Title

Origin of the Zapotec Causative Marker*k-: A Diachronic-Typological Perspective

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ORIGIN OF THE ZAPOTEC CAUSATIVE MARKER **K-*

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This paper uses synchronic and diachronic typological data to trace the origin and development of the Zapotec causative marker **k-*. It is suggested that the causative marker **k-* arose as a language-internal innovation after Zapotec had split away from its sister branch Chatino. The paper relies on Song's (1996) typology of the evolution of causative markers to show that the causative prefix **k-* has developed out of the marker of the potential mood following de-subordination of the subordinate clauses of purpose. This work contributes to the field of Zapotecan linguistics by tracing the evolution of an important pan-Zapotec morpheme, and to that of diachronic typology (Bickel 2007) by validating a proposed developmental sequence in the area of valence-related morphology.

KEYWORDS: causative, valence, potential mood, purpose clause, diachronic typology, morphemic split, Zapotec, Chatino

1. **k-*causative. Zapotec is a language family of over fifty members, of the approximate time depth of Romance, spoken primarily in the Mexican state of Oaxaca (Lewis 2009). Together with its sister language Chatino, it forms the Zapotecan branch of Otomanguean (Figure 1; the internal classification of Zapotec is shown after Operstein 2012).

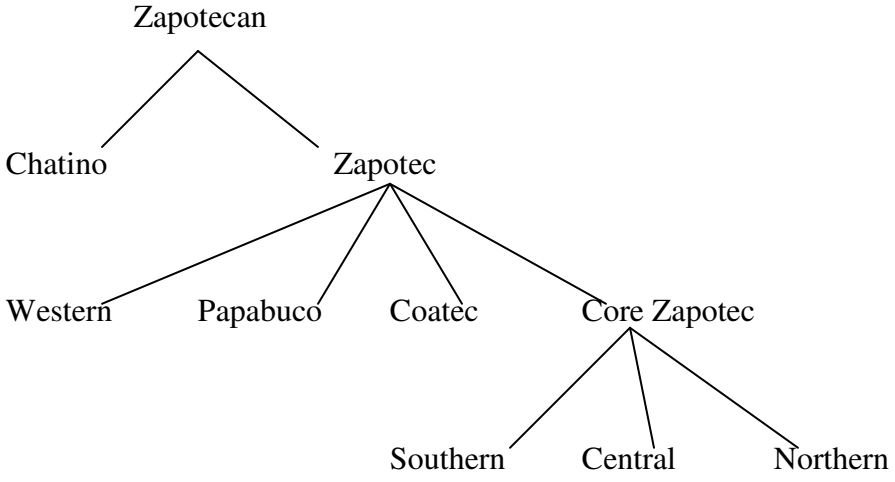

FIG. 1.-- Zapotecan language family

Morphologically, Zapotec languages are head-marking, prefixing, and basically agglutinative with elements of fusion and incorporation. These morphological features may be illustrated with the example from San Bartolomé Zoogocho Zapotec (ISO code: spq) shown in (1) (Sonnenschein 2012).

(1) *b-* *edey-* *ey-* *os-* *ban-* *tont-* *tek=* *e=* *nda'*
COMP VEN FREQ CAUS live fool really 3FAM 1S
'He keeps on coming and causing me to foolishly wake up.'[1]

Phonological characteristics of Zapotec include the fortis/lenis opposition in the consonants, deriving from the geminate/single distinction at the Proto-Zapotec level, laryngealized and in some varieties also breathy phonation in vowels, and both lexical and grammatical tone.

All Zapotec languages boast a rich variety of valence-altering devices (Operstein and Sonnenschein 2012). The main direction of derivation is from a morphologically basic and semantically less valent, to a morphologically more complex and semantically more valent, verb form. Valence-related derivation takes several different shapes of varying degrees of antiquity; the oldest layer of valence-increasing (causative) morphology consists of prefixes added directly to what are generally regarded as verb roots. The most widespread of these prefixes emerges synchronically as a series of allomorphs shown in (2*a*) through (2*e*).

(2*a*) /g/ in causatives to vowel-initial roots;
(2*b*) /ʧ/ or an equivalent palatal obstruent in causatives to /j/-initial roots;
(2*c*) /k^{w}/ or /k/ in causatives to /b/-initial roots;
(2*d*) /ʧ/, /ts/, /tj/ or their derivatives in causatives to /ɾ/-initial roots;
(2*e*) Consonant fortition in causatives to roots that begin in lenis obstruents other than /b/ or /ɾ/.

Despite their synchronic diversity, all of the alternations in (2) go back to a single source in Proto-Zapotec, reconstructed by Kaufman (1994-2007) as **k-*. The alternation between /b/ and /k^{w}/ ~ /k/ in (2*c*), as well as that between /ɾ/ and /ʧ/ ~ /ts/ ~ /tj/ in (2*d*), are historically equivalent to the lenis/fortis alternations in (2*e*) by deriving, respectively, from the single-geminate pairs **kw–*kkw* (> /b/–/k^{w}/ ~ /k/) and **ty–*kty* (> **ty–*tty* > /ɾ/–/ʧ/ ~ /ts/ ~ /tj/). The development in (2*b*) is due to fusion of the causative **k-* with the initial /j/ of the verb (**kj* > /ʧ/). These changes are summarized in Table 1, and illustrated with forms from Zaniza Zapotec (ISO code: zpw) in Table 2

TABLE 1

HISTORICAL DEVELOPMENT OF THE PROTO-ZAPOTEC CAUSATIVE MARKER *K-

Basic verb begins with . . .		*k-causative begins with . . .	
Historically	Synchronically	Historically	Synchronically
*V-	V-	*k-V-	/g/V-
*jV-	/j/V-	*k-jV-	/tʃ/V-
*k^{w}V-	/b/V-	*k-k^{w}V-	/k^{w}/V-
*k^{w}o- ~ u-	/b/V-	*k-k^{w}o- ~ u-	/k/o- ~ u-
*kV-	/g/V-	*k-kV-	/k/V-
*tV-	/d/V-	*k-tV-	/t/V-
*sV-	/z/V-	*k-sV-	/s/V-
*tzV-	/dʒ/V-	*k-tzV-	/tʃ/V-
*tyV-[1]	/ɾ/V-	*k-tyV	/tʃ/V-

NOTE

[1]Proto-Zapotec **ty/*k-ty* and **tz/*k-tz* have a diversity of outcomes in Zapotec (Operstein 2012); the outcomes shown in the table are merely representative.

TABLE 2

SYNCHRONIC ALLOMORPHS OF THE CAUSATIVE PREFIX *K- IN ZANIZA ZAPOTEC

Basic verb begins with . . .	Causative verb begins with . . .	Example of a basic verb	Example of a causative verb
b-	*k^{w}-*	*bi'* 'turn (intr.)'	*k^{w}i'* 'turn (tr.)'
ɾ-	*tʃ-*	*ɾug* 'be cut'	*tʃug* 'cut'
j-	*ʂ-*	*jih* 'burn (intr.)'	*ʂih* 'burn (tr.)'
g-	*k-*	*gaʂ* 'be hidden'	*kaʂ* 'hide, bury'
g^{w}-	*k^{w}-*	*g^{w}a* 'be many'	*k^{w}a* 'put many, scatter'
d-	*t-*	*de'* 'get together'	*te'* 'put together, collect'
z-	*s-*	*zug* 'be chopped'	*sug* 'chop'
ʐ-	*ʂ-*	*ʐib* 'be scared'	*ʂib* 'scare'
V-	*g-*	*adʒ* 'suckle'	*gadʒ* 'breastfeed'

In some Zapotec varieties, verbs beginning with sonorants other than /j/ likewise form their causatives by means of **k-*; in others, such verbs use other causativization strategies, including a change in the inflectional class of the verb, zero-derivation, and/or addition of other causative markers (cf. Marks 1976: 52).[2] The **k-* morpheme is not productive in modern Zapotec in the sense that no new causatives are formed by this means. Zapotec varieties also differ in the degree to which the causative **k-* is present in the lexicon, reflecting its varying degrees of productivity in the past. For example, in the Papabuco branch of Zapotec, **k-* is the main morphological means of causative formation (Speck 1984: 144), while in Isthmus Zapotec (ISO code: zai), less than forty verbs employ this valence-increasing mechanism (Pickett et al. 2001: 64).

Notwithstanding its non-uniform past productivity across the family, the causative marker **k-* is unquestionably pan-Zapotec,[3] and the problem of its origin is naturally of interest. An examination of causative morphology in Chatino, the sister branch to Zapotec within the Zapotecan family, reveals no semantically equivalent cognates. Chatino is viewed as a single language, albeit with deep dialectal divisions; the better-documented varieties include Zenzontepec (ISO code: czn), Yaitepec (ISO code: ctp), and Tataltepec (ISO code: cta). No valence-related prefix of the shape **k-* is attested in any of these varieties. According to Campbell (2011*a*), the valence-increasing morphemes in Zenzontepec Chatino comprise the prefixes *t- ~ s-* and *u-* and the causative auxiliary *è-*. Yaitepec Chatino displays the valence-increasing prefixes *t-* and *s- ~ x- ~ xi* as well as initial consonant palatalization (Rasch 2002). Tataltepec Chatino has the causative prefixes *x- ~ xa-* and palatalization of roots beginning with *t-* (Pride and Pride 1970). The absence of a **k-*type causative in Chatino, especially when viewed against its presence in all the branches of Zapotec, leads to the conclusion that this type of causative might have arisen in Zapotec language-internally, sometime after its separation from Chatino but prior to its split into the daughter branches.

A possible language-internal source for the **k-*causative is revealed by the system of synchronic morphophonemic alternations involved in the formation of the potential mood, found across Zapotec. In order to describe these alternations, it is necessary first to introduce some background information about the Zapotec verb. The verb in Zapotec is obligatorily marked for one of the primary tense, mood, and aspect categories, the number of which can range between four, as in Texmelucan Zapotec (ISO code: zpz), and eight, as in Isthmus Zapotec (Speck 1984: 140, Pickett et al. 2001: 51ff). These categories are marked as prefixes on the verb; the categories that are common to all Zapotec varieties are the potential mood and the habitual and completive aspects. Their place in the overall structure of the Zapotec verb is shown in the template in (3), which has been slightly modified from Speck (1984: 140). In this template, NEG represents the (optional) bound negative morpheme, ANTI the anticausative morpheme (Speck's passive), CAUS the causative morpheme, ADV an incorporated adverbial, S-PRO the subject pronoun, and O-PRO the object pronoun. The obligatory tense, mood, and aspect markers occupy the TAM slot.

(3) (NEG) TAM (ANTI) (CAUS) STEM (ADV) (S-PRO) (O-PRO)

The morphophonemic alternations involved in the formation of the potential mood are remarkably similar to the ones illustrated in Tables 1 and 2 for the formation of the **k-* causative. Just as the causative morpheme **k-*, the potential marker is realized in any given language as a range of allomorphs conditioned by the initial segment of the verb root, and just like in the case of the causative **k-*, there is an overall dispreference for consonant alternations in roots beginning with sonorants exclusive of /j/.[4] Some of the alternations involved in the formation of the potential mood are illustrated in Table 3 with forms from Zaniza Zapotec.

TABLE 3
MORPHOPHONEMIC ALTERNATIONS ASSOCIATED WITH THE POTENTIAL MORPHEME IN ZANIZA ZAPOTEC

Verb root	Potential form	Gloss
adʒ	*gadʒ*	'suckle'
bi'	*k^{w}i'*	'turn (intr.)'
ru'	*tʃu'*	'go out'
jih	*ʔih*	'burn (intr.)'
gu'-bi	*ku'-bi*	'fly'
da'	*ta'* (older form),[1] *gida'* (current form)	'be stuck on'
za	*sa* (older form),[1] *giza* (current form)	'walk'
zʔib	*ʔsib* (older form),[1] *gizʔib* (current form)	'be scared'

NOTE

[1]The older forms are preserved in the negative construction built around the potential stem. In Zaniza Zapotec, the completive (perfective) action is negated by combining the negative morpheme *un-* with the verb in the potential mood form. This environment has preserved many of the older forms of the potential which, in other syntactic environments, have been refashioned using the synchronically more productive *gi-* (< **ki-*) allomorph of the potential prefix.

The alternations involving the causative morpheme **k-* and the potential mood morpheme are identical due to the material similarity of the reconstructed morphemes. Kaufman (1994-2007) reconstructs the Proto-Zapotec(an) potential morpheme as two allomorphs, **k-* and **ki-*. The descendants of these allomorphs in Zaniza Zapotec, to give a specific example, comprise the prefixal *g-* and consonant alternations summarized in Table 3, as well as the prefixal *gi-*. Their cognates in Chatino include the Zenzontepec Chatino potential marker allomorphs *k-* and *ki-*. No doubt significantly, Chatino lacks consonant fortition as an allomorph of the potential mood (Rasch 2002, Campbell 2011*b*)

The identical shape of the synchronic alternations involved in the formation of the potential mood and **k*-causative, and the corresponding identical reconstructions of the corresponding morphemes – the causative **k-* and the **k-* allomorph of the potential marker – suggest that we are dealing with the functional split of an originally single morpheme.[5] The comparative evidence from Chatino, where **k-* is attested only as marker of the potential mood, suggests that the historically primary meaning of **k-* is modal. This conclusion is also corroborated by cross-linguistic typological evidence, to be examined in the next section.

2. *k-causative and the diachronic typology of causative marking. Cross-linguistically common sources of causative affixes on verbs include non-specific, semantically bleached causative verbs like *make*, *let*, *allow*, and *give*, as well as directional, applicative, and benefactive markers. The original, non-causative meaning of the causative morpheme may coexist with its causative meaning, accounting for the frequently observed polysemy of causative affixes. Examples include the causative suffix *-ŋà* in Lamang (Chadic) (ISO code: hia), which has been correlated with the benefactive morpheme *-ŋgà*

in the same language; the causative suffix *-kà* in Kxoe (Khoisan) (ISO code: xuu), which may be related to the directional suffix *-kà*; and the causative prefix *pyn-* in Khasi (Mon-Khmer) (ISO code: kha), which is identical to the applicative *pyn-* (Song 1996, Kulikov 2011). Another frequent source of causative affixes are verbal affixes with non-causative meanings, including temporal, aspectual, and modal (Nedjalkov and Silnitskij 1969, Li 1993, Song 1996, Kulikov 1999 et seq., Bernd and Kuteva 2002). As in the cases mentioned previously, the non-causative uses of these morphemes may coexist with their causative function. Thus, Song (1996) observes that the causative suffix in Wiyot (Algic) (ISO code: wiy) simultaneously functions as a marker of the subjunctive mood; Kulikov (2010) documents the many correlations between transitivity and tense/aspect in Sanskrit (ISO code: san), Greek (ISO code: ell), and Yukaghir (ISO code: ykg), while Golovko (1993) observes that causative affixes in Aleut (ISO code: ale) may combine the causative function with the aspectual meanings of distributivity, multiplicativity, or inchoativity. The polysemy of causative markers is illustrated in (4) with examples from Aleut, cited after Golovko (1993). A comparison between (4*a*) and (4*b*) shows that the morpheme *dgu* combines the meaning of causation with that of distributive plurality, while a comparison between (4*a*) and (4*c*) shows the syncretism between the causative and inchoative meanings in the morpheme *t*.

(4*a*) Aleut *t*-morpheme (causative meaning only; the situation is not distributive)
ayagar *igluka-s* *qakaṯikur*
woman hide- PL dry
'The woman is making/made the hides dry (simultaneously).'

(4*b*) Aleut *dgu*-morpheme (causative meaning combined with the meaning of distributive plurality)
ayagar *igluka-s* *qakadgukur*
woman hide- PL dry
'The woman is making/made the hides dry (one at a time).'

(4*c*) Aleut *t*-morpheme in subjectless sentences (inchoative meaning only)
saalu 'be dry weather' → *saalu-t* 'dry weather begins'
kimdux 'pour down (raining)' → *kimdux-t* 'starts to rain'

In the context of this study, particularly interesting is the connection between the causative meaning and that of modality. Based on a typological survey of several hundred languages, Song (1996) has provided solid documentation for a diachronic connection between markers of what he terms non-factual modality and those of causation. The term non-factual modality, as used by Song, subsumes future tense; potential, subjunctive, or other types of the irrealis modality (cf. Givón 1994 for the term); as well as incompletive aspect (1996: 50).[6] Song argues that the connection between non-factual modality and causation springs from a particular developmental pathway of causative constructions that may start out as biclausal purposive structures in which the event of the matrix clause is carried out for the purpose of realizing the event of the subordinate clause (1996: 49ff). Such constructions may be schematically represented as shown below in (5); this representation has been slightly modified from Song (1996: 59). Scause and Vcause in this

scheme refer, respectively, to the matrix clause and its verb; and Seffect and Veffect refer, respectively, to the subordinate purpose clause and its verb. The mutual ordering of the clauses is not fixed, but is determined instead by the language's word order typology.

(5) [Scause [Vcause]] Purposive Element [Seffect [Veffect]]

From the perspective of causative marker formation, the most relevant element of the structure in (5) is the morpheme that signals purpose (Purposive Element). It can have different realizations, including as a free-standing particle, nominal case marker, or verbal marker of non-factual modality which, as seen previously, can include the potential mood. A version of the above scheme showing the Purposive Element as morphologically attached to Veffect is shown in (6). In this construction, the temporal reference of the causative event is signaled only on Vcause, whereas Veffect signals the event that is about to occur.

(6) [Scause [Vcause]] [Seffect [Purposive_Element_Veffect]]

Song argues that, owing to the workings of pragmatic inferencing, "[t]he sense of purpose may . . . lead to the meaning of manipulation, which is part and parcel of the 'semantics' of causation" (1996: 58). With the passage of time, the weak semantic association between the purposive construction and causation may become stronger, and eventually the construction itself may begin to be used to express causation. Simultaneously, the marker of non-factuality – the Purposive Element – may take over the function of causation, thereby rendering Vcause superfluous. Song proposed the following developmental sequence leading from the purposive construction to one of causation, recapitulated below in (7) (after Song 1996: 82f).

(7) Developmental stages from purposive to causative construction

Stage 1: The purposive construction begins to be used to express causation. The presence of the verb that denotes the causing action (Vcause) is obligatory.

Stage 2: The association between the purposive construction and causation becomes well established and the verb that denotes the causing action (Vcause) may be optionally omitted.

Stage 3: The verbal element denoting the causing action (Vcause) no longer appears in the purpose construction. The purpose clause is thus de-subordinated and becomes a genuine causative construction.

Stage 4: The marker of non-factuality becomes a genuine causative affix. It now behaves as a true derivational affix, e.g., by losing productivity and generality.

Song's hypothesis is backed by synchronic variation in languages like Agaw (Cushitic) (ISO code: awn), where subordinate clauses of purpose are signaled by the verb in the subjunctive mood. As seen in the examples in (8), reproduced here from Song (1996: 58), the causee NP can appear in both subject (8*a*) and object forms (8*b*). Song views this variation as evidence of an ongoing pragmatic and morphosyntactic change that consists in converting the verb governing the causee NP from [Veffect] to [Vcause]. As predicted by

Song's diachronic model, the change is accompanied by formal simplification of Seffect, which may eventually lead to the complete de-subordination of the purpose clause.

(8*a*) Agaw (the causee NP appears in subject form)

ə́nt	*desátíta*	*cewúɣà*
you_SUB	study_NEG/SUBJ_2S	do_3S_PERF/DEF

'He made you not to study.'

(8*b*) Agaw (the causee NP appears in object form)

kówa	*desátíta*	*cewúɣà*
you_OBJ	study_NEG/SUBJ_2S	do_3S_PERF/DEF

'He made you not to study.'

By tying together the non-factual and causative meanings in a single diachronic-typological model, Song's hypothesis provides a plausible scenario for the development of the causative marker **k-* out of the potential mood marker in Zapotec. The polysemy of **k-*, presupposed by this development, is well in line with the observed cases of polysemy between the causative and modal meanings. The origin of this polysemy is due to the fact that the semantic/pragmatic development that took place in the context of purposive constructions did not prevent the potential marker from keeping its modal function in other contexts.

The case for the proposed origin of the causative **k-* out of the potential mood marker will be strengthened if it can be shown that Zapotec is able to use the potential mood in subordinate clauses of purpose. This aspect of the proposal is taken up in section 3.

3. Potential mood and causative marking in Zapotec. The potential mood has a variety of uses across Zapotec, both in main and in subordinate clauses. In main clauses, it may be used for uncertain non-past actions; the uncertainty aspect distinguishes the potential from the so-called definite future in the Zapotec varieties that have this category (Smith Stark 2008: 410). Its other uses in main clauses include as a polite and plural imperative and hortative; for the expression of wishes and negation; as a negative imperative following negative particles; or as a complement of certain verbs like *want*, *wish*, or *must* (Speck 1978, Butler 1980, Beam de Azcona 2004, Munro 2006, Lyman 2007). More importantly for the present purposes, the potential is also widely used across Zapotec for a variety of subordinate clauses, including purpose clauses (Butler 1980, Black 2000). This use is illustrated in (9*a*) through (9*f*) with examples drawn from four branches of Zapotec: Central (the Isthmus variety), Southern (the Coatec variety, ISO code: zps), Northern (the Yatzachi El Bajo [ISO code: zav] and Choapan [ISO code: zpc] varieties), and Papabuco (the Zaniza and Texmelucan varieties). The examples in (9*a*) through (9*c*) illustrate same-subject, and those in (9*d*) through (9*f*), different-subject purpose clauses introduced by a verb in the potential mood form.

(9*a*) Isthmus (Central) Zapotec (Pickett et al. 2007: 55)

beeda	*guuya=be*	*ni*
COMP_come	POT_see=3H	3INAN

'He came to see it.'

(9*b*) Coatec (Southern) Zapotec (Beam de Azcona 2004: 213)

yë	*yá=nh'*	*wǎ=nh'*	*kálť*	*ngǐd*
tomorrow	POT_go=1INCL	POT_eat=1INCL	broth	chicken

'Tomorrow we'll go eat chicken broth.'

(9*c*) Yatzachi El Bajo (Northern) Zapotec (Butler 1980: 31)

gwzolaogü=e'	*bsi'ini'=e*	*gon*	*liž=e'*
COMP_begin=3S	COMP_prepare=3S	POT_make	house=3S

'He began preparations for the building of his house.'

(9*d*) Zaniza (Papabuco) Zapotec (author's field notes)

kwij=r	*awsilio*	*gigal=ã*	*matxte*	*txilo*
POT_give=2S	help	POT_transfer=1S	teacher	other.side

'Help me get the teacher to the other side [of the river].'

(9*e*) Choapan (Northern) Zapotec (Lyman 2007: 161)

be	*re'n*	*ben'*	*yedyi*	*tzio=bi'*	*Lula'a*
NEG	want	people	village	POT_go=3FAM	Oaxaca

'The people of the village do not want him to go to Oaxaca.'

(9*f*)Texmelucan (Papabuco) Zapotec (Speck and Antonio n.d.: 12)

. . .	*zanu=ñ$_1$*	*gyit*	*go=ñ$_2$*
	bring=3S	tortilla	POT_eat=3S

'. . . she brought (some) tortillas for him to eat.'

Of particular interest is the different-subject purpose construction exemplified in (9*d*) through (9*f*). The examples in (10) show that in geographically diverse varieties of Zapotec, such constructions may be used as periphrastic causatives when the verb in the matrix clause is a general purpose causative verb like *make* or *let*.

(10*a*) Isthmus (Central) Zapotec (Enríquez 2005: 85)

lí	*bini=lu*	*ka*	*badu*	*ka*	*kite=kabe*
2S	COMP_make=2S	PL	child	DEM	POT_play=3PL

'You made the children play.'

(10*b*) Zaniza (Papabuco) Zapotec (author's field notes)

bizan=y	*dʒu'=y*
COMP_let=3S	POT_enter=3S

'He let him come in.'

(10*c*) Atepec (Northern) Zapotec (ISO code: zaa) (Nellis and Goodner de Nellis 1983: 432)

. . . pero	*Chepa*	*nna*	*siempre*	*beni=ą*	*qui'ni*
but	Chepa	PCL	always	COMP_make=3S	that

éxa=bi	*ca*	*yethu'*	*nna,*	*thi'=bi*	*adiru*	*baratu*
POT_lower=3S	PL	pot	PCL	POT_sell=3S	more	cheap

'. . . but Chepa always persuaded him to (lit. made him) lower (the price of) his pots and sell them more cheaply.'

Different-subject purpose clauses in (9*d*) through (9*f*) and periphrastic causatives in (10) make the developmental scenario proposed by Song (1996) especially plausible when applied to the Zapotec data. It is easy to conceptualize how, for instance, the subject of the Veffect 'to eat', expressed in (9*f*) by means of the clitic pronoun *-ñ*$_2$, can become reinterpreted as the verb's object when the verb itself is simultaneously reinterpreted as Vcause. This development is parallel to the one exemplified earlier for Agaw (Cushitic) in (8). Under this scenario, the original meaning of the subordinate clause "so that he may eat" gets reinterpreted as "so that she may feed him" or simply "to feed him" (as shown schematically in 11).

(11*a*) Purposive-construction interpretation: *go-* is Veffect and *-ñ*$_2$ is its subject

[*zanu=ñ*$_1$	*gyit*]	[*go=ñ*$_2$]
bring=3S	tortilla	POT_eat=3S_SUBJ

'. . . she brought (some) tortillas *so that he may eat* (*them*).'

(11*b*) Causative-construction interpretation: *go-* is Vcause and *-ñ*$_2$ is its object

[*zanu=ñ*$_1$	*gyit*]	[*go=ñ*$_2$]
bring=3S	tortilla	CAUS_eat=3S_OBJ

'. . . she brought (some) tortillas *so that she may feed him*' or '*to feed him*'.

Song's scenario implies that, initially, the causative meaning of the construction would have coexisted with its purposive meaning. This in turn presupposes that the semantic-functional split of the potential morpheme **k-* would have been gradual, and could plausibly have involved movement along a continuum of causative relations, such as the one proposed by Li (1993). Li views morphological causatives as located on a developmental continuum with respect to the relative degrees of control on the part of the causer and causee. At the opposite ends of the continuum are, respectively, the indirect, causee-controlled causatives (termed by Li "permissive") and the direct, causer-controlled causatives (called by him "coercive"). Each type is characterized by additional features, the most salient of which are summarized in (12). Between these two extremes, there are a number of intermediate types, characterized by a gradual shifting of the degree of control from the causer to the causee (Li 1993: 346).

(12*a*) Causee-controlled indirect causation:

1. Less control on the part of the causer.
2. Assistive in nature.
3. Causee is usually animate, often human.
4. Dependency between the two events is not absolutely necessary, and usually indicates indirect causation.

(12*b*) Causer-controlled direct causation:

1. Less control on the part of the causee.
2. Causer is directly involved, physical manipulation is likely.
3. Causee can be either animate or inanimate.
4. Dependency between the two events is absolutely necessary.

With Li's proposed continuum in mind, the development from (11*a*) (purposive reading of the construction) to (11*b*) (causative reading) can be conceptualized as movement along an evolutionary path from a causee-controlled indirect causative to a causer-controlled direct causative. The gradual change in the relative prominence and degree of control of the causer and causee would have been accompanied by a change in the semantics of causation, from indirect and assistive to direct and coercive; as well as by greater tightening of the semantic and morphosyntactic bonds between the expression of the causing and caused events. After Vcause would have ceased to be an obligatory part of the causative construction (Song's Stage 3), the path would have been open for de-subordination of the purpose clause and the development of the potential marker **k-* into a derivational causative marker (Song's Stage 4). This development did not prevent **k-* from continuing to function as a marker of the potential mood in other syntactic environments, leading to the split of the original single morpheme in two, the causative **k-* and the potential **k-*.

There are also additional, language-internal reasons that render the above diachronic scenario plausible. One of them is the fact that in some Zapotec varieties, addition of the causative **k-* may bring about changes in the tone and/or laryngealization of the root vowel. For example, Marks' (1976: 56f) examples of causative verb formation include verb pairs like *àll* 'hang (on self)' → *gaˇll* 'hang (in other place)', where both the tone and laryngealization of the root vowel of the causative member of the pair have been affected. The ability to change tone and/or laryngealization of the following vowel is typically associated with the potential marker **k-*, and is well documented across Zapotec; in earlier versions of Kaufman (1994-2007), the potential marker was reconstructed with the following high tone (cf. discussion in Smith-Stark 2002: 171). For instance, the tone rises in the potential mood in Teotitlán del Valle Zapotec (ISO code: zab), cf. *gez* → *kéz* 'hug' and *ded* → *téd* 'bypass'; similar tone changes have been reported for Chichicapan (ISO code: zpv), San Pablo Güilá (ISO code: ztu), and Coatec Zapotec, among others (Smith Stark 2002, Beam de Azcona 2004, Lowes and López Cruz n.d). Laryngealization changes in the potential mood may be exemplified with the Mitla Zapotec (ISO code: zaw) forms *yahp* 'to have' → potential *gá'p* (Briggs 1961: 30). Although this evidence is not conclusive, the shared ability of the causative **k-* and the potential **k-* to affect the tone and/or phonation of the following vowel lends additional support to the hypothesis of their shared origins.

Another language-internal reason rendering the proposed connection plausible is that it might explain the causative pattern in which some synchronically /a/-initial verb roots are causativized by means of what looks like a morpheme of the shape **ki-*. Some examples of this pattern are presented in (13).

(13*a*) **ki-*causatives in Zaniza (Papabuco) Zapotec

ag 'be tied up' → *gig* 'tie up'

atx 'burst, break, hatch, thunder' → *gitx (ritx)* 'make noise'

azh ‘break (intr.)’ → *gizh (rizh)* ‘break (tr.)’

(13*b*) **ki*-causatives in Chichicapan (Central) Zapotec
ga’azhu ‘be broken’ → *dxi’izhu* ‘break’
a’a ‘lie down’ → *dxishi* ‘lay down’
ada ‘be pierced’ → *dxi’ida* ‘pierce’
atxhí ‘be broken’ → *dzhî’tschí* ‘break’

The causative forms in (13) are problematic because the change in the vowel quality from /a/ to /i/ is inexplicable on the assumption that the causative marker had the shape **k*-. It will be recalled, however, that the potential prefix is reconstructed by Kaufman (1994-2007) in the shape of two allomorphs, **ki*- and **k*-, and so far it appears that only one of them – **k*- – was pressed into service as a causative marker. The forms in (13) hint at the possibility that the **ki*- allomorph of the potential might also have participated in this functional split, albeit in a much more restricted way (cf. related discussion in Smith Stark 2008: 385f).

Finally, given the known semantic proximity between the causative and imperative (e.g., Kordi 1985, Khrakovski and Volodin 1986), additional support for the genetic connection between the potential and causative **k*-’s in Zapotec derives from the possibility of using the potential form of the verb in polite and indirect commands (exemplified in 14). Aikhenvald (2010) observes, based on a typological study, that polite imperatives can arise from de-subordination of purpose clauses, a type of development she cites from such unrelated languages as Indonesian (ISO code: ind) and Kayardild (ISO code: gyd) (277). This observation, especially in combination with Song’s developmental scenario outlined earlier, provides typological support for the hypothesis that de-subordination of purpose clauses may be at the root of both the causative and the semantically related imperative uses of the (originally) potential form of the verb in Zapotec.

(14*a*) Potential mood as polite imperative (Choapan Zapotec; Lyman 2007: 165)
ule-cue’
HORT_POT-sit
‘Sit (polite).’

(14*b*) Potential mood as indirect command (Texmelucan Zapotec; Speck and Antonio n.d.: 13-14)

ze’	*uz=ru*	*mnii=y*	*nu*	*laab*	*dzi*	*na*
so	father=2S	said=3S	that	is.true	day	now

du’n=ã	*gyish*	*nunu*	*laab*	*dzi*	*na*	*cã=ã*	*gyi*	(…)
POT_clear=1S	bush	and	is.true	day	now	POT_set=1S	fire	

nunu	*laab*	*dzi*	*na*	*nuuz=ã*	*ya*	*gyee*
and	is.true	day	now	POT_sow=1S	plant	flower

‘Your father told me that I have to clear and burn the bush and sow the flowers today.’

4. Concluding remarks. The causative prefix **k-* seems to be an innovation that arose in Zapotec after its separation from its sister language Chatino. Song's (1996) theory of diachronic origins of causative markers allows us to derive the causative **k-* from the marker of the potential mood, arising from the use of the potential in subordinate clauses of purpose. The split of the originally single morpheme into two accounts for their shared shape, both historically and in certain opaque synchronic alternations. Additional support for the proposed origin of the causative **k-* comes from the use of the potential in both direct and indirect commands, as well as from certain shared idiosyncrasies of the potential and causative morphemes, including their ability to change the tone and laryngealization of the following vowel. Understanding the mechanism of the proposed development is assisted by Li's (1993) proposed continuum of causative construction types, which predicts the possibility of a development from indirect, causee-controlled causatives to direct, causer-controlled ones. By showing the applicability of the diachronic-typological scenarios of Song (1996) and Li (1993) to developments in an under-documented and historically under-studied language family, this paper provides further empirical support for diachronic typology as it applies to the development of morphological causatives.

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NOTES

[1]The following abbreviations are used: 1 'first person', 2 'second person', 3 'third person', S 'singular', PL 'plural', FAM'familiar pronoun', H 'pronoun referring to humans', M 'masculine pronoun', INCL 'inclusive pronoun', TAM 'tense/aspect/mood', COMP 'completive aspect', POT 'potential mood', VEN 'venitive aspect', FREQ 'frequentative aspect', HORT 'hortative', NEG 'negation morpheme', SUBJ 'subjunctive mood', PERF 'perfective aspect', CAUS 'causative', SUB 'subject', OBJ 'object', DEF 'definiteness marker', DEM 'demonstrative marker', PCL '(untranslatable) particle'. (-) separates morphemes, (.) separates words in multi-word glosses, (_) separates elements in multi-morpheme glosses, (=) is a clitic boundary.

[2]In languages where causatives to sonorant-initial roots are formed by means of consonant fortition, the development can sometimes be shown to be secondary. For example, the Isthmus Zapotec pair *luuba'* 'get swept' → *nduuba'* 'sweep', where the current *l* ~ *nd* alternation goes back to an earlier lenis/fortis pair **l* ~ **ll*, is probably due to a reanalysis of an earlier equipollent opposition. This conclusion is suggested by the existence of etymologically related pairs in Quiaviní Zapotec (*lùu'b* 'get swept' ~ *dùu'b* 'sweep') and Chichicapan Zapotec (*yo'oba* 'get swept' ~ *u-to'oba* 'sweep'), both of which are equipollent.

[3]This is confirmed by both descriptive and historical studies, among others Butler (1976), Kaufman (1994-2007), Black (2000), Pickett et al. (2001), Beam (2004), Speck (1984), Smith Stark (2002, 2008), Córdova (1578), Newberg and López (2005), Lyman (2007), and Marks (1980).

[4]However, cf. Smith Stark (2008: 397).

[5]Foreman (2012) reaches a similar conclusion regarding the possibility of a connection between potential and causative forms. Kaufman (1994-2007) hints at the possibility of a connection between the potential marker and transitivity in another area of Zapotec morphology: "The ZERO, k-, and *kw- that the transitive members of class D verbs begin with may in fact be frozen variants of *ki+ 'potential' and *kwe-+ 'completive', that got phonologically attached to transitive verbs that began with vowels" (75). The present author developed her theory of the causative **k*- formation in Operstein (2011) and (2012*b*), and provides a detailed study of the wider connections between valence and TAM in Zapotec, including the diachronic origin of class D verbs, in Operstein (2012*c*).

[6]For a recent overview of the category irrealis, cf. De Haan (2011: 454f, 459f). Of related interest is Schmidtke-Bode's (2009) finding that (finite) verbs in purpose clauses tend to be marked with non-past tense; incompletive aspect; or optative, subjunctive, or hypothetical mood markers (43-50).