

Søren Wichmann

**The Grammaticalization and Reanalysis of a Paradigm of
Auxiliaries in Texistepec Popoluca: A Case Study in
Diachronic Adaptation**

Abstract

A series of morphosyntactic changes relating to aspect-mode auxiliaries in the Texistepec Popoluca language will be analyzed under the hypothesis that the changes in question are motivated by three factors: phonological changes triggering new paradigmatic arrangements, areal convergence, and the tendency for creating structures that are in conformity with a certain over-all language type. As part of the overall diachronic account it is explained how a segment *k* came to form part of the paradigm of person markers even though this segment originally belonged to a preverbal adverbial particle and had nothing to do with person marking. The diachronic data bring support to the theoretical notion of “diachronic adaptation” proposed by Haspelmath (1999).

1. Introduction¹

In this paper a series of morphosyntactic changes in the Texistepec Popoluca language will be analyzed under the hypothesis that there are three factors that motivated these changes (and that may similarly motivate such changes in other languages as well).

1. One factor consists in changes of a purely phonological nature, for instance in this case, the loss of final vowels. Although such phonological changes are normally arbitrary with respect to the grammatical structure of a language, they may nevertheless end up motivating grammatical changes.

2. Another factor is areal convergence, involving the influence of neighboring languages.

3. Finally, a tendency similar to what has been called “drift” (Sapir 1921: 157–182) was in play, i.e. the tendency for creating structures that are in conformity with a certain over-all language type. In this case the tendency is for Texistepec Popoluca to move from an over-all left-branching to an over-all right-branching type in the sense of Dryer (1992).

The interplay of the first factor with the two others may be regarded as analogous to random genetic mutation and subsequent selection in evolutionary biology, providing some support for Haspelmath’s (1999) suggestion that linguistic change may be viewed as what he calls “diachronic adaptation.” We shall return to this issue in the Conclusion once we have reviewed all the relevant data.

The paradigm of auxiliaries whose history is the subject matter of this paper is as follows:

¹ This paper has been a long time in the making. Different aspects of it have been discussed in the following presentations: “The story of derivational morphology and auxiliaries in Texistepec Popoluca” (read at the international symposium “Synchronic and Diachronic Aspects of Grammaticalization,” Sophienberg Slot, Rungsted, Denmark, October 9–12, 1994); “Syntactic changes involving complex verbal constructions in Texistepec Popoluca” (read at the conference *Approaches to Historical Syntax*, University of Joensuu Mekrijärvi Research Station, Finland, September 19–22, 2002); “Cambios sintácticos involucrando construcciones verbales complejas en popoluca de Texistepec” (read at the VII Encuentro Internacional de Lingüística en el Noroeste in memoriam Kenneth L. Hale, Universidad de Sonora, Nov. 2002). A Spanish version of the paper has been submitted to the proceedings of the last-mentioned conference. For the present version I am pleased to acknowledge helpful comments from two anonymous referees, as well as from Ehren Reilly. Remaining inadequacies are exclusively due to myself.

(1) Texistepec Popoluca auxiliaries²

(a) Aspect-mode

<i>ma'</i>	'perfective'
<i>'u</i>	'imperfective'
<i>wa'</i>	'prohibitive'
<i>wää</i>	'to be able to'
<i>bus</i>	'to know how to'

(b) Second-position clitics³ (likewise analyzed here as auxiliaries)

= <i>chi'k</i>	'past/conditional'
= <i>te</i>	'inceptive' (from <i>ten</i> 'to begin')
= <i>y(a)</i>	'terminative' (from <i>yah</i> 'to end')

(c) Movement/Aktionsart

<i>meñ</i>	'to come'
<i>däk</i>	'to go'
<i>mo'y ~ boy</i> ⁴	'to go and have returned'

² As shown in Heine (1993), there have been very many and even sometimes mutually exclusive definitions of what an "auxiliary" is. Since auxiliaries often grammaticalize out of true verbs, Heine prefers a definition that "takes the dynamics of linguistic development into consideration" and suggests the following very broad definition: "An auxiliary is a linguistic item covering the range of uses along the Verb-to-TAM chain" (Heine 1993: 70). I agree on this approach and find it purposeless to stipulate additional, arbitrary restrictions.

³ The symbol "=" marks off a clitic boundary, defined in either phonological or distributional terms, as opposed to "-", which marks of an affix boundary.

⁴ I am using the same practical orthography here as the one used in Wichmann (1996, 2002), the only difference being that in this paper I mark initial glottal stops, which are not marked in the other works mentioned. In Wichmann (1994: 458-62, 468-70) I have presented the phonological reasonings that underlie the orthography. Apart from symbols that have the same values in IPA, this orthography includes an "ä" for the high, central vowel; a "ʔ" for the glottal stop; "b" for a slightly implosive voiced, bilabial stop; "d" for a slightly implosive voiced alveolar stop; "dʔ" for a slightly implosive predorsal-alveolar stop with a palatal off-glide; "j" for a glottal fricative; "kk" for a geminate *k* which, unlike the plain *k* does not undergo intervocalic voicing; "ñ" for the palatal nasal; "ŋ" for the velar nasal; "sh" for a palatal sibilant; "tz" for an alveolar affricate; "y" for IPA "j".

Since the remainder of the paper will make frequent reference to other languages of the Mixe-Zoquean family, a tree diagram is provided in Figure 1.

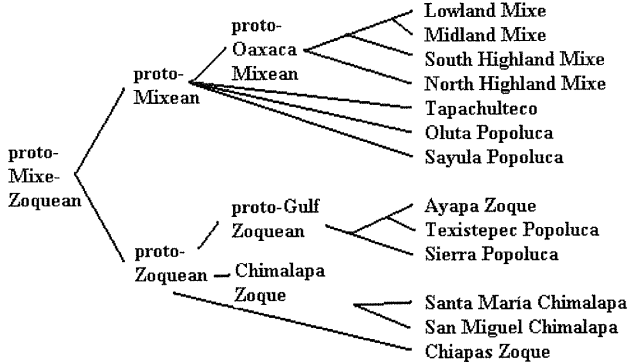


Figure 1. The classification of the Mixe-Zoquean languages according to Wichmann (1995: 10)

2. Changes involving the absolutive set of person markers

The system of auxiliaries found in Texistepec Popoluca is not shared with Sierra Popoluca (we have less information from Ayapa Zoque). Given that the two languages are otherwise rather closely related, the system must have developed in a short period of time. Its development demonstrates the effects of all three factors of change mentioned in the preceding section.

Earlier, verbal aspect in Texistepec Popoluca was expressed by means of suffixes. The language, however, suffered a sweeping sound change which caused the deletion of all (short) vowels in final position (Wichman 1995: 194). This change arbitrarily caused the proto-Zoquean perfective suffix, reconstructed as **-wä ~ -u* by Wichmann (1995: 103), to become lost. As a replacement for the suffix, a preverbal particle **ma'ak* (Wichmann 1995: 373), which earlier probably indicated that the action

had taken place earlier during the same day, was grammaticalized in the function of marking the perfective.

In order to comprehend the nature of this change, we not only have to realize that it starts out arbitrarily triggered by phonological changes, but also that areal convergence and typological drift are simultaneously involved. Following observations by Greenberg (1966: 67, 73), Vennemann (1972: 79) and Lehmann (1973: 49) that have more recently been confirmed by Dryer (1992: 100–101), it may be argued that the replacement of a suffix by a preverbal auxiliary constitutes a step towards a verb-initial (right-branching) type. In and of itself this step is not a big one, but it is part and parcel of a whole new system of auxiliaries and is accompanied by the grammaticalization of several new prefixes (the topic of the new prefixes will not be dealt with further in the present paper).

In the area where *Textistepec Popoluca* is spoken, it is common to find a verb-initial basic word order. As has been suggested by Zavala (2000a: 16–22, 2000b, 2002) in studies of *Olutec* (also known as *Oluta Popoluca*), some languages of the *Mixe-Zoquean* family may in some respects have moved away from their original verb-final type, reconstructed as such by Kaufman and Justeson (2003) for the proto-*Mixe-Zoquean* ancestor, and have acquired new verb-initial characteristics under the influence of neighboring *Mayan* languages. A case in point is the *Olutec* auxiliary + V2 construction. Zavala (2000b, 2002) notes that *Mayan* languages exhibit the major typological traits common to verb-initial languages (prepositions, noun-genitive order, AUX-verb, LightV-verb), whereas *Mixe-Zoquean* languages have typical verb-final traits (postpositions, genitive-noun order, V-AUX, and verb-LightV). The grammaticalization of a set of motion verbs as pre-verbal auxiliaries in *Olutec*, then, seems to be best explained as an influence of the verb-initial *Mayan* languages, some of which moreover have grammaticalized motion verbs that function very much like the *Olutec* ones. The idea that grammaticalization may arise under areal pressure has been pursued more generally by Bisang (1996, 1998, 2001).

Nahuatl and *Spanish* are also right-branching and could both have contributed to the areal convergence with respect to this typological feature. The existence of *Nahuatl* loanwords in *Mixe-Zoquean* as well as *Mayan* and many other *Mesoamerican* languages (Kaufman 2001, Campbell 2003) testifies to the influence of this language, which in early Colonial times, and probably also in late pre-Colonial times, functioned as a *lingua franca* throughout most of *Mesoamerica* (Bright 1993). When

Spanish took over as a lingua franca, this language began to exert a heavy influence as well. The aspect of both Nahuatl and Spanish linguistic influence on Native American languages which is best studied is that of the lexicon (e.g., Brown 1999 on the borrowing of Spanish content words; Stolz 1996 and Stolz & Stolz 1996 on function words). Partly because of this research bias and partly because of the absence of phonological materials that might help in the identification of sources and directions of syntactic interference, it is difficult to tease apart the possible influences on Mixe-Zoquean languages from Mayan and/or Nahuatl and/or Spanish. The point here, however, is not so much to identify the precise stimulus for the new patterns observed in Texistepec Popoluca, but just to argue more generally that areal convergence may be a contributing factor in the development of these patterns.

In sum, it is quite difficult to tell whether the change was motivated by phonology, drift or areal convergence. Rather than singling out one of these factors at the expense of the other two, I would like to suggest that all three factors are involved.

Some quite profound changes occurred in the system of person markers as a result of the grammaticalization of the new auxiliary. The system of pronominal inflection is given in (2). It is a mixed system which has both ergative and inverse features. The Set A pronominals are ergative and mark subjects of intransitive verbs in the imperfective, possessors of nouns, and subjects of transitive verbs. The Set B pronominals mark the subjects of intransitive verbs in the perfective and inverse objects of transitive verbs, i.e. objects that rank higher than the subject on the following hierarchy: Speech Act Participant > Non-Speech Act Participant. There is no distinction between third person direct and third person inverse.⁵ Transitive relations between speech act participants, which I choose to label "local relations," are expressed by means of pronominals which do not lend themselves to an analysis as composite affixes.

⁵ In a typology of inverse systems this feature places Texistepec Popoluca among languages such as Kiowa, cf. Zúñiga (2002: 252).

(2) Person markers in Texistepec Popoluca

	Intr	Tr	
A	1	1/3	<i>n-</i>
	2	2/3	<i>ny-</i>
	3	3/3	<i>y-</i>
B	1	3/1	<i>k=</i>
	2	3/2	<i>k=y-</i>
	3		<i>Ø-</i>
LOCAL RELATION			
	1/2		<i>k=n-</i>
	2/1		<i>k=ny-</i>

In (2) I have used a dash to indicate the status that most of the morphemes have as prefixes. An equal sign also occurs, however. As explained in footnote 3 above, this symbol marks off a clitic boundary, which may be phonologically defined. Thus, it may indicate the presence of a phonological boundary which is not necessarily aligned with a corresponding morphological boundary. With respect to the person markers the phonological boundary emerges when the elements that carry it combine with roots in *w-* or *y-*. For instance, when the second person Set B morpheme *k=y-* combines with the root *wan* 'to sing' the result is [g(ä)wyan] and not *[kwyan]. The *k* becomes voiced and an epenthetic vowel may be inserted between the *k* and the rest of the expression. What is interesting here is not the metathesis of *y* but the voicing of *k*. It is this phenomenon which is explained as the result of the presence of a phonological boundary between *k* and the lexical root including the metathesized *y*. A similar example involving a root in *y-* would be *ma'* *k=ya'k* 's/he pushed me', where the pronunciation of the verbal stem is [g(ä)ya'k]. The *k=y* phonological sequence contrasts with a *ky* sequence, which is pronounced [ky]. An example of a form exhibiting a *ky* phonological sequence would be *kvejke* 'his/her chin', which is composed of the metathesized third person Set A marker *y-* and *kejke* 'chin'.

It is rather surprising to find, in the middle of a pronominal prefix, the presence of a phonological clitic boundary which does not correspond to any morphemic boundary. It turns out, however, that the phenomenon has a straightforward diachronic explanation. The reason why the *k*'s of Set B

behave as if they are separate elements is that they are in fact intrusive elements historically. These *k*'s originally do not have anything to do with pronominals, but derive from the same particle, **ma'ak*, which provided the origin of the perfective auxiliary *ma'*.

- (3) The origin of the perfective auxiliary *ma'* (cf. Wichmann 1995: 373–4)

	proto-Zoquean	* <i>ma'ak</i> 'earlier today'
>	Chiapas Zoque (Copainalá)	<i>ma'ak</i> 'today (past time)' (Sp. 'hoy–tiempo pasado')
	Chiapas Zoque (Tecpatán)	<mac, maca> 'a little while ago' (Sp. 'denantes')
>	Sierra Popoluca	<i>ma'k</i> 'a little while ago' (Sp. 'hace rato')
>	Texistepec Popoluca	<i>ba'ak</i> 'a while ago' (Sp. 'hace (un) rato')
		<i>ma'</i> 'perfective'

In (4) I present the proto-Zoquean pronominal prefixes as reconstructed by Wichmann (1995: 96) as well as their various reflexes in different Zoquean languages. It is obvious that the *k*'s of the Texistepec Popoluca Set B do not have cognates among the other languages.

- (4) Comparison of the Texistepec Popoluca person markers with those of other Zoquean languages

	p-Zoquean	Sierra Popoluca	Tex. Pop.	San Mig. Chimal.	Chiapas
A					
1excl	* <i>än-</i>	<i>an-</i>	<i>n-</i>	' <i>än=</i>	(<i>ä</i>) <i>N-</i>
1incl	* <i>tän-</i>	<i>tan-</i>	<i>ta=n-</i>	<i>dän, tän</i>	<i>ndä-</i>
2	* <i>min-</i>	<i>iñ-</i>	<i>ny-</i>	' <i>äm=</i>	(<i>mi</i>) <i>N-</i>
3	* <i>äy-</i>	<i>i-</i>		<i>y-</i>	' <i>äy=/'äyy-</i>
B					
1ex	* <i>ä-</i>	<i>a-</i>	<i>k=</i>	<i>dä=</i>	Ø-
1in	* <i>tä-</i>	<i>ta-</i>	<i>ta</i>	-	<i>tä-</i>
2	* <i>mi-</i>	<i>mi-</i>	<i>k=y-</i>	<i>äm=, 3/2 mi=</i>	<i>Ny-</i>
3	*Ø-	Ø-	Ø-	Ø=	Ø-

LOCAL

1/2	* <i>mi+än</i>	<i>mi+an > miñ</i>	<i>k=n-</i>	<i>mix=, mix+ 'än</i>	<i>N-</i>
2/1	* <i>ä+in(?)</i>	<i>a+iñ > an-</i>	<i>k=ny-</i>	<i>mix=</i>	<i>N-</i>

In (5) I show the hypothetical evolution of the Set B markers in Texistepec Popoluca. The *ä of the 1st person exclusive is lost and the *k* of *ma'ak 'jumps' to the right taking the place of *-ä. In the case of the 1st person inclusive person marker, the consonants *k* and *t* clash and the *k* is lost. The original *tä is retained, but it has undergone a small change to *ta*, which is best understood as a result of the harmonizing influence of the *a* of the particle *ma'*. In the case of the second person marker, we again see two consonants clashing, this time *k* and *m*. Here *k* 'wins' and *m is lost. Finally, with respect to the third person marker, *k* clashes with the root, which is by a phonotactic constraint always consonant-initial, and for this reason it gets lost.

- (5) Steps in the development of the Set B (absolutive) person markers in Texistepec Popoluca

proto-Zoquean		Texistepec popoluca
I	II	III
1exB *ma'ak ä-VERB-wä>	ma'ak a-VERB >	ma' k=VERB
1inB *ma'ak tä-VERB-wä >	ma'ak tä VERB >	ma' ta VERB
2B *ma'ak mi-VERB-wä >	ma'ak mi-VERB >	ma' k=y-VERB
3B *ma'ak Ø-VERB-wä >	ma'a VERB >	ma' VERB

The following serves as a simple example of the use of *ma'* in combination with a Set B pronoun in today's Texistepec Popoluca:

- (6) *juch ma' kbiñ*
juch ma' k=y-bëñ
 where pfv 2B-come
 'Where do you come from?' (Wichmann 1996: 155)⁶

⁶ The following abbreviations are used in this and subsequent examples: A = Set A (ergative/direct); adj = formative of adjectives; appl = applicative; assoc = associative; aux = auxiliary verb; B = Set B (absolutive/inverse); caus = causative; cond = conditional; dep = dependent; det = determinative (definite article); erg = ergative; ex = exclusive; fut = future; imp = imperative; in = inclusive; inc = inceptive; instr = instrumental deverbalizer; intr = intransitive; ipfv = imperfective (incompletive); iter = iterative; lig = ligature; loc = locative; neg = negative/negation; past = past; pfv = perfective (completive); pl = plural; proh = prohibitive; pron = pronoun; rcp = reciprocal; rel = relativizer; rem = remote past; sub = subordinative; term = terminative.

Since person marking on Texistepec Popoluca intransitive verbs is organized such that Set B markers occur in the perfective and Set A markers in the imperfective, *ma'*—the perfective marker—will always cooccur with a Set B when the verb is intransitive. I assume that it was primarily in the context of intransitive verbs that the Set B person markers developed. For transitive verbs there is no split in person marking triggered by verbal aspect. Here Set A marks “direct” and Set B marks “inverse” regardless of the verbal aspect. Thus, in sentences involving transitive verbs the possibility arises that the perfective marker *ma'* may cooccur with a Set A person marker, as in (7), or that a Set B marker may occur in the absence of *ma'*, as in (8). In both of these situations there is a divorce between *ma'* and the paradigm of Set B markers containing *k*, the segment which originally hung together with *ma'*.

- (7) *ma'* *wiipke'm* *pelota*
ma' *y-wêêp-kê'm* *pelota*
 pfv 3A-throw-ascend ball
 'He threw up the ball'. (Wichmann 1996: 161)

- (8) *yä'ä juch* *u* *ktzakäyaj* *nwe'kku'*
yä'ä juch *u* *k=tzak-a'-yaj* *n-wê'k-ku'*
 here where ipfv 1B=leave-appl-3pl 1A-eat-instr
 '(It is) here that they leave me my food'. (Wichmann 1996: 255)

Whereas example (6) illustrates the type of context in which the new Set B markers came about, examples (7) and (8) illustrate that the new shape of the Set B paradigm has been extended to all instantiations of this paradigm, i.e. also to uses of the paradigm of Set B person markers outside of the context of perfective, intransitive verbs. We must imagine an earlier situation where the old Set B markers were still in use outside of this context and a subsequent extension of the new markers to all contexts of occurrence of the paradigm.

3. The new paradigm of auxiliaries

The creation of a new auxiliary *ma'* from the particle **ma'ak* not only influenced the shape of one of the sets of person markers, it also caused a whole series of chain grammaticalizations and reanalyses following in the footsteps of the grammaticalization of this new perfective auxiliary. The

total inventory of auxiliaries was provided in (1) above. Every single member of this inventory derives from a relatively recent process of grammaticalization or reanalysis. The sentences given in (9) to (22) serve to exemplify all the various auxiliaries. In many of the examples, as commonly in discourse, the different auxiliaries combine within single sentences. On most of the examples I shall comment little or not at all. I do, however, dwell a bit on some that show synchronic evidence for the recent grammaticalization of motion verbs.

Aspect-mode

- (9) *ma'* *kche'* *koraje* *'asta* *wäächi'k*
ma' *k=chê'* *koraje* *'asta* **wää=chi'k**
 pfv 1B=give anger till aux:be.able.to=cond

npa'ksdu'ka' *tum*
n-pa'ks-du'k-a' *tum*
 1A-*hit-arrive-appl one

'It made me so angry that I could have slapped him.' (Wichmann 1996: 239–41)

Cf. (13) and (15–16) below for other examples of *ma'* and (18) for another example of *wää*.

- (10) *'eep* *'u* *boy* *pikak* *tunkak*
'eep **'u** boy *y-päk-kak* **tunkak**
 again ipfv aux:go.and.return 3A-take-iter another
 'Again he went to find another.' (Wichmann 1996: 177)

- (11) *wa'* *nyaka'* *nchyooko'*
wa' *ny-yaka'* *ny-tzooko'*
 proh 2A-kill 2A-heart
 'Don't worry' (lit.: 'don't kill your heart'.) (Wichmann 1996: 209)

- (12) *bus* *nwat*
bus *n-wat*
 aux:know 1A-do
 'I know how to do it.' (Wichmann 1996: 191)

Second-position clitics

The two examples of =*chi*'k (13–14) illustrate the difference among the—presumably original—past reference function and the—presumably more recent—conditional meaning.

- (13) *pwes njemchi*'k *njak*, *dyim*,
 pwes njem=**chi**'k n-jak y-däm
 well there=past 1A-pass 3A-say

juch ma' nwyat *paktun* *dyim*
 juch ma' ny-wat pak-tun y-däm
 where pfv 2A-make *stream-road 3A-say

‘‘Well, there I was passing,’’ he said, ‘‘where you made the stream.’’ (Wichmann 1996: 219)

- (14) *jepchi*'k *däk* *wya*'k
 jepe'=**chi**'k **däk** y-wa'k
 3pron=cond aux:go 3A-ask
 ‘He was going to ask for her (propose in marriage).’

The following examples (15–16) illustrate the use of and contrast between the inchoative and terminative enclitics.

- (15) *ma*'te *chin* *shyo*'k
ma'=te y-tän y-so'k
 pfv=inc 3A-cut 3A-grass
 ‘He began to cut his grass.’ (Wichmann 1996: 185)

- (16) *ma*'y *nsos*
ma'=y n-sos
 pfv=term 1A-cook
 ‘I have finished cooking.’

Movement/aktionsart

Example (17) contains an instance of *meñ* ‘to come’ in its function as an auxiliary. It is clearly seen that it retains motion as one of its semantic components even in its use as an auxiliary expressing future. In contrast, (18) provides an example in which *meñ* has lost any reference to motion and solely expresses futurity. This periphrastic future is combined here with

the new morphological future in *-p*. Most commonly, as in (19), for instance, the motion verb expresses both tense and motion. The fact that the motion auxiliaries may either (a) express pure motion, (b) a combination of motion and tense or (c) pure tense may perhaps be taken as evidence that the process of grammaticalization is still ongoing. Examples where *däk* 'to go' refers respectively to pure motion and pure tense are given in (20–21). The last example (22) illustrates the third motion auxiliary *boy* (pronounced *mo'y* in some speakers). *Boy* ~ *mo'y* is historically a combination of the perfective auxiliary *ma'* and the motion verb 'oy 'to go and return'.

- (17) 'a'y d'u'uka' wääham meñ we'eke'
 'a'y y-yu'-ka' wää-h-am mēñ Ø-wê'k-e'
 if 3A-hunger-int aux:be.able.to-lig-now aux:come 3B-eat-dep
 'If he is hungry he may come and eat now.' (Wichmann 1996: 139)

- (18) ¿chi' nwyata'ap?, ;meñche nchyuunpakp!
 chi' ny-wat-a'-p mēñ=che ny-tuun-pak-p
 what 2A-do-appl-fut aux:come=just 2A-sit-have-fut
 'What do you want her for? You'll just have her sitting!' (= the girl is not going to be a good, hard-working house-wife) (Wichmann 1996: 251)

- (19) end'a' ee meñ ta kä'äs
 end'a' ee mēñ ta kä'äs
 neg somebody aux:come linB eat
 'Now nobody will come and eat us.' (Wichmann 1996: 135)

- (20) ma' däk ' yootäyaj 'el rey
 ma' däk y-'oota'-yaj 'el rey
 pfv aux:go 3A-call-3pl det rey
 'All went to call the king.' (Wichmann 1996: 131)

- (21) ya kduuñma, 'i 'a'y da'anma tum kuy,
 ya k-duuñe'-ma 'i 'a'y da'an-ma tum kuy
 ya 1B-old.woman-now and if old-now a tree

njusna' däk ñyumwaate' wo'kskü'da'apä'
 njuusa'=na' däk ny-duumu'-wat-e' Ø-wo'ks-kä'da'a=pä'
 how=still aux:go 2A-straight-make-dep 3B-crooked-adj=rel
 'I am old now, and if a tree is old, how can you straighten out the (branches) that are crooked?' (Wichmann 1996: 269)

Cf. (14) above for another example of *däk*.

- (22) *juch boy mya'y kuyam*
juch boy ny-ba'y kuyam
 where aux:go.and.return 2A-sell ashes
 '¿Where did you sell the ashes?' (Wichmann 1996: 279)

Cf. (10) above for another example of *boy*.

We shall now turn to a description of how the auxiliaries developed historically. This evolution is described in (23).

- (23) Summary of the development of auxiliaries in Texistepec Popoluca
1. *-wä 'perfective' (Wichmann 1995: 103) > Ø
 2. *ma'ak 'today (past time)' (Wichmann 1995: 373–4) > *ma* 'perfective'
 3. *'uy ~ 'u 'negative imperfective'⁷ > 'imperfective'; the imperfective, which was earlier expressed by means of the suffix *-pa, now enters into a paradigmatic relationship with the auxiliary *ma* 'perfective.'
 4. *wa'k ~ wa' 'conditional' (Wichmann 1995: 504) > *wa* 'negative imperative (prohibitive)'.⁸
 5. *chi'k 'past' > 'past' and 'conditional', substituting for *wa'k
 6. *-pa 'imperfective' (Wichmann 1995: 103) > *p* 'future'

(Other processes of grammaticalization of minor importance in the present context:)

7. Besides the new morfological future *-p*, another suffix develops: *-pa* 'immediate future.' The origin of this is currently unknown.

⁷ In Wichmann (1995: 258) the function of this auxiliary was reconstructed as **"negative imperative" (or **"prohibitive") on the basis of Chiapas Zoque data, but new data from San Miguel Chimalapa Zoque provided by Johnson (2000), which will be cited in Section 3 below, allows for reconstructing the function as **"negative imperfective," a function which is more compatible with that of the Texistepec Popoluca reflex. Although I am not presently able to provide a parallel example of a change from negative to positive polarity in the domain of the imperfective aspect from any other language, the change does not seem inconceivable.

⁸ A parallel example of the reanalysis of a conditional as a prohibitive is found in New Testament Greek, cf. Blass and Debrunner (1961: 189) (Royal Skousen and John Robertson, personal communication, October 2003), and the pragmatic proximity of the conditional and the prohibitive even emerges in English when a clause such as *iff you do this...* is pronounced in a menacing tone of voice, conveying the pragmatic effect of a prohibition.

8. After the grammaticalization of the new auxiliaries, others follow, which develop into clitics and express subaspects:
- a. *yah* 'to terminate' > =*y(a)* 'terminative' (enclitic of *ma*')
 - b. *ten* 'to begin' > =*te* 'inceptive' (enclitic of *ma*')

As mentioned above, the first change, which motivated a whole new paradigm of aspect-mode auxiliaries, was the loss of the perfective suffix. After this followed the grammaticalization of the particle **ma*'ak. The next step consisted in recruiting the particle **'uy* ~ *'u* "negative imperfective" to express the imperfective, which earlier was expressed by means of a *-*pa* suffix. This strategy has been called "paradigmatization" (Lehmann 1995), i.e., the tendency for languages to join together related categories in shared paradigms. Possibly because the old negative imperative had changed its function, a new negative imperative was needed.⁹ This was created by changing the function of **wa*'k ~ *wa*' "conditional." Finally, to make up for the loss of **wa*'k ~ *wa*' as a conditional marker, the particle **chi*'k, which earlier expressed past reference, became employed in this function, such that it now not only expresses past reference but also conditional. The suffix *-pa*, which is no longer used for the imperfective, changed to a future marker.

If we look again at (1), where the full system of auxiliaries is listed, we see that there are some auxiliaries in addition to the ones already discussed. Just like =*te* "inceptive" and =*y(a)* "terminative," these other auxiliaries are all grammaticalized verb roots, i.e. *wää* 'to be able to', *bus* 'to know how to', *däk* 'to go', *meñ* 'to come', *mo*'y/boy 'to go and have returned.'

If we had a window onto previous stages of the language we would probably see that these different steps were not as discrete as they look in retrospect. For instance, there was undoubtedly an overlap between steps 1 and 2 such that the pre-Textistepec Popoluca reflex of **ma*'ak and *-wä* both marked the perfective. Similarly the reanalyzed auxiliary *'u* may at an earlier stage have cooccurred with *-*pa*, redundantly marking the imperfective.

⁹ It is an open question whether proto-Zoquean **'uy* ~ *'u* marked *both* the prohibitive and the negative imperfective. If it did, the prohibitive would have been lost in Textistepec Popoluca, a loss which would fit in with the employment of the proto-Zoquean conditional for the prohibitive in this language.

The above description of the development of the paradigm of auxiliaries as a chained series of events should not be seen as anything but a description—it does not constitute an explanation proper. My use of expressions such as “recruit,” “create,” etc. are metaphorical in so far as they render grammatical changes in terms of wilful acts. To actually believe that a magical hand was involved in the developments would amount to falling victim to what Haspelmath (1999: 188) has described as the “Teleological Fallacy.” In the Conclusion I shall return to more general issues of explanation.

4. Diachronic evidence for the origins of the aspect-mode auxiliaries

In the following I shall provide examples of cognates of those Texistepec Popoluca morphemes that enter into the chain of major morphosyntactic changes described in (23), i.e. *ma'* “perfective,” *'u* “imperfective,” *wa'* “negative imperative,” *-p* “future.” For the enclitic *=chi'k* “past/conditional” it has not been possible to identify cognates. Because of its unknown origin, the hypothesis that we have suggested concerning the extension of its “past reference” meaning to “past reference” *as well as* “conditional” should be understood as internal reconstruction.

The sentence examples, which serve to show the how the cognates of the auxiliaries are used, are taken from key languages, that is, a language of each of the two non-Gulf Zoquean branches of Zoquean (see Figure 1.) All the examples are cited in a practical, standardized orthography (cf. footnote 3 above.)

A comparison of sentences with cognates of *ma'* in other Zoquean languages. **ma'ak* ‘today (past time)’ > Texistepec Popoluca *ma'* “perfective”:

Chiapas Zoque (Central Dialect [Copainalá])

- (24) *ma'ak* *man* *rancho' mo* *wa'y* *yojsu*
ma'ak Ø-*man*-*u* rancho-o'mo wa'y Ø-*yojs*-*u*
 today.(past.time) 3B-go-pfv farm-loc to 3B-work-pfv
 ‘Today he went to the farm to work.’ (Harrison et al. 1981: 74)

San Miguel Chimalapa Zoque

- (25) *gä tyempu mae ha'kkapa rroberta*
gä tyempu mae' Ø ha'k=ka'-pa rroberta
 that time rem 3A drown=die-ipfv Roberta
 'That time Roberta almost drowned.' (Johnson 2000: 19)

Texistepec Popoluca

- (26) *'i tunkak haa ma' däk kyamo'o*
'i tunkak haa ma' Ø-däk y-kamo'o
 and next day aux:pfv 3B-go 3A-cornfield.loc
 'And the next day he went to his cornfield.' (Wichmann, in press)

Comparison of sentences with cognates of 'u in other Zoquean languages.
 *'uy ~ 'u "negative imperfective" > Texistepec Popoluca 'u
 "imperfective":

Chiapas Zoque (Central Dialect [Copainalá])

- (27) *jyuyu kayu te' Jua'nis uy wyijtu motyo'mo*
y-juy-u kayu te' jwan'-is uy y-wijt-u mote-'ohmo
 3A-buy horse det Juan-erg aux:sub 3A-walk-pfv mud-loc
 'Juan bought a horse so he didn't have to walk in the mud.' (Harrison et al.
 1981:190)

- (28) *uy pokse teyjamo'mo, ma*
uy poks-e tey ham-'ohmo ma
 aux:neg sit-intr.neg.ipfv there sun-loc aux.fut

poksa kāmängä'mä
poks-a kāmān-kä'mä
 sit-imp shadow-loc

'Don't sit there in the sun; sit over there in the shadow.' (Harrison et al. 1981:190)

San Miguel Chimalapa Zoque

- (29) *'u ney poyzaktamawä*
'u ney poy=tzak-tam-A-wä
 neg.ipfv rcp run.away=leave-1/2pl-rcp-ipfv
 'We won't leave each other.' (Johnson 2000:109)

Texistepec Popoluca

- (30) 'u knäma'pa myatän
 'u kn-däm-a' pa ny-batän
 aux.ipfv 1\2-say-appl in.order.that A2-hear
 'I am telling you so that you know.' (Wichmann, in press)

Comparison of sentences with cognates of *wa'k* in other Zoquean languages. **wa'k* ~ *wa'* "conditional" > *wa'* "negative imperative" (not attested in San Miguel or Santa María Chimalapa Zoque).

Chiapas Zoque (Central Dialect [Copainalá])

- (31) *kyämejkäyu* soka's te' *papiñomo*
 y-kä-mejkäy-u soka-'is te' papiñomo
 3A-assoc-propose-pfv bachelor-erg det girl
wa'y ñäko'täjkaju
 wa'y y-nä-ko'täjkaj-u
 in.order.to 3A-caus.assoc-marry-pfv
 'The bachelor proposed to the girl that he might marry her.' (Harrison et al. 1981:191)
- (32) *wa' ñyaka'* *nchyooko'*
wa' ny-yaka' ny-tzooko'
 proh 2A-kill 2A-heart
 'Don't worry' (lit.: 'don't kill your heart'.) (Wichmann 1996: 209 [= ex. (11) above])

Comparison with sentences containing cognates of *-p* in other Zoquean languages. **-pa* "imperfective" > Texistepec Popoluca *-p* "future":

Chiapas Zoque (Central Dialect [Copainalá])

- (33) *wanba* te' *amajyon*
 wan-pa te' amajyon
 sing-ipfv det mockingbird
 'The mockingbird sings.' (Harrison et al. 1981: 434)

San Miguel Chimalapa Zoque

- (34) *mishshän täpa*
 mish 'än+ tä-pa
 2pron 1A+ love-ipfv
 'I love you.' (Johnson 2000: 102)

Texistepec Popoluca

- (35) *pero joye kbeñkakp 'eepä'*
 pero joye k=bêñ-kak-p 'eepä'
 but tomorrow B1=come-iter-fut again
 'But tomorrow I'll come again.' (Wichmann 1996: 7)

5. Conclusion

In this paper I have provided a diachronic analysis of the paradigm of auxiliary verbs in Texistepec Popoluca. The grammaticalization of the paradigm is partly a result of the general change from a verb-final to a verb-initial type which is characteristic of various Mixe-Zoquean languages, including the neighbouring language Olutec (Oluta Popoluca), which pertains to the Mixean branch of the family. In Texistepec Popoluca as currently spoken, there is a marked preference for a verb-initial constituent order. We have seen that suffixes, which is a verb-final trait, have been replaced with preverbal auxiliaries, a trait that agrees with the basic verb-initial order. I would have liked to add more examples of grammaticalization in Texistepec Popoluca, in particular a large number of prefixes that have become grammaticalized in the course of the history of the language. However, some examples of the same nature, drawn from other Mixe-Zoquean languages, are found in Wichmann (1993). It is possible to show that pre-*proto-Mixe-Zoquean* was an almost exclusively suffixing language in agreement with the verb-final type to which it has been assigned.

I hope to have demonstrated that typological drift is so intimately associated with areal convergence and phonological factors that it is difficult, at least in this case, to identify which—if any—of the three factors are more important. The main, general conclusion, then, is that monolithical explanations are not sufficient when we are dealing with complex cases of syntactic change.

Towards the end of Section 2 I alluded to Haspelmath's recent discussion of explanations in historical linguistics. The author introduces the notion of "Teleological Fallacy," i.e. the mistake of assuming that useful or needed things are sufficiently explained by their usefulness or the need for them, in other words "taking functional statements as sufficient explanation" (Haspelmath 1999: 188). An example cited by Haspelmath (1999: 189) is the following statement by Lightfoot (1999: 121): "*Of* was introduced in order to Case-mark a NP/DP which would not otherwise be Case-marked." This type of "explanation" is not much different from the descriptions made above of the seeming rationales in the development of the new system of Texistepec Popoluca auxiliaries. I agree that the demonstration that the new system could have come about as a series of interlocking changes does not suffice as an explanation, but the type of demonstration that I have tried to make is nevertheless a valid and necessary functional *description*. As far as the level of explanation is concerned I have already appealed to drift and areal convergence. But it is important to remember that a completely arbitrary change, namely the phonological loss of final vowels may have set the whole development in play. We have also seen a seemingly arbitrary triggering by phonological change of the development of a new set of person markers, cf. Section 1. Inspired by evolutionary biology, and also acknowledging works such as those of Croft (1996, 2000), Kirby (1999), and Nettle (1999) that are kindred in spirit, Haspelmath (1999) appeals to a general notion of adaptation as an avenue for explanation in historical linguistics. Some of the linguists who have commented on his article, among them Dahl (1999: 209–10), have pointed out that the analogy of linguistic change to biological evolution is weakened by the absence of a source "feeding" the pool of variation, i.e. something that might correspond to random mutation in genetics. The example of the development of the Texistepec Popoluca paradigm of auxiliaries, however, suggests that random phonological change may induce grammatical variants, some of which are then "selected" according to principles of functional fit, i.e. general conformity with the language types represented in the area and overall linguistic design. It would be preposterous to argue that phonological change is the sole trigger of grammatical change, but phonological change does frequently affect grammatical structures, and whenever this occurs there is a case for positing a logic of linguistic adaptation which is more than superficially analogous to adaptation in biology.

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Contact information:

Søren Wichmann
Max Planck Institute for Evolutionary Anthropology
Deutscher Platz 6
D-04103 Leipzig
soerenw@hum.ku.dk