8. VALENCY-CHANGING DEVICES IN TWO SOUTHERN ZAPOTEC LANGUAGES

Rosemary G. Beam de Azcona

Abstract: This article describes morphological strategies that change the valence of verbs in two Southern Zapotec languages: Coatec Zapotec and Miahuatec Zapotec. These strategies include noun incorporation, causative and anticausative morphemes. Due to historical phonological changes some morphology has become fusional and involves fortition, palatalization, tonal changes, and stem alternations. Southern Zapotec valency-changing morphology is here looked at through a historical lens, with reference to Kaufman's (1989) Proto-Zapotec verb classification. Data from these and other languages suggest a pattern of non-coronal (R1) replacive morphology associated with intransitivity, the opposite of a pattern previously identified by Kaufman. Proto-Zapotec causative morphology, sometimes now fossilized, has different statuses in Southern Zapotec ranging from derivational to inflectional morphology and to an auxiliary verb.

Key words: Southern Zapotec, valency, noun incorporation, causative, sound symbolism

1. Introduction

Southern Zapotec (SZ) is an areal-genetic grouping of 8 or more mutually unintelligible languages spoken in the Southern part of the state of Oaxaca, Mexico. The Southern Zapotec region begins where the Valley of Oaxaca ends, in southern Ejutla and northern Miahuatlán, extending through the pine forests of the Southern Sierra Madre pre-coastal mountain range, reaching the tropical coast of Pochutla between Puerto Escondido and Huatulco. All Southern Zapotec languages are genetically related, as Zapotec languages, sharing features such as VSO argument order, lexical tone, and head-marking, but the similarities which qualify them as a Southern Zapotec subgroup are partly the product of areal diffusion. Features typical of Southern Zapotec languages include nasal classificatory prefixes, a front lax vowel, inclusory constructions, monosyllabic roots, and the relative absence of plural marking. The most recent classification (Beam de Azcona 2014, based on Smith Stark 2007 and factoring in shared innovations documented in Beam de Azcona et al. in press, Beam de Azcona in preparation [a], and Beam de Azcona and Hernández Luna in preparation) divides these languages into three groups which *perhaps* represent three pre-Columbian migrations into the region: Macro-Coatecan, Miahuatecan, and Cisyautepecan, whose relative location to one another is shown in Figure 1.
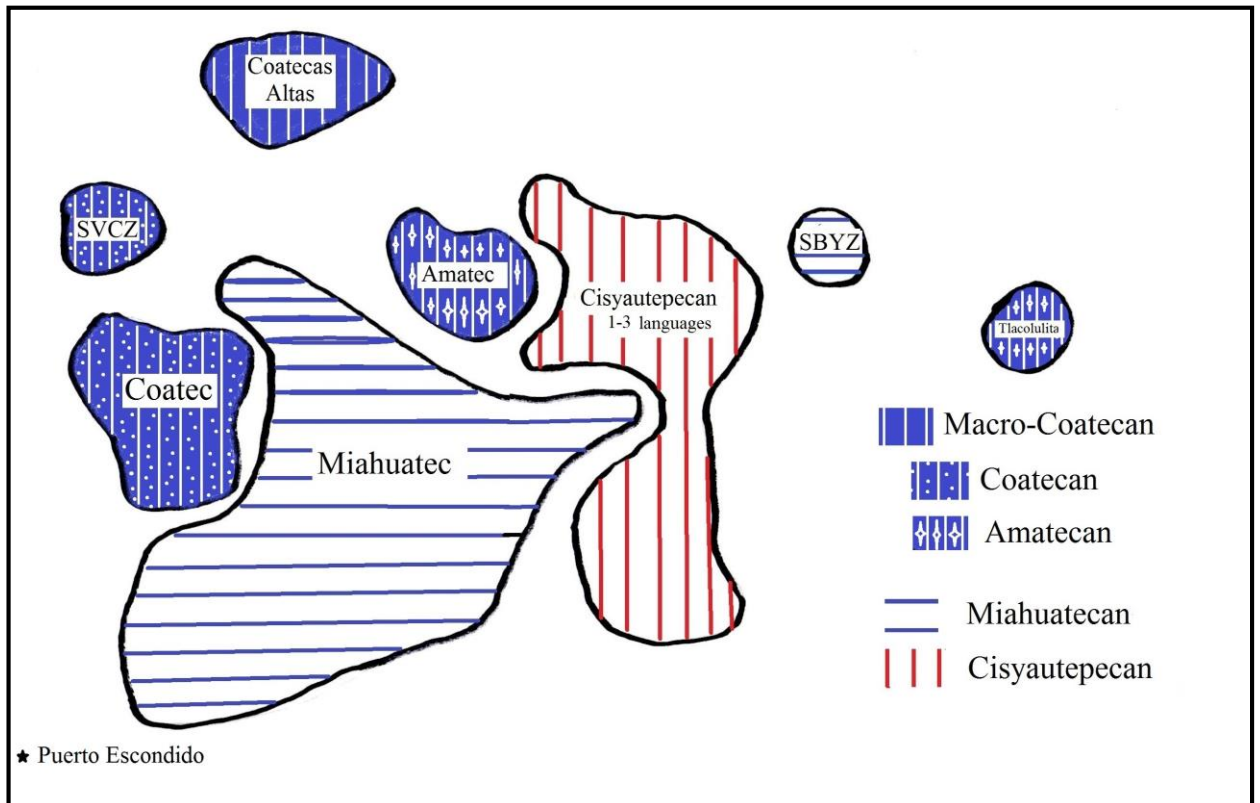
FIG. 1--Classification and relative location of SZ languages

This paper will explore valency-changing devices in two of these languages: Coatec and Miahuatec. Coatec is a moribund language with approximately 4 remaining dialects, spoken by perhaps ca. 200 mostly elderly people in 4-6 towns. Most of the Coatec data in this paper come from the healthiest of these dialects, that of San Baltazar Loxicha (Beam de Azcona 2004, in preparation [b], Beam de Azcona and Díaz Pacheco et al. in preparation) Coatec displays some conservatism as to segmental phonology, and has at least some

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loanwords from neighboring Chatino that are not present outside Coatecan (e.g. *nì* 'house' has replaced Zapotec *yó*). Miahuatec, although it is moribund in a few towns and is generally under threat from Spanish (like most indigenous languages in Latin America), is relatively thriving compared to Coatec. Census statistics reported for varieties of Miahuatec in the Ethnologue total around 83,000 speakers. There are at least 5 major dialect groupings, although one of these is moribund and another perhaps recently extinct. The Miahuatec data in this paper come from the best-documented of these varieties, that of San Bartolomé Loxicha (Beam de Azcona 2008, 2009, under review; Beam de Azcona et al. 2013; Beam de Azcona & Cruz Santiago in press, in preparation; Cruz Santiago & Beam de Azcona in preparation). Compared to Coatec, Miahuatec displays some simplification in its verbal morphology but overall the patterns are similar. Textual examples from both languages cited here are taken from Beam de Azcona et al. (2013) and from example sentences provided in the dictionaries for these languages (Beam de Azcona & Díaz Pacheco et al. in preparation, Cruz Santiago & Beam de Azcona, in preparation).

Some general points about Zapotec morphology and phonology may be helpful to bear in mind while reading the following descriptions of valency-changing operations. Chapter 2 also provides important and helpful background for understanding these phenomena.

While Zapotec languages generally have an aversion to vowel-initial words, there are both vowel- and consonant-initial roots. Likewise, Proto-

Zapotec prefixes could be either C- or CV-. The concatenation of these prefixes to these roots created both bisyllabic and trisyllabic words, and made for underlying clusters of both vowels and consonants.

TABLE 1

UNDERLYING SHAPE OF TYPICAL[1] PREFIXED WORDS IN PROTO-ZAPOTEC

Prefix	Vowel-initial root	Consonant-initial root
C-	C-VCV	C-CVCV
CV-	CV-VCV	CV-CVCV

Of particular interest are the surface realizations of underlying vowel and consonant clusters because they are responsible for a number of the paradigmatic alternations we see today. Following the views of Kaufman (1989, 1994-2007, and before him Swadesh 1947), the so-called fortis-lenis contrast found in modern Zapotec languages goes back to an earlier geminate-single contrast, with the geminates in turn having developed from consonant clusters. A consonantal prefix added to a vowel-initial root simply forms a CV sequence, but a consonant concatenated to another consonant forms a consonant cluster, which historically produces a geminate consonant, which produces various types of reflexes in modern Zapotec languages. In Coatec

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[1] The typical Proto-Zapotec root was a disyllable, but monosyllables also existed.

and Miahuatec this results in fortition of root-initial consonants, such that an unprefixed root may have a voiced consonant, corresponding to a voiceless consonant in the same root when prefixed.

Zapotec languages typically do not have surface vowel clusters although historically they did have underlying clusters where CV- markers were added to vowel-initial roots. Kaufman (1989) proposes that in Proto-Zapotec underlying vowel clusters simplified according to a vowel hierarchy which deleted one of the two vowels. This is further detailed in Chapter 3.

TABLE 2

SURFACE REALIZATIONS OF TYPICAL PREFIXED WORDS IN PROTO-ZAPOTEC

Prefix	Vowel-initial root	Consonant-initial root
C-	CVCV	CCVCV
CV-	CVCV	CVCVCV

An alternative to the vowel hierarchy analysis holds that the vowel cluster simplification is morphologically conditioned (Beam de Azcona 1999, 2004, in preparation [c]) rather than phonologically conditioned. In the inflectional paradigm, the stem-initial vowel deletes in the completive and related imperative whereas the prefix vowel deletes throughout the rest of the paradigm. This despite the fact that the completive prefix has allomorphs with

quite different vowels according to verb class. Furthermore, diachronic changes in vowel quality have given one completive prefix the same synchronic vowel as occurs in the potential and habitual in some languages, yet the prefix vowel deletes in those categories and not in the completive. Under either analysis, historically underlying clusters are reduced differently in different paradigmatic forms, such that vowel-initial roots display paradigmatic alternations similar to what happens with English strong verbs.

TABLE 3

VOWEL CLUSTER SIMPLIFICATION IN THE COMPLETIVE

TAM Category	PZ Prefix	Coatec Prefix	*-o'n* 'llorar; cry'	*-àb* 'caerse; fall'
Potential	**k(i)-*	*g-*	*go'n*	*gǎb*
Habitual	**ty(i)-*	*nd-*	*ndo'n*	*ndàb*
Completive	**kwe-, *ko-*	*mbi-, ngo-*	*mbi'n*	*ngòb*

It will also be helpful to bear in mind Kaufman's (1989) classification of Zapotec verbs, particularly the replacive prefixes of class D, explained in Chapter 3. A brief summary follows here (but for a detailed treatment of verb classification in Coatec, Miahuatec and other Southern Zapotec languages see

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Beam de Azcona 2004, 2009, and in press). Table 4 provides example verbs

with partial paradigms from each language.

TABLE 4

EXAMPLE VERBS FROM EACH CLASS

	Coatec					
	-lâ 'get well'	*-o'l* 'play music'	*-tìd* 'pass through'	*-âzh* 'get wet'	*-ìn* 'stir'	*-i'b* 'shake'
potential	*lâ*	*go'l*	*tyiǐ*	*gâzh*	*zyiň*	*kwi'b*
habitual	*ndlâ*	*ndo'l*	*ntyìd*	*ndâzh*	*nzyìn*	*nbi'b*
completive	*mblâ*	*mbi'l*	*nhwtìd*	*ngôzh*	*nhwxi'n*	*nhwti'b*
	A C-stem	A V-stem	B	C	Ch	D
completive	*mbli*	*mbi'n*	*mdób*	*ngóod*	*mpxón*	*mdi'x*
habitual	*ndli*	*ndxo'n*	*ndyób*	*ndxáad*	*ndyóon*	*nguíix*
potential	*li*	*gón*	*dyob*	*gad*	*dyon*	*kix*
	-li 'straighten up'	*-o'n* 'cry'	*-dób* 'sit'	*-áad* 'bathe'	*-on* 'shit'	*-íix* 'pay'
	Miahuatec					

For both languages, class A is minimally defined by a bilabial prefix in the completive aspect, *mbi-* for V-stems, m(b)- for C-stems. All other classes have a labiovelar completive prefix, usually *ngo-* for V-stems and *n(g)w-* for C-stems. Class B only has roots with initial coronal consonants, which palatalize in the potential and habitual. Class C only has V-stems, 99% of which begin in *a*. Classes Ch and D are both defined by their use of replacive cosonants which add to the root to form the inflectional stem. Class D roots take coronal replacives in the completive and related forms (e.g. imperative), but take non-coronal replacives in the habitual and forms related to it (e.g. potential). Class Ch is like a cross between classes B and D. It takes different replacive prefixes in the completive vs. the habitual, but both are coronal, and the replacive is palatalized in the potential and habitual.

The features of Zapotec morphophonology which have been introduced here: vowel alternations resulting from cluster simplification, fortition going back to earlier consonant clusters, the coronal and non-coronal replacive morphology of classes Ch and D, as well as suprasegmental features like tone and glottalization, palatalization, and syntactic operations involving incorporation, are the means by which differences in valency are indicated in Coatec and Miahuatec. Some of these patterns, like consonant fortition and palatalization, and noun incorporation, are robust patterns in both languages, while others such as apophony, replacive morphology, and tonal alternations are diachronic residue. Like other articles in this volume, the present chapter

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takes a highly diachronic perspective and attempts to identify and understand all of these phenomena as well as possible.

Following the typology proposed by Operstein in Chapter 3, I will now describe ways of increasing (section 2) and decreasing (section 3) valency as well as changes in valency of ambiguous directionality (section 4).

2. Valency-increasing devices

Kaufman (1994-2007) reconstructs three pre-verbal positions for grammatical markers, as in (1). Closest to the verb are derivational prefixes. One step further out are auxiliaries which may precede the (semantically) main verb. Furthest out are TAM markers, which are prefixed (in Kaufman's view procliticized) to an auxiliary verb, if there is one, or to the main verb itself if there is no auxiliary.

(1) TAM-(AUX-)(DER-)VERB

In derivational position Kaufman reconstructs *o* by itself and in the string *o(s)se*. In the AUX position is the morpheme *k*, which usually occurs together with *o* in the string *ok*. The common denominator to these strings is the prefix *o-*. Its reconstruction as a derivational prefix makes sense since adding it to an existing verb could form a new causative verb, but its ability

to concatenate to the left of *k puts it in a position more similar to the TAM markers, which I view as inflectional prefixes (at least in modern Southern Zapotec languages, and which Kaufman views as proclitics in Proto-Zapotec). In Southern Zapotec also we find reflexes of *o- behaving both inflectionally (section 2.1.2) and derivationally (section 2.2.1). Though *k is reconstructed in the AUX position for Proto-Zapotec, in Southern Zapotec its reflexes are purely derivational.[2] More strikingly different in modern behavior than in the reconstruction is *o(s)se, reconstructed as a derivational prefix but behaving in SZ languages as if the ancestor were an auxiliary verb *sse (section 2.3). These can be compared to what Operstein (2011) identifies as cognate prefixes in Valley Zapotec.

In modern SZ languages these Proto-Zapotec causative morphemes do not always retain the semantics of causation, though they do always correspond to an increase in valency. Further comparative work should determine whether this is truly a semantic change from "causative" to merely "transitive" or whether there were nuances in the Proto-Zapotec meanings that give rise to the modern meanings. Those interested in this theme should also consult Chapter 12 where Foreman & Dooley discuss the agentive reading of *o in Macuiltianguis.

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[22]However, this does not conflict with the analysis of PZ *k as an auxiliary since other formerly independent elements have been reduced to prefixes in modern SZ languages. For example, see Beam de Azcona (2004) and Beam de Azcona & Hernández Luna (2014) on the reduction of the *má* classifier to the *m-* prefix on animal words.

The remainder of this section on valency-increasing strategies will be divided between derivation (section 2.1), inflection (section 2.2), auxiliary verbs (section 2.3) paradigmatic suppletion (section 2.4) and incorporation (section 2.5).

2.1 Derivational causatives

Both *k- (section 2.1.1) and *o (section 2.1.2) produce synchronic derivational patterns in Coatec and Miahuatec. There are fewer vowel-initial stems in the languages and so the patterns rendered when either *k or *o are added to vowel-stems are more like fossilized remnants, but with a knowledge of earlier Zapotec morphology one can spot them.

2.1.1 The *k- causative

When *k- applied to a consonant-initial stem (C-stem) in Proto-Zapotec the underlying consonant cluster would have rendered a surface geminate consonant. SZ languages have voiceless/voiced (and sometimes plosive/fricative) reflexes for the geminate/single contrast of PZ. For particular pairs there are additional differences, such as the labiovelar reflecting as bilabial in the lenis version but remaining labiovelar when fortis.

(2) shows a class A example in which the intransitive verb begins in a voiced bilabial fricative while the causative counterpart begins in a voiceless

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labiovelar stop, reflecting an earlier geminate stop from the underlying consonant cluster formed by prefixation with *k-.

(2)   'secarse' viA   'secarlo' vtA

                       'dry'   'dry'

Coatec   -bìd³   -kwi'd

Miahuatec   -bíiz   -kwi'z

Example (3) shows the transitive verb from Miahuatec in context. Here *b-* is the imperative prefix and the causative verb begins in a voiceless labiovelar. A goddess instructs a human to bathe himself until he has used up an entire bar of soap, in order to avoid the Lightning god *Mdi'* smelling him. Here an additional meaning of 'dry' might be 'evaporate', with the causative usage here meaning 'cause to evaporate.' In other words, the man should cause the soap to be completely consumed and to disappear.

(3) *Dib-a   bkwi'z   za   ndyaá-la.*   [Mia.Pescador: 59]

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[3] Unless otherwise stated, Coatec data come from San Baltazar Loxicha and Miahuatec data from San Bartolomé Loxicha. Data are represented in the practical orthographies. In both languages the voiced stop symbols represent fricatives and apostrophe represents a glottal stop. *x* is a voiceless postalveolar fricative. *nh* is a velar nasal. Tone is represented as follows, using the vowel /a/ to exemplify: Coatec high *á*, low *à*, falling *â*, rising *ǎ*, glottal *a'*; Miahuatec high *á*, low *a*, falling *áa*, rising *aá*.

todo=3INAN[4]   IMP:secar   entonces   HAB:venirse=2FAM

all=3INAN   IMP:dry   then   HAB:come.back=2FAM

'Acábatelo todo, entonces te regresas.'

'Finish it all. Then you can come back.'

Many verb pairs with fortition have a vt member which is semantically causative as in (2), but not always. The vi member may be semantically passive, as in (4). In all the cases of vt/vi pairs involving fortition, which presumably all come from marking with *k-, the transitive verb is morphologically the marked case, but semantically we might argue about whether the transitive or intransitive member in any given pair reflects the more basic concept. In (2) for something to dry seems a basic concept, and to dry something is certainly to cause something to become dry, but in (4) there seems to be a difference. Things can dry without causation, but someone has to pick something up in order for something to get picked up. The transitive verb in (4) and (5) seems the more basic concept, yet morphologically it is

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[4] Abbreviations used include the following: 1EX = first person exclusive, 1S = first person singular, 2FAM = second person familiar pronoun, 2RESP = second person respectful, 3H = third person human, 3HD = third person stranger, 3INAN = third person inanimate, AN = animate, C-stem = consonant-initial stem, CAUS = causative, CL = classifier, Coa = Coatec, COMP = completive aspect, COP = copula, DEM = demonstrative, FOC = focus/topic marker, HAB = "habitual" or imperfective aspect, IMP = imperative, IMPRS = impersonal, INFIN = infinitive, INTEN = intensifier, MO = non-finite form used when the complement of a motion verb, Mia = Miahuatec, NEG = negative, NML = nominalizer, POT = potential mood, PRES = present tense, PZ = Proto-Zapotec, R1 = replacive used to form the habitual stem, R2 = replacive used to form the completive stem, STAT = stative, SZ = Southern Zapotec, TAM = tense/aspect/mood, V-stem = vowel-initial stem, vi = intransitive verb, vt = transitive verb. Fusional morphology and portmanteau morphs are indicated with \, simple concatenation with :, and clitic boundaries with =, following the Leipzig glossing rules.

the marked case here. One might ask whether it is really a causative verb derived from the intransitive, or whether the pair would have been born together as a pair (or even the intransitive born later through back-formation) via analogy to other intransitive/causative pairs. One can also ask whether *k- or its reflex of fortition is truly a causative marker in all cases or whether at some point it was reanalyzed simply as a transitive marker (or whether, depending on cross-linguistic evidence, it might have just meant transitive to begin with).

(4)   'recogerse' viA   'recogerlo' vtA
              'get picked up'   'pick up'

Coatec   -gân   -kân
Miahuatec   -gán   -kán

(5) illustrates the transitive verb in Miahuatec. The corresponding intransitive verb –gán requires an inanimate subject.

(5) *Leh' nó' ndakán*   *ndxabatz ndxáab   xa'n yáa.* [Mia]

FOC   1EX PROG:ir:M\recogerlo nanche   HAB:caer abajo árbol

FOC   1EX PROG:go:M\pick.up nance   HAB:fall   under tree

'Vamos a recoger nanches que caen debajo del nanchal.'

'We're going to pick up nances that fall under the tree.'

When *k-* applied to a vowel-initial stem (V-stem) the result is a transitive C-stem beginning in a voiced velar fricative paired with an intransitive V-stem as in (6).

(6)   'bañarse' viC1 'bañarlo' vtA

       'bathe'   'bathe'

Coatec *-àz*   *-gàz*

Miahuatec *-áad*   *-gáad*

The intransitive verb is illustrated in (7) for Coatec and (8) for Miahuatec. The imperative is related to the completive and undergoes the same vowel alternations as in the completive. So, in Coatec *go-* is the imperative prefix which causes the vowel of the verb root *–àz* to delete. Such vowel alternations are only found in the instransitive, V-stem verb, and not in the transitive, C-stem verb. In (8) the TAM marking is found on the aspectual auxiliary verb *–rux* 'finish' and 'bathe' occurs in the infinitive form *yáad*.

(7) *"¡Gôz* *tŏp-á!* *¡Glo'-á*   *xâb-á!* [Coa.Caza.:251]

 IMP:bañarse dos=2RESP IMP:sacar=2RESP ropa=2RESP

 IMP:bathe two=2RESP IMP:take.out=2RESP clothes=2RESP

¡Gôz-á!

POT:bañar=2RESP

POT:bathe=2RESP

'¡Saquen su ropa! ¡Báñense!'

'Bathe, you two! Take off your clothes! Bathe!'

(8) *Mbáay   mbruxyáad   xa' bgui'.* [Mia.Pescador:181]

bueno   COMP:terminar:INFIN:bañarse 3H   macho

well   COMP:finish:INFIN:bathe   3H   male

'Bueno, terminó de bañarse el hombre.'

'Well, the man finished bathing.'

SZ verbs with vowel-initial roots are fewer in number than those beginning in consonants, and therefore the pattern of consonant fortition, as in (2) and (4), is more robust than the pattern seen in (6). Perhaps related to this difference in productivity is the fact that verb pairs with the pattern shown in (6) are more consistently semantically causative, whereas the patterns of consonant fortition are more diverse in their semantics, as even the comparison of (2) and (4) indicates. A small group preserves, almost as a fossil, an earlier morphological pattern, perhaps with the original semantics intact. Conversely, the larger group is more productive and consequently may

better foster the development of new semantic patterns, such as the transitive but non-causative reading in (4).

The patterns resulting from the *k- causative are regular in both Coatec and Miahuatec. All of the resulting transitive C-stems belong to class A, the most productive class in both languages.

*2.1.2 The (historical) *o causative*

Although in Proto-Zapotec *o frequently precedes *k- and *(s)se-, in SZ its reflexes are best thought of as a separate phenomenon from the reflexes of the other causative markers.

Just as fortition and *g-* are not obviously related unless you are familiar with historical Zapotec phonology, the reflexes of *o- are quite distinct from each other in modern phonology, and the differences again mostly have to do with whether *o- was/is being added to a C-stem or a V-stem. These different reflexes of *o behave differently enough that I regard one reflex as derivational and the other as inflectional (see section 2.2.1).

In section 1 we saw how vowel-final prefixes, added to vowel-initial roots result in the deletion of one of the two vowels and produce vowel alternations within the inflectional paradigm. The causative *o marker appears to be an additional morphological category in which the prefix vowel survives at the expense of the initial vowel in the verb root.[5] Vowel-stems are not numerous

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[5] In most cases the root and stem are identical, but here we are talking about a root or base rather than a stem if we consider *o- to be a derivational prefix.

in SZ languages compared to consonant-stems, but there is a small number of V-stems in class A. With few exceptions, these class A V-stems are overwhelmingly transitive and at first glance appear to have roots beginning in a back rounded vowel[6]. Synchronically one might argue that these roots are o- or u-initial, but whatever their synchronic status (and however you want to make that determination) these vowels are surely reflexes of the causative prefix *o-.

Marked on V-stems,*o thus produces an alternation such that a transitive verb belonging to class A and containing a round vowel corresponds to (i.e. is derived from) an intransitive verb belonging to class C with a root in /a/. The pair 'die'/'kill' in (9) is a prototypical example.

(9)　　　　　'morirse' viC1　　'matar' vtA

　　　　　　'die'　　　　　　'kill'

Coatec	*-âth*	*-ùth*
Miahuatec	*-áth*	*-úuth*

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[6] Beam de Azcona (1999, 2004, & in preparation [c]), and Beam de Azcona et al. (in press) contend that modern /u/ developed from earlier *o in the presence of earlier (mostly now-lost) conditioning environments, particularly when the post-tonic vowel was *i. Thus, Proto-Zapotec had a single back rounded vowel phoneme */o/, probably with an allophone *[u].

Since 'kill' is causative no matter what TAM category it is inflected for, the round vowel occurs throughout the paradigm, as in (10) and (11), with the exception of the completive and imperative, as in (12), where it is replaced by the class A completive prefix vowel /i/. In Table 3 we saw vowel alternations within inflectional paradigms, but here the alternation between /a/, in 'die' as in (13), and *o or /u/ in 'kill' as in (10-12), is across the larger transitive/intransitive derivational relationship, rather than within an inflectional paradigm for one or the other verb.

(10) *"¡Guth-da   lú   xa'!"ndxáab.*   [Mia:Pescador:99]

POT:matar=NEG 2FAM 3H   COMP:decir

POT[7]:kill=NEG   2FAM 3H   COMP:say

'"¡No lo mates!" dijo.'

'"Don't kill him!" she said.'

(11) *Ngyô   dûb ár   ndùth   mbzhîn.*   [Coa:Cazador:2]

COMP:haber uno 3HF HAB:matar   CL:AN:venado

COMP:COP   one 3HF HAB:kill   CL:AN:deer

'Hubo un señor que mata venado.'

'There was a man who used to kill deer.'

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[7] The aforementioned imperative is used for some commands but the potential mood form of the verb is also used for commands if they are negative, and similarly it is used for a first person plural exhortative.

(12) *Wê   mbìth   xa'   mbzhîn.*   [Coa:Cazador:20]

     aquel COMP:matar   3HD   CL:AN:venado

     that   COMP:kill   3HD   CL:AN:deer

     'Allí lo mataron.'

     'There he killed a deer.'

(13) *Ye'n   xa' bá, nguen   cho   mblí   xkáb*   [Mia]

     joven 3H DEM NEG.COP quien COMP:hacer   pensamiento

     young 3H DEM NEG.COP who   COMP:do   thought

     chi   gath   xa'.

     que   POT:morir   3H

     that   POT:die   3H

     'Estaba joven esa persona, nadie imaginaba que iba a morir.'

     'That person was young, no one would have thought that he would

     die.'

2.2 Inflectional causatives

The derivational patterns marked by **o-* and **k-* described above have become lexicalized. However, another reflex of **o-* (section 2.2.1) is part of synchronic inflectional morphology in Coatec, and to a more limited degree

in Miahuatec. An additional inflectional strategy for marking transitivity is accomplished with a change in verb class (§2.2.2), such that the set of TAM markers selected is an indication of valency.

2.2.1 The (historical) *o causative

The *w-* reflex[8] of *o-*is more recognizable as a prefix compared to fossilized /o/ and /u/ (§2.1.2). This prefix occurs productively in Coatec and irregularly in Miahuatec.

In Coatec, *w-* is a portmanteau representation of transitivity and certain inflectional categories. Verbs marked with *w-* are consistently transitive, but not necesarilly causative (e.g. 'eat'). Because the occurrence of *w-* in Coatec is restricted according to inflectional category, its synchronic function is as much for marking those categories, most productively potential mood, as it is for marking transitivity.

The largest group of Coatec verbs to which *w-* is applied is the group of class A C-stems. In these paradigms *w-* marks the potential mood and the infinitive, a form of verb used to serve as the complement of another verb and which is morphologically based on the potential but without the same tonal

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[8] For those interested in the historical phonology of this prefix, Beam de Azcona (in preparation [c]) and Beam de Azcona et al. (in press) contend that both pre-tonic and post-tonic *o tended to have an allophonic realization [u], following Fernández de Miranda (1995 [1965]), who reconstructed only *u without a contrast to ***o*** in non-tonic syllables. Over time, as most non-tonic vowels deleted in Southern Zapotec and elsewhere, [u] reduced to /w/ in pretonic (and occasionally in post-tonic) syllables. Although neither [o] > [w] nor [u] > [w] would be an unnatural change, [w] is phonetically closer to [u] than to the mid vowel and so the existence of modern /w/ in these prefixes is one piece of evidence for believing that *o had a [u] allophone.

alternations. This group of verbs is also marked by fortition, a reflex of *k-
(§2.1.1). Note then that these verbs would have been marked historically with
the sequence *ok-, but the reflexes of each segment in the string are quite
different. The pattern of fortition as part of transitivity-marking can be noted
when comparing related derivational pairs of verbs, but the fortition is part of
the phonological identity of the verbal lexeme and occurs, in this case,
throughout the paradigm. On the other hand, w- occurs in this group of Coatec
verbs only in the potential and infinitive and thus is more productively a part
of marking those inflectional categories, although among class A C-stems it
is still notable that it occurs only on transitive and never on intransitive verbs.

TABLE 5

DISTRIBUTION OF TRANSITIVE W- IN COATEC ZAPOTEC

Inflectional category	Class	Stem shape
Potential	vtA	C-stem
	vtD	V-stem
Infinitive	vtA	C-stem
"M" (complement of motion verb)	vtB	C-stem

As summarized in Table 5, *w-* occurs in two other morphological contexts in Coatec. Class B is mostly made up of intransitive verbs, but the few transitive members of class B take *w-* in a non-finite form that occurs as the complement of verbs of motion. It seems likely that this form is related to the potential historically and there is probably some connection between *w-* being marked on this form in class B and on the potential and infinitive of class A.

All class D verbs have vowel-initial roots. The stem is then formed by "replacive" prefixes consisting of a single consonant (see Kaufman 1989; Beam de Azcona 2004, 2009, and in press; and Chapter 3 of this volume). There are two separate stems for class D verbs, the completive stem and the habitual stem. All class D verbs form consonant-initial completive stems, but while most also form consonant-initial habitual stems, a few verbs take no replacive prefix to form the habitual stem and thus have a habitual stem identical to the bare verb root, which is vowel-initial. Among these class D verbs with vowel-initial habitual stems, intransitive verbs take the expected potential prefix *g-* while the lone transitive verb, 'eat', instead takes *w-* in the potential. *W-*is thus a portmanteau marker of transitivity and potential mood, restricted by verb class and phonological shape of the stem.

As shown in Table 5, *w-* occurs only in the potential mood and in two non-finite categories that are derived from the potential mood form of the verb. One might ask why the causative marker **o* would survive to combine with these categories but not others. This distribution is not the only known affinity between the potential and the causative. The PZ causative marker **k-*

is homophonous with the PZ potential marker *k-* found in verb classes C-D. Munro (Chapter 4) finds that while most Zapotec verbs have two future forms, a definite future and what is here called potential mood (for Munro, irrealis), a small set of verbs in Tlacolula Valley Zapotec lack one or the other form according to transitivity, with the more transitive verbs taking only the potential and the less transitive verbs taking only a definite future.

The potential form itself is used in many Zapotec languages (e.g. in Quiegolani Zapotec, Black, 1994) for verbal complements. It has been hypothesized (for example, by Foreman & Dooley, Chapter 12) that the *k-* causative marker might be derived historically from the *k-* potential marker for this very reason. If verbs serving as complement to a verb of causation occurred in the potential mood form, this would provide the necessary pivot for further grammaticalization of the potential marker as a marker of causation (see Operstein, 2014, for a more elaborated version of this argument). If verbs in a causative construction occurred in the potential, it makes sense that causative markers would survive in the potential and other complement forms but not in other inflected forms. For example, if *o* is the remnant of some verb of causation which took as its complement the verb being caused, then it would not be surprising that *o-* fused with the potential in certain morphological contexts. This is what we find in Coatec.

Traces of the transitive *w-* prefix are scant in Miahuatec. 'Eat', a class D vowel-stem, takes it in all forms except the completive and imperative, and

from one of the *w*-marked forms is derived the class A causative C-stem –
wáa 'feed'.

2.2.2 Transitivity patterns marked by verb class

A few coronal-initial verb roots take class A morphology for a transitive
(nearly always causative) meaning and class B morphology for the
corresponding intransitive.

(14)   'bajarse' viB   'bajarlo' vtA

                                  'get down'   'lower'

          Coatec   *-lâ*   *-lâ*
          Miahuatec   *-lá*   *-lá*

Class B is characterized by palatalization of the stem-initial consonant in the
potential and habitual forms, and its members are overwhelmingly (though
not entirely) intransitive. This pattern of class B morphology being associated
with intransitivity must be related to the anticausative *y* covered more
thoroughly below in §3.2. Although the "MO" form of the verb, as seen in
(16), wouldn't be palatalized in class B anyway, the verb in that example is
the transitive class A verb which is never palatalized. (15) does show
palatalization of the class B intransitive verb in the potential form. In these
two examples taken from the same text, a human who uses Lightning's

powers to fly in the sky is unable to come down on his own, so the god's

mother sends him to get the man down. Intransitive and causative uses are

thus well-illustrated here.

(15) *Nà ná   găk-ta' lyâ   ár*   [Coa:Cazador:176]

    y   NEG POT:poder=todavía POT:bajarse   3HF

    and NEG POT:be.able=still   POT:get.down 3HF

    ndô beh'   zhówê.

    cara cielo   entonces

    face sky   then

    'Ya no pudo bajarse del espacio entonces.'

    'Now he wouldn't be able to get down from the sky.'

(16) *"¡Wâ   lâ   ár zìn!"*   [Coa:Cazador:179]

    IMP:ir   MO:bajarlo 3HF tonto

    IMP:go   MO:lower   3HF idiot

    '¡Anda baja a ese tonto!'

    'Go and get that idiot down!'

2.3 Causative auxiliary

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Both Coatec and Miahuatec have causative auxiliary verbs that are the direct reflexes of Proto-Zapotec*sse-: Coatec *–tzé* and Miahuatec *–ti ~ -te*. In Chapter 3, Operstein identifies the reflexes of *s(s)e-* as prefixes, especially in central Zapotec, but in these two SZ languages *sse* is an auxiliary verb belonging to class A, with transitive morphology (Coatec *w-*).

In both languages the most productive way of marking causation is by combining this auxiliary with a complement verb in the infinitive, as the examples in (17-19) show.

(17)   Coatec   *-tzékèn*   'exigir' (lit. 'CAUS apurarse')

'demand' (lit. 'CAUS hurry')

Miahuatec   *-tiní*   'incitarle a decir algo' (lit. CAUS hablar)

'cause to speak'

(18) *Nâ gă   wtzékèn   zheh'   xa'* [Coa]

1S   POT\1S:ir\1S   INFIN?:CAUS:INFIN\apurarse POT\cambiar3HD

1S   POT\1S:go\1S   INFIN?[9]:CAUS:INFIN\hurry POT\change 3HD

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[9]Presumably here the causative auxiliary serves as complement of a motion verb. As far as I have documented, this verb class (transitive class A C-stems) has infinitives in *w-* but MO forms without *w-*. MO forms serve as complement to motion verbs and infinitives serve as complement to all other verbs. This would appear to be the infinitive form instead, though this should be looked into further. There is a w-marked MO form for some class B verbs, perhaps this could be true of some class A verbs including this one as well.

nàk   *ti'n.*

STAT:COP   trabajo

STAT:COP   work

'Yo voy a exigir que se cambia la autoridad.'

'I am going to demand that new people be named to serve in the

town's government.'

(19) *Naraáx-á*   *tiní*   *mén*   *thí mdiguébix*   [Mia]

STAT:malo=IMPRS POT:CAUS:hablar gente   uno CL:niño:chiquito

STAT:bad=IMPRS   POT:CAUS:speak people one CL:child:small

gab   *xa'*   *dí'z*   *makryaád.*

POT:decir 3H   palabra   grosero

POT:say   3H   word   rude

'Es malo incitar a cualquier niño a decir groserías.'

'It's bad to make a little kid say curse words.'

In (19) the entire meaning is rendered by two clauses, each of which has a

subject, the subject of the first clause being *mén* and the subject of the second

clause being *xa'*. The first clause has the causative marking, and the verb

complex *tiní* takes both a subject, *mén*, and an object, *thí mdiguébix*. On its

own the verb *ní* takes only a subject. This is probably why the fuller meaning

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of 'make someone say curse words' has to be expressed with a second clause, because the causative auxiliary can render an intransitive verb into a transitive verb complex, but not a ditransitive one. Compare (19) to the non-causative example of –ní in (20).

(20) *Dí'l   nhwní   presideént páar dyop   mén*   [Mia]
temprano COMP:hablar presidente para POT:juntarse gente
early   COMP:speak mayor   for POT:gather   people

yaá   juúnt.
POT:ir   junta
POT:go   meeting
'Temprano voceó el presidente municipal exortando a los comuneros para que vayan a la asamblea.'
'The mayor spoke early in the morning in order to gather the people to come to the meeting.'

However, the causative auxiliary can create a ditransitive clause if applied to a verb that is already transitive[10].

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[10] There seem to be some lexical restrictions on which words can combine with the causative auxiliary. For example, -ní 'speak,' as in (20) can be causativized with –ti, but –áab 'say' cannot.

(21) *Mtigu'*   *xa' ná*   *nit*

     COMP:CAUS:INFIN\tomar 3H 1S   agua

     COMP:CAUS:INFIN\drink 3H 1S   water

     'Me hicieron tomar agua.'

     'They made me drink water.'

As both derivational and inflectional markers, the reflexes of **o-* and **k-* are not strictly causative in Miahuatec and Coatec but generally mark a broader category of transitivity. The reflexes of **sse* however would be considered truly causative even under a narrow definition.

2.4 Lexical(ized) causatives and paradigmatic suppletion

As pointed out by Operstein (Chapter 3), patterns that are historically transparent may be synchronically less so, as the 'die' and 'kill' pair cited in (9) shows. Such verbs may seem phonologically dissimilar to speakers, though diachronically the relationship is clear.

    Operstein also discusses "paradigmatic suppletion", in which one causative verb shares a relationship to two non-causative verbs or vice versa. She cites the Coatec example (Beam de Azcona 2004: 235) *-xăp* 'raise, lift; fill' related to non-causative *yàp* 'go up in price; get filled' and also *-àp* 'rise, go up'.

More suppletive still, in fact phonologically unrelated, is the pair of verbs 'become' (*-ak* in both languages with tonal differences) and 'do, make' (*-ùn* in Coatec and *–lí* in Miahuatec). These verbs constitute a pair of intransitive:transitive alternatives when forming certain constructions in the language, including light verb constructions (Beam de Azcona under review) and compounds involving adjective (and noun) incorporation discussed further below in §2.5.2. In these constructions only these two verbs appear to be productive options; 'become' is used for forming intransitive constructions, while 'do, make' is used for forming transitive (and ditransitive) constructions. Although both verbs are related derivationallly to other verbs, those verbs do not enter into these constructions. What appears to bind these two verbs together is their basic intransitive and transitive semantics. To become X is a semantically basic concept typical of many intransitive verbs. To do/make X is a semantically basic concept typical of many transitive verbs. The two verbs are in syntactic complementary distribution with respect to the constructions mentioned, with the distribution determined entirely by transitivity. Thus, while phonologically unrelated, these two verbs can be said to form a sort of paradigm, each being the more or less transitive partner of the other, which is substituted when one wishes to change the valency of a particular construction.

2.5 Incorporation

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Incorporation is quite productive in Zapotec. Most common is noun incorporation, which can decrease valency (or advance peripheral arguments to core argument status, see Beam de Azcona & Cruz Santiago in press) and is covered below in §3.3. Here I briefly describe two other elements which, when incorporated, can have the opposite effect and increase the valency of the verb.

2.5.1 Incorporation of the comitative marker

In Miahuatec the comitative marker *noó* may be incorporated into the verb, licensing it to take an additional argument. This is shown in (22a-b), where *noó* undergoes a tonal change due to the first person singular subject, which follows. (22c) shows that *noó* is strictly comitative and cannot be used as an instrumental marker. The instrumental marker is the loanword *konh* and it cannot be incorporated. The animacy of the argument being added is restricted according to the lexical semantics of the verb.

(22) a. *Ngolnó-n*   *sweért*

COMP:nacer:con\1S=1S   suerte

COMP:be.born:with\1S=1S   luck

'Nací con suerte.'

'I was born with luck.'

(22) b. *Mdanó-n*   *Jwaánh.*

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COMP:R2:comer:con\1S=1S   Juan

COMP:R2:eat:with\1S=1S   Juan

'Comí con Juan.'

'I ate with Juan'

(22)   c.   *Mdanó-n   kuchaár

COMP: R2:comer:con\1S=1S cuchara

COMP: R2:eat:with\1S=1S   spoon

'Comí con cuchara.'

'I ate with a spoon.'

Incorporation of comitative and instrumental markers has not been observed in Coatec.

2.5.2 Adjective incorporation

Adjectives can be incorporated to form both transitive and intransitive verbs in both Coatec and Miahuatec. The mechanisms involved appear to be the same for both languages, but the examples documented for Miahuatec are much richer, so I will be citing only that language in this section. A transitive example is Miahuatec *–líláan* 'alisarlo; to make smooth,' from *–lí* 'do, make' and *láan* 'smooth.'

Both Miahuatec and Coatec (and perhaps all other Zapotec languages) have light verb constructions. It seems that light verb constructions occur

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mostly (or only) with two verbs: the transitive verb 'do,' and the copula 'become.' The noun which supplies the bulk of the meaning in the construction occurs as direct object of 'do' or as copula complement of 'become,' following the subject in both cases if canonical VS(O) order is employed (Beam de Azcona under review).

(23) *Gŭn*   *nhó* *ti'n*   *a las siete*.   [Coa]

POT.hacer   1IN   trabajo (a las siete)

POT.do   1IN   work   (at seven)

'Vamos a trabajar a las siete.' (lit. 'vamos a hacer trabajo a las 7')

'We're going to work at seven.' (lit. 'we're going to make work at seven')

(24) *Ndùn*   *mě*   *yéhlnděz*.   [Coa]

HAB:hacer   3H.RESP NOM:CL:tlacuache

HAB:do   3H.RESP NOM:CL:possum[11]

'Ella miente.' (lit. 'hace ella (sus) mentiras')

'S/he lies.' (lit. 's/he makes lies')

(25) *Guéh'l ndidi'z*   *xa' le'n* *xka'l xa' péer hasta que* [Mia]

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[11] This is an informal term for 'lie' based on possum behavior. It is also possible to use a similar term derived from a verb, *yéhlkwi'n*. In both cases the derived word is clearly a noun due to the presence of the nominalizer *yéhl*.

noche	HAB:hablar	3H	panza	sueño	3H	pero	hasta	que
night	HAB:speak	3H	belly	dream	3H	but	until	

ngwáyáak		*xa'*	*remed*	*lo*	*xa'*	*mbo'*	*zeéb*
COMP:ir:M:hacerse		3H	remedio	cara	3H	hab:sacar	susto
COMP:go:M:become		3H	cure	face	3H	hab:take.out	fear

za	*mgui'báá*	*loó*	*xa'.*
entonces	quitarse=IMPRS	cara	3H
then	go.away=IMPRS	face	3H

'En las noches hablaba dormido pero hasta que fue a curarse con la persona que saca espanto se le quitó.'

'At night s/he used to talk in his/her sleep, but finally when s/he went to get cured by the person who removes fright, then the problem disappeared.'

The same two verbs can combine with adjectives to form transitive or intransitive verb phrases. These might also be considered light verb constructions except for the fact that the syntactic structure is different in that the adjectives are incorporated into the verb complex. It is possible to incorporate nouns this way too, but as (23-25) show, with nouns it is possible to form a light verb construction in which the semantically heavy nouns occur as discrete arguments of the verb. With adjectives it is obligatory that the

adjectives are incorporated into the verb complex. Subjects follow them. Adverbs which normally cliticize outside the verb root and before the subject, cliticize onto the ends of these adjectives. These verb complexes containing adjectives thus constitute compounds that are perhaps derived historically from light verb constructions with a structure more like that in (23-25), but that structure no longer exists with adjectives: it is ungrammatical as shown below in (30)

Many but not all incorporated adjectives are borrowed from Spanish. The class of adjectives is not large in Zapotec and most native adjectival forms are derived from verbs. Adjectives incorporated into the verb 'do, make' form transitive verbs and those incorporated into 'become' form intransitive verbs.

(26) *Mblítont   koyot   wetzaá-n   mazií   ngwá   xa'* [M.]
COMP:hacer:tonto coyote hermano\1S=1S cuando COMP:ir 3H
COMP:do:stupid   coyote brother\1S=1S   when   COMP:go 3H

ró   nit,   mbéez   xa'.
boca   agua   COMP:gritar   3H
mouth water   COMP:shout   3H
'A mi hermano lo desorientó el coyote cuando fue a la playa según cuenta.'
'They say that the coyote made my brother disoriented when he went to the beach.'

(27) *Deéhguch   mblifrit   xa' dá'   za   baátha'* [Mia]

grasa:cuche COMP:hacer:frito 3H frijol entonces tanto

lard:pig   COMP:make:fried 3H bean then   much

naweh   ndya'y.

STAT:bien   HAB:saber=IMPRS

STAT:well   HAB:taste=IMPRS

'Con manteca de cerdo frío los frijoles por eso es que está tan

sabroso.'

'They fry the beans with pork lard; that's why they taste so good.'

(28) *Gaknagui'-dáá   lú   za   gabí-n-y*   [Mia]

IMP:hacerse:STAT:bravo=NEG 2FAM entonces POT:decir=1S=IMPRS

IMP:become:STAT:rude=NEG 2FAM then   POT:tell=1S=IMPRS

loó-laá.

cara=2FAM

face=2FAM

'No te enojes y te lo digo.'

'If you don't get mad I'll tell you.'

(29) *Ngóokkwíi*　　　　*ko'b yéh por*　　*nguen cho*　　[Mia]

COMP:hacerse:agrio　masa DEM porque　NEG.COP quien

COMP:become:sour　dough DEM because　NEG.COP who

mtzéh-y　　　　　*ná'-n.*

COMP:recalentar=3INAN　ayer= DEM

COMP:reheat=3INAN　　　yesterday= DEM

'Se acedó este atole porque nadie lo hirvió ayer.'

'This atole (maize beverage) went bad (lit. became sour) because

no one reheated it yesterday.'

(30) **Ngóok*　　*ko'b*　*yéh*　　*kwíi*

COMP:hacerse　masa　DEM　　agrio

COMP:become　dough　DEM　　sour

In terms of valency changes, there are two main components in these

compounds, the verb and the adjective, and we could look at potential valency

changes in terms of either, because both can predicate. There are three types

of adjectives in Zapotec: underived adjectives, which are few in number, and

adjectives derived from verbs or borrowed from Spanish, which are both

plentiful. All can predicate without the use of an overt copula or other verb.

Here is a stative-marked (i.e. verbally derived) example:

(31) *Nabi'-láá*   *xi'nxót*   *xa' mazií ngúth*   *xa'.* [M.]

STAT:grande=ya   hijo:nieto 3H cuando COMP:morir 3H

STAT:mature=already child:grand 3H when COMP:die   3H

'Ya eran grandes sus nietos cuando se murió.'

'His grandchildren were grown up already when he died.'

From the point of view of the head verb, there is no change in valency once an adjective is incorporated, although there is a significant semantic change. 'Make' is transitive whether one is fabricating something or whether one is causing another to acquire certain adjectival qualities. Likewise, 'become' is not transitive in either circumstance. It can equate a subject and a copula complement, or it can equate a subject and an incorporated adjective or noun.

However, if we look at the compounds with incorporated adjectives with respect to one another, or to the adjectives alone, we do see changes in valency. An adjective like *nabi'* in (31) predicates intransitively all on its own. Its juxtaposition to a noun equates it to that noun, attributes its own meaning to the noun. The noun is its subject. It has no object. When such an adjective is incorporated into 'become,' as in (28-29), there is no change in transitivity, it remains part of an intransitive predicate. However, when it is incorporated into 'make,' as in (26-27), it becomes part of a transitive predicate and takes not only a subject but an object, justifying this topic's

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inclusion in this section on valency increases. Of course, there is also a change in valency, which we might consider ambidirectional, if we compare compounds headed by the one verb to those headed by the other. Indeed, the same adjective can be incorporated by either verb. *Tont*, borrowed from Spanish *tonto* 'stupid,' appears in a transitive compound in (26) and in an intransitive one in (32)

(32) *Thebeés*   *ngóoktont*   *xa' yáa*
     definitivamente COMP:hacerse:tonto 3H hora
     certainly   COMP:become:stupid 3H time

     or   *zií*   *mdi'n yéek*   *xa'*.
     cuando COMP:tocar palo   cabeza 3H
     when   COMP:touch tree   head   3H
     'Se había quedado completamente atontado cuando le tocó el palo en la cabeza.'
     'He definitely lost his intellect when the tree hit him on the head.'

3. Valency-decreasing devices

Turning now to strategies for decreasing valency, the morphological approaches involve class D morphology, in which new verbs are derived

through prefixation of coronal replacives (section 3.1), and an intransitive marker *y* which sometimes fused with replacives (section 3.2). A morphosyntactic approach to decreasing valency involves noun incorporation (section 3.3).

3.1 Replacives

In Kaufman's (1989) classification of Zapotec verbs, he identified prefixes he called "replacives", which are added to class D roots in order to form the stem. In Coatec and Miahuatec class D verbs take a non-coronal replacive in most of the paradigm (R1), but a coronal replacive in the completive and forms derived from it (R2)[12]. A related class, class Ch (Beam de Azcona 2004), has coronal prefixes for both R1 (*z* in Coatec, *d* in Miahuatec) and R2 (*x*) prefixes. These patterns are here illustrated in Coatec, where the irrealis prefix is added onto a stem formed with the R1 prefix while the completive stem is formed with the R2 prefix:

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[12] In Beam de Azcona (2004) I dubbed these R1 and R2 simply because of the order in which each of the replacive prefixes occurs within the paradigm. Zapotecanists trained by Terrence Kaufman are often in the habit of listing the potential, habitual, and completive forms of the verb, in that order, as Kaufman regards these as the principal parts of the Zapotec verb, akin to the way Latin verbs are often cited with the first person present indicative, infinitive, first person perfect, and past participle, the four principal parts from which the rest of the morphology can be predicted. Although there are exceptions in individual languages and with irregular verbs, in most cases the full extent of Zapotec morphology for a given verb can be predicted from the potential, habitual, and completive forms. When the paradigm is listed in this way the R1 prefix occurs first (though it undergoes fortition in the potential) and the R2 prefix occurs last, in the completive form.

(33)   vtCh   vtD

            'batir; stir'   'sobarlo; massage'

            -ìn   *-a'b*

Irrealis   *nh-z-ìn*   *nh-g-a'b*

Completive   *nhw-x-i'n*   *ngw-d-a'b*

According to Kaufman (1989) there was a pattern in Proto-Zapotec in which transitive class D verbs had the R1 and R2 prefixes in paradigmatic forms like those shown in (33) for 'massage,' and the corresponding intransitive verbs had R2 throughout the paradigm. This pattern is attested with the Coatec class Ch verb 'buy.'

(34)   vtCh   viA

                        -i' 'buy'   *-xi'* 'get bought'

        INF   *zi'*   *xi'*

        Habitual   *ndzyi'*   *nxi'*

        Completive   *nhwxi'*   *mxi'*

Other modern examples of R2 being used to derive an intransitive verb include *d*-initial intransitive verbs corresponding to *g*-initial transitive verbs in Isthmus (see Pérez Báez, Chapter 6) and Tlacolula Valley Zapotec (see

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Munro, Chapter 4), both belonging to the Central Zapotec subgroup. This pattern makes a lot of sense typologically. It is similar to English passives formed with past participles, as in past perfect and transitive *I have eaten grasshoppers many times* and passive *The grasshoppers were eaten.* However, Coatec and Miahuatec usually display the reverse pattern, with the intransitive verb taking the R1 prefix, as shown in (35) for Coatec.

(35)		vtD[13]	viA
		-ìb 'pluck'	*-yi'b* 'be plucked'
	Potential	*kĭb*	*yi'b*
	Habitual	*ndyìb*	*ndyi'b*
	Completive	*ngwdìb*	*mbyi'b*

In one case a class D transitive verb has two class A verbs derived from it, with a derived intransitive taking the R1 prefix and a derived transitive taking the R2 prefix. Here in Coatec[14]:

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[13] Miahuatec also has the R1 prefix fossilized in the intransitive member of this verb pair, but the transitive member has also migrated to class A and shows fortition of the R1 prefix, related to the historical causative/potential *k-* prefix: *-gui'b* viA 'quitarse; be removed', *-kíib* vtA 'quitarlo; remove.'

[14] The Miahuatec cognates are vtD (R1 *b* R2 *dz*) *–íib*, and the class A roots *–dzíib* and *–kwi'b*, each of which have ambitransitive readings.

(36)   vtD   viA   vtA

               -b-ìb 'shake'   *-bi'b* 'shake'   *-ti'b* 'winnow, strain'

	vtD	viA	vtA
Potential	*kwĭb*	*bi'b*	*wti'b*
Habitual	*nbìb*	*nbi'b*	*nti'b*
Completive	*nhwtìb*	*mbi'b*	*mti'b*

In (34-36) we can observe one verb belonging to class Ch or D and exhibiting the usual paradigmatic consonant alternations, and another verb belonging to the more regular class A and exhibiting only one of the replacive consonants throughout. In this case it is possible to say that the class D verb is the original verb and that the class A verb is derived from one or another form in the class D paradigm. However, there are a number of strictly class A verb pairs in Coatec and Miahuatec which exhibit patterns of replacive morphology in which [-coronal] R1 and [+coronal] R2 occur as root-initial consonants, perhaps due to some earlier re-analysis. In these cases it is more difficult to say, based on morphology alone, whether one verb is more basic than another. The overwhelming pattern running through all these verb pairs is that rather than intransitivity corresponding to R2 as in (34), the correspondence is reversed as in (35), with R1 representing the intransitive verb and R2 the transitive partner verb. (37a-c) give examples with three different pairings of replacive consonants.

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	vtA w/ R2		viA w/ R1	

(37) a. t-initial   b-initial

Coatec   *-tĭl*   'peel'   *-bĭl*   'have a hard covering removed'

-ti'x   'measure'   *-bìx*   'be measured'

Miahuatec   *-chi'x*   " "   *-bíix*   " "

(37) b. l-initial   g-initial

Coatec   *-lo'b*   'sweep'   *-go'b*   'be swept'

-la'b   'count'   *-ga'b*   'be counted'

Miahuatec   *-láb*   " "   *-gáb*   " "

(37) c. l-initial   b-initial

Coatec   *-lên*   'weigh'   *-bên*   'get weighed'

-la'   'release'   *-ba'*   'be let go'

Replacive morphology is identifiable because one coronal and one non-coronal consonant alternate across forms which are obviously related both

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semantically and phonologically. We cannot appeal to processes like fortition or palatalization to explain the existence of verbs so obviously related as –*láb* and –*gáb* (37b) the way we could verbs like –*gán* and –*kán* (4). There is no phonological explanation for an l/g correspondence, only the morphological explanation that replacive morphology, already known from class D paradigms, provides us with.

What is curious is that the typologically natural correspondence between R2 and intransitivity identified by Kaufman (1989) and exhibited in (34) exists right alongside the opposite correspondence of R1 and intransitivity seen in (35-37).

Rather than being an aberration or a new development, it seems that the correspondence between R2 and transitivity goes back to PZ as well. The transitive verb 'measure' in (37a) is reconstructed by Kaufman (1994-2007) as a class A root beginning in *ty* and preceded by causative *o(k)-. Coatec *t* and Miahuatec *ch* are the regular reflexes of such a *k-ty* sequence. The intransitive counterpart to 'measure' does not appear in the reconstruction. Kaufman reconstructs both 'sweep' verbs as *l*-initial, but the word for 'broom' is reconstructed with *k* (the ancestor of modern *g*). What relationship is there between *l* and *k* other than that of replacive morphology? Kaufman reconstructs the transitive verb *la'* 'dejarlo; leave it' which is the direct ancestor of the 'release' verb in (37c), but the intransitive verb does not appear in the reconstruction. Even without reconstructions for all the intransitive verbs in (37), there are three cases in which we see a

modern replacive relationship and in which a transitive verb is reconstructed with an initial coronal in Proto-Zapotec. These coronals are known R2 prefixes, not R1 prefixes. One could argue that these were just non-class D verbs that happened to have initial coronal consonants and that at some later stage the intransitive partners were derived with R1 prefixes, however the word for 'broom' suggests that there was already a derivational relationship involving replacives between the transitive verbs listed here and other forms.

A look through the various chapters of this volume reveals that modern examples of R1 corresponding to intransitive and R2 to transitive abound. There are verb pairs of equipollent derivation in Papabuco Zapotec (see Operstein, Chapter 9) in which a less transitive verb begins in *b* and a more transitive verb begins in *r* or *tʃ* (reflexes of single and geminate **ty* respectively)[15]. Although Tlacolula Valley Zapotec (see Munro, Chapter 4) does have a *g/d* correspondence where the coronal segment corresponds to intransitivity, it also has *b/ts* and *g/l* patterns in which the coronal (R2) consonant instead corresponds to the more transitive verb. Sonnenschein (Chapter 13) finds a *b/l* correspondence in San Bartolomé Zoogocho Zapotec in which the coronal consonant is found on the transitive verb. Even Colonial Valley Zapotec (Lillehaugen 2012) has verbs like *ti-bijba=ya* 'puesto ser assi [encima de otra cosa] and *t-o-chijba=ya* 'poner encima de otra cosa' in which

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[15] Another verb pair offered by Operstein, *yaaw* 'be closed' and *saaw* 'close' shows another, less common, replacive correspondence which is the ancestor of Class Ch verbs in Southern Zapotec. Here too it is the R2 prefix corresponding to transitive rather than intransitive.

the coronal affricate (R2) appears in the transitive verb while the bilabial occurs in the intransitive counterpart. Thus, while a pattern in which R2 corresponds to intransitivity exists in at least some verbs in Central and Southern Zapotec, a pattern in which R2 corresponds to higher valency appears to be more robust and occurs in at least Northern, Central, Southern, and Papabuco Zapotec.

3.2 Intransitive (anticausative) y

In a number of cases intransitive verbs are marked either by palatalization of the stem-initial consonant, including replacive consonants (§3.2.1) as well as root-initial consonants (§3.2.2), or by the addition of a prefix *y*-added onto vowel-initial roots (§3.2.3).

3.2.1 Intransitive y paired with replacives

Kaufman (1994-2007) reconstructs a replacive combination of *Ø/y* not found in class Ch-D verbs in Coatec or Miahuatec. He reconstructs an additional *i-* or *y-* prefix which could combine with the R2 replacive found on intransitive verbs and the completive form of their transitive partners. Although no palatalization of completive stems has been documented in Miahuatec or Coatec, (38) shows regular and (39) irregular examples of vt:vi pairs whose vi is a *y*-initial stem (in Coatec).

	vtD	viA w/ y-

(38)   *-g-a'b* (*-g-* R1, *-d-* R2)   *-ya'b*

‘massage’   ‘get a massage, be rubbed’[16]

-g-òbxêx (*-g-* R1, *-d-* R2)   *-yo'b* (*xêx*)

‘drag (something)’   ‘be dragged’[17]

(39)   *-k-ìx* (*-k-* R1, *-t-* R2)   *-yâx*

‘pay’   ‘be paid for’

Some class A verb pairs take a class Ch replacive as the vt stem-initial consonant, and have a *y*-initial vi:

(40)   vtA x-initial   viA y-initial

        Coa.   *-xeh'l* ‘open (something)’   *-yeh'l* ‘open up’

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[16] The Miahuatec cognate for ‘massage’ in (13) suggests that this *y*-initial intransitive verb in Coatec is a reduction from a palatalized consonant. Miahuatec has vtD ‘sobarlo; massage’ – *a'b* (R1 *g*, R2 *d*), while the intransitive partner verb is an irregular verb of class A or B, *-da'b* whose stem-initial consonant undergoes palatalization in the potential, habitual, and completive forms.

[17] Note that this pair appears derivationally related to ‘sweep’ (vtA *–lo'b*, viA *–go'b*), which also shows replacive patterns. The ‘sweep’ pair has an R2-initial transitive verb and an R1-initial intransitive verb while the ‘drag’ pair uses the same R1, *-g-*, in the transitive verb and *y-* in the intransitive verb.

Mia.	*-xa'l* ""	*-ya'l* ""
Coa.	*-xeh'd* 'untie'	*-yeh'd* 'become untied'
Mia.	*-xa'z ~ xa'k*	*-ya'k*

(41)   vtA z-initial   viA y-initial

Coa.	*-zo'l* 'burn (something)'	*-yôl* 'get burned'
Mia.	*-do'l* ""	*-yól* ""
Coa.	*-zàt* 'wash (something)'	*-yàt* 'get washed'
Mia.	*-da'ch* ""	*-ya'ch* ""
Coa.	*-zu* '' 'break into pieces'	*-yû* 'get smashed, made into tiny pieces'

Coatec *z* and Miahuatec *d* are the reflexes of Proto-Zapotec lenis *s*. The fortis counterpart, *ss* has the reflexes *tz* (in Coatec) and *t* (in Miahuatec). The Coatec examples in (42) show correspondences like those in (41) except with the fortis reflex of *ss* instead of *s*. According to Kaufman (1994-2007)'s reconstruction the *tz* seen here in 'douse' is the result of the concatenation of the *k* of the causative morpheme(s) *ok* and the replacive *z*. At least two of the verb pairs in (42) do seem to have a causative:intransitive relationship compared to the active:passive semantics of all the verb pairs in (41) where the vt begins in lenis *z*.

(42)   vtA tz-initial   -viA y-initial

-tzu' 'douse'   *-yu'*'get doused'

-tze'k 'turn something around'*-yêk* 'turn around'

-de'k ""   *-yék* ""

-tzà 'cover'   *-yǎ*'get covered'

-tzûb 'knock down'   *-yûb*'fall'

-túb ""   *-yúb* ""

3.2.2 Intransitive y as palatalization

Kaufman's (1994-2007) "versive" marker *i*- seems the likely etymon (via metathesis) of the palatalization seen on many intransitive verbs. Note that most of the verb pairs in this section require some agentive action for the change of state indicated by the intransitive verb to take place, i.e. the transitive verb is more semantically basic, and the passive verb is derived through palatalization.

Several intransitive class A verbs begin in consonants that are palatalized in all forms save the infinitive[18] in Coatec. In Miahuatec there is also palatalization but it is less extensive. The example in (43) only has it in the potential, habitual and completive.

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[18] Note that the infinitive is the form used with the causative auxiliary, so that this instantiation of intransitive *y* does not occur when the verb is causativized. Compare *–tzé têhl* 'make crooked' to*-tyêhl*'become crooked.'

(43)   vtA C-   viA Cy-

Coa.   *-dûd*   'roll (something) up'   *-dyûd*   'get rolled up'

       -dò   'sell'   *-dyǒ*   'be sold'

Mia.   *-thóo*   ""   *-dyóo*   ""

Coa.   *-tzi'*   'squeeze'   *-tzyi'*   'get squeezed'

       -leh'th 'empty, make free'   *-lyeh'th* 'get freed up'

       -tê   'distribute'   *-tyê*   'be distributed'

       -tûb   'de-leaf'   *-tyûb*   'get de-leafed'

In Coatec a few cases of intransitive verbs beginning with palatalized *zy* correspond to transitive verbs whose initial consonant is not only unpalatalized but fortis, probably from concatenation with causative **k*.

(44)   vtA tz-initial   viA zy-initial

       -tza'l   'lose (something)'   *-zya'l*   'get lost'

       -tzǒn   'destroy'   *-zyǒn*   'be destroyed'

       -tzómbî 'clean'   *-zyómbî* 'get cleaned'

Another case of palatalization in Coatec is on the potential and habitual forms of class B verbs. This is thought to come via metathesis of the potential and habitual prefix vowels historically. Palatalization from intransitive *y* (**i*) may

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have created such a strong association between palatalization and intransitivity that most of the transitive members of class B have migrated to other classes. Of ca. 100 recorded class B verbs in Coatec, 7 are transitive, 20 ambitransitive, and the rest intransitive. In Miahuatec 17 verbs out of 60 class B verbs are transitive.

3.2.3 Intransitive y with V-stems

A few transitive V-stems in Coatec correspond to y-initial intransitive verbs. One cognate from Miahuatec suggests that at least one of these V-stems was historically a C-stem, probably formed with a replacive.

(45)   vtC V-initial   viA y-initial

        Coa.   *-àz* 'plant'   *-yâzh* viA 'get planted'

                -òj 'grind'   *-yôj* 'get ground'

        Mia.   -do' ""   -yó ""

3.3 Noun incorporation

Noun incorporation is quite productive in Zapotec. Following the usual generalizations (Aikhenvald 2007, Mithun 1984), incorporated nouns in Coatec and Miahuatec are most commonly objects, followed by subjects of intransitive verbs, and instrument incorporation also exists in both languages.

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The incorporation of subjects, as in (46), does not affect transitivity, since the incorporated subject must be replaced by another. The bird on whose body feathers sprout is but a peripheral argument, expressed as a locative noun phrase, in (46a), but becomes the subject of the compound verb in (46b). Although a peripheral noun phrase becomes a core argument, the overall transitivity of the verb does not change. Both verbs are intransitive. Likewise in (47) a verb with instrument incorporation remains intransitive.

(46) a. *Ngótz-lá   dó'b   lád   dxuúl yéh.* [Mia]

COMP:nacer=ya   pluma cuerpo pollito este

COMP:be.born=already feather body   chick   this

'Ya le salieron las plumas a este pollito.'

'Now feathers have sprouted on this little chick.'

b. *Dehra'   gatzdo'b   mguíil   bweén-ká.*   [Mia]

todavía=NEG   nacer:pluma   perico   bien=siempre

still= NEG   be.born:feather parrot   well=always

'Los pericos aún no emplumecen.'

'The parrots still haven't feathered.'

(47)   *Tzaththoóz   mbíixdo'   má'.*   [Mia]

fuerte=mucho COMP:envolverse:mecate animal

strong=much COMP:get.tangled:rope   animal

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'La bestia se había enredado muy fuerte.'

'The animal had gotten tangled up with the rope very

tightly.'

Although the subject position must be obligatorily refilled once a subject is incorporated, the same is not true of the object position, which may remain vacant, resulting in a decrease in valency. (48) shows what is normally a transitive verb, 'take out,' behaving intransitively when compounded with its would-be object. The phrase *loó nó'* is an adjunct which could be omitted without losing grammaticality.

(48) *Mbwi' nó' thí mbeh'l neéd ndaá nó'* [Mia]
      COMP:ver 1EX un culebra camino HAB:ir 1EX
      COMP:see 1EX a snake road HAB:go 1EX

      noó mbo'loz   má'   loó nó'.
      y   HAB:sacar:lengua   animal cara 1EX
      and HAB:take.out:tongue animal face 1EX
      'Vimos una culebra por el camino donde íbamos caminando

      y nos sacó la lengua'.

      'We saw a snake on the road where we went walking and it

      stuck its tongue out at us.'

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However, not all cases of object incorporation result in a decrease in valency. In some cases a peripheral noun phrase gains prominence by filling the object position. In (49a) 'job' is the direct object in a light verb construction 'do a job' meaning 'work.' Although the European verbs *work* and *trabajar* are intransitive, the Zapotec light verb construction is formally transitive, with the bulk of the meaning being contributed by what is syntactically the direct object. In (49b) 'job' is incorporated and the result is a new compound verb 'job-make' meaning 'use.' In this case the result is not an intransitive verb but a transitive one, as one uses *something*.

(49) a.　　*Gǔn*　　　*nhó*　　*ti'n*　　*hasta las diez.*　　　[Coa]

　　　　　POT:hacer　1INCL　trabajo　hasta　las　diez

　　　　　POT:do　　　1INCL　job　　　until　the　ten

　　　　　'Vamos a trabajar hasta las diez'.

　　　　　'We're going to work until ten o'clock.'

b.　　*Ba'*　*ñâ*　　*lâd*　*ndùnti'n*　　　　*Mě*　*Gǒx*

　　　　así　　HAB:verse　ropa　HAB:hacer:trabajo　3H.RESP　viejo

　　　　like.this　HAB:look　rag　HAB:do:job　　　　3H.RESP　old

　　　　Maǎ.

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Tomás

Thomas

'Así se ve la ropa que usa Don Tomás'.

'This is what the bandana that Terry wears looks like.'

4. Derivations of ambiguous directionality

The phonological patterns involved in the following derivations, involving feature loss (section 4.1) and tonal changes (section 4.2), occur only marginally in Coatec and, though they may exist, they have not been noted in Miahuatec.

4.1 Feature loss

In Coatec there are a few derived verb pairs that begin in *kw/w,* and *ty/y,* though the latter pattern does not necessarily involve a difference in transitivity.

   (50)   *-kwîn* 'move (something)'   *-wîn* 'move'   [Coa]

             -kwa' 'put (something) on top'   *-wa'* 'get on top'

4.2 Tonal changes in Coatec

Many of the patterns already detailed above are accompanied by tonal changes.

For some verbs a change in tone, with or without a change in verb class, signals the change in valency.

(51)   *-lákeh'* vtA 'reduce'   *-lákèh* viB 'be reduced'   [Coa]

          -teh' vtA 'finish off'   *-tèh* viA 'become scarce'

Such patterns have thus far been better surveyed in Coatec than in Miahuatec, though some cognate patterns have been spotted, so here I will report generalizations for Coatec and point out when there are known Miahuatec cognates. For every tonal category that exists in Coatec, there is a verb pair with that tone, which undergoes no tonal change between the transitive and intransitive member. However, there are clusters of verbs which do display suprasegmental differences between transitive and intransitive forms.

In Coatec, all tonal contrasts have been neutralized on glottalized syllables, such that glottalization itself comes to act as a category in the inventory of tonal contrasts. In Coatec there are at least 11 verb pairs which are glottalized on the transitive form and unglottalized (7 low, 3 falling, 1 rising) on the intransitive form. In this paper examples of these are found in (2), (33), (37a), (41), (42), and (51). Miahuatec cognates to these patterns are found in (2), (37a), (41) and (45). Unlike Coatec, Miahuatec does contrast

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high and low tone on glottalized syllables. However, in the four examples that occur in this paper, all of the transitive glottalized roots have low tone, including the two in (41) and (45) that correspond to a high tone on the intransitive partner verb. In Coatec 10 verbs which lack glottalization have a low toned transitive verb corresponding to a non-low (4 falling, 4 glottal, 2 rising) toned intransitive verb. These patterns can be seen above in (9), (34), (35), (36), (38), (42), (43), and (45). The Coatec falling tone develops historically from the high tone while the Miahuatec falling tone comes historically from the low tone (Beam de Azcona 2008). Thus, the Coatec pattern of low on a transitive verb with falling on an intransitive verb is cognate to the Miahuatec pattern of falling on a transitive verb with high on an intransitive verb, as seen in (9). Two remaining patterns find rising tone on Coatec transitive verbs (two verbs have falling on the intransitive verb and another verb has low on the intransitive form).

Although verb pairs with suprasegmental differences corresponding to the difference in transitivity are not numerous compared to verbs with no such changes, there are indeed patterns which emerge. Looking at pairs with suprasegmental differences corresponding to differences in transitivity, all of the possible suprasegmental categories (glottalization, high, low, rising, and falling tones) are found on intransitive verbs but there is a more limited range of suprasegmental categories marked on their transitive partners. It would seem that both glottalization and low tone have a historical association with transitivity. 11 verbs in Coatec are glottalized only in the transitive form. 10

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verbs in Coatec have low tone on the transitive verb, while additionally we might add to these the glottalized verbs, noting that in Miahuatec the verbs which are glottalized in the transitive form do not take high tone but take low tone instead, even if their intransitive partner is high. Three remaining transitive verbs in Coatec have rising tone, a tone which in Coatec often results from a floating high tone being added to a low tone, i.e. the rising tone is compositional, with its first member being the low tone. No Coatec verbs that have a tonal difference in the transitive pair have high or falling (which comes from high historically), on the transitive member. Thus, both low tone and glottalization are associated with transitivity as suprasegmental markers.

There is also interaction between transitivity and tonally marked paradigmatic inflection. Perhaps the best known tonal perturbations in all of Zapotec involve floating high tones in the potential mood and, separately, with first person singular marking. In class A, the largest and most productive verb class in Coatec, consonant-stems take a floating high tone in the potential mood only on intransitive verbs, while the floating high tone that marks a first person singular subject only affects transitive verbs. This is shown in (52), where the low toned transitive verb 'bend' displays no tonal changes in the bare potential form but changes from a low to a rising tone when accompanied by a first person singular subject. With the opposite pattern the passive verb 'get dry,' which also has an underlying low tone, changes to a rising tone in the potential mood, but is unperturbed when accompanied by a first person singular subject.

(52) *-kìt* vtA 'bend (something)' *-bìd* viA 'get dry'

Potential *wkìt* *bĭd*

w/1s subj. *wkĭt nâ-ý.* *nbìd nâ.*

5. Conclusion

Most of the valency-changing devices described here for Coatec and Miahuatec are described for Zapotec languages belonging to other subgroups elsewhere in this volume. Indeed, the present collection of papers is valuable in part because it will be easy for readers to compare a variety of grammatical markers across a wide variety of Zapotecan languages. This chapter, like the volume as a whole, has a heavily diachronic perspective, looking to the reconstruction made by Kaufman (1994-2007) to provide insight for synchronic patterns, but the intent is also to push the existing reconstruction further. Some patterns have not been fully reconstructed. For example, where replacive consonants are used in transitive/intransitive verb pairs, two different patterns are found but one appears more robust than would appear to be the case based on the existing historical work.

Phonologically, tonal operations seem to be marginally involved in valency changes compared to segmental morphology. Although many

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segmental changes can be traced to morphemes made up of particular segments, the reflexes of some of these are more processes, e.g. fortition and palatalization, rather than mere concatenation. Not all patterns can be understood based on natural phonology, with replacive morphology being one of the most intriguing aspects of (in)transitivity marking in the languages surveyed.

Incorporation is a productive process of word-formation in Zapotec that sometimes reduces valency but other times simply reorganizes arguments in terms of prominence.

Some of the phonological patterns that have been identified here seem to have sound symbolic properties. Much of the valency-changing morphology discussed below can be traced back to Proto-Zapotec(an) causative *o[19] and anticausative *i (Kaufman 1994-2007). This distribution of marking causation with a back vowel and low-valency verbs with a high front vowel may correlate with common sound symbolic properties. Just as diminutives are often marked with a high front vowel, smaller, less powerful beings might be expected to serve as subject to intransitive verbs more often than transitive verbs, while larger, more powerful beings represented by back vowels would be more prototypical subjects of transitive verbs. Likewise, the association of low tone, and perhaps also glottalization, with higher valence verbs would have similar sound symbolism.

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[19]All Proto-Zapotec forms cited in this paper come from Kaufman (1994-2007) unless otherwise stated.

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