



**HAL**  
open science

## The gap strategy in Ixcatec (Otomanguean, Mexico)

Evangelia Adamou, Denis Costaouec

► **To cite this version:**

Evangelia Adamou, Denis Costaouec. The gap strategy in Ixcatec (Otomanguean, Mexico). 2019. halshs-02417251

**HAL Id: halshs-02417251**

**<https://shs.hal.science/halshs-02417251>**

Preprint submitted on 18 Dec 2019

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

**Research report:**  
**The gap strategy in Ixcatec (Otomanguean, Mexico)\***

Evangelia Adamou<sup>1</sup> and Denis Costaouec<sup>2</sup>

<sup>1</sup>French National Centre for Scientific Research (CNRS) and <sup>2</sup>University Paris Descartes

**Abstract**

The present research report provides an overview of the gap strategy in Ixcatec, a critically-endangered and under-described Otomanguean language of Mexico. Ixcatec RCs using the gap strategy are postnominal. They are built with an uninflected complementizer and involve a finite verb or a predicate adjective. The head of the RC can be a noun, but in free-speech RCs are frequently constructed with a null nominal.

**Keywords:** Relative clauses, Otomanguean

**1. Introduction**

This article presents an overview of the gap relativization strategy in Ixcatec (ISO code: *ixc*). Ixcatec is a language of the Otomanguean stock and the Popolocan branch, together with Chocho (or Ngigua and Ngiba), Popoloc, and Mazatec (Fernández de Miranda 1951, 1956, Hamp 1958, Gudschinsky 1959, Swadesh 1960: 83). The Ixcatec speakers reside in Santa María Ixcatlán in the State of Oaxaca, in Mexico (see map in Figure 1). Nowadays Santa María Ixcatlán has roughly 400 inhabitants, but it was an important centre when the Spaniards arrived in 1522 knowing that it was estimated to have had a population of 10,000 to 30,000 inhabitants (Hironymous 2007).

Ixcatec is a critically endangered language as it is spoken by less than ten speakers who do not use the language in their daily lives (see endangerment scale in Krauss 2007). This situation is the result of a long process of shift to Spanish, starting with Spanish colonization in the 16th century. Although contact with Spanish speakers was most likely scarce in the past centuries, intensive and extensive shift to Spanish took place during the early twentieth century and is nowadays fully completed (Adamou 2016).

Ixcatec is an under-described language. Among the earliest studies, we note a phonological analysis, a dictionary, and a study of possessives (Fernández de Miranda 1953, 1959, 1961). In the early 2000s there has been some preliminary work on Ixcatec nominal phrases (Veerman-Leichsenring 2001a) and the Ixcatec data were discussed in publications on the Popolocan branch (e.g., Veerman-Leichsenring 2000). More recently, work has been conducted on Ixcatec phonetics and phonology (Alarcón Montero 2010), on syntax and morphology (Adamou & Costaouec 2013; Adamou 2014; Costaouec & Swanton 2015;

---

\* Acknowledgments: We extend our warmest thanks to the Ixcatec speakers who participated in this study: Cipriano Ramirez Guzmán, Rufina Robles, Juliana Salazar Bautista, and Pedro Salazar Gutierrez. This work has been supported by the Endangered Languages Documentation Programmes of the Hans Rausing Foundation for data collection and analysis. It benefited greatly from discussions within the Programme of International Cooperation (PICS) between the CNRS and CIESAS Sureste, titled ‘Relative clauses in the languages of Mesoamerica’ (co-PIs Enrique Palancar and Roberto Zavalla).

Adamou 2017b), on spatial language and cognition (Adamou 2017a), and on information structure (Adamou, Gordon & Gries in press).

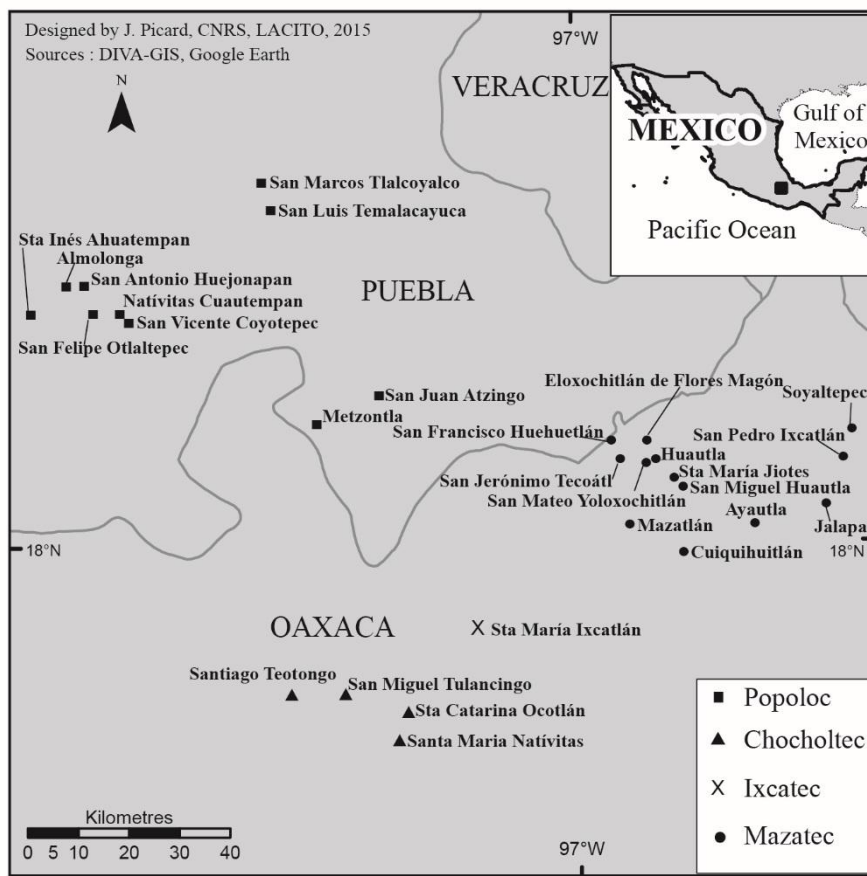


Figure 1. The localities in which the Popolocan languages are spoken (Mexico). Ixcatec is only spoken at Santa María Ixcatlán.

Ixcatec is phonologically distinguishing between three level tones, a high tone (noted <sup>1</sup>), a mid tone (noted <sup>2</sup>), and a low tone (noted <sup>3</sup>). Verbs and nouns are clearly distinct. Verbs are the syntactic nucleus of independent or dependant clauses and receive tense, aspect, and modality markers (perfective, imperfective, progressive, evidential, and anterior; the latter is also used with predicate adjectives), valency-changing suffixes (e.g., antipassive, applicative, causative), and person suffixes. Nouns are determined by the definite and the indefinite articles, demonstratives, possessives, quantifiers, and numerals. Animate nouns are formed with the *noun classifiers* *di*<sup>2</sup>- ‘man’, *k<sup>w</sup>a*<sup>2</sup>- ‘woman’, *ʔu*<sup>2</sup>- ‘animal’ (glossed CLF) and agree with the cross-reference morphemes *-ðá*<sup>2</sup> ‘male’, *-k<sup>w</sup>a*<sup>2</sup> ‘female’, and *-βá*<sup>3</sup> ‘animal’ which are suffixed on verbs, possessives, and predicate adjectives only with S arguments and only when those are in a syntactically marked position. Noun classifiers are distinct from *class terms* (glossed CLS) which partake in word formation for certain categories of nouns (designation of plants, body parts, etc.) but do not exhibit agreement.

Ixcatec is a head-marking language, i.e., grammatical relations are marked on the verb (Nichols 1986). Core arguments are not coded through case morphemes or adpositions. Ixcatec has accusative alignment in indexing (A = S ≠ P) (Malchukov et al. 2010), i.e., only the single argument of intransitive verbs (S) and the agent-like argument of transitive verbs

(A) are indexed on the verb through a series of suffixes, with third person being zero. A dozen experience predicates take a different coding for person, namely through possessive suffixes.

Ixcatec is a pro-drop language, i.e., free pronouns are optionally used for all functions, and noun phrases (NPs) are frequently omitted. In main clauses, Ixcatec has a VS unmarked order and monotransitive main clauses have an SVO order. Ixcatec yes/no questions are introduced by an optional interrogative particle *ʔa*<sup>2</sup>. *Wh*-words (e.g., *ja'ra*<sup>2</sup> 'who', *nda'ra*<sup>2</sup> 'what', *ndi'ra*<sup>2</sup> 'where'), always precede verbs in direct and indirect questions.

The present paper is organized as follows. Section 2 presents the methodology. Section 3 illustrates the gap strategy in Ixcatec. Finally, section 4 offers some concluding remarks and future directions for research.

## 2. Method

A free-speech Ixcatec corpus was collected from 2010 to 2013 as part of the Ixcatec language documentation programme.<sup>1</sup> 50 hours of video recordings are now available on the *Endangered Languages Archive* (ELAR).<sup>2</sup> 30 minutes of annotated speech, synchronized with the videos, are available at the Pangloss Collection.<sup>3</sup>

Part of the Ixcatec corpus is transcribed using ELAN (Max Planck Institute for Psycholinguistics, Nijmegen, Netherlands), part of it is in Toolbox, and part of it in field notes. For this study, four hours were analysed: relative clauses (RCs) were identified and coded as intransitive subject RCs, agent RCs, and object RCs. Examples that were unclear were discarded from the analysis. Moreover, we glossed and analysed the RCs in the Ixcatec texts that were collected, transcribed, and translated in Spanish by Fernández de Miranda (1961). In addition, elicited data were used whenever there were no instances of relevant RCs in the corpus.

The four most fluent speakers of Ixcatec participated in this study. The last Ixcatec speakers learned Ixcatec from having spent more time with their grandparents who were monolingual in Ixcatec and from their parents who were bilingual, L1-Ixcatec and L2-Spanish. One of the speakers was raised monolingual in Ixcatec and learned Spanish from school. All four speakers have not been using Ixcatec in their daily lives for the last 50 years. They have participated at the Ixcatec language documentation programme and on this occasion started using Ixcatec again for the recording sessions. Moreover, three of the four speakers also gave classes of Ixcatec at the kindergarten, primary, and secondary school, once per week, roughly at the same period as the Ixcatec language documentation program.

The two 80-year-old female speakers, who are close friends, were brought together at the house of one of the speakers. They vividly discussed their daily life and their conversations are characterized by frequent overlaps and back-channelling and quick turn-taking, 220 ms in average (Adamou 2016: 10). The two 80-year-old men, who are family members, would generally discuss local traditions and recollections. Their conversations showed few overlaps and back-channelling and were characterized by slow turn-taking, i.e., 1000 ms in average, which can be considered as part of a more formal communication register (Adamou 2016: 10).

---

<sup>1</sup> Endangered Languages Documentation Program (ELDP): *Lexical Documentation of Ixcatec, a highly endangered Otomanguan language of Oaxaca* (HRELP, MDP 0214), 2010–2013, PI. D. Costaouec.

<sup>2</sup> Accessed at <http://www.elar-archive.org/index.php>

<sup>3</sup> Accessed at [http://lacito.vjf.cnrs.fr/pangloss/corpus/list\\_rsc.php?lg=Ixcatec](http://lacito.vjf.cnrs.fr/pangloss/corpus/list_rsc.php?lg=Ixcatec)

All Ixcatec speakers were informed about the goals of this research and signed formal authorizations. In parallel, the Ixcatec language documentation programme was approved by the community's general assembly. Participants were paid for their participation in this study.

### 3. Gap strategy

A relative clause can be defined as “a subordinate clause which delimits the reference of an NP by specifying the role of the referent of that NP in the situation described by the RC” (Andrews 2007: 206). For example, subordination of the clause ‘The cat catches the rat’, in (1b), to the clause ‘I see the cat’, in (1a), results in the complex clause ‘I see the cat that catches the rat’, in (1c).

- (1) a. *I see the cat.*  
 b. *The cat catches the rat.*  
 c. *I see the cat [that Ø catches the rat].*

More specifically, (1c) is composed of a matrix clause and a relative clause (noted in brackets). The head of the RC, ‘cat’ in this example, is underscored. When the co-referential NP is not overtly expressed in the RC, it is referred to as a *gap* and it is noted as Ø; see (1c). When the gap has the grammatical function of a subject, as in (1c), the RC is dubbed *subject relative clause*, and when it has the function of an object it is dubbed *object relative clause*. The RC in (1c) is *postnominal*, i.e., it follows the head NP.

To account for gaps at a theoretical level, three influential analyses were extensively discussed in the literature: the traditional base-generated head (or head external) analysis, according to which the head NP originates outside the RC (Chomsky 1977 among many others); the head raising analysis, according to which the head NP raises from inside the RC by syntactic movement (Kayne 1994 among others); and the matching analysis, according to which there is both an external and an internal head, but the internal head is phonologically deleted through matching with the external head (see Chomsky 1965). However, in the functional-typological literature, the term ‘gap’ is adopted without any discussion as to where the gap originates from. The use of the term ‘gap strategy’ is merely one referring to a RC where no overt NP expresses the relative function (Andrews 2007: 206). Following the latter tradition, the theoretical discussion concerning the origin of the gaps remains beyond the scope of this paper.

Ixcatec RCs are generally built with the gap strategy. Example in (2) shows how two main clauses, in (2a) and (2b), form a complex clause consisting of a matrix clause and a RC, in (2c).

- (2) a.  $\text{ʔi}^2\text{na}^1\text{na}^3$      $\text{k}^w\text{-i}^2\text{ʃkũ}^2\text{-na}^3$      $\text{sa}^1$      $\text{ʔu}^2\text{-tʃi}^1\text{tu}^1$   
 1SG            PFV-see-1SG    DEF    CLF.AN-cat  
 ‘I see the cat.’ {JSB-elic-2015}<sup>4</sup>
- b.  $\text{sa}^1$      $\text{ʔu}^2\text{-tʃi}^1\text{tu}^1$      $\text{k}^w\text{-i}^1\text{ka}^1$      $\text{sa}^1$      $\text{ʔu}^2\text{-ra}^1\text{tʔi}^3$   
 DEF    CLF.AN-cat    PFV-catch    DEF    CLF.AN-rat  
 ‘The cat catches the rat’. {JSB-elic-2015}

<sup>4</sup> The examples code the speaker through her/his initials, the type of data (conv: conversational, elic: elicited), the year of recording, the name of the text and the number of the sentence when appropriate.

- c.  $\text{ʔi}^2\text{na}^1\text{na}^3$   $\text{k}^w\text{-i}^2\text{ʃkũ}^2\text{-na}^3$   $\text{sa}^1$   $\text{ʔu}^2\text{-tʃi}^1\text{tu}^1$   
 1SG PFV-see-1SG DEF CLF.AN-cat
- $[\text{la}^2$   $\text{k}^w\text{-i}^1\text{ka}^1$   $\emptyset_s$   $\text{sa}^1$   $\text{ʔu}^2\text{-ra}^1\text{tʔi}^3]$   
 COMP PFV-catch DEF CLF.AN-rat  
 ‘I see the cat that catches the rat.’ {JSB-elic-2015}<sup>5</sup>

Adamou (2017) observes the syntactic and morphological ambiguity of the Ixcatec RCs. Indeed, even though the semantics and pragmatics favour the subject interpretation of (2c), ‘I see the cat that catches the rat’, the Ixcatec RC has no case marking, no agreement and no word order that could indicate whether this is a subject RC or an object RC: *la*<sup>2</sup> is uninflected, there is no verb morphology, and the word order of the NP in the RC is postverbal in both subject and object RCs. As illustrated in (2c), Ixcatec RCs are generally constructed with a finite verb, marked for tense-mood-aspect and receiving the personal suffixes (third person being zero as in this example). The head of the RC can be a noun, as in (2c), but it can also be a personal pronoun, a demonstrative pronoun, a definite article, a numeral, or a quantifier.

The Ixcatec RCs are typically introduced by the uninflected complementizer *la*<sup>2</sup>. Albeit frequent, the use of the complementizer *la*<sup>2</sup> is optional as shown in (3) with an example from the conversational corpus. Such uses were also noted during systematic data collection with translation tasks (Adamou 2017).

- (3)  $\text{ka}^2\text{na}^1\text{ko}^3$   $[\text{βa}^2\text{-tse}^2$   $\text{re}^2\text{si}^2\text{βi}^2$   $\text{ka}^2$   $\text{tʃa}^2\text{hmi}^2$   $\emptyset_{\text{DO}}$   $\text{me}^1\text{nda}^2$   
 everything IPFV-do receive all people for\_this  
 ‘Everything that all the people are going to inhale, that’s why.’  
 {RRM-conv-2010-Everyday life\_2\_86}

In addition, the Ixcatec complementizer *la*<sup>2</sup> introduces adverbial clauses, in (4), and completive clauses, in (5).

- (4)  $\text{k}^w\text{a}^2\text{tu}^1=\text{βi}^2\text{hi}^2\text{-ʔa}^2\text{-na}^2$   $[\text{la}^2$   $\text{mã}^1\text{hũ}^1\text{ra}^2]$   
 PFV.PL-arrive-NEG-FOC-FOC COMP sweep there??  
 ‘Won’t they come to sweep there?’ {RRM-conv-2010-Everyday life\_3\_11}

- (5)  $\text{ku}^1\text{-tʃe}^2\text{-ku}^1\text{-na}^3$   $\text{sa}^2$   $\text{k}^w\text{a}^1\text{-e}^2\text{nʔe}^2\text{rme}^1\text{ra}^2$   $\text{ku}^1\text{-tʃe}^2\text{-ku}^1\text{-na}^3$   
 PFV-say-ANT-1SG DEF CLF.F-nurse PFV-say-ANT-1SG
- $[\text{la}^2$   $\text{nda}^1$   $\text{ʃta}^1$   $\text{si}^1]$   
 COMP what ugly EXS.PRED  
 ‘I said to the nurse, I said how ugly it is!’  
 {JSB-conv-2010-Everyday life\_3\_90}

Adamou & Costaouec (2013) noted the similarity of the Ixcatec *la*<sup>2</sup> and the Popoloc complementizer *la*<sup>3</sup>/*na*<sup>3</sup> (Veerman-Leichsenring 1991).

<sup>5</sup> We note that a problem with the annotation of the gaps arises for Ixcatec. The subject gap in this example is postverbal because the unmarked position of subjects in the Ixcatec RCs is postverbal. However, the position of the subject gap before the object is rather arbitrary; the unmarked word order in the Ixcatec transitive main clauses is SVO while the two arguments are not expressed simultaneously in the RCs.

### 3.1 Noun headed RCs

Example in (6) illustrates a subject RC headed by a NP. It also illustrates the use of the complementizer *la*<sup>2</sup> to introduce a complement clause with the verb ‘to think’. In addition, it can be seen that the head noun ‘people’ is only used in the first subject RC, but is omitted in the two following subject RCs, i.e., ‘that worked’.

- (6) me<sup>1</sup>                      la<sup>2</sup>                      ʔi<sup>2</sup>na<sup>1</sup>na<sup>3</sup>                      βi<sup>2</sup>-ʃja<sup>2</sup>ku<sup>2</sup>-na<sup>3</sup>  
 therefore                      COMP                      1SG                      IPFV-think-1SG
- la<sup>2</sup>    ʔu<sup>1</sup>tʃa<sup>1</sup>    tʃa<sup>2</sup>hmi<sup>2</sup>    [la<sup>2</sup>    k<sup>w</sup>a<sup>2</sup>tu<sup>1</sup>=βa<sup>2</sup>hi<sup>1</sup>    la<sup>2</sup>                      Ø<sub>S</sub>]                      /  
 COMP    much                      people                      COMP                      PFV.PL-pass                      LOC.DIST
- [la<sup>2</sup>    k<sup>w</sup>a<sup>2</sup>tu<sup>1</sup>=tse<sup>2</sup>    ʃa<sup>3</sup>    Ø<sub>S</sub>]                      /  
 COMP    PFV.PL-do                      work
- [la<sup>2</sup>    ʔu<sup>1</sup>tʃa<sup>1</sup>    ʃa<sup>3</sup>    k<sup>w</sup>a<sup>2</sup>tu<sup>1</sup>=tse<sup>2</sup>    Ø<sub>S</sub>]  
 COMP    much                      work                      PFV.PL-do  
 ‘Therefore I’m thinking that many people that have passed by there, that they worked, that they worked a lot...’ {CRG-conv-2010-Monte Alban\_46}

Example (7) illustrates a RC with the locative predicate *ki*<sup>1</sup>*i*<sup>2</sup>. Examples (8) and (9) illustrate a subject RC with a predicate adjective, i.e., ‘be good’, ‘be mild’, and ‘be spicy’.

- (7) tsu<sup>2</sup>-me<sup>1</sup>-ʃi<sup>2</sup>                      na<sup>2</sup>ʔmi<sup>1</sup>ni<sup>3</sup>ntu<sup>2</sup>                      [la<sup>2</sup>    Ø<sub>S</sub>    ki<sup>1</sup>i<sup>2</sup>                      ka<sup>2</sup>ʔja<sup>2</sup>]  
 want/say-?-APPL                      god                      COMP                      LOC.PRED                      up  
 ‘What says God who is above...’ {CRG-conv-2011-Milpa\_237}
- (8) k<sup>w</sup>a<sup>2</sup>ndi<sup>2</sup>    β-i<sup>2</sup>rha<sup>2</sup>-ma<sup>2</sup>                      h<sup>1</sup>ŋgu<sup>2</sup>    tu<sup>2</sup>ndzi<sup>1</sup>ʔu<sup>1</sup>    [la<sup>2</sup>    i<sup>1</sup>na<sup>3</sup>-ku<sup>1</sup>    ki<sup>1</sup>tʃa<sup>3</sup>    Ø<sub>S</sub>]  
 when                      IPFV-find-3PL                      one                      agave\_heart                      COMP                      fine-ANT                      ripe  
 ‘When they find an agave that is already ripe...’ {PSG-conv-2008-Palenque\_28}
- (9) la<sup>2</sup>                      k<sup>w</sup>a<sup>2</sup>-a<sup>2</sup>ʔa<sup>2</sup>                      ɲũ<sup>1</sup>hũ<sup>1</sup>                      h<sup>1</sup>ɲa<sup>2</sup>                      ʃe<sup>1</sup>  
 COMP                      PFV-throw\_in                      four                      pepper                      sweet
- ɲũ<sup>1</sup>hũ<sup>1</sup>                      h<sup>1</sup>ɲa<sup>2</sup>                      ʃe<sup>1</sup>                      /  
 four                      pepper                      sweet
- ɲũ<sup>1</sup>hũ<sup>1</sup>                      wa<sup>2</sup>hi<sup>2</sup>u<sup>2</sup>                      [la<sup>2</sup>    tʃe<sup>3</sup>-ʔa<sup>2</sup>-na<sup>2</sup>    Ø<sub>S</sub>] //  
 four                      sweet\_pepper                      COMP                      spicy-NEG-FOC
- ku<sup>2</sup>                      ju<sup>1</sup>hu<sup>2</sup>                      [la<sup>2</sup>    tʃe<sup>3</sup>-na<sup>2</sup>    Ø<sub>S</sub>]  
 COORD/INS    two                      COMP                      spicy-FOC  
 ‘One throws in four sweet peppers, four sweet peppers, four *guajillos* (*Capsicum annuum*) that are not spicy, and/with two that are very spicy.’ {RRM-conv-2011-Caldo de res\_454}

Example (10) illustrates a RC with a direct object.

- (10) sa<sup>1</sup>-ra<sup>2</sup>      ja<sup>2</sup>hu<sup>2</sup>      [la<sup>2</sup>      ku<sup>2</sup>-ʔu<sup>2</sup>ne<sup>2</sup>hi<sup>2</sup> Ø<sub>DO</sub>]  
 DEF-DEM.DIST    meat            COMP            PFV-wash  
 ‘That meat that one washes...’ {RRM-conv-2011-Caldo de res\_13}

We did not find any examples of RCs with an indirect object although it is possible in elicitation; see (11).

- (11) sa<sup>1</sup>      i<sup>2</sup>-ʔi<sup>1</sup>      [la<sup>2</sup>      sa<sup>1</sup>      k<sup>w</sup>a<sup>2</sup>-ru<sup>2</sup>fi<sup>1</sup>na<sup>2</sup>      ku<sup>2</sup>-tʃe<sup>2</sup>-k<sup>w</sup>a<sup>2</sup>  
 DEF      CLS-little      COMP      DEF      CLF.F-NP            PFV-say-CO.3SG  
  
 h<sup>h</sup>ŋgu<sup>2</sup>      i<sup>2</sup>sto<sup>1</sup>ria<sup>2</sup> Ø<sub>IO</sub>]  
 INDF      story  
 ‘The kid that Rufina tells a story to.’ {JSB-elic-2015}

Examples in (12) and (13) illustrate RCs with an oblique instrumental gap and in (14) with a comitative. Note the absence of an applicative instrumental marker on the verb or the instrumental *ku<sup>2</sup>* ‘with’.

- (12) la<sup>2</sup>      ba<sup>1</sup>ra<sup>2</sup>      [la<sup>2</sup>      tsee<sup>2</sup>-me<sup>2</sup>di<sup>1</sup> Ø<sub>INS</sub>]  
 COMP      ruler            COMP      do-measure  
  
 ʔmẽ<sup>1</sup>ʔõ<sup>2</sup>      ʔi<sup>1</sup>na<sup>2</sup>      ta<sup>1</sup>sj-a<sup>3</sup>      me<sup>2</sup>di<sup>1</sup>da<sup>1</sup>  
 also            well            be-2SG      measure  
 ‘(Because as says the Word of God) that [with] the ruler with which you measure, you will be measured.’ (de Miranda 1961: 86)<sup>6</sup>

- (13) sa<sup>1</sup>      ma<sup>2</sup>tʃi<sup>1</sup>ti<sup>2</sup>      [la<sup>2</sup>      k<sup>w</sup>-a<sup>2</sup>te<sup>2</sup>-na<sup>3</sup>      ʔi<sup>2</sup>nu<sup>2</sup>      Ø<sub>INS</sub>]  
 DEF      machete            COMP      PFV-cut-1SG      corn\_field  
 ‘The *machete* with which I cut the corn.’ {JSB-elic-2015}

- (14) ne<sup>2</sup>ru<sup>2</sup>-pa<sup>1</sup>na<sup>3</sup>      [la<sup>2</sup>      tse<sup>2</sup>-na<sup>3</sup>      ʃa<sup>3</sup>      Ø<sub>COM</sub>]  
 comrade-POSS.1SG      COMP      do-1SG      work  
 ‘The comrade of mine with whom I work.’ {JSB-elic-2015}

Examples in (15) and (16) illustrate RCs with time and (17) with reason.

- (15) nda<sup>2</sup>tʃi<sup>2</sup>ka<sup>2</sup>-na<sup>2</sup>      i<sup>2</sup>nga<sup>2</sup>      [la<sup>2</sup>      ku<sup>2</sup>-tse<sup>2</sup>      ʃa<sup>3</sup>      Ø<sub>TIME</sub>]  
 how\_many-FOC      year            COMP      PFV-do      work  
 ‘How many years during which they worked!’ {PSG-conv-2010-Monte Alban\_80}

- (16) sa<sup>1</sup>      u<sup>1</sup>ra<sup>2</sup>      [la<sup>2</sup>      k<sup>w</sup>a<sup>2</sup>-ʃ<sup>h</sup>e<sup>2</sup>-na<sup>3</sup>      Ø<sub>TIME</sub>]  
 DEF      time            COMP      PFV-get\_out-1SG  
 ‘The time when I got out.’ {JSB-elic-2015}

- (17) sa<sup>1</sup>      mo<sup>2</sup>ti<sup>1</sup>vu<sup>2</sup>      [la<sup>2</sup>      k<sup>w</sup>a<sup>2</sup>-ʃ<sup>h</sup>e<sup>2</sup>      Ø<sub>REASON</sub>]  
 DEF      reason            COMP      PFV-get\_out  
 ‘The reason for which he/she got out.’ {JSB-elic-2015}

<sup>6</sup> We have respected the transcription and segmentation provided by the author and have added glosses and a translation from Spanish to English.



Example (18) illustrates a RC with a possessive function (also known as genitive). No examples were found in the spontaneous corpus.

- (18) sa<sup>1</sup>    a<sup>2</sup>lu<sup>1</sup>mnu<sup>2</sup>    [la<sup>2</sup>    tra<sup>2</sup>ba<sup>1</sup>ju<sup>2</sup>-ʔe<sup>1</sup>    Ø<sub>POSS</sub>    la<sup>2</sup>    ʔi<sup>1</sup>na<sup>3</sup>]  
 DEF    student    COMP    work-POSS.3SG    COMP    fine  
 ‘The student whose work is fine.’ {JSB-elic-2015}

### 3.2 RCs with null nominal head

The analysis of the free-speech Ixcatec corpus revealed a high number of RCs in which the nominal head is not overtly expressed (Lehmann 1984). In (19) and (20) the head is a personal pronoun. These examples also illustrate non-restrictive RCs, i.e., RCs that only comment on the NP. Non-restrictive RCs may involve a pause between the head NP and the RC (Andrews 2007: 207), and this is the case in (20) where a small pause precedes the complementizer *la<sup>2</sup>*.

- (19) ʔi<sup>2</sup>na<sup>1</sup>na<sup>3</sup>    [la<sup>2</sup>    mi<sup>2</sup>ʔe<sup>2</sup>-na<sup>3</sup>    Ø<sub>S</sub>]    ki<sup>1</sup>=ʃte<sup>2</sup>nga<sup>2</sup>    ki<sup>1</sup>=ʃte<sup>2</sup>nga<sup>2</sup>  
 1SG    COMP    hear-1SG    PROG.3SG-thunder    PROG.3SG-thunder  
 ‘I, who have not heard that it is thundering, thundering...’<sup>7</sup>  
 {JSB-conv-2010-Everyday life\_6\_459}

- (20) ʔi<sup>2</sup>na<sup>3</sup>ri<sup>2</sup> /    [la<sup>2</sup>    tu<sup>1</sup>=tse<sup>2</sup>-ri<sup>2</sup>    Ø<sub>A</sub>    ʃa<sup>2</sup>e<sup>1</sup>na<sup>2</sup>]  
 1PL.EXCL    COMP    PROG.PL-do-HON/2PL.EXCL    task  
 ‘We, who are doing the tasks...’ {RRM-conv-2010-Everyday life\_2\_202}

In some rare examples, the RC is introduced by a demonstrative pronoun, as in (21).

- (21) me<sup>1</sup>ra<sup>2</sup>    la<sup>2</sup>    /    [la<sup>2</sup>    ʃi<sup>2</sup>-e<sup>2</sup>ʔe<sup>2</sup>    Ø<sub>A</sub>    sa<sup>2</sup>ʃo<sup>1</sup>r    ndra<sup>2</sup>]    //  
 DEM.DIST    COMP    /    COMP    IPFV-give    taste    like\_this    //  
 ‘That one, that gives taste, like this.’ {RRM-conv-2011-Caldo de res\_385}

The RC may also have a definite article as a head. See an example of a subject RC in (22) and (23), a direct object in (24), and a locative in (25).

- (22) k<sup>w</sup>-i<sup>2</sup>te<sup>1</sup>ʔe<sup>2</sup>    ja<sup>2</sup>te<sup>3</sup>    k<sup>w</sup>e<sup>2</sup>nda<sup>2</sup>    la<sup>2</sup>  
 PFV-enter    wood    for    COMP
- k<sup>w</sup>-i<sup>2</sup>hi<sup>2</sup>    ndju<sup>2</sup>ja<sup>1</sup>    ʃta<sup>1</sup>nda<sup>2</sup>    la<sup>2</sup>    ʔa<sup>2</sup>ku<sup>2</sup>    ʃti<sup>2</sup>nde<sup>1</sup>e<sup>1</sup>  
 arrive    steam\_bath    after    COMP    inside    bathe
- ka<sup>2</sup>    sa<sup>1</sup>    [la<sup>2</sup>    k<sup>w</sup>a<sup>2</sup>tu<sup>2</sup>-ʃi<sup>2</sup>    Ø<sub>S</sub>    ndju<sup>2</sup>ja<sup>1</sup>]  
 all    DEF    COMP    PFV.3PL-go    steam\_bath  
 ‘One enters the wood in order for all those who go to the steam bath to bathe.’  
 {PSG-conv-2008-Temascal\_6}
- (23) me<sup>1</sup>    /    sa<sup>1</sup>    [la<sup>2</sup>    tu<sup>1</sup>=ka<sup>2</sup>tse<sup>1</sup>ngi<sup>2</sup>    Ø<sub>S</sub>]    i<sup>1</sup>na<sup>3</sup>    ʃ-a<sup>2</sup>ʃa<sup>2</sup>  
 therefore    DEF    COMP    PROG.PL-earth\_up/lift    fine    IPFV-earn  
 ‘So... the ones who are lifting (the maize plants) earn good money.’

<sup>7</sup> The matrix clause of a RC is not always straightforward in conversations as speakers frequently replan their speech and negotiate turns.

{PSG-conv-2011-Milpa\_153}

- (24) tsu<sup>2</sup>-ku<sup>1</sup> / k<sup>w</sup>-e<sup>2</sup>na<sup>2</sup>-na<sup>3</sup> // sa<sup>1</sup> /  
 want/say-ANT / / PFV-buy-1SG // DEF /

sa<sup>1</sup> [la<sup>2</sup> k<sup>w</sup>a<sup>2</sup>-ja<sup>1</sup> Ø<sub>DO</sub> ka<sup>2</sup> rha<sup>2</sup>-na<sup>3</sup>]  
 DEF COMP PFV-POSS.PRED all hand-POSS.BP.1SG

‘One says I buy the one that I have on my hands.’ {RRM-conv-2010-Everyday life\_1\_240}

- (25) ki<sup>1</sup>i<sup>2</sup>-ke<sup>2</sup> sa<sup>1</sup> [la<sup>2</sup> β-i<sup>2</sup>ti<sup>1</sup>?-i<sup>2</sup> Ø<sub>Loc</sub>]  
 LOC.PRED-ITER DEF COMP IPFV-enter-1PL.INCL

‘There is again the one (the Monte Alban archaeological site) in which we enter.’

{CRG-conv-2010-Monte Alban\_96}

RCs may also have an indefinite article as head, in (26), and a quantifier, in (27).

- (26) me<sup>1</sup>ra<sup>2</sup> je<sup>2</sup> h<sub>ngu</sub><sup>2</sup> [la<sup>2</sup> tʃa<sup>2</sup>tʃi<sup>2</sup>?e<sup>2</sup> Ø<sub>A</sub> ka<sup>2</sup> li<sup>2</sup>-ʔi<sup>1</sup>]  
 DEM.DIST PRST.PRED one COMP teach all CLS-little  
 ‘That is the one that teaches all the children.’ {CRG-conv-2010-Monte Alban\_730}

- (27) la<sup>2</sup> k<sup>w</sup>e<sup>2</sup>nda<sup>2</sup> phi<sup>1</sup> ka<sup>2</sup> [la<sup>2</sup> li<sup>2</sup>-ʔi<sup>1</sup> Ø<sub>s</sub>]  
 COMP for go all COMP CLS-little

[la<sup>2</sup> mi<sup>1</sup>?e<sup>2</sup> Ø<sub>s</sub>]  
 COMP sick

‘It is in order for all those who are children, who are sick, to go.’

{PSG-conv-2008-Temascal\_16}

In some cases, there is no nominal head and no determiner either; see (28).

- (28) [la<sup>2</sup> tʃe<sup>3</sup>] [la<sup>2</sup> h<sub>ni</sub><sup>1</sup>] /  
 COMP spicy COMP tasty /

me<sup>1</sup> ku<sup>2</sup> [la<sup>2</sup> tʃe<sup>3</sup>-ʔa<sup>2</sup>-na<sup>2</sup>] // h<sub>ni</sub><sup>1</sup>-ʔa<sup>2</sup>-na<sup>2</sup>  
 therefore COORD/INS COMP spicy-NEG-FOC // tasty-NEG-FOC

‘(The one) which is spicy, is (the one) that is tasty, that is, with (the one) that isn’t spicy, it isn’t tasty.’ {RRM-conv-2011-Caldo de res\_465}

Similar cases have been reported in the literature (see Andrews 2007: 214), but they are not discussed extensively. In the Ixcatec examples, it appears that the referents are well identified in the discourse and can therefore be omitted.

### 3.3 Accessibility Hierarchy

This section summarizes the various RCs with respect to the Noun Phrase Accessibility Hierarchy (Keenan & Comrie 1977), presented in (24). According to this hierarchy, if a language can relativize a position in the Accessibility Hierarchy, it can relativize any higher position. Subjects and agents are considered as more accessible to relativization than direct objects, indirect objects, oblique objects, possessors, and objects of comparison.

- (29) subject > direct object > indirect object > oblique object > possessor > object of comparison

In the previous sections it was shown that Ixcatec allows relativization of subjects, direct objects, indirect objects, oblique objects (instrumental, comitative), adjuncts (locative, time, reason), and possessors through the gap strategy and the use of the complementizer *la*<sup>2</sup>. Table 1 summarises these possibilities.

Table 1. Accessibility Hierarchy of the gap strategy in Ixcatec

	Subject	Direct object	Indirect object	Instrumental	Comitative	Locative	Time	Reason	Possessor
<b>Gap strategy</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓

#### 4. Concluding remarks

Ixcatec being an under-described language, this work is the first comprehensive study of the most common relativization strategy, the gap strategy. More research remains to be done on other types of relativization strategies and RCs which have not been discussed in the present paper. For example, we have found some rare instances of *internally headed relative clauses* (IHRCs) both in the texts by Fernández de Miranda (1961), exemplified in (30), and in the contemporary corpus, shown in (31). In these examples, we note that the RC involves an existential predicate.

[Preceding sentence: ‘How is the world formed?’]

- (30) ?mee<sup>1</sup>ndrii<sup>2</sup>      si<sup>1</sup>      fo<sup>2</sup>rma<sup>1</sup>du<sup>1</sup>      tʃi<sup>2</sup>k<sup>2</sup>a ku<sup>1</sup>  
 like\_this      EXS.PRED      formed      like COORD/INS??

[**la**<sup>2</sup>      tʷu<sup>2</sup>si<sup>1</sup>[e]<sup>s</sup>      si<sup>1</sup>-nga<sup>2</sup>      rha<sup>2</sup>-na<sup>3</sup>]  
 COMP      orange      EXS.PRED-inside      hand-POSS.BP.1SG  
 ‘In this way, it is formed like the orange that is in my hand.’  
 {Fernández de Miranda 1961: 193}

- (31) ka<sup>2</sup>ndi<sup>2</sup>      me<sup>1</sup>ndi<sup>2</sup>      la<sup>2</sup>      tse<sup>1</sup>-ʃi<sup>2</sup>      ndju<sup>2</sup>ja<sup>1</sup>  
 when      for\_this      COMP      do-APPL.INS      steam\_bath

me<sup>1</sup>ra<sup>2</sup>      tsi<sup>1</sup>-tse<sup>2</sup>-na<sup>2</sup>      sa<sup>1</sup>      a<sup>2</sup>ni<sup>1</sup>ma<sup>3</sup>      βe<sup>1</sup>tu<sup>2</sup>  
 DEM.DIST      EVD-do-FOC      DEF      deceased      NP

[**la**<sup>2</sup>      si<sup>1</sup>      sa<sup>1</sup>      ndju<sup>2</sup>ja<sup>1</sup>-ri<sup>2</sup>s]  
 COMP      EXS.PRED      DEF      steam\_bath-DEM.PROX

‘Thus when the steam bath was built, the one that built the late Alberto, this steam bath that is here...’ {PSG-conv-2008-Temascal\_35}

In addition, Adamou (2017) draws attention to the use of the cross-reference morphemes (*-k<sup>w</sup>a<sup>2</sup>* ‘woman’, *-ǰa<sup>2</sup>* ‘man’ and *-βa<sup>2</sup>* ‘animal’) as *resumptive pronouns*. The theoretical question of whether such uses are alternative realizations of gaps or ordinary pronouns is left for future research (see Asudeh 2012 for an overview of analyses of resumption).

In conclusion, this paper draws mainly on free-speech data, which have the advantage of showing what speakers are doing in natural communication. Elicited data were used to illustrate RCs that were not found in the analysed parts of the corpus. As larger portions of the Ixcatec corpus are being annotated, we hope to gain a better understanding of how relativization works in Ixcatec. In the meantime, this research report contributes to the typology of RCs in the languages of the Mesoamerica presented in this volume.

## Abbreviations

Glosses follow the Leipzig Glossing Rules.

1, 2, 3	first, second, third person		
AN	animal	HON	honorific
ANT	anterior	INCL	inclusive
APPL	applicative	INDF	indefinite
BP	body part	INS	instrumental
CLF	classifier	IPFV	imperfective
CLS	class	ITER	iterative
CO	cross-reference	LOC	locative
COMP	complementizer	M	masculine/male
COORD	coordinator	NEG	negative
DEF	definite	NP	proper noun
DEM	demonstrative	PFV	perfective
DIST	distal	PL	plural
EVD	evidential	POSS	possessive
EXCL	exclusive	PRED	predicate
EXS	existential	PROG	progressive
F	feminine/female	PRST	presentative
FOC	focus	SG	singular

## References

- Adamou, Evangelia. 2014. L'antipassif en ixcatèque. *Bulletin de la Société de Linguistique de Paris* 109(1). 373–396.
- Adamou, Evangelia. 2016. *A corpus-driven approach to language contact. Endangered languages in a comparative perspective*. Berlin & Boston: Mouton de Gruyter.
- Adamou, Evangelia. 2017a. Spatial language and cognition among the Ixcatec-Spanish bilinguals (Mexico). In Kate Bellamy, Mike Child, Antje Muntendam & M. Carmen Parafita Couto (eds.), *Multidisciplinary Approaches to Bilingualism in the Hispanic and Lusophone World*, 175-209. Amsterdam & Philadelphia: Benjamins.
- Adamou, Evangelia. 2017b. Subject preference in Ixcatec relative clauses (Otomanguean, Mexico). *Studies in Language* 41(4): 66-109.
- Adamou, Evangelia, Matthew Gordon & Stefan Th. Gries. 2018. Prosodic and morphological focus marking in Ixcatec (Otomanguean). In Evangelia Adamou, Katharina Haude & Martine Vanhove (eds). *Information Structure in Lesser-described Languages: Studies in Prosody and Syntax*, 51-83. Amsterdam: Benjamins.
- Adamou, Evangelia & Denis Costaouec. 2013. El complementante *la* en ixcatéco: marcador de clausula relativa, completiva y adverbial. *Amerindia* 37(1). 193–210.

- Andrews, Avery D. 2007. Relative clauses. In Timothy Shopen (ed.), *Language typology and syntactic description*, 206–236. Cambridge: Cambridge University Press.
- Asudeh, Ash. 2012. *The logic of pronominal resumption*. Oxford: Oxford University Press.
- Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1977. On Wh-movement. In Peter Culicover, Thomas Wasow & Adrian Akmajian (eds.), *Formal Syntax*, 71–132. New York: Academic Press.
- Costaouec, Denis & Michael Swanton. 2015. Classification nominale en ixcatèque. *La linguistique* 51(2). 201–239.
- Fernández de Miranda, María Teresa. 1951. Reconstrucción del protopopoloca. *Revista Mexicana de Estudios Antropológicos* 12. 61–93.
- Fernández de Miranda, María Teresa. 1953. Las formas posesivas del ixcateco. In *Memoria del Congreso Científico Mexicano* 12. 159–170.
- Fernández de Miranda, María Teresa. 1956. *Glotocronología de la familia popoloca*. México, DF: Instituto Nacional de Antropología e Historia.
- Fernández de Miranda, María Teresa. 1959. *Fonémica del Ixcateco*. México, DF: Instituto nacional de antropología e historia (INAH).
- Fernández de Miranda, María Teresa. 1961. *Diccionario ixcateco*. México, DF: Instituto nacional de antropología e historia (INAH).
- Gudschinsky, Sarah C. 1959. *Proto-Popotecan. A Comparative Study of Popolocan and Mixtecan*. Bloomington, Indiana: Indiana University Publications.
- Hamp, Eric P. 1958. Chocho-Popoloca Innovations. *International Journal of American Linguistics* 26(1). 62.
- Hironymous, Michael. 2007. *Santa Maria Ixcatlan, Oaxaca: From Colonial Cacicazgo to Modern Municipio*. PhD dissertation, University of Texas, Austin.
- Kayne, Richard S. 1994. *The Antisymmetry of Syntax*. Cambridge, Mass.: MIT Press.
- Keenan, Edward L. & Bernard Comrie. 1977. Noun phrase accessibility and universal grammar. *Linguistic Inquiry* 8. 63–99.
- Krauss, Michael. 2007. Classification and terminology for degrees of languages endangerment. In Matthias Brenzinger (ed.), *Language Diversity Endangered*, 1–8. Berlin: Mouton de Gruyter.
- Lehmann, Christian. 1984. Der Relativsatz. *Typologie seiner Strukturen, Theorie seiner Funktionen, Kompendium seiner Grammatik*. Tübingen: G. Narr.
- Malchukov, Andrej, Martin Haspelmath & Bernard Comrie (eds). 2010. Ditransitive constructions: a typological overview. In Andrej Malchukov, Martin Haspelmath & Bernard Comrie (eds), *Studies in ditransitive constructions: A comparative handbook*, 1–64. Berlin & New York: De Gruyter.
- Nichols, Johanna. 1986. Head-marking and dependent-marking grammar. *Language* 62(1). 56–119.
- Swadesh, Morris. 1960. The Oto-Manguean Hypothesis and Macro Mixtecan. *International Journal of American Linguistics* 26(2). 79–111.
- Veerman-Leichsenring, Annette. 2000. Popolocan Independent Personal Pronouns: Comparison and Reconstruction. *International Journal of American Linguistics* 66(3). 318–359.
- Veerman-Leichsenring, Annette. 2001a. Ixcateco: La frase nominal. *Anales de Antropología* 35. 323–358.
- Veerman-Leichsenring, Annette. 2001b. Changes in Popolocan word order and clause structure. In Jan T. Faarlund (ed.), *Grammatical Relations in Change*, 303–322. Amsterdam & Philadelphia: John Benjamins.

Veerman-Leichsenring, Annette. 2001c. Coreference in the Popolocan languages. In Brinton, Laurel J. (ed.), *Historical Linguistics 1999: Selected papers from the 14th International Conference on Historical Linguistics*, Vancouver, 9–13 August 1999, 337–350.