

# What is ‘contact-induced grammaticalization’? Evidence from Mayan and Mixe-Zoquean languages<sup>1</sup>

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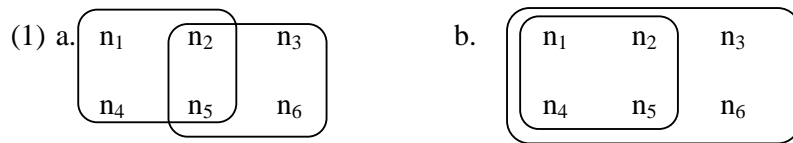
## 1 Language contact and grammatical calquing

It has long been known that not only formal elements of language (e.g. phonemes, allophones, phonological rules) and form meaning-pairings or ‘Saussurean signs’ (morphemes, constructions) can be ‘transferred’ from one language to another as a consequence of language contact, but also aspects of semantic organization or conceptualization (e.g. Weinreich 1953, Thomason & Kaufman 1988). For instance, conventionalized metaphors with the status of a lexeme can be borrowed (‘loan translations’ or ‘calques’), new values for existing grammatical categories can be imported from a contact language (e.g. by adding a dual to an originally two-fold number system), and even complete linguistic subsystems such as definiteness or aspect marking may be newly created through language contact. The latter two types of processes, often also called ‘grammatical calquing’ (Ross 1999), ‘structural borrowing’ (Winford 2003), ‘pattern transfer’ or ‘indirect (morphosyntactic) diffusion’ (Heath 1978, Aikhenvald 2002), have received some attention in recent work by Bernd Heine and Tanya Kuteva under the heading ‘grammatical replication’ (e.g. Heine & Kuteva 2003, 2005). As an example of ‘grammatical replication’, Heine & Kuteva (2003, 2005) mention the use of *wh*-pronouns as relativizers, which is a typical feature of European languages (cf. Haspelmath 1998), and which has extended its territory not only to the more ‘peripheral’ languages of the European *sprachbund* (cf. van der Auwera 1998), but also to non-European languages that have been in contact with European ones (e.g. Tariana/North Arawak under the influence of Portuguese; cf. Aikhenvald 2002: 183, Heine & Kuteva 2005: 3). Such processes of ‘grammatical replication’ are so pervasive and have been reported on so extensively that we will take their existence for granted. For more examples and information, the reader is referred to the work by Aikhenvald (2002), Heine & Kuteva (2003, 2005) (as well as further references cited there) and several contributions to this volume.

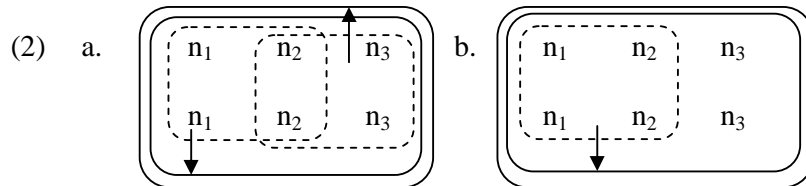
While the result of grammatical calquing – convergence at some level of grammatical organization – is usually fairly obvious and easily describable, the process itself is much more poorly understood. In general, it seems to be clear that there is an element of ‘interlingual identification’ involved (Weinreich 1953: 7-8, 32; cf. also Heine & Kuteva 2003: 531), in so far as two markers from different languages are *equated* in terms of their semantic or distributional properties. This ‘act of identification’ may lead to a process which has been called ‘polysemy copying’ by Heine & Kuteva (2003, 2005), and which can roughly be described like this: at a first stage, a marker of one language and a marker of some contact language have overlapping functions, or one of the markers is more specific than the other. Using the semantic map model, these two situations can be represented as in (1), where the ‘conceptual nodes’  $n_1$ – $n_6$  stand for specific meanings or functions in a semantic map framework, and the rounded rectangles indicate the range of functions associated with two markers from different languages:

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As a consequence of language contact, one or both of the markers may change their range of meanings. Accordingly, the functions of the two markers may be ‘aligned’, i.e. their range of meaning may become more or less identical, as is illustrated in (2) (the dotted rectangles indicate the function/distribution before language contact). We will refer to this process as ‘semantic map assimilation’:



The process of ‘semantic map assimilation’ illustrated in (2) is intuitively very simple and can certainly account for many cases of grammatical convergence (cf. also Heine & Kuteva 2003: 555-561, 2005: 100-103 on ‘polysemy copying’). The example mentioned above – the use of question pronouns as relativizers in Tariana – can easily be accommodated within this model: the (native) element of the target language – in the case of Tariana, the question word *kwana* – extends its territory on the semantic map, thus covering roughly the semantic space corresponding to the (more general/polysemous) Portuguese pronoun *que*.

## 2 Contact-induced grammaticalization

Unfortunately, not all instances of grammatical convergence can be explained as easily as the Tariana example, and Heine & Kuteva (2003, 2005) even claim that ‘polysemy copying’ can only account for a small minority of cases. They argue that more often than not, grammatical convergence of the type outlined above is the result of ‘contact-induced grammaticalization’:<sup>2</sup> rather than simply copying the range of functions associated with a given marker from a contact language, languages carry out a process of grammaticalization that targets the function of the source language element. Heine & Kuteva distinguish two types of such ‘contact-induced grammaticalization’: ‘ordinary contact-induced grammaticalization’ and ‘replica grammaticalization’. ‘Ordinary contact-induced grammaticalization’ is described as follows (cf. Heine & Kuteva 2003: 533, 2005: 81):

- (3) Ordinary contact-induced grammaticalization
- Speakers notice that in language **M** [the model language or source language] there is a grammatical category **Mx**.
  - They create an equivalent category **Rx** in language **R** [the replica language or target language] on the basis of the use patterns available in **R**.
  - To this end, they draw on universal strategies of grammaticalization, using construction **Ry** in order to develop **Rx**.
  - They grammaticalize **Ry** to **Rx**.

<sup>2</sup> Both the term and the idea may be due to Nau (1995), a work Heine and Kuteva frequently also refer to. In this paper we focus on the hypotheses by Heine and Kuteva rather than those by Nau, since the former are more explicit and also more ambitious. For the subtype of contact-induced grammaticalization discussed under (3), Heine & Kuteva (2003: 562; 2005: 270) also see a parallel and a precursor in Bruyn (1995). We would rather interpret Bruyn (1995) as an *avant la letter* criticism and plea for caution (a point already made in van der Auwera et al. 2005: 210).

Heine & Kuteva (2003: 534) provide the example of the French-based creole Tayo, which has – supposedly – ‘replicated’ a dual on the model of the Melanesian contact languages Drubéa and Cèmuhi. The relevant marker – a pronominal suffix *de* – has been derived from a numeral meaning ‘two’ (cf. the numeral *deux* of the lexifier language French). Thus, a new value (‘dual’) for an existing category (‘number’) has been introduced into Tayo grammar under contact influence, but no pattern of polysemy associated with any specific marker has been transferred, since the ‘model languages’ (Drubéa, Cèmuhi) do not use a numeral ‘two’ as a dual marker (neither does French; in Drubéa and Cèmuhi no dual suffix can be isolated at all). The result of this process is convergence at the level of pronominal paradigm architecture: even though the relevant elements in the contact languages are formally completely different, their pronominal paradigms have cells with identical feature values.

The second type of contact-induced grammaticalization is called ‘replica grammaticalization’ by Heine & Kuteva. In this case, the process of grammaticalization in the target language (or ‘replica language’) is not only ‘instigated by’ the contact language, the relevant languages also use the same underlying source meaning; i.e., rather than “draw[ing] on universal strategies of grammaticalization” (cf. (1c) above), the target language adopts the same grammaticalization path that was also taken by the source language. ‘Replica grammaticalization’ is described as follows (Heine & Kuteva 2003: 539, 2005: 92):

(4) Replica grammaticalization

- a. Speakers notice that in language **M** there is a grammatical category **Mx**.
- b. They create an equivalent category **Rx** in language **R**, using material available in **R**.
- c. To this end, they replicate a grammaticalization process they assume to have taken place in language **M**, using an analogical formula of the kind [**My** > **Mx**]: [**Ry** > **Rx**].
- d. They grammaticalize **Ry** to **Rx**.

As an example for this Heine & Kuteva (2005: 93) mention the ‘hot-news perfect’, which Irish English has developed on the model of Irish Gaelic, using a construction of the form ‘x is after V-ing’ (e.g. *He’s after going*, corresponding to Irish *Tá sé [tar éis] imeacht*,<sup>3</sup> lit. ‘is he after going’; cf. Greene 1979: 125, Pietsch 2005: 9). As in the Tayo case discussed above (‘ordinary contact-induced grammaticalization’), a new value (‘hot-news perfect’) for an existing category (‘tense-aspect’) is introduced into the target language; but unlike in the Tayo case, not only the result of the process, but also the process itself has – supposedly – been copied from one language to another.

Heine & Kuteva (2003: 555-559, 2005: 100-103) put forward four arguments to substantiate their claim that most cases of ‘grammatical replication’ are instances of ‘contact-induced grammaticalization’ rather than ‘polysemy copying’: (i) in most if not all of the relevant cases, the extension of a pattern of polysemy works in the direction of ‘more grammatical’; (ii) the replica construction is always less grammaticalized than the model construction; (iii) there are no intermediate stages in ‘polysemy copying’ while ‘replica grammaticalization’ is a gradual development; and (iv) replicated “categories tend to exhibit properties that bear witness to their grammaticalization history” (Heine & Kuteva 2005: 103).

While we agree with Heine & Kuteva that ‘polysemy copying’ does not qualify as a sufficient explanation for all cases of grammatical convergence, we do not believe that ‘contact-induced grammaticalization’ as an intentional process targeting specific grammatical categories is the only possible alternative explanation. We will argue that the type of grammatical convergence under discussion can be regarded as a process which encompasses two instances of interference, namely (i) interlingual identification of form-meaning pairings, and (ii) interlingual identification of linguistic subsystems, which involves the transfer of

<sup>3</sup> ‘Compound prepositions’ such as *tar éis* are common in Irish Gaelic.

‘routines’ (i.e. conventionalized uses of form-meaning pairings). Given that ‘contact-induced’ processes of grammaticalization are by definition more recent than the corresponding processes in the model language, the ‘replica construction’ is usually less grammatical than the ‘model construction’ (cf. Heine & Kuteva’s point (ii)). However, as we will show in Section 4, semantic map assimilation also seems to be possible in cases where the target language marker is more grammaticalized than the model language marker. Heine & Kuteva’s point (iv), i.e. the observation that the target language constructions “tend to exhibit properties that bear witness to their grammaticalization history”, as well as the fact that the relevant processes are usually gradient and unidirectional (points (i) and (iii)), can, in our view, be related to the ‘transfer of routines’ mentioned above, which is associated with the ‘interlingual identification of linguistic subsystems’. As we will argue, such a transfer of routines (e.g. the grammatical indication of duality) introduces and/or increases the frequency of a given marker or construction in the target language, and this, in turn, leads to grammaticalization. Accordingly, all processes of ‘contact-induced grammaticalization’ are, to a certain extent and, most notably, in their final stages, language-internal. There is consequently no reason to believe that they should not obey general principles of language change such as the ones pointed out by Heine & Kuteva (2003, 2005).

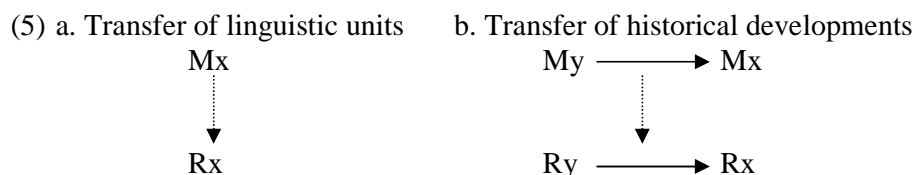
### 3 Can grammaticalization be borrowed?

The concept of ‘contact-induced grammaticalization’ encompasses a number of rather strong claims, some of which are at variance with recent models of language change (e.g. Croft 2000). In particular, they attribute a considerable degree of linguistic meta-knowledge to speakers, who are regarded as having not only an active knowledge of what is a grammatical category and what is not (“[s]peakers notice that in language M there is a grammatical category Mx”) – as well as the will to create grammatical categories in one of their languages – but also an awareness of processes of grammaticalization (“they replicate a grammaticalization process they assume to have taken place in language M”). Even though Heine & Kuteva (2003, 2005) explicitly deny that speakers have historical knowledge about any of their languages, they still hold the view that such diachronic processes are in some way “accessible” to speakers (cf. the quotation given below). With respect to the development of third person plural pronouns into polite second person singular pronouns in the Silesia dialect of Polish – presumably an instance of ‘replica grammaticalization’ under the influence of German – they remark:

Most likely, these Polish speakers were unfamiliar with the historical factors that were responsible for the grammaticalization in German; still, from the sociolinguistic, pragmatic, and grammatical information that was accessible to them they had enough information for replication. Obviously, replication did not mean that the Polish speakers repeated the history of the German *Sie*-construction; however, replication was not confined to simply copying a polysemy pattern [...] that they found in the model language but rather involved a process that was structurally not unlike the one speakers of the model language had undergone centuries earlier. (Heine & Kuteva 2005: 93)

The assumption that speakers at least have access to information about diachronic processes of change in the ‘model language’ seems to be necessary if one wants to maintain the idea of ‘replica grammaticalization’ as described in (4) above (though not in the case of ‘ordinary contact-induced grammaticalization’, which only presupposes an awareness of grammatical categories and an intentional creation of such categories). Moreover, it seems necessary to assume collective and cross-generational action since, as Heine & Kuteva (2003: 533) point out, language change “does not happen overnight and may involve several generations of speakers”.

As the brief summary provided above has shown, Heine & Kuteva take it that not only linguistic elements or units such as phones, morphemes or constructions may be transferred from one language to another (we could speak of ‘transfer of linguistic units’), but also processes of language change (‘transfer of linguistic processes’): “[i]n this process [replica grammaticalization], it is not a grammatical concept but rather a grammaticalization process that is transferred from the model (M) to the replica language (R)” (Heine & Kuteva 2005: 92). The difference between ‘transfer of (linguistic) units’ and ‘transfer of (historical) processes’ is depicted in a simplified way in (5) (dotted arrows indicate contact influence):



In this chapter, we will aim to show that there is a way of interpreting the notion ‘contact-induced grammaticalization’ which is based on the two types of interference mentioned above, both of which can be regarded as instances of ‘transfer of linguistic units’ (or properties of such units) as illustrated in (5)a: (a) interlingual identification of form-meaning pairings, and (b) interlingual identification of linguistic subsystems. These two types of ‘interlingual identification’ differ in terms of what is identified: in the first case, two form-meaning pairings such as morphemes or constructions from different languages are equated in terms of their function or distribution. In the second case, domains of grammatical organization are interlingually identified, and specific types of ‘routines’ or category values are transferred from one language to another. As we will aim to show, the two processes are orthogonal to each other so that they may occur either separately or in combination. Accordingly, we will distinguish three types of contact-induced change: (i) ‘interlingual identification of linguistic subsystems’ plus ‘interlingual identification of form-meaning pairings’, (ii) ‘interlingual identification of linguistic subsystems’ without ‘interlingual identification of form-meaning pairings’, and (iii) ‘interlingual identification of form-meaning pairings’ without ‘interlingual identification of linguistic subsystems’ (in the fourth possible combination – no interlingual identification of either subsystems or form-meaning pairings – nothing happens). In the following two sections, we will first have a closer look at ‘interlingual identification of form-meaning pairings’ (Section 4) and then consider ‘interlingual identification of linguistic subsystems’ (Section 5). In Section 5, the combination of the two processes will also be discussed.

#### 4 Interlingual identification of form-meaning pairings

The process of semantic map assimilation illustrated in (2) above can be made more explicit as follows: there are two signs from two different languages, say Mx (from the model language) and Ry (from the replica/target language). The sign Mx of the model language is associated with two conventionalized uses or ‘routines’ (say, ‘question word’/Routine1 and ‘relativizer’/Routine2). The sign of the replica/target language – Ry – is used for only one routine (‘question word’/Routine 1). Once Mx and Ry are interlingually identified, Ry will also be used (by individual speakers) to express relativization. At this point, such uses are still *ad hoc* and may be regarded as improper usage by conservative speakers. Once the novel use of Ry with Routine2 has been conventionalized, the pattern of polysemy associated with Ry is extended and ‘assimilated to’ the one of Mx (i.e., Ry becomes Rx). This development is illustrated in Diagram 1 (cf. also (2) above, which takes an onomasiological perspective, while Diagram 1 represents the process from the perspective of the markers involved). It is

important to bear in mind that we employ the terms ‘use’ and ‘routine’ for different things, i.e. the former for the *ad hoc* ‘use’, and the latter for the conventionalized one.

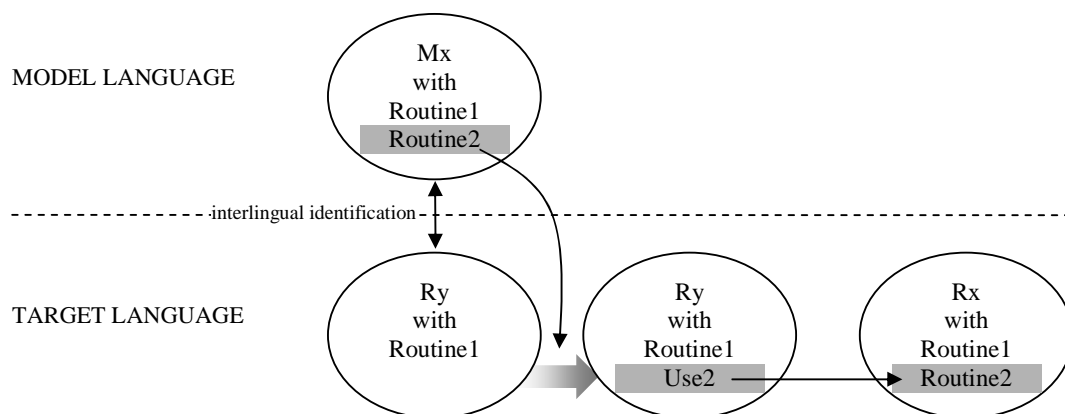


Diagram 1: Semantic map assimilation from the perspective of the markers involved

As a result of ‘semantic map assimilation’, the marker of the replica language Ry may become more grammatical, for instance, in so far as it is used in more contexts (and therefore with a higher frequency), in so far as the meaning becomes more general, etc. While these processes are clearly ‘contact-induced’ to the extent that they are direct reflexes of language contact, the formal symptoms of grammaticalization (such as phonetic erosion, increasing fixedness, etc.) should be regarded as language-internal developments, which follow from the semantic and pragmatic ones pointed out above.

Semantic map assimilation seems to be a rather common process with function words. As another pertinent case we may mention the use of comitative prepositions as, first, NP conjunctions and, later, clause conjunctions in Mesoamerican languages, the latter extension supposedly having taken place under the influence of Spanish (cf. Campbell 1987: 256-7, Heine & Kuteva 2005: 16 on Pipil; parallel processes can be observed in many other Mesoamerican languages). The use of specific body-parts as local prepositions (relational nouns) in many Mesoamerican languages is another case in point (cf. Campbell et al. 1986 on Mesoamerican language in general, and Stolz & Stolz 2001: 1544, Heine & Kuteva 2005: 25 on the pattern of polysemy ‘shoulder/back’ more specifically). However, semantic map assimilation is also commonly found with grammatical elements. Moreover, it seems to work not only from more grammatical to less grammatical elements, but also *vice versa*. Fortescue (1984) conjectures that the Greenlandic modal suffixes *-sinnaa* (possibility) and *-sariagar* (necessity) have extended their range of functions from non-epistemic to epistemic modality under the influence of Danish: “Ordinary ‘verb-extending’ affixes *sinnaa* ‘can’ and *sariagar* ‘must’ may also be used modally [epistemically, VG & JvdA], perhaps under Danish influence (thus *sinnaalluar* ‘can well’, corresponding to Danish *kan godt*)” (Fortescue 1984: 293).

## 5 Interlingual identification of linguistic subsystems

In the type of interference discussed in this section, it is not a pair of form-meaning pairings that is subject to interlingual identification but the organization of an entire grammatical subsystem. As a starting point, there is a category in the model language M – say, Mc – and a category Rc in the target language R. Mc and Rc are functionally similar, though they differ

in terms of their specific category values. For instance, the category ‘number’ may have the values ‘singular’, ‘dual’ and ‘plural’ in the model language, while it only has ‘singular’ and ‘plural’ in the target language. Thus, the target language lacks both a ‘routine’ of the model language (the indication of duality), and a grammatical marker to express such a routine.

If the two categories  $M_c$  and  $R_c$  are interlingually identified, their paradigmatic structures are assimilated, i.e. the same types of routines are (obligatorily) expressed in both languages. In other words, the relevant categories adopt paradigms with the same number and types of cells. Given that the replica language lacks not only one routine of the model language (‘dual’), but also a marker for expressing that routine, a new grammatical sign needs to be created (a dual marker). At a first stage, novel uses of the newly created sign will be sporadic, and only in a second (language-internal) step will they turn into a routine, thus becoming an integral part of the paradigmatic make-up of the relevant category. This development, which we will call ‘category assimilation’, is illustrated in Diagram 2:

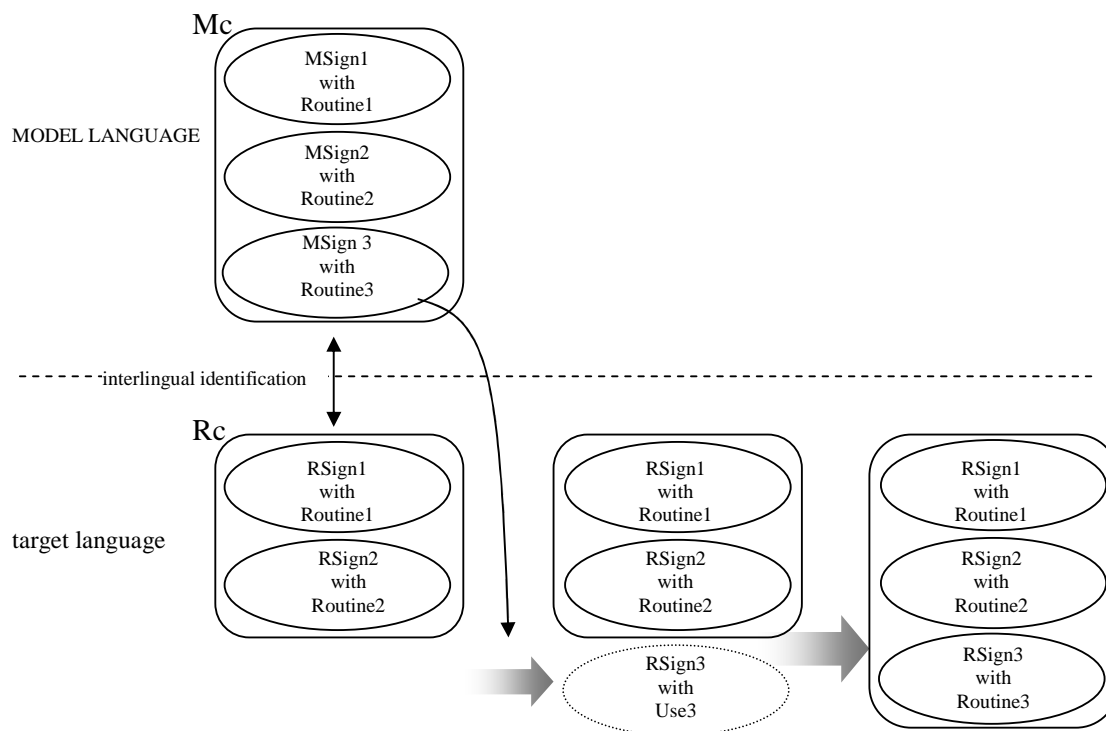


Diagram 2: Interlingual identification of linguistic subsystems

The question arises what kind of marker will be used to express the new routine in the target language (RSign3 in Diagram 2). In the type of processes under consideration, it is always material of the target language itself that is used for that purpose (i.e. we are not dealing with the borrowing of entire morphemes). Inspiration in the formation of a new sign may or may not come from the model language. This difference obviously mirrors the distinction between ‘replica grammaticalization’ and ‘ordinary contact-induced grammaticalization’ made by Heine & Kuteva (2003, 2005): in the first case, inspiration comes from the model language, and in the second case cross-linguistically common pathways of grammaticalization are taken. In terms of the model proposed here, the difference can be phrased like this: in one case, there is both ‘interlingual identification of linguistic subsystems’ and ‘interlingual identification of form-meaning pairings’, and in the second case there is only ‘interlingual identification of linguistic subsystems’. The latter scenario covers cases such as the development of a dual in Tayo. We will not discuss such cases any further. Instead, we will aim to show why Heine &

Kuteva’s (2003, 2005) ‘replica grammaticalization’ can be regarded as the combination of the two types of interlingual identification pointed out above.

Let us briefly consider the ‘hot news perfect’ of Irish English for illustration. In a simplified and idealized way, the development can be described as follows:<sup>4</sup> bilingual speakers of Gaelic and English interlingually identified the tense-aspect systems of their two languages, which led to the introduction of a new value into the system of (their variety of) English (‘transfer of routine’). At the same time, the various components of the Irish construction and corresponding elements from English were interlingually identified, in particular: (i) the relevant prepositions of Gaelic (different prepositions can be found, e.g. *tar éis*, *d’éis*, *i ndiaidh*) and the English preposition *after*; (ii) the category ‘verbal noun’ of Irish and the English category ‘gerund’; and (iii) the Gaelic copula *tá* (also called ‘substantive verb’) and the English copula *be*. Each of the processes can be regarded as an instance of ‘interlingual identification of form-meaning pairings’. Once these morphemes were interlingually identified, a construction of the form [*be after V-ing*] could be formed in English on the model of the Gaelic construction. This construction filled the ‘gap’ in the paradigm of the tense-aspect system of Irish English (relative to Gaelic), thus allowing for the expression of a ‘hot-news perfect’.

A similar development can be assumed for some of the cases discussed by Heine & Kuteva (2005) under the heading ‘replica grammaticalization’, for instance the use of a construction involving a verb meaning ‘to come’ for the expression of deontic modality in Estonian and Latvian (cf. Stolz 1991: 79-80, Heine & Kuteva 2005: 24), or the use of a reflexive construction to express volition in Southern Balkanic Romani and Bulgarian (Boretzky & Iglá 1999: 719, Heine & Kuteva 2005: 26).

As we have tried to show, interlingual identification of linguistic subsystems and of form-meaning pairings are independent of and orthogonal to each other. Four cases can thus be distinguished, according to the presence or absence of each of the processes (in one case, neither of the processes takes place, i.e. nothing happens). This is illustrated in Table 1 with one example for each type:

	<b>IntId of subsystem</b>	<b>no IntId of subsystem</b>
<b>IntId of form-meaning pairing</b>	Irish English hot-news-perfect <i>[be after V-ing]</i>	Tariana relative pronoun <i>kwana</i>
<b>no IntId of form-meaning pairing</b>	Tayo dual <i>-de</i>	nothing happens

Table 1: Interlingual identification of subsystems and of form-meaning pairings

In the following sections, we will discuss three instances of grammatical convergence between Mixe-Zoquean and Mayan languages. We will aim to show that all these cases can be accommodated within the model illustrated in Table 1, and that they can be regarded as different instances of the top-left cell in Table 1, i.e. of cases where both linguistic subsystems and form-meaning pairings have been interlingually identified. We will start with some general remarks concerning contact between Mayan and Mixe-Zoquean languages in Section 6. In Section 7, the auxiliary constructions of Tzotzil and Zoque, and the parallels between them, are discussed in some detail. Section 8 presents relevant data from the domain of modality. In Section 9, some hypotheses are made concerning the types of ‘linguistic transfer’ that can be assumed to have taken place in the languages under consideration, and Section 10 concludes with some general remarks.

<sup>4</sup> The description is simplifying in several respects. For instance, the ‘after-perfect’ is not only used as a ‘hot-news perfect’ but, at least in earlier stages of Gaelic, also with a completive use; cf. Pietsch (2005: 9) for a brief survey.

## 6 Language contact between Mayan and Mixe-Zoquean languages

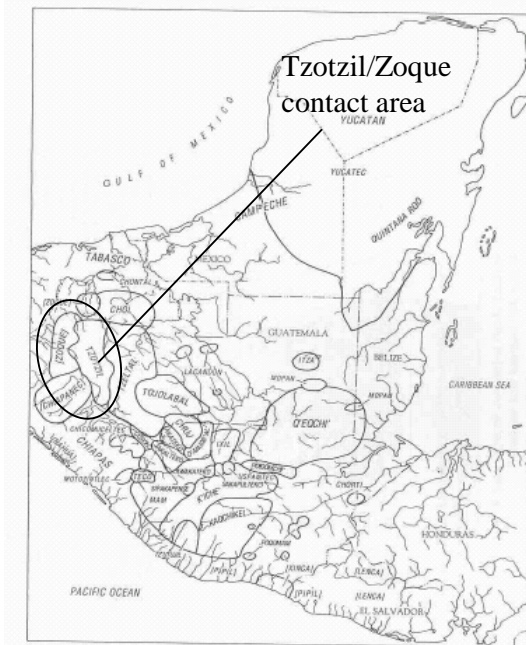
Next to the Balkans and South Asia, Mesoamerica is probably one of the best described linguistic areas (cf. Campbell et al. 1986, van der Auwera 1998, Stolz & Stolz 2001). The fact that the languages under consideration in this paper form part of this area is, however, largely irrelevant. What is much more important is that they have been in direct contact for many centuries and indisputably display traces of convergence both in the lexicon and at different levels of grammar. Zavala (2002: 169) states that “[i]t is well known that Mayan and Mixe-Zoquean languages share a large number of lexemes. This lexicon is shared not for accidental reasons but because these linguistic communities were in close contact and underwent situations of prolonged bilingualism in the pre-Colombian period” (Zavala 2002: 169, our translation). Zavala then goes on to demonstrate that there are also considerable convergence features in the grammars of Mayan and Mixe-Zoquean languages. In Sections 7 and 8, we will zoom in even closer than Zavala (2002) and concentrate on two languages that are spoken in the heart of the Mayan–Mixe-Zoquean contact area, i.e. in the western part of the Mexican state of Chiapas, namely Tzotzil (Mayan) and Chiapas Zoque (Mixe-Zoquean). A map of the languages of Chiapas is given in Figure 1.

In his family-level comparison, Zavala (2002) concentrates on three contact features: (i) auxiliary constructions, (ii) constructions involving directional roots, and (iii) constructions with secondary predicates. Given that the first of these topics will be detailed in a section of its own with reference to Tzotzil and Chiapas Zoque (Section 7), we will here only summarize the other two features.

Mayan languages are well known for their elaborate conceptualization of space (cf. Haviland 1993, 1994, 1996; Brown 1994, 2003; Aissen 1994; Bohnemeyer & Stolz 2006, etc.). They are very careful in describing the direction of movement, even with predicates that do not convey motion by themselves. We will use examples from Tzotzil to illustrate this. In Tzotzil, directionals are formed by adding a suffix *-el* to elements of a closed class of verbal roots.

The 14 ‘directionals’ listed by Haviland (1993: 37) are given in (6) (note that the class of ‘directionals’ contains two elements that do not convey motion, namely *lik-el* ‘start[ing], aris[ing]’ and *vay-el* ‘sleep[ing]’, but because these roots clearly form part of this class morphologically and distributionally they are usually included in it):

- (6) deictically anchored motion:
- batel* ‘away from speaker’
  - talel/tal* ‘come’
  - k’otel* ‘arrive there’
  - yulel* ‘arrive here’
- point-oriented motion
- ech’el* ‘pass by, away’
  - sutel* ‘return’
  - komel* ‘stay’
  - helavel* ‘pass by’



MAP 13 Mayan Languages  
(redrawn after Campbell 1988b insert, map of Mayan languages)

enclosure or region oriented motion

*och'el* enter

*lok'el* 'exit'

vertical axis motion

*muyel* 'ascend'

*yalel* 'descend'

aspectuals

*likel* 'arise, start'

others

*vayel* 'sleep'

Directionals are right-adjoined to the main predicate. They may be combined, thus providing more than one piece of information relating to the movement of some participant:

(7) *ʔa l-a-kaʔ-ik-e ʔich'-ik muy-el tal ʔul*

TOP DET-2POSS-horse-PL-CL take.IMP-PL ascend-DIR COME.DIR CL

'Your horses, bring them up here.' (Zavala 2002: 181)

The main predicate *ʔich'* basically means 'receive, carry, take' (cf. Laughlin 1975: 56). It does not convey motion. The first directional *muyel* indicates that there is upward motion, and the second directional anchors that motion deictically, i.e. the sentence can roughly be paraphrased as 'carry them moving upwards and towards me'.

As shown by Zavala (2002), Mixe-Zoque languages likewise have a closed class of roots which correspond very closely to the ones found in Mayan: "The paradigms of directionals which exist in Mixe-Zoque and in Mayan languages are remarkably similar in terms of the number of their forms, their semantics and the place they occupy behind the verb" (Zavala 2002: 181). If we compare the directionals of (Zinacantán) Tzotzil to those of (Chapultenango) Zoque, the parallelism is in fact striking. Table 2 summarizes the inventories of both languages, which are almost completely identical, as far as the meanings expressed are concerned. Chapultenango Zoque has one root which Tzotzil lacks (*hahk* 'cross'), and Tzotzil has the two aforementioned exceptional roots which do not convey motion, viz. *likel* 'start(ing)' and *muyel* 'sleep(ing)'. Still, the overall conceptualization of motion in the predicate complex is strikingly parallel. Zavala (2002: 181-183) argues that the parallelism is due to transfer from Mayan to Mixe-Zoquean languages:<sup>5</sup>

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<sup>5</sup> Zavala (2002) argues on the basis of phonological evidence (more attrition in Mayan), of productivity (higher frequency and more combinability in Mayan than in Mixe-Zoquean) and of distributional factors (restriction to verbal predicates). We may add to this that some Mixe-Zoquean languages seem to use only three or four types of motion in that construction (e.g. San José El Paraíso Mixe; cf. Section 6).

	Tzotzil	Zoque
go (away)	<i>bat-el</i>	<i>mak</i>
come (here)	<i>tal(-el)</i>	<i>mit</i>
arrive (there)	<i>k'ot-el</i>	<i>nuʔk</i>
exit	<i>lok'-el</i>	<i>puht</i>
stay	<i>kom-el</i>	<i>tʒʌʔi</i>
ascend	<i>muy-el</i>	<i>kiʔm</i>
descend	<i>yal-el</i>	<i>mʌʔm</i>
enter	<i>och'-el</i>	<i>tʌhkʌʔ</i>
pass	<i>helav-el</i>	<i>kʌt</i>
cross	–	<i>hahk</i>
return	<i>sut-el</i>	<i>wituʔ</i>
start	<i>lik-el</i>	–
sleep	<i>vay-el</i>	–

Table 2: Directional roots in Zinacantán Tzotzil and Chapultenango Zoque

There is an important difference between Tzotzil and Zoque on the formal side, however: while Tzotzil uses an adjunction structure to encode motion in terms of directionals (cf. (7) above), Zoque uses incorporation for that purpose. Some pertinent examples are given in (8). We will refer to this construction of Mixe-Zoquean languages as the ‘incorporated motion’ construction:

- (8) a. *Y-ken-puht-u*  
 2ERG-see-go.out-CP  
 ‘He saw it going out.’
- b. *Y-ken-mit-u*  
 3ERG-see-come-CP  
 ‘He saw it coming.’
- c. *Y-ken-kiʔm-u*  
 3ERG-see-go.up-CP  
 ‘He saw it going up.’ (Zavala 2002: 179/80)

Structures comparable to the ones pointed out above exist in most Mayan and Mixe-Zoquean languages, but the specific inventories of ‘types of movement or direction’ are different. Referring to Kaufman (1997), Zavala (2002: 180) points out that such systems are found “in all branches and groups of the Mayan family with the exception of the Yucatecan and the Huastecan branches”, i.e. two of the most peripheral groups of languages. Within the Mixe-Zoquean family, constructions such as the one illustrated for Zoque in (8) are likewise found in all branches, though the specific inventories of directional roots vary. Zavala (2002: 179) mentions that Olutec has 13 roots entering into the ‘incorporated motion’ construction (i.e., two more than Chapultenango Zoque; cf. Table 2). However, there are also languages of the Mixean branch which seem to have a much more reduced inventory of verbs used in this construction, in particular those which show less obvious indications of contact with Mayan languages. According to van Haitsma & van Haitsma (1976: 27-28), the Mixe dialect of San José El Paraíso has only three verbs of motion occupying the second slot in this construction, namely *muHk*<sup>6</sup> ‘to come together’, *naHš* ‘to pass’ and *kek* ‘to run away’. In addition to those, there are some verbs which do not express movement and which also enter into the V+V-

<sup>6</sup> Capital ‘H’ indicates aspiration, which van Haitsma & van Haitsma (1976) analyze as a supra-segmental feature of the syllable.

composition process illustrated in (8) (e.g. *ta'k* 'to weave' and *wa'kš* 'to divide'). Given that San José El Paraíso is a relatively conservative dialect, this seems to suggest that Mixe-Zoquean languages with a larger set of 'directionals' extended that category under contact influence from Mayan (cf. also Note 5).

The second reflex of contact between Mixe-Zoquean and Mayan languages pointed out by Zavala (2002) concerns secondary or 'depictive' predicates (cf. Schultze-Bernd and Himmelmann 2004, Himmelmann & Schultze-Berndt 2005). In most Mayan languages, secondary predicates are expressed as constituents of their own as is the case, for instance, in Tzotzil, where they occupy a preverbal position, which is also used for focused constituents:

(9) Zinacantan Tzotzil

*chot-ol(-on) l-i-kom*  
 sit-POS(-1ABS) CP-1ABS-stay  
 'I remained seated.' (Zavala 2002: 183)

The Tzotzil construction does not point to language contact in any way. However, indications of grammatical convergence are found in other Mayan languages. As was illustrated with respect to the expression of 'directionals' above, Mixe-Zoquean languages usually allow V-into-V incorporation, or V+V composition. This construction is also found in Ch'ol (also spoken in Chiapas), where it is used for 'secondary predicates':

(10) Ch'ol (Mayan)

*tyi buch-k'oty-i aj-pekro*  
 PERF sit-arrive-VTI MASC-Pedro  
 'Pedro arrived sitting.' (Zavala 2002: 184)

Since incorporation is exceptional among Mayan languages while being a salient features of Mixe-Zoquean languages, Zavala (2002) hypothesizes that sentences such as (10) are the result of (semantic and structural) transfer from Mixe-Zoquean to Mayan: "[g]iven that the verbal compounds with predicate serialization is a pattern commonly found in the Mixe-Zoquean family and the only Mayan languages that have developed that pattern are those that surround the Mixe-Zoquean family, it is clear that incorporating secondary predication is an areal phenomenon and that Chol and Huastec borrowed it from the Mixe-Zoquean languages with which they are or were in contact at some point in time" (Zavala 2002: 184).

Secondary predication will not be discussed any further. It is nevertheless relevant because it illustrates that there has been structural transfer from Mixe-Zoquean to Mayan languages, not only in the lexicon but also in the grammar/morphology (remember that directionals have been claimed by Zavala 2002 to have gone the other way around, i.e. from Mayan to Mixe-Zoquean languages).

## 7 Auxiliary constructions in Tzotzil and Zoque

We will now consider two languages in more detail, i.e. Tzotzil and Zoque. As shown by Zavala (2002), there is clearly convergence at the family-level between Mayan and Mixe-Zoquean languages in the domain of auxiliary constructions. We will aim to show that there are some particularly striking parallels between Tzotzil and Zoque which go beyond the more general parallels pointed out by Zavala (2002). The presentation of the auxiliary construction will also pave the way for the comparison of the two modal systems in Section 8.

In both Tzotzil and Zoque, aspect and person inflection is distributed over the auxiliary and the main verb: the auxiliary inflects for aspect and the main verb inflects for person. In Tzotzil, the main verb appears in the subjunctive mood, which is marked by a

suffix *-uk/-ik-* on intransitive verbs, and by the absence of aspect marking with transitive verbs:<sup>7</sup>

(11) ‘primary auxiliary construction’ of Tzotzil

a. intransitive verbs

*ch-tal*                    *veʔ-ik-on*  
 ICP-come(AUX) eat-SUBJ-1ABS  
 ‘I’ll come to eat.’ [PK]

b. transitive verbs

*ch-tal*                    *h-k’opon*            *preserente*  
 ICP-come(AUX) 1ERG-talk.to president  
 ‘I’ll come to talk to the president.’ [PK]

The class of auxiliaries participating in the construction illustrated in (11) forms a subset of the set of roots from which directionals can be formed (cf. (6) above). The roots *helav* ‘pass’ and *vay* ‘sleep’ can be used as directionals but not as auxiliaries.

In addition to these ‘primary auxiliaries’, as we will call such elements as *tal* in (11), there is a set of verbal elements that behave like primary auxiliaries in some respects but differ from them in others. We will call elements from this second set ‘secondary auxiliaries’. Like primary auxiliaries, secondary ones are marked for aspect while not having an argument structure of their own. The difference is that they do not require verbs in the subjunctive mood but combine with verbs in the indicative mood which are, however, morphologically impoverished. One such ‘secondary auxiliary’ is the modal element *yuʔ*, which expresses possibility. It usually combines with verbs in the incomplete aspect that lack the ‘affirmative’ marker *ta*, which is otherwise obligatory in combination with dynamic predicates in affirmative main clauses (this is why the main verbs are ‘morphologically impoverished’). The ‘secondary auxiliary construction’ of Tzotzil is illustrated in (12). (13) illustrates the use of the verb *?abteh* as a main predicate. Here, the affirmative particle *ta* is obligatory. Forms in the incomplete aspect without *ta* are otherwise found in main clauses only with stative predicates such as *?ohtikin* ‘know (persons)’ or *naʔ* ‘know (things)’ (cf. (14)), and in specific types of subordinate clauses (e.g. purpose clauses, cf. (15); cf. Gast 1998).

(12) ‘secondary auxiliary construction’

*x-(y)uʔ*                    *x-i-?abteh*  
 ICP-be.able(AUX) ICP-1ABS-work  
 ‘I can work.’ [PK]

(13) dynamic predicate, indicative mood/affirmative

*ta*    *x-i-?abteh*  
 AFF ICP-1ABS-work  
 ‘I (am) work(ing).’ [PK]

(14) stative predicate (no *ta*)

*Mi*    *x-av-ohtikin*    *li*            *h-Petul-eʔ*  
 Q    ICP-2ERG-know DET    MASC-Petul-CL  
 ‘Do you know Petul?’ [PK]

(15) *ta*    *x-i-bat*            *ta*    *Chamoʔ*    *sventa*            *(x)-h-chan*            *bats’i*    *k’op*  
 AFF ICP-1ABS-go PREP Chamula in.order.to (ICP)-1ERG-learn real language  
 ‘I’ll go to San Juan Chamula in order to learn Tzotzil.’ [FN]

<sup>7</sup> All examples without an indication of the source are based on personal knowledge of one of the authors.

In the auxiliary construction of Zoque, the main verb is overtly marked as a form that is commonly called ‘dependent’ (or ‘conjunct’) in Mixe-Zoquean linguistics because it tends to occur in (semantically or pragmatically) subordinate clauses (see e.g. Wichmann 1995b). Dependent verbs are characterized morphologically by elements from a set of suffixes which are triggered by specific elements in a ‘trigger slot’ at the beginning of the sentence, and which differ slightly from dialect to dialect. The dialect of Francisco León has three such ‘dependent’ suffixes (cf. Engel et al. 1987: 390): (i) *-u*, e.g. after the progressive marker *nʌ* (*-u* is also used as a completive aspect marker); (ii) *-a/-ʌ* (depending on vowel harmony), e.g. after the negative completive operator *ha*; and (iii) *-e/-i* elsewhere (e.g. after the negative incompleted operator *hiʔn*). The use of the three ‘dependent’ suffixes of Francisco León Zoque is illustrated in (16):

(16) Francisco León Zoque

- a. *nʌ*        *Y-poy-u*  
 PROG    3ABS.DEP-run-DEP  
 ‘He is running.’ (Engel & Engel 1987: 384)
- b. *ha*        *Y-poy-a*  
 NEG.CP 3ABS.DEP-run-DEP  
 ‘He didn’t run.’ (Engel & Engel 1987: 388)
- d. *hiʔn*     *Y-poy-e*  
 NEG.ICP 3ABS.DEP-run-DEP  
 ‘He doesn’t/will not run.’ (Engel & Engel 1987: 388)

Dependent intransitive verbs are moreover characterized by a special paradigm of person markers, which seems to be a blend of absolutive and ergative marking: in the first and third person, the same prefixes are used as in combination with independent transitive predicates (*N-* [nasalization] for the first person, *Y-* [palatalization] for the third person), whereas in the second person we find the prefix *NY-* (nasalization and palatalization), which also functions as a second person *absolutive* marker in combination with independent verbs. The person paradigm of Francisco León Zoque is given in Table 3:

	ERG	ABS.DEP	ABS
1	N-	N-	Ø
2	N-	NY-	NY-
3	Y-	Y-	Ø

Table 3: Person marking in Francisco León Zoque

In Francisco León Zoque, ‘triggers’ of dependent marking on the verb can roughly be classified into three major classes: (i) discourse-level elements (e.g. coordinators, subordinators), (ii) sentence-level elements (adverbs) and (iii) predicate-level elements (e.g. TAM, motion). It is the third group of elements that can reasonably be regarded as ‘auxiliaries’. The relevant items from Francisco León Zoque are listed in (17). They are sub-classified according to whether or not they inflect for aspect. In the following, we will focus on the auxiliaries on the right hand side. The use of the auxiliary *min* ‘come’ is exemplified in (18):

- (17) auxiliaries of Francisco León Zoque (only verb-related DEP-triggers)
- |                             |                          |
|-----------------------------|--------------------------|
| <u>no aspect inflection</u> | <u>aspect inflection</u> |
| <i>o(y)</i> indefinite past | <i>oy</i> ‘round-trip’   |
| <i>nʌ(m)</i> progressive    | <i>maŋ</i> ‘go’, future  |

<i>u(y)</i>	neg. imperative/exhortative/potential	<i>min</i>	‘come’, inchoative
<i>ha</i>	neg. preterite	<i>mus</i>	potential modality
<i>hiʔn</i>	neg. present	<i>sun</i>	volition

- (18) *Min-pa*            *Y-peht-u*  
 come(AUX)-ICP 3ERG-sweep-DEP  
 ‘He’ll come to sweep (the floor).’  
 (Harrison et al. 1981: 442)

Let us return to the parallels between the auxiliary constructions of Tzotzil and Chiapas Zoque. In aspect-marking auxiliaries from (some varieties of) both Tzotzil and Chiapas Zoque, the incompletive aspect is marked overtly whereas the completive aspect is marked by the absence of any inflectional material. This is not a feature commonly found in either Mayan or Mixe-Zoquean languages:

- (19) Tzotzil (Zinacantán dialect)

a.	<i>tal</i>	<i>h-k’el</i>
	come(AUX)	1ERG-see
	‘I came to see it.’ [PK]	
b.	<i>ch-tal</i>	<i>h-k’el</i>
	ICP-come(AUX)	1ERG-see
	‘I’ll come to see it.’ [PK]	

- (20) Zoque (Francisco León dialect)

a.	<i>mus</i>	<i>Y-poy-a</i>
	be.able(AUX)	3ABS.DEF-run
	‘He could run.’	
b.	<i>mus-pa</i>	<i>Y-poy-a</i>
	be.able(AUX)-ICP	3ABS.DEF-run
	‘He can run.’ (Engel et al. 1987: 388)	

Another aspect of clause architecture which makes the two languages strikingly similar concerns clitic placement: Tzotzil has a set of second-position clitics which attach to the auxiliary if there is one because auxiliaries often (though not necessarily) occupy the first word of the sentence. Aissen (1987: 9) lists the second-position clitics given in (21) (Zinacantán dialect). An example of a clitic attached to an auxiliary is given in (22) (the evidential/quotative clitic *la*).

(21)	temporal/aspectual		modal/evidential
	<i>xa</i>	‘already’	<i>nan</i> ‘maybe’
	<i>to</i>	‘still’	<i>kik</i> ‘maybe’
	<i>ʔox</i>	‘completed time’	<i>me</i> ‘please’
			<i>no</i> ‘just, simply’
			<i>la</i> ‘quotative’

- (22) *ba=la*            *vay-uk*  
 go(AUX)=EV sleep-SUBJ  
 ‘(they say) he went to bed.’ [PK]

Zoque, in turn, has a set of clitics which are considerably parallel to the ones of Tzotzil in terms of their function and which tend to attach to the first word of the predicate complex, though their position is probably not entirely fixed. When there is an auxiliary in the sentence, the clitics almost always attach to that auxiliary. The clitics listed by Engel & Engel (1987)



an intransitive verb meaning ‘exit, go out, come out, issue forth, run (dye), etc.’ (Laughlin 1975: 217). In this case, the understood mover is simply the speaker plus some bystander:

- (28) *Ch-ba lok'-uk akta noxtok*  
 ICP-go(AUX) be.issued-SUBJ document also  
 ‘We will go to have a document issued also.’ (Haviland 1993: 39)  
 (lit.: ‘A document will go emerge.’)

Such an ‘indeterminacy of argument structure’ is found not only in other Mayan languages but also in Mixe-Zoquean languages. Zavala (2002: 177) provides the following examples from Chol (Mayan) and Olutec (Mixe-Zoquean):

- (29) Chol  
*tyi tyäl-i k-il-añ-tyel*  
 PERF come-ITR 1ERG-see-?-PSV.IMPF  
 ‘Somebody came to see me.’ (Zavala 2002: 177)  
 (lit.: ‘I was come-seen.’)

- (30) Olutec  
*?oy-u=k ?i=yak-kep-e ?alwanyil*  
 round.trip-CP=AN 3ABS=PSV-look.for-IND mason  
 ‘Somebody went to look for the mason.’ (Zavala 2002: 177)  
 (lit.: ‘The mason was go-and-return-looked for.’)

Finally, the following example from Ocotepéc Zoque is due to Jan Terje Faarlund:

- (31) *oy-u = ?uŋ yah(k)-we-hay-tʌ(h)-i te? simio?ŋ*  
 go-return-CP-EV CAUS-call-APPL-PAS-DEP DET Simon  
 ‘(the king) had somebody go and call Simeon.’ [PTD]

The main predication says that the implicit subject (the king) had someone call Simeon. The auxiliary denotes a ‘round trip’, i.e. it expresses that the unspecified participant who was sent to call Simeon went and returned. What the sentence says, then, is that ‘the king had someone go and return and call Siméon’. While in the English translation the mover is encoded as a participant of its own, this is not the case in the Zoque example (31), where the unspecified first object does not correspond to an argument position but is implied by the diathetic structure of the verb, which contains a causative, a passive and an applicative marker.

## 8 The expression of modality in Tzotzil and Zoque

In this section, we will outline the expression of possibility and necessity in Chiapas Zoque and Tzotzil. As will be seen, the expression of possibility is largely parallel in both languages, but this parallelism is not particularly remarkable because the patterns found in both languages are rather common cross-linguistically. In the encoding of necessity, however, there are more noteworthy parallels that are in all likelihood the result of language contact.

### 8.1 Possibility in Tzotzil and Zoque

Both Tzotzil and Zoque have a more or less ‘generic’ auxiliary for all the nuances of non-epistemic possibility (cf. van der Auwera & Plungian 1998), i.e. for ‘participant external’ possibility (or ‘root possibility’), for ‘deontic possibility’ (permission) and for ‘participant-internal’ possibility (ability). The Tzotzil ‘secondary auxiliary’ *yu?* has already been introduced above (cf. (12)). Another example of *yu?* in the incomplete aspect is given in (32). The root *yu?* occurs in the complete aspect and in the perfective form as well. In the

first case, it has the meaning ‘finish’ (cf. (33)). The perfective aspect has a resultative-stative function in Tzotzil (cf. (34)).

- (32) *Mi x-yu? x-i-bat-otikotik ta s-na li Xun?*  
 Q ICP-POT ICP-1ABS-go-1PL.EXCL PREP 3POSS-house DET John  
 ‘Can we go to John’s house?’ [Hav 9]
- (33) *i-yu? ?onox li na-e*  
 CP-finish PTCL DET house-CL  
 ‘The house is finished for good; it is constructed.’ [Hav 7]
- (34) *Yu?-em li k’op-e*  
 POT-PERF DET issue-CL  
 ‘The issue lingers on.’ [Hav 7]

In addition to (non-deontic) ‘participant-external’ possibility as illustrated in (32) above, *yu?* is also used to express deontic possibility (permission, cf. (35)) and ‘participant-internal possibility’ (ability). In the latter case, *yu?* is often accompanied by the relational noun *-u?un* (cf. (36)), which is also used to mark the agent in passive clauses (cf. (37)):

- (35) deontic possibility (permission)  
 – *Mi x-(y)u? xa x-i-bat?*  
 Q ICP-POT now ICP-1ABS-go  
 ‘May I go now?’  
 – *X-(y)u? x-a-bat mi i-lah l-av-abtel a?a.*  
 ICP-POT ICP-2ABS-go if CP-finish DET-2POSS-work PTCL  
 ‘Yes, you can indeed if your work is finished.’ [Hav 7]
- (36) participant-internal possibility (ability)  
*Mi x-(y)u? av-u?un li ?abtel-e*  
 Q ICP-POT 2POSS-by DET work-CL  
 ‘Are you able to do the job?’ [Hav 7]
- (37) *-u?un* as passive agent  
*Ha? la t(a) x-mah-at y-u?un li maxtro-etik ...*  
 FOC EV AFF ICP-beat-PSV 3POSS-PSV.AGT DET teacher-PL  
 ‘They were beaten by the teachers ...’ (Aissen 1987: 63)

In addition to the generic (secondary) auxiliary *yu?*, Tzotzil has two more elements with a more specific function: *tak’*, which usually expresses deontic possibility (permission), and *na?*, which indicates ‘acquired capacity’ or knowledge, something that has been learned. *Tak’* is used in an impersonal construction and therefore bears a third person possessor prefix. Like *yu?*, it qualifies as a ‘secondary auxiliary’ (cf. (38)). By contrast, *na?*, which occurs in a personal construction, behaves like a full verb and takes person inflection (cf. (39)).

- (38) *-tak’*: deontic possibility  
*(x)-s-tak’ x-a-man*  
 (ICP)-3ERG-POT ICP-2ABS-buy  
 ‘You can buy it.’ (Hurley & Ruiz 1986: 394)
- (39) *-na?*: participant-external possibility/deontic  
*li vo?ot-e mu x-a-na? x-a-?abteh*  
 DET you-CL NEG ICP-2ERG-know ICP-2ABS-work

‘You don’t know how to work.’ (Gast 1998: 128)

The situation in Zoque is parallel in so far as there is a generic auxiliary *mus* which is used with all types of situational possibility. This auxiliary requires the dependent vowel *-a/-A* on the main verb. Examples illustrating the use of *mus* with different types of possibility are given in (40)–(42):

(40) participant-internal possibility (ability)

*Muhs-u Y-tsaK-A tak oye-pA te? taK-tsaK-pa-wA-?is*  
 POT-CP 3ERG-make-DEP house good-ATTR DET house-make-ICP-  
 NOM-ERG

‘The mason was able to build a good house.’ (Harrison et al.: 1981: 78)

(41) deontic possibility (permission)

*Y-?iatsi-?is = ?uŋ = te Y-nA-jay-u ke muhs-pa = ?uŋ*  
 3POSS-brother-ERG=EV=FOC 3ERG-say-APPL-CP that POT-ICP=EV  
*ma? Y-pyAjk-a te? rey-?is loro*  
 go(AUX) 3ABS.DEP-fetch-DEP DET king-GEN parrot  
 ‘His brothers said that he could (was allowed to) go and fetch the king’s parrot.’  
 [RZ, Simion y te’ gigante]

(42) participant-external (non-deontic) possibility

... *wA?ka sa?sa mus-A y-ihtya-A dA dAWA-ram*  
 so that healthy POT-DEP 3ABS.DEP-be-DEP our live-PL  
 ‘so that we can live a healthy live.’ (lit.: ‘...so that our lives can be healthy.’)  
 [DM 8/1995, Pueblos oprimidos]

Neither Tzotzil nor Zoque display any peculiarities in their grammaticalized marking of possibility. There are certainly parallels, for instance in formal properties of the relevant constructions and in the range of meaning associated with both *yu?* and *mus*, but these parallels do not seem to be particularly remarkable from a cross-linguistic perspective (for instance, they represent a pattern commonly found in European languages). As pointed out before, this is different in the expression of necessity, to which we will turn now.

## 8.2 Necessity in Tzotzil and Zoque

The modal domain of necessity exhibits striking parallels between Tzotzil and Zoque, which are in all likelihood due to language contact. Both languages use a verb meaning ‘to want, to love’ in an impersonal construction to express necessity. In the case of Tzotzil, the relevant verb is *k’an*. The personal use of this verb is illustrated in (43):

(43) *Mu h-k’an x-i-k’opoh*  
 NEG 1ERG-want ICP-1ABS-speak  
 ‘I don’t want to speak.’ [Hav 8]

When used as a modal auxiliary, *k’an* takes a third person possessor prefix, which corresponds to an impersonal subject (‘it wants’). It is used to express participant-external necessity (either deontic or non-deontic). There are two constructions: first, *k’an* may be complemented by a finite clause. Such clauses are optionally introduced by the complementizer *ti* (cf. (44)). The examples in (44) and (45) are instances of non-deontic and deontic participant-external necessity, respectively:

- (44) participant-external necessity/non-deontic  
 (x)-s-k'an          ti          ((a)-x-a-ʔabteh-e  
 (ICP)-3ERG-want COMP AFF-ICP-2ABS-work  
 yoʔ k'uxi x-a-mak'lantas o a-ch'amaltak  
 so that ICP-2ERG-support PTC 2POSS-family  
 'You have to work in order to provide for your family.' (Hurley & Ruíz 1986: 332)
- (45) participant-external necessity/deontic  
 yuʔn la (x)-s-k'an ta (x)-s-pok li s-bek'tal-ik  
 because EV (ICP)-3ERG-want AFF (ICP)-3ERG-purify DET 3POSS-body-PL  
 'because they have to purify their bodies (in a ritual).' [CRI 2/3, 170]

Alternatively, *k'an* is complemented by a non-affirmative form of some lexical verb, in what we have called a 'secondary auxiliary' construction. There seems to be no noticeable difference in meaning between the two constructions, and the distribution of these constructions may at least partly be a matter of regional variation:

- (46) (x)-s-k'an (x)-h-tih-tik ti h-bin-tik-e  
 (ICP)-3ERG-want (ICP)-1ERG-play-1PL DET 1POSS-POT-1PL-CL  
 'We have to make music with our pots.' [CRI 2/3, 131]
- (47) hech o xal(x)-s-k'an (x)-h-pas-be-tik lek ti s-veʔel-ik-e  
 therefore (ICP)-3ERG-want (ICP)-1ERG-MAKE-APPL-1PL well DET 3POSS-FOOD-PL-cl  
 'Therefore, we have to prepare good food for them.' [CRI 2/3, 176]

Turning to Zoque, we find exactly the same two constructions, and it is, again, a matter of diatopic variation which of the constructions is preferred. The relevant verb of Zoque is *sun* 'to love, to want' (or *sud*, depending on the dialect). Its use with the meaning 'to want' is exemplified in (48):

- (48) *Sun-pa Y-huy-u eyapa koʔkaya*  
 want-ICP 3ERG-buy-DEP other hat  
 'He wants to buy another hat.' (Harrison et al. 1981: 361)

In its modal use, *sun* takes a third person ergative prefix, just like Tzotzil *k'an*. In the first type of construction, it is complemented by a finite clause, as is illustrated in (49) and (50) with examples from the dialects of Copainalá and Chapultenango, respectively:

- (49) Copainalá Zoque  
*Y-sun-pa waʔy mang-u Y-tuʔnis-u*  
 3ERG-want-ICP that go(AUX)-DEP 3ERG-visit-DEP  
 'You have to go and visit her.' (Harrison et al. 1981: 155-6)
- (50) Chapultenango Zoque  
*Y-sud-ba waʔka Y-muhs-yah-ʌ da ore teʔ aŋmayo-yah-pa-pa*  
 3ERG-want-ICP that 3ERG-know-PL-DEP our language DET teach-PL-ICP-REL  
 'The teachers have to speak our language.'  
 [DM 8/1995, Pueblos oprimidos]

The second type of construction, which is found in the dialect of Rayón, is an auxiliary construction, comparable to the Tzotzil construction illustrated in (46) and (47) above. The dependent suffix required by *sun* is the one that is also required by *mus*, i.e. -a/-ʌ:

- (51) a. *Y-sud-pa dΛ meʔts-a kΛbi*  
 Y-want-ICP we search.for wood  
 ‘We have to find wood, ...’ (lit.: ‘it wants our finding wood’)
- b. *Y-sud-pa dΛ dzΛk-Λ huktΛhk*  
 3ERG-want-ICP we make-DEP fire  
 ‘We have to make fire.’ (lit.: ‘it wants our making fire’)  
 [RZ, Te’karmen to’nabajkis pyeka tzame]

Even though the use of a verb of wanting as a necessity operator is not unheard of (cf. Fanari 2005), the striking parallelism of the constructions described above for Tzotzil and Zoque seems likely to be contact-induced. It is found in other Mayan languages as well (e.g. Yucatec *k’abèet*; cf. Lehmann et al. 2000: 26), but seems to be less widespread among other Mixe-Zoquean languages (at least no such structure from any other Mixe-Zoquean language has come to our attention). The semantic structure of this construction can roughly be described as shown in (52). Remember that both constructions a. and b. are available in both languages under discussion.

- (52) Encoding of ‘NECESSARY(HAPPEN(*e*))’:
- a. 3ERG-WANT [that *e* happens]  
 b. 3ERG-WANT [*e* to happen]

The assumption that language contact is relevant is supported by the fact that a parallel construction is also used in local dialects of Spanish, as for instance in the dialect of Soyaló (one of the westernmost Tzotzil-speaking villages, i.e. a village in the heart of the Mayan-Mixe-Zoquean contact area). In this dialect, the Spanish verb *querer* ‘to want, to love’ is used in a modal function, typically in an impersonal construction:

- (53) *Quiere que vayas tu mismo.*  
 wants that you.go.SUBJ you INT  
 ‘You have to go yourself.’ (Mónica Zepeda, p.c.)

Note that (53) is ambiguous between an impersonal reading and a personal one, i.e. it can either mean ‘it is necessary that you go yourself’ or ‘(he) wants that you go yourself’. The impersonal reading is often also used with nominal complements. For instance, (54) could be uttered by a mason when asking his assistant to bring more bricks (note that the preposition *a*, which is required in the *ir*-future of standard Spanish, is regularly omitted in the dialect of Soyaló):

- (54) *Va querer más tabique.*  
 FUT want more adobe  
 ‘More adobe will be needed.’ (Mónica Zepeda, p.c.)

## 9 What has been transferred?

Having pointed out some instances of grammatical convergence in the verbal complex of Mayan and Mixe-Zoquean languages in general, and between Tzotzil and Chiapas Zoque more specifically, we will now address the question of what exactly may have been transferred in each case. We will argue that all instances of convergence can be accounted for in terms of the types of processes pointed out in Section 4, i.e. interlingual identification of form-meaning pairings and of linguistic subsystems. Given that there are virtually no historical records available, the discussion is necessarily tentative and all our arguments should be taken as hypotheses rather than claims. We will discuss directionals (Section 9.1), the auxiliary construction (Section 9.2) and the expression of necessity (Section 9.3).

### 9.1 Directionals

The most striking fact about the use of grammaticalized directionals in Mayan and Mixe-Zoquean languages is the parallelism in the *types of motion* expressed in the relevant languages. This was illustrated in Table 2 above: even though the constructions of the two languages are different, the inventories of types of motion are almost identical. That this has been the result of language contact, and probably of transfer from Mayan to Mixe-Zoquean languages, has been argued for by Zavala (2002: 181-183), and we will adopt this view here.

Supposing that Zavala (2002) is right in assuming that the ‘directed motion’ construction has been transferred from Mayan to Mixe-Zoquean languages, what has been copied is the way the conceptual domain of motion is structured and reflected grammatically. Moreover, the inventory of forms has not been extended infinitely, but a closed class of elements has been formed. This is relevant because it is one indication that the ‘incorporated motion’ construction has a grammatical status. Zavala (2002: 179-80) points out that “there are three reasons why the directional verbs should be considered grammatical morphemes: first, the directionals form a closed paradigm .... Second, the Mixe-Zoquean directionals are suffixes which do not contribute anything to the argument structure of the clause. And third, in many contexts the directionals have lost their meaning of movement ... and only encode a trajectory” (Zavala 2002: 179-80, our translation). All of these arguments apply to an even greater extent to Mayan languages.

Let us now consider what exactly may have been transferred in the expression of directed motion in Tzotzil and Zoque. From the perspective of Heine & Kuteva’s concept of ‘contact-induced grammaticalization’, the grammaticalization of directed motion roots in Mixe-Zoquean could roughly be described like this: speakers notice that in their (Mayan) contact language there is a grammatical category **Mx** (directionals) which is used to encode the direction of movement; they create an equivalent category **Rx** (a closed class of motion roots) in their Mixe-Zoquean contact language, on the basis of the use patterns available in that language; to this end, they use incorporation (or maybe V+V composition), which can also be conceived of as suffixation.

We would like to argue that the data in question can also be accounted for on the basis of a non-intentional view of language change. The development under discussion seems to be a case of ‘interlingual identification of linguistic subsystems’ which is comparable to the borrowing of a pronominal dual in Tayo outlined in Section 2: the values available for the linguistic subsystem of directed motion have become largely parallel in the two languages by extending one of the systems (presumably the one of Zoque or other Mixe-Zoquean languages). In Mayan languages there is a ‘discourse habit’ of carefully encoding the direction of movement (cf. Haviland 1993, 1994, 1996; Brown 1994, 2003; Aissen 1994, etc.). Via interference, this routine seems to have been transferred to the relevant Mixe-Zoquean target languages.

Given that a new routine was thus introduced into the grammar of Mixe-Zoquean, a new way of encoding that category needed to be found. In Tzotzil, adjunction of *el*-directionals in a construction of the type  $[V_{\text{FIN}} V_{\text{DIR}}\text{-}el]$  is used for that purpose. As has been shown, Zoque uses V+V-composition or maybe V-into-V incorporation to express directed motion. What this suggests is that these two constructions were interlingually identified in terms of their semantic properties. In other words, both interlingual identification of linguistic subsystems and interlingual identification of form-meaning pairings took place.

This process of ‘double interlingual identification’ is illustrated in Diagram 3. The two (interlingually identified) constructions  $[V_{\text{FIN}} + V_{\text{DIR}}\text{-}el]$  (of Tzotzil) and  $[V V\text{-}V_{\text{DIR}}]$  (of Mixe-Zoquean), indicated here by dotted rectangles, serve as a formal frame of reference within which the two grammatical subsystems of directed motion are identified (the paradigms of motion roots are included in rounded rectangles). As a result, parallel inventories of types of motion are integrated into the relevant paradigms (Routines 1-n).

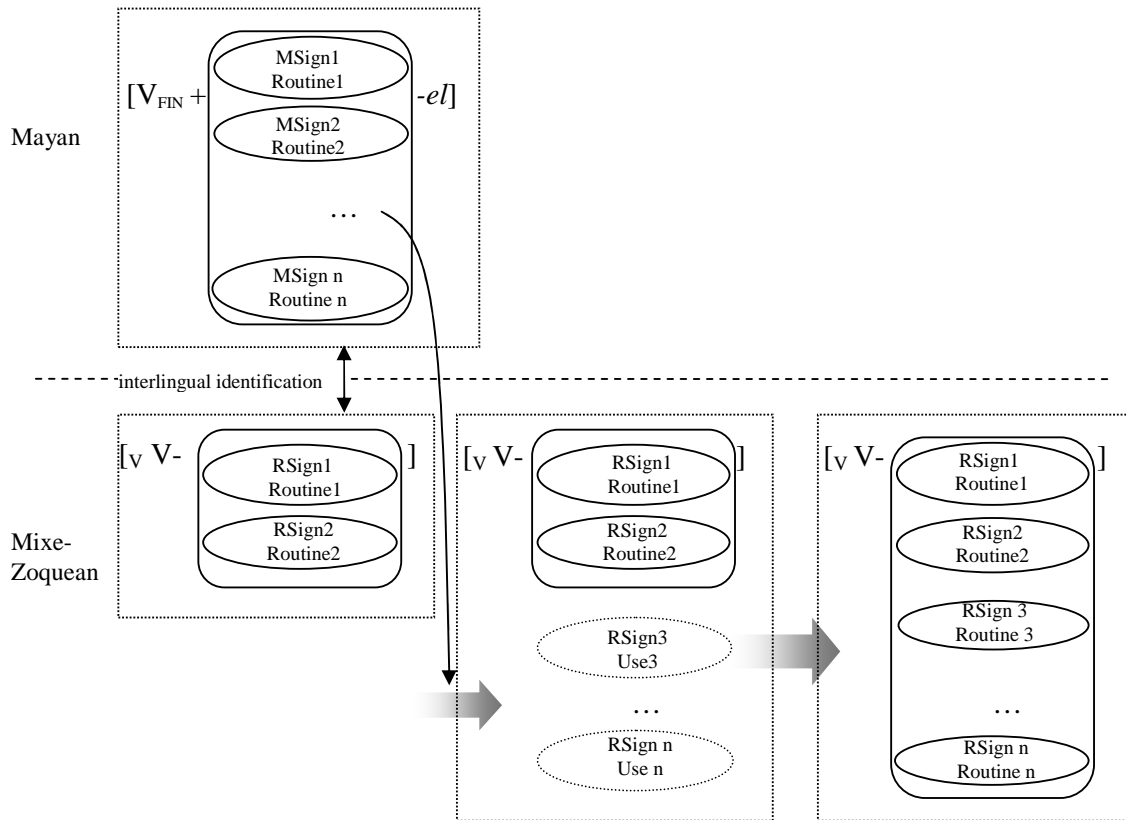


Diagram 3: Transfer of ‘directed motion’ from Mayan to Mixe-Zoquean

## 9.2 Auxiliary constructions

Just as in the case of directionals, we will follow Zavala (2002: 178-88) in assuming that the auxiliary construction described in Section 7 is an innovation of Zoque and other Mixe-Zoquean languages which has resulted from language contact with Mayan. The possible historical developments will briefly be outlined in the following, but again, it should be borne in mind that the presentation is necessarily hypothetical and largely based on comparative evidence because no historical data are available.

Let us start with Tzotzil. The genesis of the auxiliary construction in Mayan languages can be explained rather straightforwardly in language-internal terms. In fact, we only need to assume one process of reanalysis. Tzotzil has a construction in which a subjunctive verb is juxtaposed to an indicative verb. Typically, this construction expresses ‘consecutivity’ (‘...in order to...’):<sup>8</sup>

- (55) *ch-i-muy h-tuch’ i tahchuch-e*  
 AFF.ICP-1ABS-climb 1ERG-cut DET lentimus.mushroom-CL  
 ‘I climbed up to pick the lentimus mushroom.’ (Haviland 1993: 35)

When the subject of the main verb is in the third person, there is no overt person marking (because the third person absolutive marker is phonologically empty). Thus, the only change that needs to be assumed to account for the development of the auxiliary construction in Tzotzil is a process of reanalysis by which the first verb in a ‘consecutive’ construction with a third person subject is reanalyzed as an independent, morphologically impoverished

<sup>8</sup> Note that the absence of aspect marking on the verb identifies the predicate *huch’* as a subjunctive form. Transitive verbs do not take overt subjunctive inflection in Tzotzil.

auxiliary. The omission of the person marking on the first verb/auxiliary can moreover straightforwardly be explained in terms of economy principles, since it is redundant. This process of reanalysis is illustrated in (56):

- (56) *ch-∅-tal*                      *ve'-uk-∅*  
 ICP-3ABS-come                  eat-SUBJ-3ABS
- ↓
- ch-tal*                                  *ve'-uk-∅*  
 ICP-come                              eat-SUBJ-3ABS

Once this process of reanalysis has taken place, the auxiliary construction can be generalized to the first and second person, so that instead of *ch-i-tal veʔ-ik-on* (with the first person absolutive marker *i-* on the first verb) we find *ch-tal veʔ-ik-on* ('I [will] come to eat').

The situation in Zoque is different. As a starting point, we can assume a 'clause template' for dependent clauses similar to the one found in (the conservative) Mixe dialect of San José El Paraíso (cf. van Haitsma & van Haitsma 1976): there is a 'trigger slot' at the beginning of the clause and the verb is usually sentence-final. The arguments and adjuncts are located between the trigger slot and the verb in this dialect:

- (57) [ \_\_\_\_\_ ]                      \_\_\_\_\_                      PERS-Verb-DEP  
 trigger slot                      arguments/adjuncts                      ↑
- 

In San José El Paraíso Mixe, the trigger slot is taken by elements such as "introducers, ligatures [and] adverbs", e.g. *čĩr* 'then', *ko* 'when', *ma:b* 'since', *kaʔ* 'no', *tĩ* 'already' and *ʔoy* 'having gone' (van Haitsma & van Haitsma 1976: 58). For Totontepec Mixe, Schoenhals & Schoenhals (1982: 317) provide the following (non-exhaustive listing) of dependent triggers: *hets*, 'and', *vaniʔts* 'after, then', *kep* 'tomorrow', *oš* 'yesterday', *hiphi* 'early in the morning', *mik* 'strong(ly)', *tsoh* 'delicately', *vinʔit* 'when' and *vinšup* 'how much'. Wichmann (1995a) has argued (for Sayula Popoluca) that dependent marking is governed by matters of discourse organization and that it relates to the difference between foregrounded and backgrounded information. At some point, the use of dependent forms in Mixe-Zoquean may have been motivated semantically, but in contemporary Mixe-Zoquean languages there is a rather rigid formal relationship between a specific set of 'triggers' in the trigger slot and dependent morphology on the verb. As van Haitsma & van Haitsma (1976: 58) put it, "[t]he difference between conjunct and nonconjunct seems to be a mechanical consequence of the trigger words with no special semantic function of its own".

Two changes need to be assumed for the template shown in (57) to develop into the auxiliary construction of Chiapas Zoque. First, it is generally assumed that Mixe-Zoquean languages have changed their basic verb order from a verb-final system to VO-ordering (e.g. Wichmann 2003 and references cited there), maybe under the influence of contact with Mayan and other Mesoamerican languages. This first step gives us a structure of the following type:

- (58) [ \_\_\_\_\_ ]                      PERS-Verb-DEP                      \_\_\_\_\_  
 trigger slot                      arguments/adjuncts                      ↑
- 

The second step in the process of reanalysis is the formation of a closed class of predicate-related elements – auxiliaries – which may occupy the 'trigger slot'. This process is completely parallel to the one illustrated in Diagram 3 above: the dependent clause template



identification – the need to create new formal means for the expression of specific routines – are ‘problem-solving activities’. Obviously, it is also possible that interlingual identification of form-meaning pairings is the very first step in a contact-induced re-organization of a linguistic subsystem, and that several such processes cumulatively lead to an increase in the overall similarity of the systems involved. Which of these scenarios mirrors the actual developments more closely is an empirical question that we are unable to answer at this point.

## 10 Conclusions

As has repeatedly been mentioned, we take it that all processes described in the preceding sections can be accounted for on the basis of two instances of interference: (i) interlingual identification of form-meaning pairings, and (ii) interlingual identification of linguistic subsystems. The arguments and claims made in this paper are necessarily tentative, however, given the hypothetical nature of the actual developments in the languages under discussion, and given the fact that the interaction of grammaticalization and language contact is very hard to get a grip on even for languages which are better documented in historical terms. The main objective of this paper has been to discuss the question of what can plausibly be assumed to be transferred in cases of ‘grammatical convergence’. We have argued for a conception of ‘contact-induced grammaticalization’ which is based on the simple concept of ‘interlingual identification’, whose existence seems to be taken for granted by most researchers concerned with language contact. In our view, the term ‘contact-induced grammaticalization’ thus means ‘instances of grammaticalization that have been triggered by interlingual identification’, even though they are, in themselves, language-internal. In this model, it is not necessary to attribute linguistic meta-knowledge or intentionality to bilingual speakers in situations of ‘contact-induced grammaticalization’. The data discussed are, obviously, only one small piece of evidence from which it would be unwarranted to generalize. Still, we hope to have made a contribution to the relationship between language contact and grammaticalization, a topic which has chiefly been instigated by Aikhenvald (2002) and Heine & Kuteva (2003, 2005), and which certainly deserves to receive more attention in future typological and historical linguistic work.

### Sources

- [Hav] *Sk'op Sotz'leb. The Tzotzil of Zinacantan*. Available online at:  
<http://www.zapata.org/Tzotzil/>
- [FN] Field notes collected by the first author.
- [PK] Personal knowledge of one of the authors.
- [PTD] *Pekatsamedam*. A corpus of Zoque narratives compiled by Jan Terje Faarlund.
- [RZ] *Relatos Zoques*. Ed. by Marcelino Estrada Rueda et al. Colegio Lenguas de México, 1997.
- [DM] *Dü Musokyuy*. Journal edited by the Instituto Chiapaneco de Cultura.
- [CRI] *Cuentos y Relatos Indígenas*. México D.F.: UNAM.

### List of references

- Aikhenvald, Alexandra Y. (2002). *Language Contact in Amazonia*. New York: Oxford University Press.
- Aissen, Judith (1987). *Tzotzil Clause Structure*. Dordrecht: Reidel.
- Aissen, Judith (1994). Tzotzil auxiliaries. *Linguistics* 32: 657-90.
- Bohnenmeyer, Jürgen & Christel Stolz (2006). Spatial reference in Yukatek Maya: A survey. In Levinson, S.C. and D.P. Wilkins (eds.), *Grammars of Space*. Cambridge: Cambridge University Press.

- Boretzky, N. & B. Iglá (1999). Romani mixed dialects. In Bakker, P. & M. Mous (eds.), *Mixed Languages: 15 Case Studies in Language Intertwining*, 35-68. Amsterdam: IFOTT.
- Brown, Penelope (1994). The INs and ONs of Tzeltal locative expressions. The semantics of static descriptions of location. *Linguistics* 32.4/5: 743-90.
- Brown, Penelope (2003). Position and motion in Tzeltal frog stories: The acquisition of narrative style. In Strömquist, S. and L. Verhoeven (eds.), *The Frog Story Revisited*, 37-57. Mahwah, NJ: Erlbaum.
- Bruyn, Adrienne (1995). *Grammaticalization in Creoles: the development of determiners and relative clauses in Sranan*. PhD University of Amsterdam.
- Campbell, Lyle, Terrence Kaufman and Thomas C. Smith-Stark (1986). Meso-America as a linguistic area. *Language* 62.3: 530-70.
- Croft, W. (2000). *Explaining Language Change. An Evolutionary Approach*. Harlow etc.: Longman.
- Engel, Ralph, Mary Allhiser & José Mateo Alvarez (1987). *Diccionario Zoque de Francisco León*. Mexico D.F.: Instituto Lingüístico de Verano.
- Fanari, Martina (2005). 'When something wants done'. Diastratic and diatopic variation in the use of volitional verbs to express deontic modality. Talk given at the XXII Meeting of the *Associazione Italiana di Anglistica*. Cagliari, 15-17 September, 2005.
- Fortescue, M. (1984). *West Greenlandic*. London: Croom Helm.
- Gómez Domínguez, Domingo (2003). *Un Acercamiento a la Dialectología Zoque*. Tuxtla Gutiérrez: Centro Estatal de Lenguas, Arte y Literatura Indígenas.
- Greene, D. (1979). Perfects and perfectives in Modern Irish. *Ériu* 30: 122-141.
- Harrison, Roy, Margeret Harrison & H. Cástulo García (1981). *Diccionario Zoque de Copainalá*. Mexico D.F.: Instituto Lingüístico de Verano.
- Haspelmath, M. (1998). How Young Is Standard Average European? *Language Sciences* 20.3: 271-288.
- Haugen, Einar (1950). The analysis of linguistic borrowing. *Lingua* 2: 271-290.
- Haviland, John (1981). *Sk'op Sotz'leb. El Tzotzil de San Lorenzo Zinacantán*. Mexico D.F.: UNAM.
- Haviland, John (1993). The syntax of Tzotzil auxiliaries and directionals. *Proceedings of Berkeley Linguistics Society* 19: 35-49.
- Haviland, John (1994). "Te xa setel xulem" [The buzzards were circling]. Categories of verbal roots in (Zinacantec) Tzotzil. *Linguistics* 32: 691-741.
- Haviland, John (1996). Projections, transpositions and relativity. In Gumperz, John & Steven Levinson (eds.), *Rethinking Linguistic Relativity*, 217-323. Cambridge: Cambridge University Press.
- Heath, Jeffrey (1978). *Linguistic Diffusion in Arnhem Land*. Canberra: Australian Institute of Aboriginal Studies.
- Heine, Bernd & Tania Kuteva (2003). On contact-induced grammaticalization. *Studies in Language* 27.3: 529-72.
- Heine, Bernd & Tania Kuteva (2005). *Language Contact and Grammatical Change*. Cambridge: Cambridge University Press.
- Himmelman, N. & E. Schultze-Berndt (2005). *Secondary Predication and Adverbial Modification*. Oxford: Oxford University Press.
- Hurley, A. & A. Ruíz (1986). *Diccionario Tzotzil de San Andrés con Variaciones Dialectales*. Mexico D.F.: Instituto Lingüístico de Verano.
- Kaufman, Terrence (1997). Grammaticalization through incorporation of Mije-Sokean verbs. Paper presented at the Rice University Conference on Grammaticalization, Houston, Texas.

- Laughlin, Robert M. (1975). *The Great Tzotzil Dictionary of San Lorenzo Zinacantan*. Washington D.C.: Smithsonian Institution Press.
- Lehmann, Ch. (1995). *Thoughts on Grammaticalization A Programmatic Sketch*. Originally published as *Arbeiten des Kölner Universalienprojektes* 48, 1982. München: LINCOM.
- Lehmann, Ch., Y.-M. Shin & E. verhoeven (2000). *Person Prominence and Relation Prominence. On the Typology of Syntactic Relations with Special Reference to Yucatec Mayan*. München: LINCOM.
- Nau, Nicole (1995). *Möglichkeiten und Mechanismen kontaktbewegten Sprachwandekls unter besonderer Berücksichtigung des Finnischen*. München: Lincom Europa.
- Pietsch, L. (2005). *Re-inventing the "Perfect" Wheel: Grammaticalisation and the Hiberno-English Medial-Object Perfects*. Working Paoers in Multilingualism, no 65 (Series B). Hamburg: University of Hamburg.
- Ross, Malcolm D. (1999). Exploring metatypy: How does contact-induced typological change come about? Keynote talk, Australian Linguistic Society's annual meeting, Perth. Available online at: <http://rspas.anu.edu.au/linguistics/mdr/Metatypy.pdf>.
- Schoenhals, A. & L. Schoenhals (1982). *Vocabulario Mixe de Totontepec*. Mexico, D.F.: Instituto Linguístico de Verano.
- Schultze-Bernd, E. & N. Himmelmann (2004). Depictive secondary predicates in crosslinguistic perspective. *Linguistic Typology* 8: 59-130.
- Stolz, Thomas & Christel Stolz (2001). Mesoamerica as a linguistic area. In Haspelmath, M., E. König, W. Oesterreicher and W. Raibled (eds.), *Language Typology and Language Universals: An International Handbook, Vol. II*, 1542-53. Berlin: Mouton de Gruyter.
- Thomason, S.G. and T. Kaufman (1988). *Language Contact, Creolization, and Genetic Linguistics*. Berkeley: University of California Press.
- van der Auwera, Johan (1998). Revisiting the Balkan and Meso-American linguistic areas. *Language Sciences* 20.3: 259-70.
- van der Auwera, Johan, Ewa Schalley & Jan Nuyts (2005). 'Epistemic modality in a Slavonic parallel corpus – a pilot study'. In Hansen, Bj. & P. Karlík (eds.), *Modality in Slavonic languages. New perspectives*, 201-217.
- van der Auwera, Johan & Vladimir Plungian (1998). Modality's semantic map. *Linguistic Typology* 2: 79-124.
- van Haitisma, J.D. & van Haitisma, W. (1976). *A Hierarchical Sketch of Mixe as Spoken in San José El Paraíso*. Norman: SIL.
- Weinreich, Uriel (1953). *Languages in Contact*. London/The Hague/Paris: Mouton.
- Wichmann, Søren (1995a). 'Empathy' and 'grounding' in Sayula Popoluca. In: Schousboe, Steen (ed.), *Embedding in Functional Grammar. Publications of the Department of English*, 169-187. University of Copenhagen.
- Wichmann, Søren (1995b). *The Relationship among the Mixe-Zoquean Languages of Mexico*. Salt Lake City, UT: University of Utah Press.
- Wichmann, Søren (2003). The grammaticalization and reanalysis of a paradigm of auxiliaries in Texistepec Popoluca: A case study in diachronic adaptation. *SKY Journal of Linguistics* 16: 161-183.
- Winford, Donald (2003). *An Introduction to Contact Linguistics*. Oxford: Blackwell.
- Wonderly, William (1951a). Zoque I: Introduction and bibliography. *IJAL* 17: 1-9.
- Wonderly, William (1951b). Zoque II: Phonemes and morphophonemes. *IJAL* 17: 105-123.
- Wonderly, William (1951c). Zoque III: Morphological classes, affix list and verbs. *IJAL* 17: 137-162.
- Wonderly, William (1951d). Zoque IV: Auxiliaries and nouns. *IJAL* 235-251.
- Wonderly, William (1952a). Zoque V: Other stem and word classes. *IJAL* 18: 35-48.
- Wonderly, William (1952b). Zoque VI: Text. *IJAL* 18: 189-202.

Zavala, Roberto (2002). Calcos sintácticos en algunos complejos verbales Mayas y Mixe-Zoques. *Pueblos y Fronteras* 4: 169-187.