	
e	1		5	40	17	41		2
f		1	6	12	33	42	1	
g	25	6	7	22	4	43		1
h	1	1	8	17	16	44		2
i		1	9	16	2	45	2	
j		1	10	17	1	46	1	
k	2	1	11	3	8	47		1
l	115	53	12		16	48		1
m	1		13	1	3	49	1	
n	4	1	14		9	50		1
o	9	1	15	1	5	51		1
p		1	16	3	2	52	1	
q	32	15	17	4	3	53	1	
r	1	1	18	2	2	54	1	
/1/	4	10	19	3	0	55	1	
/1'/	14	17	20	7	2	56	1	
/2/	10	1	21	5	2	57		1
/2'/	23	13	22	1	1	58	1	
/3/	48	41	23		5	59		1
/3'/	70	46	24		1	60		1
/32/	2	12	25		5	61	1	
/4/	37	35	26	3	2	q	1	2
/4'/	72	63	27		3	l	1	14
/42/	7	6	28		3	/1/	1	9
Total	483	333	29	4		/1'/	2	4
			30	2	2	/2/		1
			31	1	2	/2'/		6
			32	1		/3/	3	18
			33	2	1	/32/	1	11
			34		1	/4/	23	36
			35	1		/42/	3	3
			36	2		(without non-3	230	30)
						Total	483	333

Table 4. Prosodic classes in non-paired verbs contrasting inanimate vs. animate.

Table 4 shows that verbs belong to 19 classes to inflect for a 3SG, but many such classes have only one verb. Excluding those, there are only two (i.e., *a* and *b*) which are specific to inanimates but they have only two members each, so again they are utterly irrelevant. We can conclude that the form for the 3rd person does not help much in predicting animacy. Exactly the same can be broadly said for the forms inflected in other persons of which we have up to 64 classes, most of them instantiated by one or two verbs. Classes 12 (with 16 members) and 14 (with nine) are the most notable exception as they only include animates. The system does not seem to like absolutes, but there are tendencies. For example a verb that inflects like a class *l* for the 3rd person is likely to be inanimate, but if the verb inflects for the other persons in this class, it is likely to be animate. Likewise, it is highly probable that a verb with no prosodic inflection whose stem bears the prosodic feature /3/ is animate.

If prosody is not a good indicator of animacy value, this opens the possibility that the morphology in the suffix classes is perhaps used for this purpose. I entertain this hypothesis in the following sections, where I claim that this is precisely what happens, at least with animate verbs; inanimate ones appear to have a more canonical inflectional class distribution.

4.1.2. *Non-paired verbs and the suffix classes.*

The distribution of the 816 non-paired attending to class membership is given in Table 5. In order to present the data in a more convenient way, I have extracted Class 3 to the left.

Animates	Intransitive		Cl. 3	?	Cl. 1	Cl. 2	Cl. 4	Cl. 5	Cl. 6	
	1SG		- -á ⁴	-	-y	-á ⁴	-á ⁴	-y	-y	
	2SG		- -u ³	-	-y	-u ³	-y	-u ³	-u ³	
	3SG.AN		-y -y	-Ø	-Ø	-Ø	-Ø	-Ø	-ʔ	
	212		17 142	11	23	10	-	6	3	
	100%		75.5%	5%	11%	4%		3%	1.5%	
	Transitive									
	1SG> AN		- -á ⁴		-y	-á ⁴	-á ⁴	-y	-y	
	2SG> AN		- -u ³		-y	-u ³	-y	-u ³	-u ³	
	3SG> AN		-y -y		-Ø	-Ø	-Ø	-Ø	-ʔ	
121		2 110		-	2	7	-	-		
100%		92.5%			1.5%	6%				

Inanimates	Intransitive		Cl. 3		Cl. 1	Cl. 2	Cl. 4	Cl. 5	Cl. 6	
	1SG		-		-	-	-	-	-	
	2SG		-		-	-	-	-	-	
	3SG.INAN		-y		-Ø			-?		
	226		65		161				-	
	100%		29%		71%					
	Transitive				?					
	1SG> INAN		-	-á ⁴	-	-y	-á ⁴	-á ⁴	-y	-y
	2SG> INAN		-	-u ³	-	-y	-u ³	-y	-u ³	-u ³
	3SG> INAN		-y	-y	-Ø	-Ø	-Ø	-Ø	-Ø	-?
257		1	110	3	107	28	-	8	-	
100%		43%		1%	42%	11%		3%		

Table 5. The 816 non-paired verbs of the sample.

The data in the Table 5 show two different, but related things: (i) animate verbs have a clear preference to belong to Class 3; and (ii) many of the members of Class 1 are inanimate verbs. This could suggest that the suffixes of these classes ($-á^4$, $-u^3$, $-y$ and $-y$, $-y$, $-Ø$) are used to indicate animacy information about their respective S/O arguments in such a way that in an ideal state of affairs, Class 3 would say something about S/O being animate and Class 1, used with transitives, that O is inanimate. However, a closer look at the table further reveals that in reality things are a bit messier: (iii) almost half of the inanimate verbs also belong to Class 3; and (iv) a score of animate verbs are also found in Class 1. This situation suggests that the system we observe in Lealao Chinantec has some motivated core, while still displaying inflectional class organization. In this, the Chinantec system is typologically very similar to other better known inflectional class systems found in Indo-European languages which are partly motivated by gender. I address this commonality in §5.2.

Before observing paired verbs in the next section and proposing what the morphosyntax of this core is in §5.1, I think it is first worth studying whether the exceptions in (iii) and (iv) could be accounted for by other means. To address the issue raised in (iii), I study the 49 intransitive animate verbs that use a bare stem to encode a 3rd person –largely a coding strategy for inanimates– under the hypothesis that perhaps these verbs have some semantic property in common that make them stand out from the rest of animate verbs. For this purpose consider Table 6, where I have arrayed such verbs in different semantic fields (like most animate verbs, the verbs in question appear in their citation form in the 1st person plural future).

	Class ? -, -, -Ø		Class 1 -y, -y, -Ø		Class 2 -á ⁴ , -u ³ , -Ø		Class 5 -y, -u ³ , -Ø	
Miscellanea	<i>?i⁴bi⁴ɲaá⁴</i>	bellow	<i>?i²ngi⁴a²</i>	laugh	<i>?ii⁴a²</i>	owe	<i>?i⁴saá⁴a²</i>	drown
	<i>?i⁴bi⁴tín⁴</i>	squeak (squirrel)	<i>?i²?ee⁴a²</i>	burp	<i>?i⁴xaa³²a²</i>	be rich	<i>?i⁴hniaá⁴a²</i>	be able to see
	<i>?i⁴hm³</i>	dig (a den)	<i>?i⁴cue⁴²a²</i>	sneeze				
	<i>?i⁴liuú⁴</i>	gobble (a turkey)	<i>?i²ju⁴²a²</i>	cough				
	<i>?i⁴tiuú⁴</i>	neigh	<i>?i²bi³jmí²a²</i>	fast				
	<i>?i⁴h⁴</i>	roar	<i>?i²liaa⁴²a²</i>	bathe				
	<i>?i⁴hmaá²</i>	fly	<i>?i²fi²a²</i>	whistle				
			<i>?i²fi⁴²a²</i>	blow one's nose				
			<i>?i²liu²a²</i>	talk				
			<i>?i²tie²a²</i>	call				
			<i>?i²yaa⁴²a²</i>	shout				
			<i>?i⁴caa²a²</i>	play				
			<i>?i²bi³?i²a²</i>	wait				
Emotional			<i>?i²hi²a²</i>	weep	<i>?i²?eén⁴a²</i>	moan	<i>?i⁴ñaa³²a²</i>	be afraid
			<i>?i²bi³fee²a²</i>	presume	<i>?i²bi³ñuu⁴²a²</i>	feel encouraged	<i>?i⁴?i³a²</i>	be embarrassed
			<i>?i²dxuu²a²</i>	complain	<i>?i⁴dxí⁴a²</i>	be jealous	<i>?i⁴taa³²a²</i>	get used to
							<i>?i⁴he⁴²a²</i> (<i>dsí²a²</i>)	be disgusted
Posture	<i>?i⁴hiú⁴</i>	sit, stand (birds, insects)	<i>?i²laa²a²</i>	lie down	<i>?i²bi³lí³²a²</i>	lie crooked		
			<i>?i²naa²a²</i>	stand up	<i>?i⁴</i>	be standing (SG)		
			<i>?i²yaa²a²</i>	sit				
Motion	<i>dsá⁴ɲ⁴</i>	walk (babies)	<i>dsá³ví⁴a²</i>	go up a level higher than the ground	<i>dsá³gueé⁴a²</i>	crawl		
	<i>dsá⁴raá³</i>	fly	<i>dsá³gui⁴a²</i>	go downhill				
			<i>dsá³ví³a²</i>	go uphill				
			<i>?i⁴cui²a²</i>	escape	<i>?i²bi³reé⁴a²</i>	hide		
Location	<i>?i⁴</i>	be inside						

Table 6. The 49 intransitive animate non-paired verbs that do not belong to Class 3.

When one observes the semantics of the verbs in Table 6, it is difficult to come up with a semantic property that unites all these lexemes into one coherent group. It is true that some of those in Class 1 depict activities some of which are typically found in fluid systems with semantic alignment of the agentive/patientive type, e.g. ‘laugh’, ‘burp’, ‘sneeze’, etc. Others are more agentive ‘talk’, ‘whistle’, ‘shout’, ‘play’, etc. But similar verbs are also largely found in Class 3. It is equally difficult to predict how an intransitive animate verb will be inflected if we were to be led only by the semantics, as verbs with very similar meanings are found in different classes (e.g. $\text{?i}^2\text{laa}^2\text{a}^2$ ‘lie down’, $\text{?i}^2\text{hi}^2\text{a}^2$ ‘weep’ and $\text{?i}^4\text{cuiin}^2\text{a}^2$ ‘escape’ are of Class 1, but $\text{?i}^2\text{bi}^3\text{l}\text{H}^3\text{a}^2$ ‘lie crooked’ and $\text{?i}^2\text{?eén}^4\text{a}^2$ ‘moan’ and $\text{?i}^2\text{bi}^3\text{ree}^4\text{a}^2$ ‘hide’ are of Class 2, while having very similar semantic). Admittedly, the first column in Table 6 could give the impression that verbs referring to actions performed by animals receive $-\emptyset$ instead of $-y$ for the 3rd person, but there are also verbs depicting animal actions that belong to Class 3, as for example the ones in Table 7.

Class 3	
-, -, -y	
$\text{?i}^4\text{bi}^4\text{c}\text{H}^4\text{y}^1$	growl (animal)
$\text{?i}^4\text{fey}^4$	flap wings
$\text{?i}^4\text{nieey}^1$	be tied up (an animal)
$\text{?i}^4\text{ná}^4\text{chieey}\text{?}^4\text{?}^2$	gather up together (animals)
$\text{?i}^4\text{ná}^4\text{cuaay}\text{?}^4\text{?}^2$	gather up together (animals)
$\text{?i}^4\text{c}\text{H}^4\text{y}\text{?}^4\text{?}^2$	fall (animal)
$\text{?i}^4\text{yá}^4\text{niuuy}\text{?}^4\text{?}^4$	go around broody (a hen)
$\text{?i}^4\text{nieey}^4$	shed skin (a serpent)
$\text{?i}^4\text{v}\text{H}^4\text{y}\text{?}^2$	be born (of an egg)
$\text{dsá}^4\text{xú}^4\text{láy}\text{?}^4\text{?}^4$	scratch off (animal)
$\text{?i}^4\text{s}\text{H}^4\text{y}^3$	be sullen (animal)
$\text{?i}^4\text{chiéy}\text{?}^4\text{?}^4$	shake (animal)

Table 7. Animate intransitive verbs of Class 3 referring to actions of animals.

Finally, if such verbs were to be inflected in 1SG or 2SG (as characters speaking in a fable), it is not entirely sure what the suffix selected would be. The list in Table 6 suggests that it would be by means of $-y$ for either value, imagining the verb could be interpreted as a Class 1 verb. But the existence of the verb $\text{dsá}^3\text{gueé}^4\text{a}^2$ ‘crawl’ in Class 2 (which we can compare with the verb $\text{dsá}^4\text{ng}\text{H}^4$ ‘for a baby to be able to walk’) together with the list in Table 7 further suggests that it could just as well be by means of $-\text{á}^4$ and $-\text{u}^3$. From all this, we can conclude that semantics does not help in determining class membership, at least for the intransitive verbs considered.

Before moving on to paired verbs in the next section, let us address issue (iv) by considering the inanimate verbs that belong to Class 3. For these verbs, we could entertain the hypothesis that their receiving suffixes $-\text{á}^4$, $-\text{u}^3$, $-y$ is because their prosodic inflection is similar to the animate verbs of Class 3, but different from those of Class 1. We have seen in Table 4 above that prosodic inflection is largely uninformative about animacy, but it could happen that verbs that receive the same prosodic inflection would attract similar sets of suffixes. If this were the case, the selection of Class 3 suffixes by inanimate verbs would be

accounted for as being conditioned by the type of prosodic inflection the verb receives, and hence it would be linked to the phonology of the inflected stem. For this purpose, I have compared the prosodic inflection of the 110 inanimate transitive verbs of Class 3 on the one hand with the 105 inanimate transitive verbs of Class 1 and on the other with the 109 animate transitive verbs of Class 3. The results are given in Table 8.

Cl.	3			Cl.	1SG/2/1PL			Cl.	1SG/2/1PL		
	INAN		AN		INAN		AN		INAN		AN
	Cl. 1	Cl.3			Cl. 1	Cl.3			Cl. 1	Cl.3	
<i>a</i>			2	<i>1</i>	14	22	<i>31</i>		1		
<i>b</i>	2			<i>2</i>	4	7	<i>32</i>	1			
<i>d</i>		2	1	<i>3</i>	3	1	<i>35</i>		1		
<i>g</i>	23			<i>5</i>	39	16	<i>36</i>	2			
<i>k</i>	2			<i>6</i>	11	13	<i>37</i>	1			
<i>l</i>	53	36	29	<i>7</i>	22		<i>40</i>	2			
<i>n</i>			1	<i>8</i>	6	11	<i>41</i>			2	
<i>o</i>	9			<i>9</i>	16		<i>42</i>	1			
<i>q</i>	4	1	8	<i>10</i>	17		<i>45</i>	2			
<i>r</i>		1		<i>11</i>		3	<i>46</i>	1			
<i>/1/</i>		1	2	<i>13</i>			<i>49</i>	1			
<i>/1'/</i>	1	3	2	<i>14</i>			<i>53</i>	1			
<i>/2/</i>	2			<i>15</i>		1	<i>54</i>	1			
<i>/2'/</i>	1	4	6	<i>16</i>	3		<i>55</i>	1			
<i>/3/</i>	3	15	18	<i>17</i>	4		<i>56</i>	1			
<i>/3'/</i>	3	16	23	<i>18</i>		2	<i>58</i>	1			
<i>/32/</i>		2	1	<i>19</i>	3		<i>q</i>		1		
<i>/4/</i>		6	9	<i>20</i>	7		<i>l</i>		1	1	
<i>/4'/</i>	4	20	6	<i>21</i>	5		<i>/1/</i>		1	2	
<i>/42/</i>		3	2	<i>24</i>		1	<i>/1'/</i>		2	1	
Total	107	110	110	<i>25</i>		5	<i>/3'/</i>		2	1	
				<i>26</i>	3		<i>/32/</i>		1	1	
				<i>28</i>		2	<i>/4'/</i>	1	7	4	
				<i>29</i>	4		<i>/42/</i>		3	2	
				<i>30</i>		2					
							Total	107	110	110	

Table 8. Transitive verbs of Class 1 and 3 compared for prosodic features.

Table 8 shows that there are formal similarities between the animate and the inanimate verbs of Class 3. This is puzzling because prosodic inflection appears to align with animacy on the one hand, while on the other it aligns with class. In this respect, there is for example a tendency for the inanimate verbs of Class 1 to take a different inflection than the animate verbs of Class 3, and hence prosody aligns with animacy value. But the verbs of Class 3 that are inanimate take a similar inflection than animate verbs, and hence prosody aligns with class. One way to understand this situation and the reason why we have transitive inanimate

verbs in Class 3 is to regard this class as a default (in the sense of the ‘elsewhere’ case) that bears its own distinctive prosodic properties associated with it. In this light, Class I would have to be seen as a subclass within this major class (see §5.2 for more arguments in favor of Class 3 as a default).

4.2. Paired verbs

4.2.1. Paired verbs, prosodic inflection and animacy.

Paired-verbs are verbs that inflect as both animate and inanimate depending on the animacy of their S/O argument. In Rupp and Rupp's (1996) dictionary, I have been able to identify 175 such verbs: 53 intransitive and 122 transitive. For the intransitive verbs, only the forms for the 3rd person are comparable, because in natural usage the inanimate paradigm of the verb cannot have forms for other persons. To inflect for animacy agreement, a verb often belongs to different prosodic classes simultaneously. When it does, there are two main patterns.

In the first pattern, the animate paradigm has different tonal inflection than the inanimate one. There are 67 paired verbs that behave like this. The example in (19) illustrates an intransitive verb with its two paradigms, and that in (20) a transitive one.

(19) $\text{ʔi}^4\text{tia}^3$ (intr) ‘fall from height’

a. INAN ‘for something to fall from height’

	PRS	PRF	FUT	INFL STEMS		
				INCPL	CPL	IRR
3SG.INAN	tia^3	$\text{ma}^3\text{-tia}^3$	$\text{ʔi}^4\text{-tia}^3$	tia^3	tia^3	tia^3

b. AN ‘for animate entity to fall from height’

	PRS	PRF	FUT	INFL STEMS		
				INCPL	CPL	IRR
1SG	$\text{tia}^4\text{-á}^4$	$\text{ma}^3\text{-tia}^3\text{-á}^4$	$\text{ʔi}^4\text{-tia}^4\text{-á}^4$	tia^4	tia^3	tia^4
2SG	$\text{tia}^4\text{-u}^3$	$\text{ma}^3\text{-tia}^3\text{-u}^3$	$\text{ʔi}^4\text{-tia}^4\text{-u}^3$	tia^4	tia^3	tia^4
3SG.AN	$\text{tia}\langle\text{y}\rangle^4$	$\text{ma}^3\text{-tia}\langle\text{y}\rangle^3$	$\text{ʔi}^4\text{-tia}\langle\text{y}\rangle^4$	tia^4	tia^3	tia^4
1PL.INCL	$\text{tia}^4\text{-a}^2$	$\text{ma}^3\text{-tia}^3\text{-a}^2$	$\text{ʔi}^4\text{-tia}^4\text{-a}^2$	tia^4	tia^3	tia^4

(20) $\text{ʔi}^4\text{lia}^2$ (tr) ‘push’

a. INAN ‘push something’

	PRS	PRF	FUT	INFL STEMS		
				INCPL	CPL	IRR
1SG>INAN	$\text{lia}\langle\text{y}\rangle^4$	$\text{ma}^3\text{-lia}\langle\text{y}\rangle^4$	$\text{ʔi}^2\text{-lia}\langle\text{y}\rangle^4$	lia^4	lia^4	lia^4
2SG>INAN	$\text{lia}\langle\text{y}\rangle^3$	$\text{ma}^3\text{-lia}\langle\text{y}\rangle^1$	$\text{ʔi}^2\text{-lia}\langle\text{y}\rangle^3$	lia^3	lia^1	lia^3
3SG>INAN	lia^4	$\text{ma}^3\text{-lia}^3$	$\text{ʔi}^4\text{-lia}^4$	lia^4	lia^3	lia^4
1PL>INAN	lia^4	$\text{ma}^3\text{-lia}^2$	$\text{ʔi}^4\text{-lia}^2$	lia^4	lia^2	lia^2

b. AN ‘push animate’

	PRS	PRF	FUT	INFL STEMS		
				INCPL	CPL	IRR
1SG>AN	$\text{lia}^3\text{-á}^4$	$\text{ma}^3\text{-lia}^2\text{-á}^4$	$\text{ʔi}^2\text{-lia}^1\text{-á}^4$	lia^3	lia^2	lia^1
2SG>AN	$\text{lia}^4\text{-u}^3$	$\text{ma}^3\text{-lia}^4\text{-u}^3$	$\text{ʔi}^2\text{-lia}^4\text{-u}^3$	lia^4	lia^4	lia^4
3SG>AN	$\text{lia}\langle\text{y}\rangle^3$	$\text{ma}^3\text{-lia}\langle\text{y}\rangle^2$	$\text{ʔi}^4\text{-lia}\langle\text{y}\rangle^2$	lia^3	lia^2	lia^2
1PL>AN	$\text{lia}^3\text{-a}^2$	$\text{ma}^3\text{-lia}^4\text{-a}^2$	$\text{ʔi}^2\text{-lia}^4\text{-a}^2$	lia^3	lia^4	lia^4

The inanimate paradigm of the verb in (19) belongs to the invariant class and has tone /3/ for all cells. In contrast, its animate paradigm belongs to Class *g* for the marking of 3rd person but to Class 20 for the marking of other persons, we can represent this as {*g/20*}. The verb in (20) is {*g/7*} for the inanimate and {*l/11*} for the animate. The multiple permutations give rise to a system with many inflectional possibilities. For the values of such classes see the Appendix. The 67 paired verbs in the sample of this first pattern display 41 such combinations, which are given in Table 9. The combinations pertaining to verbs (19) and (20) are highlighted in shading.

#	INAN		AN		#	INAN		AN	
	3	1SG/2/1PL	3	1SG/2/1PL		3	1SG/2/1PL	3	1SG/2/1PL
1	<i>b</i>	42	/32/	68	1	<i>q</i>	–	/'4/	8
1	<i>g</i>	7	/3/	5	3	<i>q</i>	–	/'4/	/'4/
1	<i>g</i>	7	/4/	6	1	<i>q</i>	–	<i>g</i>	7
2	<i>g</i>	7	<i>l</i>	5	1	/2/	–	/'1/	8
4	<i>g</i>	7	<i>l</i>	11	2	/'2/	–	/4/	6
3	<i>g</i>	7	<i>l</i>	14	1	/'2/	–	/'4/	/'4/
1	<i>g</i>	7	<i>l</i>	24	1	/'2/	–	<i>l</i>	<i>l</i>
3	<i>g</i>	7	<i>q</i>	11	4	/3/	–	/'4/	/'4/
1	<i>g</i>	37	<i>l</i>	5	1	/3/	–	<i>g</i>	20
2	<i>k</i>	16	/32/	22	3	/3/	22	/4/	6
1	<i>k</i>	16	/32/	68	1	/3/	27	/'4/	/'4/
1	<i>k</i>	17	/32/	22	1	/3/	63	<i>l</i>	63
1	<i>l</i>	10	/3/	18	1	/'3/	–	/4/	6
1	<i>l</i>	10	/'4/	8	1	/32/	31	/3/	18
3	<i>l</i>	19	/3/	5	1	/4/	6	/3/	6
2	<i>l</i>	32	<i>q</i>	25	1	/'4/	–	/'1/	8
2	<i>o</i>	16	<i>q</i>	13	5	/'4/	/'4/	/3/	5
1	<i>o</i>	20	<i>q</i>	13	1	/'4/	13	/3/	5
1	<i>q</i>	–	/'2/	/'2/	1	/'4/	22	<i>l</i>	21
1	<i>q</i>	–	/4/	66	2	/'4/	26	/3/	22
					1	/'4/	65	/'2/	13
Total					67				

Table 9. Prosodic inflection in the 67 paired verbs of the first pattern.

The second pattern is instantiated by 42 paired verbs. In this pattern, the forms for the 3rd person inanimate and animate are prosodically identical, while the forms for the other persons remain contrastive. An example is given in (21).

(21) $\gamma^4 c \#^1 a^2$ (tr) ‘knock over’

a. INAN ‘knock something over’

	INFL STEMS		
	PRS	PRF	FUT
1SG>INAN	$c\dot{\gamma}\gamma^4$	$ma^3-c\dot{\gamma}\gamma^4$	$\gamma^4-c\dot{\gamma}\gamma^4$
2SG>INAN	$c\dot{\gamma}\gamma^{32}$	$ma^3-c\dot{\gamma}\gamma^2$	$\gamma^4-c\dot{\gamma}\gamma^1$
3SG>INAN	$c\dot{\gamma}^{32}$	$ma^3-c\dot{\gamma}^2$	$\gamma^4-c\dot{\gamma}^2$
1PL>INAN	$c\dot{\gamma}^{32}-a^2$	$ma^3-c\dot{\gamma}^1-a^2$	$\gamma^4-c\dot{\gamma}^1-a^2$

b. AN ‘knock animate over’

	INFL STEMS		
	PRS	PRF	FUT
1SG>AN	$c\dot{\gamma}^{42}-\acute{a}^4$	$ma^3-c\dot{\gamma}^{42}-\acute{a}^4$	$\gamma^4-c\dot{\gamma}^{42}-\acute{a}^4$
2SG>AN	$c\dot{\gamma}^{42}-u^3$	$ma^3-c\dot{\gamma}^{42}-u^3$	$\gamma^4-c\dot{\gamma}^{42}-u^3$
3SG>AN	$c\dot{\gamma}^{32}$	$ma^3-c\dot{\gamma}^2$	$\gamma^4-c\dot{\gamma}^2$
1PL>AN	$c\dot{\gamma}^{32}-a^2$	$ma^3-c\dot{\gamma}^{42}-a^2$	$\gamma^4-c\dot{\gamma}^{42}-a^2$

The verb in (21) belongs to Class $\{l, 10\}$ when inanimate and $\{l, 5\}$ when animate. The 42 verbs display the 17 different inflectional possibilities given in Table 10. One of such classes has up to 16 members.

#	INAN		AN	
	3	1SG/2/1PL	3	1SG/2/1PL
2	/2/	8	/2/	2
1	/2/	67	/2/	2
1	l	19	l	5
1	l	21	l	5
2	l	10	l	5
1	/3/	27	/3/	6
2	/3/	22	/3/	6
16	l	9	l	11
1	l	64	l	11
1	l	10	q	13
1	q	10	q	13
7	l	10	l	15
1	/3/	16	/3/	18
2	l	32	l	24
1	/3/	61	/3/	24
1	r	34	r	35
1	/32/	26	/32/	62
Total	45			

Table 10. Prosodic inflection in the 42 paired verbs of the second pattern.

The remaining 66 paired verbs in the sample do not change in prosodic inflection when they are inflected as animate or inanimate. Relevant examples are given in (22) and (23).

(22) $\text{ʔi}^4\text{gwii}^4$ (intr) ‘get cold’ {/4/, 6}

a. INAN ‘for something to get cold’

3SG.INAN	INFL STEMS		
	PRS	PRF	FUT
	gwii ⁴	ma ³ -gwii ⁴	ʔi ⁴ -gwii ⁴

b. AN ‘for animate to get cold’

1SG	INFL STEMS		
	PRS	PRF	FUT
	gwii ⁴² -á ²	ma ³ -gwii ⁴² -á ²	ʔi ⁴ -gwii ⁴² -á ²
2SG	gwii ⁴ -u ³	ma ³ -gwii ⁴ -u ³	ʔi ⁴ -gwii ⁴ -u ³
3SG.AN	gwii ⁴ -y	ma ³ -gwii ⁴ -y	ʔi ⁴ -gwii ⁴ -y
1PL.INCL	gwii ⁴² -a ²	ma ³ -gwii ⁴² -a ²	ʔi ⁴ -gwii ⁴² -a ²

(23) $\text{ʔi}^2\text{gwa}^4\text{a}^2$ (tr) ‘change’ {/l, 5}

a. INAN ‘change something’

1SG>INAN	INFL STEMS		
	PRS	PRF	FUT
	gwa<y>ʔ ⁴²	ma ³ -gwa<y>ʔ ⁴²	ʔi ² -gwa<y>ʔ ⁴²
2SG>INAN	gwa<y>ʔ ⁴²	ma ³ -gwa<y>ʔ ⁴²	ʔi ² -gwa<y>ʔ ⁴²
3SG>INAN	gwaʔ ³²	ma ³ -gwaʔ ²	ʔi ⁴ -gwaʔ ²
1PL>INAN	gwaʔ ³² -a ²	ma ³ -gwaʔ ⁴² -a ²	ʔi ² -gwaʔ ⁴² -a ²

b. AN ‘change entity’

1SG>AN	INFL STEMS		
	PRS	PRF	FUT
	gwa<y>ʔ ⁴² -á ²	ma ³ -gwa<y>ʔ ⁴² -á ²	ʔi ² -gwa<y>ʔ ⁴² -á ²
2SG>AN	gwa<y>ʔ ⁴² -u ³	ma ³ -gwa<y>ʔ ⁴² -u ³	ʔi ² -gwa<y>ʔ ⁴² -u ³
3SG>AN	gwa<y>ʔ ³²	ma ³ -gwa<y>ʔ ²	ʔi ⁴ -gwa<y>ʔ ²
1PL>AN	gwaʔ ³² -a ²	ma ³ -gwaʔ ⁴² -a ²	ʔi ² -gwaʔ ⁴² -a ²

In this section, we have seen that at least two thirds of the paired verbs of the sample inflect as animate and inanimate in rather unpredictable ways. Like with non-paired verbs, if prosody does not work as an optimal way to inform about the animacy of a verb, it makes sense –at least from a morphosyntactic point of view– that other parts of the system do the job. In the following section, I show that the suffix sets of the major suffix classes (i.e., Classes 1,2 and 3) have a clear morphosyntactic function in the realization of animacy agreement with paired-verbs, which are the ones that have more need of it for inflectional purposes.

Finally, alternative views of paired verbs are possible. For example, one could claim that they represent two independent lexemes related semantically through derivation. Under such a view the morphological irregularities they display would be accounted for as being in effect typical of derivation, while verbs in (22) and (23) would have to be seen as ‘ambi-animate’ by undergoing some sort of zero conversion from animate to inanimate and vice versa. But if the verbs were to be seen as related through derivation, the fact that the suffixes display a clearer mapping from function to form precisely with them would still want an explanation. This is why the treatment of paired verbs as inflectional has advantages for the analysis of the suffixes. Nevertheless, appealing to derivation as an argument to account for the morphological irregularity we observe in Tables 9 and 10 would be weak in the light of

other tables such as Table 4 that show that prosodic inflection in Chinantec is rich in irregularities.

4.2.2. Paired verbs and the suffix classes.

In this section, I show the distribution of the suffix classes used in the inflection of 175 paired verbs. For this purpose consider the figures in Table 11, (shading highlights where marking preferences lie).

Animates	Intransitive		Cl. 3	Cl. 1	Cl. 2	Cl. 4	Cl. 5	Cl. 6
		1SG	– -á ⁴	-y	-á ⁴	-á ⁴	-y	-y
		2SG	– -u ³	-y	-u ³	-y	-u ³	-u ³
		3SG.AN	-y -y	-Ø	-Ø	-Ø	-Ø	-ʔ
	53		5 47	1				
	100%		98%	2%				
	Transitive							
		1SG> AN	-á ⁴	-y	-á ⁴	-á ⁴	-y	-y
		2SG> AN	-u ³	-y	-u ³	-y	-u ³	-u ³
		3SG> AN	-y	-Ø	-Ø	-Ø	-Ø	-ʔ
122		122						
100%		100%						
Inanimates	Intransitive		Cl. 3	Cl. 1	Cl. 2	Cl. 4	Cl. 5	Cl. 6
		1SG	–	–	–	–	–	–
		2SG	–	–	–	–	–	–
		3SG.INAN	-y	-Ø				-ʔ
	53		2	51				
	100%		2%	96%				
	Transitive							
		1SG> INAN	-á ⁴	-y	-á ⁴	-á ⁴	-y	-y
		2SG> INAN	-u ³	-y	-u ³	-y	-u ³	-u ³
		3SG> INAN	-y	-Ø	-Ø	-Ø	-Ø	-ʔ
122		1	79	37	2	3		
100%		1%	65%	30%	1.5%	2.5%		

Table 11. The 175 paired verbs of the sample.

In Table 11, we can see that Class 3 is aligned with animacy. We have seen a similar tendency in animate non-paired verbs in Table 5, but there the distribution was more spread out in the other classes. The same can be said at least for the use of a bare stem, which indisputably identifies the presence of an inanimate argument. For transitive inanimate verbs, the situation is very different from non-paired verbs. With the latter, the distribution of Classes 1 and 3 were even, but with paired verbs, the preference is for Class 1. There are still a sizeable number of verbs in Class 2, which would need explaining, because their presence is comparable to the 11% we find in equivalent non-paired verbs. The figures in Table 11 reveal clear preference for the selection of a particular set of suffixes according to the animacy of the

verb. I take such preferences to reveal the application of the morphosyntactic mapping I develop in the next section.

5. The suffix classes and the morphosyntax of agreement.

5.1. Revisiting the morphosyntax of animacy agreement.

One could say that the major marking tendencies we observe with paired verbs responds to a morphosyntactic mapping from function to form. The mapping could be said to have the form in (24).

(24)	Animate S		Inanimate S
	1SG → -á ⁴		
	2SG → -u ³		
	3SG → -y		3SG → ∅
	A > Animate O		A > Inanimate O
	1SG → -á ⁴		1SG → -y
	2SG → -u ³		2SG → -y
	3SG → -y		3SG →

The mapping in (24) includes information about subject (S/A) and information about animacy of S/O. Because of this, it could ideally be divided up further. One possibility is to posit that the person-number paradigm bears a split between the cells involving a subject of 1SG and 2SG, on the one side, and those involving a 3SG, on the other. Let us deal with 3SG first.

On the one hand, an intransitive inanimate verb can only be inflected in 3SG, and in paired verbs this information is encoded by a bare stem by default. On the other hand, transitive verbs can have a subject in all persons, but their object is inanimate. To encode a transitive situation involving a 3SG acting on an inanimate object (>), a bare stem is also used. One possible way to interpret these similarities in form (i.e. use of a bare stem for both situations) is to take them to reflect similarities in function. Accordingly, the use of a bare stem could be taken to signal the inanimate gender of an absolutive argument S/O, as in (25), illustrated by the forms in (26), please note that the inflected stem also carries information about person-number of the subject.

(25) INAN.S/INAN.O → bare stem (-∅)

(26) a.	3SG.INAN	ʔí ⁴ -hɛ́ʔ ⁴
		FUT-get.close.IRR.3[3SG.INAN]
		‘It’ll get closer.’
	a.	3SG>INAN
		ʔí ⁴ -liáʔ ⁴
		FUT-push.IRR.3[3SG>INAN]
		‘He’ll push it.’

The situations in (25), (29) and (30) are specific. For all other possibilities, namely when 1SG or 2SG function as S or when they function as A of verbs with an animate object, a default or elsewhere case applies. As both situations are equally encoded by $-á^4$ and $-u^3$, respectively, it seems that what is important now is the marking of subject (S/A), as in (31).

- (31) 1SG → $-á^4$
 2SG → $-u^3$

A summary of the proposal is given in (32):

(32)

<p>(a)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">S/A</td></tr> <tr><td>1SG →</td><td>$-á^4$</td></tr> <tr><td>2SG →</td><td>$-u^3$</td></tr> </table>	S/A		1SG →	$-á^4$	2SG →	$-u^3$	<p>(b)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">A › Inanimate</td></tr> <tr><td>1SG →</td><td>$-y_2$</td></tr> <tr><td>2SG →</td><td>$-y_2$</td></tr> </table>	A › Inanimate		1SG →	$-y_2$	2SG →	$-y_2$
S/A													
1SG →	$-á^4$												
2SG →	$-u^3$												
A › Inanimate													
1SG →	$-y_2$												
2SG →	$-y_2$												
<p>(c)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">Animate S/O</td></tr> <tr><td>3SG →</td><td>$-y_1$</td></tr> </table>	Animate S/O		3SG →	$-y_1$	<p>(d)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">Inanimate S/O</td></tr> <tr><td>3SG →</td><td>$-∅$</td></tr> </table>	Inanimate S/O		3SG →	$-∅$				
Animate S/O													
3SG →	$-y_1$												
Inanimate S/O													
3SG →	$-∅$												

When the subject is of 1SG and 2SG the situation in (a) serves as a default in the sense of the elsewhere case, while (b) applies to a smaller subclass within (a). This allows for the marking of (a) to also apply to situations that have an inanimate object as indeed happens with the verbs that are characterized as Class 2 in Table 11. Such verbs amount to 37, but 30 of them are verbs of the type in (22-23), which do not use prosodic inflection to encode animacy. Another example of this type of verb is given in (33), with an indication of the suffixes the verb requires.

- (33) $i^4 t_{\underline{t}}^4 a^2$ (tr, an) ‘receive’ {g, 69}

	PRS	PRF	FUT	SUFF. CL. 2
1SG	$t_{\underline{t}}^{42} -á^2$	$ma^3 - t_{\underline{t}}^3 - á^4$	$\gamma^4 - t_{\underline{t}}^4 - á^4$	$-á^4$
2SG	$t_{\underline{t}}^4 - u^3$	$ma^3 - t_{\underline{t}}^3 - u^3$	$\gamma^4 - t_{\underline{t}}^4 - u^3$	$-u^3$
3SG›AN	$t_{\underline{t}}^4 - y$	$ma^3 - t_{\underline{t}}^3 - y$	$\gamma^4 - t_{\underline{t}}^4 - y$	$-y$
3SG›INAN	$t_{\underline{t}}^4$	$ma^3 - t_{\underline{t}}^3$	$\gamma^4 - t_{\underline{t}}^4$	$-∅$
1PL	$t_{\underline{t}}^{42} - a^2$	$ma^3 - t_{\underline{t}}^3 - a^2$	$\gamma^4 - t_{\underline{t}}^4 - a^2$	$-a^2$

Verbs like (33) abide by the default in (a) and are thus not perceived as members of (b). This has two very interesting consequences for the system: (i) while a great number of inanimate transitive verbs are inflected attending to (b), it makes (b) become an inflectional class whose membership needs to be dictated by the lexicon. Even if we defined the exceptions to (b) as being of the type of verbs in (33), there are still 8 verbs of the other patterns in Tables 9 and 10 that would escape the generalization; (ii) because (a) is a default, it strongly suggests that

the marking of agreement with subject (S/A) is more important to the system than marking animacy, at least when a 1st and a 2nd person are involved. We can see the impact of the preference of the agreement system based on subject in verbs of the type in (33) in that a form such as $\text{ʔt}^A \text{t}^A \text{a}^A$ {1SG.FUT} means both ‘I’ll receive something’ and ‘I’ll receive someone’, or rather, just ‘I receive (an object)’.

Finally, at least for the context of a 3rd person subject, the mapping still works for paired verbs attending to the animacy of S/O, but when we compare this with non-paired verbs, the form-function correspondence in (c) and (d) leaks. All these facts reveal that the morphosyntax of animacy agreement in Lealao Chinantec is less prominent than the morphosyntax of subject agreement. This is something I discuss further in the next section.

5.2. Revisiting the morphosyntax of subject agreement.

In the previous section, we have seen that the morphosyntactic mapping in (32) which accounts for most instances of animacy agreement in paired verbs already implies a situation where 1SG and 2SG are subject. If we study the encoding of these person-number values in the sample as a whole, we find four encoding strategies: (a) using the suffixes $-\text{a}^A$ and $-\text{u}^3$ for either value; (b) using the suffix $-\text{y}$ for both values; or the heteroclite options in (c) or (d), which result as a combination of (a) and (b). The relevant figures are given in Table 12, based on all 848 entries in the sample that can inflect for a 1st or 2nd person subject.

1SG,2SG		S.INAN	S.AN	A>INAN	A>AN	Total	
a.	$-\text{a}^A, -\text{u}^3$	–	199	176	234	609	72%
b.	$-\text{y}, -\text{y}$	–	24	186	0	210	25%
c.	$-\text{a}^A, -\text{y}$	–	0	2	7	9	1%
d.	$-\text{y}, -\text{u}^3$	–	9	11	0	20	2%
	Total	–	232	375	241	848	100%

Table 12. The encoding 1SG and 2SG in 848 entries.

The figures in Table 12 reveal that strategy (a) serves as a default, both in its sense of the elsewhere case and the most frequent option, suggesting that the suffixes $-\text{a}^A$ and $-\text{u}^3$ function as default indexes of subject of 1SG and 2SG without any significant correlation with animacy. Strategy (b), is the second most favored option, it constitutes a lexically defined class of verbs with a great majority of inanimate transitives.

All this points to the existence of an agreement system in Lealao Chinantec that is hybrid between encoding information about subject agreement and about animacy agreement. Information about animacy is scattered. In the mapping in (32) it was mainly at work in the configurations in (b) and (c). But outside paired verbs, the association of $-\text{y}$ is no longer restricted to animacy. To show this, consider Table 13, where I give the distribution for the three coding strategies of a 3SG subject in the whole sample: (a) is the suffix $-\text{y}$; (b) is by using a stem with no exponent; and (c) is by means of the suffix $-\text{?}$.

3SG		S.INAN	S.AN	A>INAN	A>AN	Total	
a.	-y	67	211	112	234	624	53.6%
b.	-∅	212	51	267	9	539	46.2%
c.	-ʔ	0	3	0	0	3	0.2%
Total		279	265	379	243	1166	100%

Table 13. The encoding 3SG in the 1166 entries of the sample.

While the workload of strategy (c) is utterly insignificant for the syntax, strategies (a) and (b) have comparable frequencies. In other words, they instantiate two inflectional classes which have an equal amount of labor regarding the encoding of 3rd person subject. We have seen in the mapping in (32) that at least for paired verbs, the reference to a 3rd person subject is indirect, the emphasis lying on an animacy distinction of the S/O. However, when the whole system is taken into account, the function of -y or -∅ can no longer be said to be linked to animacy. This is particularly relevant for -y because the figures in Table 13 indicate that there is some expectation for a bare stem NOT to be used to realize 3SG subject with an animate O. As no similar expectation can be said of -y, it strongly suggests that -y is a default exponent of a 3SG subject, regardless of animacy.

The favored strategy for the encoding of 1SG and 2SG together with the default strategy for the encoding of 3SG shows that Class 3 serves as a default mapping of subject, given in (34), while still being strongly associated to verbs with an animate S/O argument.

(34) S/A

1SG	→	-á ⁴
2SG	→	-u ³
3SG	→	-y

Class 3 is also the largest class; the remainder of the verbal lexicon gathers in the rest of the classes in an uneven way. The membership to the suffix classes is still largely a lexical matter, and hence a treatment in inflectional classes is justified, but there are tendencies in such membership involving the animacy features of the S/O argument of the verb. The general distribution of the classes attending to animacy value is given in Table 14 for the 848 verbs in the samples which can inflect in all persons. Notice that Table 14 cannot give information about {S.INAN}. For the distribution of this value the classes taken as whole paradigms are not informative, and only Table 13 should be informative. The zeros of 3SG could pertain to at least four classes, but as pointed out above, the 67 verbs that manifest -y for {S.INAN} can only be understood as pertaining to Class 3.

	S.AN	O.INAN	O.AN	Total	S.AN	O.INAN	O.AN	Total	S.AN	O.INAN	O.AN
Class 1 -y, -y, -Ø	24	186	0	210	11.5%	88.5%	–	100%	10.5%	49.6%	–
Class 2 -a ⁴ , -u ³ , -Ø	10	65	2	77	13%	84.5%	2.5%	100%	4.3%	17.4%	0.8%
Class 3 -a ⁴ , -u ³ , -y	189	111	232	532	35.5%	21%	43.5%	100%	81.5%	29.6%	96.2%
Class 4 -a ⁴ , -y, -Ø	0	2	7	9	–	22%	78%	100%	–	5.2%	3%
Class 5 -y, -u ³ , -Ø	6	11	0	17	35%	65%	–	100%	2.5%	2.8%	–
Class 6 -y, -u ³ , -?	3	0	0	3	100%	–	–	100%	1.2%	–	–
Total	232	375	241	848					100%	100%	100%

Table 14. The classes and animacy configurations

Being a default, Class 3 is found for all animacy values, but shows preferences for the animate value as most verbs with an {S.AN} argument and practically all with {O.AN} are members of this class. Most of the verbs of Class 1 have {O.INAN}, but only half of the verbs with {O.INAN} are found in Class 1, the rest are distributed in other four classes.

The system we observe in Lealao Chinantec is remarkably similar in typological terms to the inflectional class systems found in better-known Indo-European languages where gender plays a major part in class membership, as discussed for example in Wurzel (1984), Corbett and Fraser (1993), Fraser and Corbett (1994), Aronoff (1994), among others. For example, Russian nouns are said in the literature to fall into four inflectional classes (see Corbett and Fraser 1993, Müller 2004, etc.), and the membership of such classes show strong correlations with gender.¹⁹ One class contains all masculine nouns, while a second one contains all neuter nouns. Masculine nouns are also found in a third class that instead is mostly populated by feminine nouns, which in turn are virtually the only type of nouns found in the fourth class. The case of Lealao Chinantec is very similar to this situation if one sees animacy as a type of gender. But perhaps, because verbs in Chinantec are often still talked about as being targets of animacy agreement rather than controllers, the typological simile would perhaps have to be made with agreeing adjectives organized in inflectional classes.

6. Concluding remarks.

In this paper, I have shown that verbs in Lealao Chinantec receive different sets of suffixes for the person-number values 1SG, 2SG, and 3SG which have a puzzling distribution because whereas they are used to index agreement of subject, just like other suffixes for 1PL and 2PL which have no allomorphy, they also convey information about the animacy of the S/O argument of the verb. I have identified six inflectional classes involving the suffixes –four in Rupp & Rupp's (1996) account– although three of them comprise the greater bulk of verbs in a sample of over 1,000 verbal entries.

Studying the distribution of these suffixes, I have concluded that they manifest a mixed system of agreement, combining a more canonical system based on subject agreement (S/A) which is default and another based on the animacy features of the S/O. The morphology involved in the main three classes responds to a morphosyntactic mapping that is operational in verbs with two animacy paradigms. But as there are important mismatches in the meaning-to-form correspondences in the inflection of verbs with only one animacy value, the system

¹⁹ These classes receive different number labels according to analysis and tradition, so I will only refer to them generically here.

ceases to be functional and a treatment of the suffixal allomorphy in inflectional class terms is justified.

As it is widely accepted nowadays in grammaticalization theory that transparent morphosyntactic systems often develop into more morphologically opaque ones (Givón's (1971) aphorism that today's morphology is yesterday's syntax), it seems reasonable to think that the functional morphosyntactic mapping we observe at work in paired verbs was perhaps prior to the system, but evolved into another system where the link between function and form has been broken for a substantial set of the lexicon. In lack of diachronic evidence to support it, this trend of thought should remain at a speculation level. However, the mixed morphological system we observe synchronically can shed new lights on a typology of agreement, as developed in Corbett (2006), Evans (2003), Polinsky (2003), etc.

Lealao Chinantec is one of the many endangered indigenous languages of Mexico, and we can only hope that it survives and keeps evolving through time. It belongs to the Chinantecan branch of Oto-Manguean which comprises languages that display some of the most complex morphological systems known to us. The fact that Chinantecan languages are gaining attention of morphologists comes as good news for the discipline, and probably in just the right time, as it is important for linguists to join efforts to improve a theory of morphology by expanding it beyond the typological limits of the inflection of better-known European languages.

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Appendix

The prosodic classes of Lealao Chinantec (' = ballistic stress)

Cl.	3		
	INCPL	CPL	IRR
a	'1	'1	42
b	3	4	'2
c	'3	'4	'3
d	'3	'3	42
e	4	'1	'1
f	4	3	3
g	4	'3	'4
h	4	32	4
i	4	'42	'42
j	32	32	1
k	32	4	'2
l	32	'2	'2
m	32	'4	'4
n	'3	'3	'4
o	3	'3	'4
p	3	'3	3
q	4	'4	'4
r	4	'4	4
s	32	32	'3
t	32	2	2
/1/	1	1	1
/1'/	'1	'1	'1
/2/	2	2	2
/2'/	'2	'2	'2
/3/	3	3	3
/3'/	'3	'3	'3
/32/	32	32	32
/4/	4	4	4
/4'/	'4	'4	'4
/42/	42	42	42

Cl.	1SG			2			1PL		
	INCPL	CPL	IRR	INCPL	CPL	IRR	INCPL	CPL	IRR
1	'1	'1	'1	'1	'1	'1	'1	'1	'1
2	1	1	1	1	1	1	1	1	1
3	42	42	42	42	42	42	42	42	42
4	32	'2	1	32	'2	1	32	'2	1
5	42	42	42	42	42	42	32	42	42
6	42	42	42	4	4	4	42	42	42
7	4	'4	42	3	'1	3	42	2	2
8	42	42	42	'1	'1	'1	2	2	2
9	32	'2	1	'3	42	'3	32	42	42
10	'4	'4	'4	32	'2	1	32	1	1
11	'3	'4	'3	'3	'4	'3	'3	'4	'3
12	42	42	42	3	3	3	32	32	32
13	'4	'4	'4	'4	'4	'4	42	42	42
14	'4	'4	'4	'4	42	'4	32	42	42
15	'4	'4	'4	'4	'4	'4	32	42	42
16	4	'4	42	3	3	3	32	2	2
17	32	'2	1	'3	'2	'3	32	42	42
18	42	42	42	4	4	4	32	32	32
19	'4	'4	'4	32	'1	1	32	2	2
20	4	'4	42	3	'3	3	32	2	2
21	'4	'4	'4	32	'1	1	32	2	2
22	4	4	4	3	3	3	32	32	32
23	'4	'4	'4	32	'1	1	4	2	2
24	32	'2	1	'4	'4	'4	32	42	42
25	32	'2	1	4	'4	'4	42	42	42
26	32	32	1	32	32	1	32	32	1
27	4	4	4	'1	'1	'1	2	2	2
28	42	42	42	4	'4	'4	42	'4	'4
29	'4	'4	'4	32	'2	1	32	42	42
30	42	42	1	42	42	42	42	42	42
31	32	'2	1	3	3	3	32	2	2
32	32	'2	1	'3	'2	'3	32	1	1
33	4	4	4	3	3	3	42	42	42
34	4	'4	4	4	'4	4	42	'4	42
35	42	'4	42	4	'4	4	'4	'4	42
36	4	'4	42	'3	'3	'3	42	42	42
37	4	'4	42	'1	'1	'1	42	2	2
38	'4	'4	'4	'2	'2	'2	'4	'4	'4
39	'4	'4	'4	32	'2	'2	32	32	32
40	'4	'4	'4	32	'2	1	42	1	1
41	42	42	4	42	42	42	42	42	42
42	42	'2	1	'1	'3	'3	2	2	2
43	32	32	42	4	32	4	42	32	42
44	4	'4	42	'3	'3	'3	2	2	2
45	4	'4	42	'3	'3	'3	32	2	2
46	4	'2	1	'3	'1	'3	'3	2	2
47	4	'4	42	'1	'1	'1	42	2	2
48	4	'4	42	'1	'1	'1	2	2	2
49	32	'2	1	'3	'1	'3	'3	2	2
50	32	'2	1	32	'1	1	'4	2	2
51	42	'2	1	42	'2	1	42	42	42
52	42	'2	1	42	4	4	42	42	42
53	4	4	4	'1	'1	'1	'1	'1	'1
54	'4	'4	'4	32	'1	1	32	2	2
55	'4	'4	'4	32	'2	1	32	2	2
56	'4	'4	'4	'1	'1	'1	2	2	2
57	'4	'4	'4	2	2	2	32	32	32
58	42	'4	42	'1	3	3	2	2	2

