

## Argument realization and discourse status in Yucatec, a purely head-marking language

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**Abstract:** We examine the impact of givenness on argument realization in a small text corpus of Yucatec folk narratives (660 clause-like units). We find that the default devices for the extension of topic chains are bare cross-reference markers. Weightier expressions – free pronouns, demonstrative pro-forms, clause-mate co-nominals, and left-dislocated pro-forms or nominals – are used for disambiguation among competing referents, resuming previous topic chains, and introducing new referents. Bare cross-reference markers occur exclusively with given referents. Their behavioral properties thus strongly support an anaphoric analysis, despite the existence of evidence suggesting an agreement (‘pro-drop’) analysis in the presence of clause-mate co-nominals.

**Keywords:** argument realization, givenness, topicality, head-marking, Yucatec Maya

### 1. Introduction

The question addressed in this paper is which factors govern the use of noun phrases (NPs)<sup>1</sup> in purely head-marking languages, given that NPs are by definition syntactically optional in head-marking structures. Based on qualitative observation, BOHNEMEYER (2009) suggests that in Yucatec Maya, non-pronominal NPs are used both for the introduction of new referents and for the resumption of previously introduced ones that are not continuing topics in the local context, *i.e.*, for newly returned chain-initial topics in the sense of GIVÓN (1983: 9). In contrast, bare cross-reference markers not accompanied by NPs are used for extending topic chains. In other words, they are used very much like pronouns in dependent-marking

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<sup>1</sup> Throughout this article, we use the term ‘noun phrase’ (NP) in the broad, traditional sense of DIXON (2009: 106-108), corresponding to ‘determiner phrase’ (ABNEY 1987) in the Minimalist Program and ‘reference phrase’ (VAN VALIN 2008) in Role and Reference Grammar.

languages such as English. Our primary goal in this article is to test this hypothesis quantitatively. We present the results of a small corpus study. The hypothesis is not without alternative, as Yucatec also has free pronouns as they occur in configurational dependent-marking languages such as English. An important supplementary question is thus what the functional division of labor is between the realization of arguments by bare cross-reference markers vs. by (cross-reference markers augmented by) morphologically unbound pronouns. Our study is rounded out by an additional realization option – left-dislocated NPs – and by a consideration of the role of discourse structure and lexical semantics in reference resolution.

The article is organized as follows: in Section 2, we define central terms. Section 3 sketches the grammar of Yucatec down to the introduction of the options speakers choose among for the realization of arguments. In the process, we discuss the evidence for Yucatec cross-reference markers being referential. We also include a summary of the analysis in BOHNEMEYER *et al.* (2015), according to which Yucatec cross-reference markers realize the arguments of the head in the absence of coindexed clause-internal NPs, but serve to express agreement in the presence of such ‘co-nominals’, much as argued by BRESNAN & MCHOMBO (1987) for the subject markers of Chicheŵa (Bantu; Malawi, Zambia, Mozambique). In Section 4, we present the corpus study. We discuss the findings in Section 5. We include a qualitative comparison with available accounts of realization in other head-marking languages. Section 6 concludes.

## **2. Argument realization and discourse status**

We use the term ‘argument realization’ for the choice among different constructions a given language allows for the expression of a particular semantic argument of a given predicate (similarly ALLEN (2000, 2008), BICKEL (2003), BROWN (2008), DU BOIS (1987, 2003), and others). Argument realization in this sense is one aspect of the larger domain of argument structure, the mapping between the lexical meaning of verbs (and other natural-language predicators), their morphosyntactic properties, and

the expression of their semantic arguments<sup>2</sup>. For example, as illustrated in (1), the subject of rebuke may be ellipsed (a) or expressed by a pronoun (b) or a non-pronominal NP (c).

- (1) a. *Floyd<sub>i</sub> took exception and  $\emptyset$ <sub>i</sub> rebuked the officer.*  
 b. *Floyd<sub>i</sub> took exception. He<sub>i</sub> rebuked the officer.*  
 c. *Floyd took exception. Sally rebuked the officer.*

Which of the available options is (most) appropriate for the realization of a given argument in a particular context depends on a variety of factors, including:

- The semantic role and grammatical relation of the argument in conjunction with the meaning and selectional restrictions of the verb (or more generally, the head) – *e.g.*, some semantic arguments require prepositional phrases, verbal projections, or clauses for their expression;
- The syntactic environment of the construction – *e.g.*, the ellipsis in (1a) is licensed by coordination;
- The status of the referent of the argument in the discourse – *e.g.*, whether the referent has already been mentioned (1a,b) or is newly introduced to the discourse (1c).

This study is concerned with the influence of discourse status on argument realization. Discourse status can be characterized informally as the metalinguistic information about a given referent (most commonly an individual, time, place, or event) that is ideally available to speakers and hearers when processing a particular utterance as a result of the preceding discourse and the general knowledge shared by the members of the linguistic and cultural community. We take discourse status to comprise at least two basic dimensions, which are in first approximation independent of one another. Many different labels for these dimensions have been proposed. We call them here ‘givenness’ and ‘pragmatic role’. Both can be

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<sup>2</sup> Some authors use ‘argument realization’ in this broader sense, for which we prefer ‘argument structure’; *e.g.*, BUTT & KING (2000), GOLDBERG (2005), and LEVIN & RAPPAPORT-HOVAV (2005).

conceptualized as variables with a range (possibly a scale) of categorical values.

In the following, we assume an informal, generic dynamic model of discourse, which decomposes discourses into sets of utterances. Utterances are verbal or nonverbal actions that realize tokens of conventional semiotic signals and perform speech acts<sup>3</sup>. Each utterance has a unique position in the discourse vis-à-vis all the other utterances the discourse consists of, which precede it, follow it, or overlap with it. Speakers and hearers keep a record of the discourse as it unfolds, updating with each utterance the Common Ground (CG; STALNAKER 1974; LEWIS 1979), *i.e.*, the information they treat as shared.

By givenness, we refer to the relative ease with which a referent can be “picked up” in a given utterance in a manner that is pragmatically felicitous and readily processable for the interactants. This ease can be measured in terms of the relative weightiness or complexity of the expression required for this purpose (CHAFE 1976, 1994; GUNDEL *et al.* 1993). Alternative terms for this property used equally widely in the literature include ‘availability’ and ‘accessibility’ (*cf.* GIVÓN 1983 for both). Speakers treat referents as given or accessible in a given context when they assume a tacit agreement with the hearers to the effect that the referents in question are available in the discourse context for reference by suitable expressions without requiring explicit introduction. This agreement can be licensed by the referents having been mentioned previously in the same conversation. An alternative means by which an expression may be associated with an accessible referent in a given context is that the referent is unique in the ‘topic situation’ (KRATZER 2014), *i.e.*, the situation around which the conversation revolves at the time of the utterance, which may or may not be the extralinguistic utterance situation. Such uniqueness assumptions may depend on shared cultural (or

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<sup>3</sup> We assume that utterances are individuated at the speech act level: a felicitous utterance performs exactly one speech act in the sense of AUSTIN (1962) and SEARLE (1969, 1975). However, we leave open the possible existence of a subatomic level in speech act theory, which might allow for the conflation or amalgamation of “co-speech-acts” in single utterances. Apologies in Western cultures, for example, may be seen as composite acts that involve both the acceptance of blame – a representative or commissive act in SEARLE’S (1969) classification – and the expression of empathy or regret, an expressive act.

‘encyclopedic’) knowledge. For example, in a conversation about a garden, the definite description *the roses*, used for the first time in this conversation, can generally be expected to pick up a unique referent, namely all and only the roses growing in the garden in question at the ‘topic time’ (KLEIN 1994; *i.e.*, the time of the topic situation).

*Relative* givenness is crucially influenced by recency of mention, (presumed) salience in the utterance context, and the availability of competing referents for the same potential expressions (GIVÓN 1983). Additional factors influencing especially the minimum weightiness of the expression required to felicitously introduce a new referent include the availability of a conventional conceptual category under which the referent can be subsumed and the lexicalization of that category in the language in question (GUNDEL *et al.* 1993).

We introduce the term of art ‘pragmatic role’ for the role a referent plays in the *information structure* of the utterance within its discourse context. The roles we have in mind are in particular those of topic and focus. Following BÜRING (1997, 2003), CARLSON (1982), KLEIN & VON STUTTERHEIM (1987), VON STUTTERHEIM & KLEIN (2002), ROBERTS (1996, 2012), and VAN KUPPEVELT (1995, 1996), we assume that the thematic organization of the utterances that form a coherent discourse can be described in terms of question-answer relations. Every utterance responds to one or more implicit or explicit questions. These questions under discussion (QUDs) ultimately derive from the communicative goals of the interaction, which may of course change during the interaction.

We informally define the focus of an utterance as that part of its meaning – if any – that eliminates some of the available alternatives (ideally, all but one) of the immediate QUD to which the utterance responds (ROOTH 1985, 1992). We define the topic of an utterance as comprising the set of discourse referents mentioned in its immediate QUD but not in focus. Consider (2). What we identify as topics in the following discussion are underlined; foci are bolded. This fragment was recorded during a referential communication task involving a picture matching game. Every picture shows a ball and a chair, the differences being in the orientation of the chair and the location of the ball with respect to the chair. The implicit

QUDs of each description are these: ‘How is the chair oriented?’ and ‘Where is the ball?’.

- (2) a. U láak’e chan k’anche’a’,  
 U=láak’ le=chan k’áanche’=a’  
 A3=other DEF=DIM stool=D1  
 ‘Another one of those little chairs here.’
- b. le pàarte tu’x ku kotal máako’,  
 le=pàarte tu’x k-u=kotal máak=o’  
 DEF=part where IMPF-A3=sit:INCH.DIS person=D2  
 ‘the seat (*lit.* the part where people sit),’
- c. **chik’in** yàan.  
 chik’in yàan  
 west(B3SG) EXIST(B3SG)  
 ‘it is **in the west.**’

In this particular example, the topical parts of the utterance are expressed by topicalization and left dislocation constructions. The main clause of the sentence involves a focus construction, with the focused constituent providing the key information addressing the QUD ‘How is the chair oriented?’. We discuss the constructions involved in (2) further in § 3.

Our approach to defining ‘topic’ is less psychological, but otherwise broadly compatible with REINHART’s (1982) proposal. It aligns closely with the Prague School view of theme and rheme as being differentiated in terms of a continuum of ‘communicative dynamism’, *i.e.*, that which “pushes the communication forward” (FIRBAS 1971: 135-136)<sup>4</sup>.

The examples discussed above make it clear that both givenness (1) and pragmatic role (2) influence argument realization. However, they influence it in different ways. By hypothesis, givenness is the primary semantic factor governing pronominalization, whereas pragmatic role governs the use of information perspective devices such as focus constructions, topicalizations, and left-dislocations. Since we are primarily interested in the effects of head-marking on realization, and specifically in the role of morphologically bound expressions that semantically behave much like reference tracking devices (pronouns) and morphosyntactically behave as

<sup>4</sup> An important potential challenge for the view that topic and focus derive from complementary parts of the QUD is the phenomenon of contrastive topics. We address this issue in § 3.

if they saturated argument positions of a head – that is, in cross-reference markers – the corpus study we present in § 4 focuses on givenness rather than pragmatic role. However, in analyzing the results of the corpus study, we discuss the apparent semantic conditions of the use of other realization constructions, such as LDS, as well. Therefore, we have tried to sketch a more comprehensive picture of discourse status in this section.

The last question to be addressed here is whether (or to what extent) these two variables are indeed independent of one another, as we assumed above. GUNDEL *et al.* (1993), for example, treat focus as a givenness property. However, in the framework assumed here, it is topicality where the two dimensions meet, since by the definition proposed above, topics are necessarily given. Foci and frame setters, in contrast, can be both given and newly introduced.

### 3. The grammar of argument realization in Yucatec

The language scientifically known as ‘Yucatec’ is called *Maya* by its speakers. It gave its name to the Mayan language family. It is spoken by approximately 780,000 first-language speakers in the three Mexican states of the Yucatan peninsula and a few thousands more in neighboring Belize and the Mexican state of Tabasco (LEWIS *et al.* 2015)<sup>5</sup>. It forms the Yucatecan branch of the Mayan language family together with its much smaller and lesser-documented sisters Itza’, Mopán, and Lacandon.

Typologically, Yucatec is a head-initial and, with the exception mostly of certain operators/functional categories<sup>6</sup>, exclusively right-branching language. It has a split argument marking (or ‘alignment’) system, which treats the single argument of intransitive predicates sometimes on a par with the actor of a transitive verb and sometimes on a par with the undergoer. What makes this system typologically unusual is that the split is governed neither lexically nor pragmatically, but by an inflectional category that conflates viewpoint aspect and mood (called ‘status’ in BOHNEMEYER (2002), following a proposal by KAUFMAN (1990) for the

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<sup>5</sup> Published data from the Mexican government’s 2010 census show 786,113 speakers age five and older ([http://cuentame.inegi.org.mx/hipertexto/todas\\_lenguas.htm](http://cuentame.inegi.org.mx/hipertexto/todas_lenguas.htm); last consulted 3/19/2015).

<sup>6</sup> There is also a small, closed class of around 40 true adjectives, which occur pre-nominally.

entire Mayan language family); *cf.* BOHNEMEYER (2004), KRÄMER & WUNDERLICH (1999), and references therein<sup>7</sup>.

Crucially for present purposes, Yucatec is an entirely head-marking language. There is no case marking of any kind on dependents. We use the term ‘head-marking’, not in the broad sense of NICHOLS (1986), but in the narrower sense of VAN VALIN (1985). In this usage, it is equivalent to ‘cross-reference’ (BLOOMFIELD 1933: 191-194) and the ‘concentric’ syntactic type of MILEWSKI (1950). A construction is head-marking in this sense if, and only if, it involves a head that carries one or more bound morphemes indexing the fillers of its argument positions, and that saturate them in the absence of clause-mate coindexed NPs or co-nominals. We use the traditional term ‘cross-reference markers’ for the bound indices; other common terms include ‘bound pronominal arguments’ and ‘argument affixes’. A construction is dependent-marking in the narrow sense if, and only if, it involves a nominal dependent and its head such that the dependent bears a morphological reflex of the (semantic and/or syntactic) relation to the head – in other words, a case-marker, irrespective of whether the nominal is in fact a syntactic argument of the head or merely coindexed with an argument. A construction is double-marking if, and only if, it is both head-marking and dependent-marking. A language is purely head-marking if, and only if, its grammar licenses no dependent-marking (or double-marking) constructions.

Examples (3) and (4) illustrate head-marking in Yucatec. In (3), two possessed nominals are used as heads of nonverbal predicates. A first-person ‘Set-A’ clitic cross-references the possessor and a second-person ‘Set-B’ suffix the theme, the semantic subject of the predication. The following example (4) features the same two markers cross-referencing the actor and undergoer of a transitive verb. This distribution is found across the Mayan language family. Up to this point, it instantiates ergative alignment.

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<sup>7</sup> Alignment splits governed by viewpoint aspect are well known, especially from Indo-Iranian languages. What distinguishes the system found in Yucatec and, to varying degree, other languages of the Yucatecan and Cholan branches of the Mayan language family from this better known system is that the split occurs in intransitive clauses in the Mayan case, but in transitive clauses in the Indo-Iranian case.

- (3) Síi in=ìiho-ech, in=pàal-ech, ko'x!  
 yes A1SG=son-B2SG A1SG=child-B2SG HORT  
 'You ARE my son alright, you ARE my child; let's go!' (Lehmann ms.a)
- (4) T-inw=il-ah-ech te=ha'ts+kab+k'iin=a'  
 PRV-A1SG=see-CMP-B2SG PREP:DEF=divide:PASS+earth+sun=D1  
 'I saw you this morning.'

Like most Mayan languages, Yucatec has two paradigms of cross-reference markers. Mayanists have become accustomed to labeling these 'Set A' and 'Set B.' Table 1 summarizes the distribution of the two paradigms across syntactic contexts. Table 2 lists the forms.

Environment	Set A	Set B
Transitive verbs (active voice)	A(ctor)	U(ndergoer)
Intransitive verbs; transitive verbs in non-active voice	s (the single argument of intransitive clauses in incomplete 'status')	s (the single argument of intransitive clauses in complete, subjunctive, extrafocal 'status')
Other lexical categories	Possessor of nominal	S of non-verbal predicates

**Table 1.** Distribution and functions of the two paradigms of Yucatec cross-reference markers.

Number	Person	Set A	Set B
SG	1	<i>in(w)=</i>	<i>-en</i>
	2	<i>a(w)=</i>	<i>-ech</i>
	3	<i>u(y)=</i>	<i>-Ø (/ih)</i>
PL	1	<i>(a)k=...(-o'n)</i>	<i>-o'n</i>
	1 INCL	<i>(a)k=...-o'ne'x</i>	<i>-o'ne'x</i>
	2	<i>a(w)=...e'x</i>	<i>-e'x</i>
	3	<i>u(y)=...o'b</i>	<i>-o'b</i>

**Table 2.** The morphological forms of the two paradigms of cross-reference markers.

As illustrated in (5), the co-nominals are syntactically optional. In their absence, the cross-reference markers are interpreted like pronouns.

- (5) a. T-**u**i=nes-ah-Ø<sub>i</sub> [hun-túul pàal]<sub>j</sub> [le=xoh]<sub>i</sub>=o'  
 PRV-A3=gnaw-CMP(B3SG) one-CL.AN child DEF=cockroach=D2  
 'The cockroach bit a child.' [elicited]
- b. T-**u**=nes-ah-Ø  
 PRV-A3=gnaw-CMP(B3SG)  
 'It bit it.' [constructed]

EVANS (1999) and HASPELMATH (2013) challenge the traditional assumption that cross-reference markers are bound pronominal arguments. Evans shows that some head-marking languages use cross-reference markers indiscriminately in contexts where they pick up a given referent (*i.e.*, are interpreted definitely, insofar as they behave similarly to definite descriptions), introduce a new one (*i.e.*, are interpreted indefinitely), or are used non-referentially (*e.g.*, in impersonal contexts such as those in which English speakers might use *one* or generic *you*, French speakers use *on*, and German speakers use *man*). He cites primary data from Bininj Gunwok (Gunwinygu; Northern Territory, Australia), but also draws on secondary data from a range of other languages. He argues that this versatility does not match the behavior of free pronouns in European languages and suggests that cross-reference markers are inherently non-referential and should really be treated as agreement markers. In response, MITHUN (2003) shows that Yup'ik (Eskaleut, Alaska) and Navajo (Athabaskan, Arizona and New Mexico) reserve bare cross-reference markers – cross-reference markers unaccompanied by co-nominals – for picking up given referents ('definite' uses) and use other expressive devices in indefinite and non-referential contexts. This is true for Yucatec as well. Indefinite and non-referential uses require a cross-reference marker to be accompanied by a co-nominal. Example (6), a continuation of (2), illustrates impersonal reference. To express this, the A3 marker *a=* combines with the bare nominal *máak* 'person'. 'Where one leans against' is thus literally rendered as 'where (a) person leans against':

- (6) Le=tu'x      k-u=nak-tal              **máak**=o',      lak'in              súut-ul  
 DEF=where    IMPF-A3=lean-INCH.DIS    person=D2    east(B3SG)    turn/ACAUS-INC(B3SG)  
 'The backrest (*lit.* where one leans (against)), east is where it's turned.'

Without the nominal *máak* 'person', *u=* would have to be interpreted as picking up a given referent.

Example (7), again from the same matching game as (2) and (6), illustrates a referential indefinite expression used to introduce a new referent. It combines the phonologically unpronounced B3SG suffix with a co-nominal constituted by the numeral *hun-* 'one', the 'generic' classifier for inanimate referents *p'éel*, an optional diminutive marker, and the head *bòola* 'ball':

- (7) (...) ti' pek-ekbal hun-p'éeł chan bòola=i'.  
 PREP(B3SG) supported.as.if.fallen.down-DIS(B3SG) one-CL.IN DIM ball=D4  
 '(...) that's where a little ball is lying.'

Without the co-nominal, (7) would be understood to refer to some contextually given individual. The utterance would be infelicitous in a context in which no obvious candidate is available.

Lastly, whereas the indefinite description in (7) introduces a referent as an instance of the category lexicalized by the head (in this case, the category 'ball'), (8) illustrates a strategy used for introducing a referent without specifying more than the broadest, most general category possible. This strategy is used for example in order to suggest that the identity of the referent is unknown. To this effect, the cross-reference marker is coindexed with the pro-forms *máax* for humans or *ba'x* for non-human referents (both animate and inanimate ones), optionally augmented by the interrogative particle *wáah*. In this use, (*wáah*)*máax* and (*wáah*)*ba'x* translate as 'someone' and 'something', respectively. Outside the kind of context illustrated in (8), *máax* and *ba'x* are primarily used as interrogative pro-forms.

- (8) Yàan wáah+máax ti' k-a=ch'a'-ik ts'àak?  
 EXIST(B3SG) ALT+who PREP(B3SG) IMPF-A2=take-INC(B3SG) cure\ATP  
 'Is there someone from whom you get medicine?' (Blair & Vermont-Salas 1967)

Without the co-nominal, (8) would be interpreted as inquiring about the existence of a specific person given in context from whom the addressee receives medicine.

It sum, it appears that bare cross-reference markers are exclusively used for given referents in Yucatec. The findings of the corpus study we present in § 4 confirm this. To this extent, they behave like pronouns in European languages.

HASPELMATH (2013) suggests that head-marking may be analyzable as a combination of agreement and argument ellipsis. However, what matters for our purposes is that heads in combination with bare cross-reference markers *behave* semantically *as if* their argument positions were saturated by pronouns: they are morphosyntactically complete, and they occur with given referents, but not by themselves with new ones or in non-referential

contexts. It is not clear to us how meaningful the question is as to whether this behavior is attributable to a property of the cross-reference markers alone (in particular, the putative property of being bound pronominal indices) or only to the combination of cross-reference marker, head, and the absence of a co-nominal. If there is no empirical way of adjudicating between these alternatives, then this question is in our view meaningless. Notice, however, that this does not mean that it is not possible to empirically test the hypothesis that head-marking is a combination of agreement and argument ellipsis. A systematic crosslinguistic difference in the possible or typical discourse status of bare cross-reference markers and argument ellipsis would argue against the hypothesis. The present study can be seen as contributing to laying the groundwork for such a test.

BOHNEMEYER *et al.* (2016) propose a BRESNAN & MCHOMBO-style PRO-drop analysis for the cross-reference markers of Yucatec. They draw on two sources of evidence. First, distributional evidence suggests that co-nominals can occur as constituents of the same projection that immediately dominates the head, called the (verbal) core in BOHNEMEYER *et al.* (2016), following FOLEY & VAN VALIN (1984), VAN VALIN (ed.) (1993), VAN VALIN (2005), and VAN VALIN & LAPOLLA (1997), *inter alia*<sup>8</sup>. Secondly, Yucatec is a language with optional plural marking.

BOHNEMEYER *et al.* (2016) show that the participants in their production studies strongly preferred to express simultaneous plural marking on verbs and co-nominals over all other distributions, with simultaneous omission of plural marking on both verbs and co-nominals in second place. BOHNEMEYER *et al.* interpret these findings as indicating weakly grammaticalized syntactic agreement between the verb and co-nominals, in line with the PRO-drop analysis.

On the PRO-drop analysis, co-nominals can occupy argument positions inside the core. In addition, they occur in adjoined or detached positions, such as the left-dislocations illustrated in (2b) and (6) above. The syntactic position of the left-dislocation (LD) is identified by the occurrence on the left edge of the sentence, combined with a falling “comma” intonation and

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<sup>8</sup> The core is a projection that immediately dominates a head and all of its syntactic arguments, as well as a ‘periphery’ of modifiers. Verbal cores can be considered subject-internal verb phrases.

a clitic particle such as proximal ‘D1’ =*a*’ in (2a) and (11) below and distal/anaphoric ‘D2’ =*o*’ in (6). In the dialect of Yucatec spoken in Quintana Roo and northeastern parts of the state of Yucatán, there are four particles that appear in this position<sup>9</sup>. The same four particles also occur at the right edge of a matrix clause, with their realization there being subject to the same set of constraints. The particle D2 =*o*’ indicates the presence of an expression with a referent that is given in the speech situation or treated as uniquely identifiable in the topic situation (*cf.* § 2), for example because it was previously mentioned. In fictional narratives – but apparently only in that genre – D3 =*e*’ often replaces D2 =*o*’ with referents that are uniquely identifiable in the topic situation. In addition, and across genres, D3 =*e*’ occurs with phrases that lack a trigger for D1 =*a*’ or D2 =*o*’, as in (10). As (2a) shows, the Yucatec LD construction involves a clause-external topic position in the sense of AISSÉN (1992). The grammar of Yucatec does not license a clause-internal topic position. Further evidence for this analysis is presented in BOHNEMEYER (2009: 189-190)<sup>10</sup>.

LDS are quite pervasive in Yucatec discourse. Moreover, Yucatec LDS occur with cross-reference markers whose linking properties strikingly resemble those of subjects in European languages. However, contrary to DURBIN & OJEDA (1978) and GUTIÉRREZ-BRAVO & MONFORTE (2010), LDS cannot synchronically be analyzed as verb-initial subjects. At least four properties rule out a subject analysis:

- The contested position can be filled by nominals not co-indexed with cross-reference markers, as in (2a);
- A single sentence can carry multiple instances of the contested construction, as also illustrated in (2) above;

<sup>9</sup> HANKS (1990: 18-19) mentions a fifth particle, =*be*’, used with referents of whose presence the speaker has auditory evidence, but no visual evidence. However, this particle appears to be restricted to the variety HANKS’ study is based on, which is spoken in the northwest of the state of Yucatán.

<sup>10</sup> In addition to left-dislocations, there are right-dislocations in Yucatec (called ‘antitopics’ in BOHNEMEYER (2002: 133-135), following LAMBRECHT 1994). However, it is not clear that simple NPs ever occur in this position. If they do, they do so exceedingly rarely.

- When a sentence does contain multiple such constructions, one constituted by an adverbial can intervene between one filled by a co-nominal and the matrix clause;
- Predicate-initial sentences without a filler of the contested position do occur in conversation<sup>11</sup>.

So far, we have introduced three structural devices for argument realization in Yucatec: bare cross-reference markers, clause-internal co-nominals, and LDed co-nominals. BOHNEMEYER (2009) formulates hypotheses regarding the use of these in discourse that are summarized in Table 3, recast in the framework introduced in § 2. The notion of the ‘topic chain’ was introduced in GIVÓN (1983) without receiving a clear definition there. A narrow and somewhat simpleminded definition would be the following: a topic chain is a sequence of references to the same discourse referent, distributed across contiguous utterances. In the corpus study we present in § 4, we restricted the coding of topic chains to adjacent utterances. Despite the label, a referential expression that extends a topic chain does not have to be ‘topical’ in the sense introduced in § 2. It can also be in focus, as illustrated by the pronoun in the exchange in (9):

(9) *Who filed the complaint, Sally or Floyd? – HE did!*

Topic chains in GIVÓN’s sense are a givenness phenomenon, not a topicality phenomenon.

Referent	Given	New
Realization		
Bare cross-reference marker	Extending ‘topic chains’	N/A
Cross-reference marker plus clause-mate co-nominal	Resuming discontinued topics; maintaining multiple competing topic chains	Introducing new referents
Cross-reference marker plus LDed co-nominal	Contrastive topics and frame setters	Introducing new referents inthetic utterances and as topics in generic categorical utterances

**Table 3.** Yucatec resources for argument realization  
(adapted from BOHNEMEYER 2009:195)

<sup>11</sup> GUTIÉRREZ-BRAVO & MONFORTE (2010) treat such sentences as evidence of a constituent order split.

Example (2) and its continuation in (6) together illustrate of use of LDs for the expression of contrastive topics. A frame setter is illustrated in (2a). But according to Table 3, LDs also occur with new referents. One type of context in which this happens is under generic reference. Another case in point is thetic utterances. A thetic utterance is one in which all discourse referents are newly introduced (KURODA 1972; LADUSAW 1994; SASSE 1987). As a result, thetic utterances also have no topic in the framework introduced in § 2. An example of a LD in a thetic utterance is (10), the introductory sentence of a fictional narrative:

- (10) Hun-túul xib=e',  
 one-CL.AN male=D3  
 h-ts'o'k u=bèel y=éetel hun-túul x-ch'úupal  
 PRV-end(B3SG) A3=way A3=COM one-CL.AN F-female:child  
 ma' t-uy=ohel-t-ah wáah x-wáay=i'.  
 NEG(B3SG) PRV-A3=knowledge-APP-CMP(B3SG) ALT F-sorcerer(B3SG)=D4  
 'A man, he married a girl not knowing that she was a witch.' (ROMERO CASTILLO 1964: 305)

Two further options for argument realization in Yucatec not listed in Table 3 because they are not considered in BOHNEMEYER (2009), but which we would like to add here, are focus positions and independent pronouns. The following examples illustrate focus constructions in which the focus constituent is coindexed with an argument of the background clause:

- (11) a. Tèech=wáah túun le=k-a=k'ay=a', mùuch?- Pos tèn!  
 you(B3SG)=ALT CON DEF=IMPF-A2=sing=D1 frog well me(B3SG)  
 'So are you the one who is singing here, frog?' – 'Well I am!' (Lehmann ms.c)  
 b. Tèech=wáah túun k-a=k'ay=a', mùuch?  
 you(B3SG)=ALT CON IMPF-A2=sing=D1 Frog  
 'So are YOU singing here, frog?' [constructed]

The construction in (11a) involves a nominalized subordinate background clause and is thus readily identifiable as a kind of cleft. The question is whether the same string, but without the nominalization, as in (24b), is likewise a cleft or whether it instead instantiates a mono-clausal focus construction. Proponents of the cleft analysis include BOHNEMEYER (2002, 2009); BRICKER (1979); TONHAUSER (2003, ms.); and VAPNARSKY (2013). The mono-clausal analysis has been advocated by GUTIERREZ-

BRAVO & MONFORTE (2009) and VERHOEVEN & SKOPETEAS (2015). The correct choice between these competing analyses hinges on a complex set of properties, several of which are contested, with different authors citing conflicting data. A discussion that does the issues justice would take us too far afield here.

Lastly, we have now seen the independent pronouns of Yucatec in focus position in (11). Clause-internally, they mostly occur as oblique arguments, as in (12):

- (12) A'1            **tèen**,    José,    ba'x            le=he'l=o',    ba'x            u=k'àaba'.  
 say(B3SG)    me        José        what(B3SG)    DEF=PRSV=D2    what(B3SG)    A3=name  
 'Tell **me**, José, what that there is, what is its name.' (BLAIR & VERMONT-SALAS 1965)

Expressions of recipients and similar semantic roles are not cross-referenced on the verb and are not targeted by any voice operations. We therefore treat them as obliques.

The full paradigm of independent pronouns is represented in Table 4:

Number	Person	Form
SG	1	<i>tèen</i>
	2	<i>tèech</i>
	3	<i>leti'</i>
PL	1	<i>to'n</i>
	2	<i>te'x</i>
	3	<i>leti'o'b</i>

**Table 4.** The paradigm of independent pronouns

The first- and second-person forms can be analyzed as portmanteaus formed out of the general purpose preposition<sup>12</sup> *ti'* and the appropriate Set-B suffix (*cf.* Table 2 above). The third-person forms in addition contain etymologically the definite article *le*. *Ti'* rarely co-occurs with the first- and second-person pronouns in the same environments in which it is obligatory with the third-person pronouns:

<sup>12</sup> *Ti'* is a default marker for adjuncts and obliques across the board, with the exception of instruments and comitatives. Having such a single semantically (nearly) empty general-purpose adposition is not unusual for Mesoamerican languages, especially for Mayan languages.

- (13) a. Hay-p'éeł àanyos yàan tèech?  
 how-CL.IN year:PL EXIST(B3SG) you  
 'How old are you (*lit.* how many years are **with you**)?'
- b. Hay-p'éeł ha'b yàan ti' leti'-o'b?  
 how-CL.IN year EXIST(B3SG) PREP it-PL  
 'How old are they (*lit.* how many years are **with them**)?' (BLAIR & VERMONT-SALAS 1965)

Thus it seems that (first and) second person forms such as *tèech in* (13a) are used like prepositional phrases, whereas third person forms such as *leti'o'b* in (13b) are not.

This concludes our survey of the grammar of argument realization in Yucatec. As we move on to the presentation of the corpus study in § 4, we have three objectives: First, we would like to conduct a quantitative test of the generalizations in Table 3. Secondly, we hope to elucidate the functional division of labor between bare cross-reference markers and independent pronouns. The latter are not represented in Table 3, and since they overlap with the bare cross-reference markers semantically and with co-nominals in terms of their syntactic distribution [as in (13)], their use is of obvious interest for the study of realization in head-marking languages. And lastly, we aim to prepare the ground for a comparison of argument realization across head-marking languages.

#### 4. Realization in Yucatec narratives: A small corpus study

In order to quantify the distribution of the various realization strategies in Yucatec discourse, we conducted a small corpus study involving four fictional narrative texts. Our decision to focus on narratives was motivated in part by utilitarian considerations: most of the literature on argument realization has been based on narrative discourses (including, *e.g.*, BICKEL 2003; DU BOIS 1987; and the contributions in GIVÓN 1983), and narrative is also the genre in which by far the greatest number of transcribed, analyzed, and glossed Yucatec texts is available. Furthermore, from a theoretical perspective, there is a well-motivated expectation of the properties of argument realization being maximally simple in fictional narrative discourse. In particular, the narrator can generally expect to be the sole participant with active control over the Common Ground; the role of exophoric reference, and with it that of gestural and gaze cues and other

nonlinguistic information in reference resolution, is minimized; and interference effects from other interactions (such as givenness of a referent due to mention in a prior conversation) likewise tend to be minimal. All of these factors should ensure relatively ideal conditions for the study of argument realization. By the same token, however, generalizations from narrative texts should not be assumed to hold for other genres of discourse without modification.

The corpus our study draws on consists of four texts. Information about these is listed in Table 5 below. The amount of linguistic material each text comprises is measured in ‘predication units’ in Table 5, a term of art for a structural unit that has proven useful in previous corpus studies on Yucatec (BOHNEMEYER 1998b; 2003)<sup>13</sup>. A predication unit comprises no more than one clause, regardless of whether it is a matrix clause or a subordinate one. Furthermore, any expression that is dependent on a clause and a co-constituent of the same sentence, but is not a constituent of the clause itself, belongs to the same predication unit as the clause in question. This covers adjoined/detached material such as LDs and topicalizations. A predication unit comprises maximally a single conversational turn. However, we treated small (usually single-word) turn-constituting units that form an intonation unit with a sentence and have a conventionalized sequential position with respect to it as part of an appropriate predication unit – usually the one that contains the matrix clause. This applies to vocatives<sup>14</sup> and interjections such as in *Yes, Virginia, there is a Santa Claus*, which we would thus code as a single predication unit.

To illustrate, here is how we would segment (10) and (11a) above into predication units, using braces for tagging to avoid unwanted phrase structure interpretations:

<sup>13</sup> BOHNEMEYER (1998b, 2003) uses the term ‘utterance unit’ for what we call ‘predication unit.’

<sup>14</sup> LAUNEY (2004: 64-65) suggests that vocatives are predications in ‘omnipredicative’ languages such as Classical Nahuatl, *i.e.*, languages in which the privilege of heading a syntactic predicate is not restricted in terms of lexical category. And as BOHNEMEYER (2002: 108-129) and VAPNARSKY (2013) show, Yucatec qualifies as an omnipredicative language at least to some extent. Indeed, there is preliminary morphological evidence supporting a predicative analysis of Yucatec vocatives; but the issue awaits further study. We did not code vocatives as predication units.

- (10') {Hun-túul xib=e',  
 one-CL.AN male=D3  
 h-ts'o'k u=bèel y=éetel hun-túul x-ch'úupal}  
 PRV-end(B3SG) A3=way A3=COM one-CL.AN F-female:child  
 {ma' t-uy=ohel-t-ah} {wáah x-wàay=i'.}  
 NEG(B3SG) PRV-A3=knowledge-APP-CMP(B3SG) ALT F-sorcerer(B3SG)=D4  
 'A man, he married a girl not knowing that she was a witch.' (ROMERO CASTILLO 1964: 305)
- (11) a'. {Tèech=wáah túun} {le=k-a=k'ay=a', mùuch?} - {Pos tèen}!  
 you(B3SG)=ALT CON DEF=IMPF-A2=sing=D1 frog well me(B3SG)  
 'So are you the one who is singing here, frog?' – 'Well I am!' (LEHMANN ms.c)

Note that whereas the LD in (10') forms a predication until with the following matrix clause, the focus constituent on the left edge of (11a') constitutes its own predication unit on the cleft analysis of the focus construction, which we assume here. Subordinate clauses such as the right-most two clauses in (10') form their own predication units regardless of their syntactic position in the sentence, which is why tagging in terms of predication units does not quite align with phrase structure<sup>15</sup>.

<sup>15</sup> We used orthography as the criterion for identifying sentences. Orthography in turn reflects above all intonation. That sentences comprise on average multiple predication units – *i.e.*, *mutatis mutandis*, clauses – in Yucatec narratives may seem surprising. It should be borne in mind, though, that clauses often consist of a single morphological (let alone phonological) word in Yucatec and that they are commonly integrated into sentences, not by hypotaxis, but by structural devices situated in a grey area between hypotaxis and parataxis.

Title	Narrator	Recorded	Published	Sentences	Predication units	Predication units included in the analysis
<i>Bix kahnal le nukuch máako'b úuch wayo</i> 'How the ancestors used to live here in the old days' ( <i>Kahnal</i> )	Vicente Ek Catzin	By Jürgen Bohne-Meyer in Yaxley, Quintana Roo, in 1999	N/A	357	621	318
<i>Huntúul kòolkab</i> 'A campesino' ( <i>Kòolkab</i> )	Domingo Dzul Poot	N/A	Dzul Poot (1986: 15-23)	65	152	114
<i>Huntúul óotsil koonchúuk</i> 'A poor charcoal seller' ( <i>Koonchúuk</i> )	Ambrosio Dzib	By Manuel J. Andrade in Chichen Itzá, Yucatán, in 1930	Andrade & Máas Collí (1991: 426-433)	52	145	66
<i>T'u'l yéetel hkoh</i> 'Rabbit and Puma' <sup>16</sup> ( <i>T'u'l &amp; Hkoh</i> )	Bernardino Tún		Andrade & Máas Collí (1990: 502-517)	95	279	162
Total				569	1197	660

**Table 5.** Information about texts in the corpus

As is apparent from the table, we excluded some material from the analysis. There were two types of exclusions. First, we excluded all character utterances represented as direct speech. This amounts to all character utterances in these texts; indirect speech is extremely unusual in Yucatec stories. Two factors motivated the exclusion of *Oratio recta* from the analysis. The first of these factors is the genre difference, as direct speech is conversational (notwithstanding the conversation being fictional when embedded in fictional narratives). The second reason for the exclusion is that character speech is anchored to a Common Ground that is distinct from, though not entirely independent of, the Common Ground of the narrative text.

The second exclusion applies uniquely to the *Kahnal* text (the first text listed in Table 5). This text has actually a composite genre structure. The

<sup>16</sup> ANDRADE & MÁAS COLLÍ translate this title into Spanish as 'El conejo y el coyote'. However, the Yucatán peninsula is not part of the traditional range of coyotes. Yucatec speakers customarily translate *koh* as 'león', which in Yucatecan Spanish is used for any large cat.

first 87 sentences, or 177 predication units, are descriptive rather than narrative. The speaker describes the conditions of life in remote settlements in the jungle “in the old days”, *i.e.*, before the advent of modern infrastructure. We only included the second part of the *Kahnal* text in our analysis, which is a demon story. The two parts are tied together by the descriptive part providing background for the demon story and the narrative at the same time providing an illustration of the difficult conditions described in the first part. We excluded the descriptive part from the analysis primarily due to the pervasive occurrence of generic and habitual reference (*cf.* BOHNEMEYER 2003 for details).

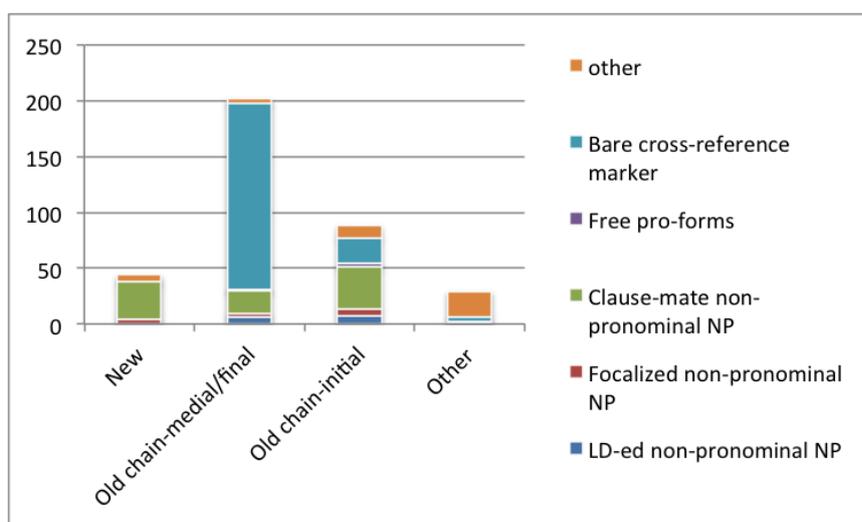
We coded the referents associated with the argument positions of both matrix and subordinate verbal cores and stative predicates in the texts for four givenness levels: ‘new’; ‘old chain-medial/final’; ‘old chain-initial’; and ‘other’. ‘Other’ here mainly refers to argument positions coindexed with utterances, clauses, and verbal cores. We treated a referent as chain-medial/final if, and only if, it was mentioned in the immediately preceding clause. A chain-initial old referent is an old referent that is resumed after having been discontinued as a topic. We did not code the referents for pragmatic role, as our main concern in this study is with pronominalization; above all, with the use of bare cross-reference markers and free pronouns.

Among realization strategies, we coded for the following options: ‘LDed non-pronominal NPs’; ‘focalized non-pronominal NPs’; ‘clause-mate non-pronominal NPs’; ‘morphologically unbound pro-forms’ in any syntactic function coindexed with an argument position of a verbal core; ‘bare cross-reference markers’; and ‘other’. LDed, focalized, and clause-internal co-nominals are of course accompanied by cross-reference markers on the verb or stative predicate. Morphologically unbound pro-forms include the emphatic pronouns discussed at the end of § 3, demonstrative pro-forms such as (14) below (or pronominal demonstratives; *cf.* BOHNEMEYER 2012), and indefinite pro-forms used in content questions (*e.g.*, (8) above) and as pronominal indefinite NPs (*e.g.*, in (10) above), including as relative clause constructions with pronominal heads. This ‘other’ category comprises verbal cores, clauses, and

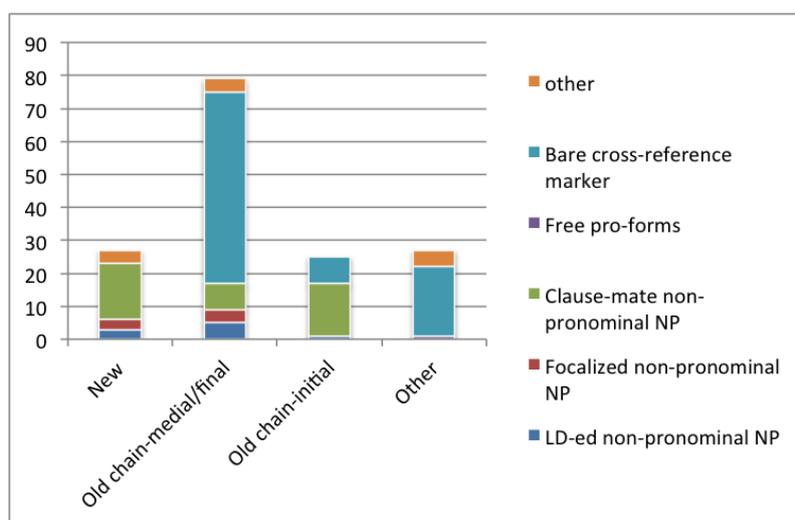
utterances coindexed with argument positions of a verbal core and reflexive constructions.

- (14) A=ti'a'l                      lel=a'?'  
 A2=property(B3SG)    DEM=D1  
 'Is this [pointing] yours?'

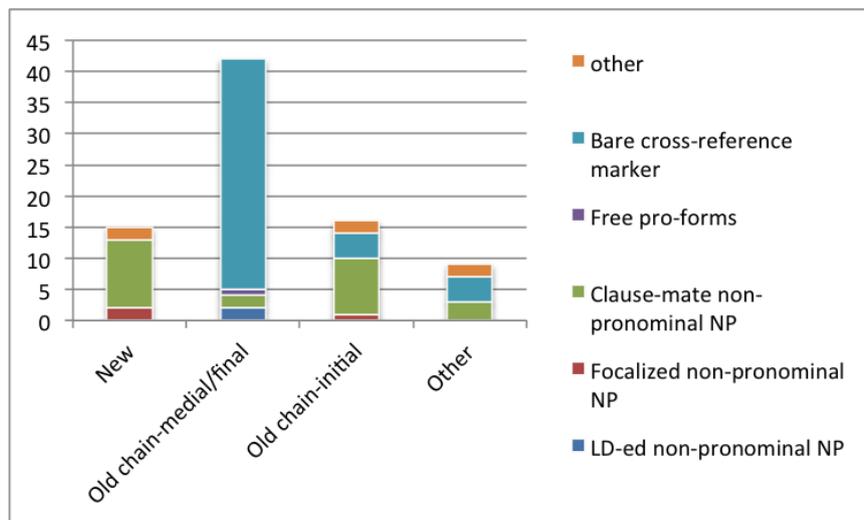
Figures 1-4 break down the distribution of the realization strategies over the givenness levels:



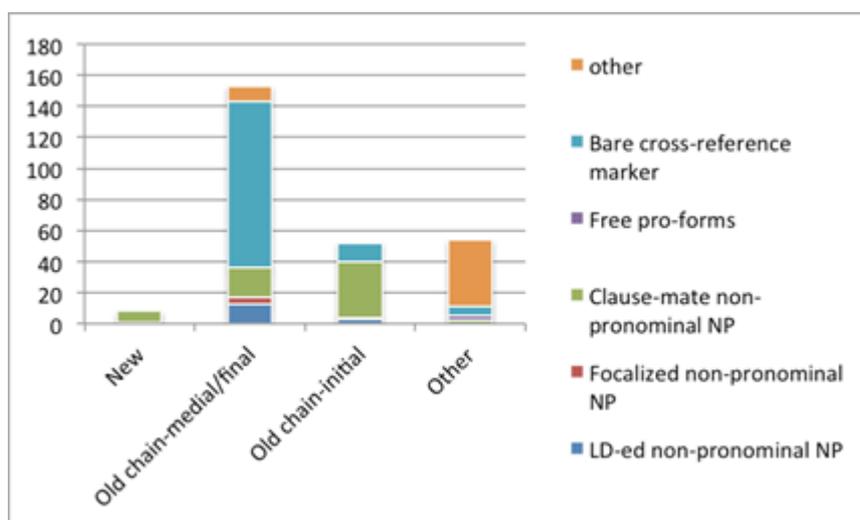
**Figure 1.** Frequency of realization strategies by givenness levels in the *Kahnal* narrative text



**Figure 2.** Frequency of realization strategies over givenness levels in the *Kòolkab* narrative text



**Figure 3.** Frequency of realization strategies by givenness levels in the *Koonchúuk* narrative text



**Figure 4.** Frequency of realization strategies by givenness levels in the *T'u'l & Hkoh* narrative text

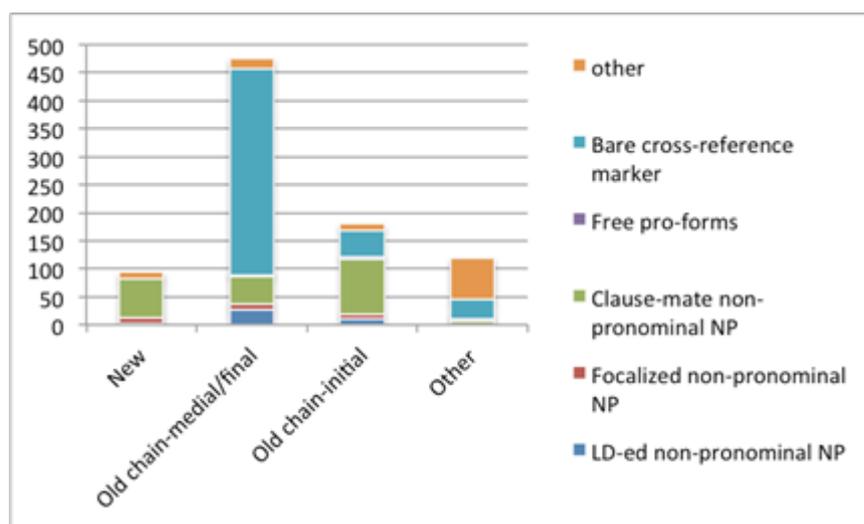
The distribution of the strategies seems overall remarkably similar across the four texts. The differences are mainly the following:

- The *T'u'l & Hkoh* text stands out for its surprisingly small number of new discourse referents introduced in the course of the story. This appears to be an artifact of referents often being introduced in this

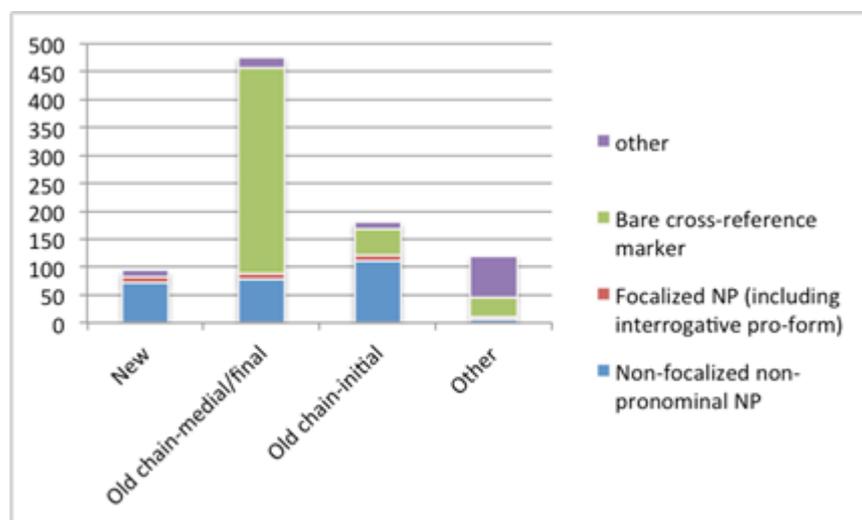
text in places where we did not count as them as such: direct speech and locative adverbials.

- The *Kahnal* and *T'u'l & Hkoh* texts show a much higher incidence of cross-reference markers coindexed with utterances or dependent cores/clauses than the other two texts. This is due to differences in how direct speech is marked in these texts: in *Kahnal* and *T'u'l & Hkoh*, the narrator used primarily lexical speech act verbs, whereas a formulaic quotative construction dominates in the case of *Kahnal* and in *Koonchúuk*, direct speech is often not marked at all.

Figure 5 summarizes the distribution across the four texts. For the purposes of inferential statistics, we lumped LDS and clause-mate non-pronominal NPs and distributed pro-forms across focus constructions and ‘Other’ strategies. The resulting breakdown is visualized in Figure 6. We subjected this distribution to a chi-squared test, which tests for a statistically significant difference between the expected and observed frequencies of items in different categories. The result was highly significant ( $df = 9$ ;  $\chi^2 = 577.3$ ;  $p < 0.001$ ), lending support to the hypothesis that realization strategies are used with different frequencies in different argument positions.



**Figure 5.** Frequency of realization strategies by givenness levels across the narrative corpus



**Figure 6.** Simplified distribution of realization strategies over givenness levels across the corpus

The findings can be summarized as follows:

- New referents are overwhelmingly introduced by clause-mate non-pronominal NPs. Marginally, LDs are also used for this purpose, but never bare cross-reference markers.
- For the extension of topic chains, bare cross-reference markers appear to be the default strategy, although LDed and clause-internal co-nominals are likewise used for this purpose. However, free pronouns play no more than a marginal role in Yucatec narratives. Bare cross-reference markers and clause-internal co-nominals compete for the function of resuming a temporarily discontinued topic (in the Givónian sense), with co-nominals having a slight (and not necessarily significant) advantage of numbers.

Thus, despite the availability of free pronouns in Yucatec, it is not them, but bare cross-reference markers that are used to continue topic chains, pragmatically resembling the free pronouns of configurational dependent-marking languages such as English. In the next section, we offer a discussion of these findings and attempt to draw some preliminary comparison to available data on argument realization in other head-marking languages.

## 5. Discussion and comparison

There are two types of morphologically unbound pro-forms in Yucatec that are semantically definite and thus could in theory be used to extend topic chains: the free personal pronouns listed in Table 4 above and the demonstrative pro-forms exemplified in (14) above. However, our corpus does not contain a single token of either device in the function of extending a topic chain. This is by no means a surprising finding. It is essentially a confirmation, based on corpus data, of the observation that bare cross-reference markers are semantically anaphoric in this language. Combined with GRICE's (1975) third Manner Maxim ["Be brief (avoid unnecessary prolixity)"], the anaphoricity (or pronominal force) of bare cross-reference markers ensures that free pro-forms are not used to extend topic chains unless their use for this purpose in a given context is motivated by additional factors.

In our corpus, demonstratives were used anaphorically only in reference to previously mentioned states of affairs, not to individuals<sup>17</sup>. We found just two tokens of free personal pronouns. They were used for disambiguation when an interrupted topic chain was resumed, as illustrated in (15):

- (15) (...) *ba'l=e'*,    *k-uy=il-ik*                      *t-u=k'uch-ul*  
 thing=D3            IMPF-A3=see-INC(B3SG)    PREP-A3=arrive-INC  
*u=k'iin-il*    *u=bis-a'l*                      *tuméen*    *le=k'àas-il+ba'l=o'*,  
 A3=sun-REL    A3=go:CAUS-PASS.INC    CAUSE    DEF=bad-REL+thing=D2  
***leti'***=e',    *ma'*                      ***u=k'áat***                      *h-bin=i'*.  
 it=D3            NEG(B3SG)    A3=wish(B3SG)    NMLZR-go=D4  
 '(...) but, (when) he saw the day he was to be taken by the Devil arriving, as for **him**,  
**he** didn't want to go.' (ANDRADE & MÁAS COLLÍ 1991: 426-433)

The third-person pronoun *leti'* appears LDED in the last line. It is coreferential with the following cross-reference marker *u=*, which indexes the possessor of the nominal predicate *k'áat* 'wish'. Without the intervention of *leti'*, the closest potential nominal antecedent for the cross-reference marker in the last line is *k'àasilba'l* 'Devil' at the end of the second line. The presence of *leti'* triggers a Manner implicature that

<sup>17</sup> Exophoric uses occurred in character speech. As mentioned, we did not include these utterances in the analysis.

discourages the interpretation of *k'àasilba'l* as the antecedent of the cross-reference marker.

Example (15) illustrates the function of resuming a previous topic chain. The structural devices that meet this function include, aside from free pro-forms, clause-mate co-nominals and LDed NPs. An eminently plausible hypothesis that remains to be tested is that the preference among these types of expressions is iconically correlated with the distance of the previous mention, with the heaviest and most complex device, LD, being used for the most distant antecedents and the least weighty device, free pro-forms, being used for the most proximate antecedents, such as in the case of (15):

- (16) *Complexity scale of Yucatec referring expressions and givenness of referents*  
 Bare cross-reference markers < pronominal clause-mate co-nominals  
 | < lexical clause-mate co-nominals < LDed pro-forms < LDed lexical nominals  
 |  
 Least complex  
 ↑↓  
 Most accessible referents
- |  
 Most complex  
 ↑↓  
 Least accessible referents

However, more surprisingly, as Figures 5 and 6 show, there is also a sizeable number of cases in which a bare cross-reference marker is used to resume a discontinued topic chain. Resumed topics occur with bare cross-reference markers under two licensing conditions: disambiguation by discourse structure and disambiguation by lexical semantics and world knowledge. The following excerpt from the *Kahnal* text illustrates both types of effects. The story involves a demon<sup>18</sup>, who at the onset of (17) has just tracked down, killed, and eaten a man who was out hunting alone in the bush. In this excerpt, we use boldface for bare cross-reference markers, simple underlining for cross-reference markers accompanied by clause-mate co-nominals, and double underlining for cross-reference markers accompanied by LDed nominals.

<sup>18</sup> The demon is referred to throughout as *k'àasilba'l*, which etymologically means 'thing of evil', just like the Devil in (15).

- (17) a. (...) káa, bin, t-u=ki'=k'ax-ah-Ø  
 CON HS PRV-A3=nicely-tie-CMP-B3SG  
 '(...) and, they say, **he** [the demon] nicely tied **them** [*lit.* 'it'; the bones] together.'
- b. káa t-u=kuch-ah-Ø, bin,  
 CON PRV-A3=load/carry.on.back-CMP-B3SG HS  
 'and **he** [the demon] loaded **them** [*lit.* 'it'; the bones] on his back.'
- c. káa t-u=ch'a'-ah-Ø, bin, u=ts'òon (...) le=òotsil máak  
 CON PRV-A3=take-CMP-B3SG HS A3=shoot\ATP DEF=poor person  
 'and **he** [the demon] grabbed, they say, the gun of (...) the poor man'
- d. ts'-u=hàan-t-ik=o',  
 TERM-A3=eat-APP-INC(B3SG)=D2  
 '**he had eaten**.'
- e. káa=h-bin-ih  
 CON=PRV-go-B3SG  
 'and **he** [the demon] took off.'
- f. Pwes, le=òotsil nohoch máak=o',  
 well DEF=poor big person=D2  
 'Well, the poor old man.'
- g. ohel-a'n=e' biha'n-Ø h-ts'òon tuméen u=pamiilya=o'.  
 knowledge- RES(B3SG) go:RES-B3SG NMLZR-shoot\ATP CAUSE A3=family=D2  
 'it was known (that) he was gone hunting by his family.'
- h. Káa, bin, h-k'uch-Ø te=hòol+nah, bin=o',  
 CON HS PRV-arrive-B3SG PREP:DEF=aperture+house HS=D2  
 'When, they say, **he** [the demon] arrived at the door, they say.'
- i. hehten!, káa, bin, t-u=pul-ah-Ø.  
 IDEO CON HS PRV-A3=throw-CMP-B3SG  
 'hehten!, and, they say, he [the demon] threw **them** [*lit.* 'it'; the bones] down.'

In lines a and b, two topic chains can be seen extended simultaneously by bare cross-reference markers, one referring to the demon, the other to the bones of his<sup>19</sup> victim. Even though Yucatec cross-reference markers and pro-forms are not gendered, no ambiguity arises thanks to the animacy difference of the two referents and the two transitive verbs involved selecting for human-like agents.

Furthermore, twice in this textlet is a bare cross-reference marker used to resume a previously interrupted topic chain. In both cases, the cross-reference marker in question resumes reference to the demon. The first instance occurs in line e. There are two potentially competing referents at this point both of which have been mentioned more recently by non-

<sup>19</sup> It becomes clear later in the story that this particular demon happens to be male.

pronominal NPs: the dead man and his gun. But neither is a viable referent for the bare cross-reference marker in line e, since both at the point fail to meet the selectional restrictions of *bin* ‘go’.

The second instance of resuming reference to the demon with just a bare cross-reference marker occurs in line h. This follows a sequence of two lines, f and g, in which the topical referent is again the dead man. We hypothesize that in this case it is discourse structure that helps disambiguate the reference of the cross-reference marker in h. Lines f and g provide background information that is not part of the main story line. They are recognizable in this capacity by the use of stative result-state verb forms in line g (*cf.* BOHNEMEYER 2003 for details). We tentatively conclude that speakers turn to the more “weighty” devices for resuming an old topic chain – clause-internal and LDed pronominal and non-pronominal NPs – predominantly when lexical semantics and discourse structure are not sufficient for supporting unambiguous reference resolution.

Although the finding that bare cross-reference markers are the primary means for extending topic chains in Yucatec and that morphologically free pro-forms are only used for this purpose when their use is motivated by additional factors is by no means surprising, it nevertheless in our view represents an important empirical contribution. This is, first of all, due to the special circumstances involved in the Yucatec case – such as (*cf.* § 3 and references therein for details):

- The co-presence of head-marking and free personal pronouns;
- The PRO-drop-like, ambiguous nature of cross-reference markers in this language;
- The absence of gender and noun class marking on cross-reference markers and pro-forms;
- The obviation alignment system of this language;
- The frequent use of left-dislocations in Yucatec discourse.

All of these properties make Yucatec an interesting language for inclusion in future crosslinguistic and typological studies of argument realization. However, secondly, and more generally, we currently still lack

much reliable empirical work on argument realization in head-marking languages altogether. The languages studied in detail in the contributions to GIVÓN ed. (1983) are all either purely dependent-marking (English, Japanese) or show at least some degree of double-marking (in the sense of the co-presence of two features: (i) person-marked heads licensing argument ellipsis (PRO-drop) and (ii) some form of nominal case marking; Amharic, Chamorro, Hausa, Spanish, Ute). Similarly, the three Himalayan languages studied in BICKEL (2003) – Belhare (Sino-Tibetan), Maithili, and Nepali (the latter two both Indo-Iranian) are all double-marking<sup>20</sup>.

The first study of argument realization in a purely head-marking language was DU BOIS' (1987) well-known investigation of another Mayan language, Sacapultek (Quichean; Guatemala). This study was based on a corpus of 18 Pear Story narratives elicited with the film and protocol described in CHAFE (1980). The corpus comprised 443 clauses, roughly comparable in size to ours. DU BOIS' primary interest was the distribution of givenness levels over the argument position classes 'A' (transitive actor), 'O' (transitive undergoer), and 'S' (intransitive argument). Hence, he provided only a limited amount of information about the distribution of the structural devices involved in realization. However, his findings appear to be broadly compatible with ours. Thus, he notes:

“In Sacapultec discourse, independent pronouns are rare; mentions that would be realized pronominally in a language like English are realized affixally.” (p. 814)

Lastly, our interest in argument realization in Yucatec was sparked (or rekindled) in part by recent work by KOENIG & MICHELSON (2012, 2013, 2014, 2015). KOENIG and MICHELSON tackle argument realization in another purely head-marking language, Oneida (a Northern Iroquoian language of Ontario, New York, and Wisconsin), based on a much larger corpus than ours (approximately 8230 clauses; approximately 31000 words). Like DU BOIS', their focus is again different from ours. KOENIG & MICHELSON's work on realization in Oneida has been motivated by a confluence of two features of this language: first, KOENIG & MICHELSON

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<sup>20</sup> Several of the languages we consider double-marking are classified as dependent-marking in NICHOLS & BICKEL (2013). What matters most for present purposes, however, is that there is agreement that none of the languages in question is (purely) head-marking.

(2012, 2015) claim that selectional restrictions play no role in Oneida grammar; and secondly, Oneida happens to be a language with a small nominal lexicon, in which most individual concepts are expressed by (co-) predicative expressions and deverbal expressions rather than by lexical nominals. As a result, the use of referring expressions at the phrase level – which overwhelmingly do not involve lexical nouns – is largely restricted to introducing new referents and to meeting the demands of information perspective.

KOENIG & MICHELSON did not study the distribution of realization strategies by givenness levels. However, it is apparent from their data that just as in Yucatec, free pronouns are rare in Oneida discourse: the authors report 490 tokens in their ca. 31000-words corpus. Another noteworthy feature is the ratio of referring phrasal expressions to clauses in KOENIG & MICHELSON's corpus. This is about 0.4. We counted 303 phrasal referring expressions over 660 predication units, a ratio of approximately 0.5 (just over one per sentence). Given the different composition of the two corpora and differences in which kinds of referring expressions are included in the analysis and in the criteria the two teams use for identifying clauses/predication units, it is difficult to assess how meaningful the proximity of these two figures is. However, both figures are in line with DU BOIS' (1987: 829) 'One Lexical Argument Constraint,' which states the proposed generalization that universally, clauses with multiple non-pronominal arguments are dispreferred. This hypothetical generalization entails that the average number of phrasal referring expressions per clause in head-marking languages should not be greater than one. Obviously, both Oneida and Yucatec discourses seem to actually operate at a significantly lower density of referring expressions than that. The actual number will be influenced by a variety of language-specific factors, such as:

- The extent to which clauses are combined into sentences;
- The extent to which argument sharing of various kinds occurs across clauses that are thus combined;
- The extent to which the presence of gender or noun-class marking on cross-reference markers supports both longer topic chains and

more frequent resumption of discontinued topics with bare cross-reference markers.

At least the last factor is bound to be responsible for differences in realization patterns between Oneida and Yucatec, as Oneida has a complex pronominal gender system, whereas gender marking in Yucatec is restricted to nouns, where it is optional.

Clearly, such potential differences call for cross-linguistic comparisons of realization across different head-marking languages such as Oneida and Yucatec. We hope to have made a small contribution in this paper toward paving the way for such future comparison.

## 6. Conclusions

We have presented one of the first corpus studies of the impact of givenness on argument realization in a purely head-marking language. We found that in narrative discourse, Yucatec speakers use bare cross-reference markers to extend topic chains, much like speakers of dependent-marking languages use independent pronouns. Combined with the property of entirely eschewing new referents, this behavior strongly supports an anaphoric analysis of the bare cross-reference markers, contra EVANS (1999). This finding is all the more significant given the evidence for an ambiguous (or PRO-drop) analysis of the cross-reference markers, which in the presence of clause-mate co-nominals seem to express agreement, as argued in BOHNEMEYER *et al.* (2016).

Although morphologically unbound pronouns and demonstrative pro-forms are available in Yucatec as well, they are not used for the purpose of tracking highly accessible referents unless additional factors motivate their use. Noun phrases are used both for the introduction of new topics and for the resumption of discontinued old ones. Bare cross-reference markers occur with discontinued topics where discourse structure and lexical semantics provide cues that help disambiguate their reference. A hypothesis that remains to be tested is that for the purposes of resuming an interrupted topic chain, there is a complexity scale of devices, the choice among which iconically reflects the relative accessibility of the referent, as illustrated in (16) above.

## Abbreviations

<b>1</b>	First person	<b>F</b>	Feminine
<b>2</b>	Second person	<b>HORT</b>	Hortative
<b>3</b>	Third person	<b>HS</b>	Hearsay evidential
<b>A</b>	Cross-reference Set-A	<b>IDEO</b>	Ideophone
<b>ALT</b>	Alternative worlds (conditional, disjunction, question focus)	<b>IMPF</b>	Imperfective
<b>ACAUS</b>	Anticausative	<b>IN</b>	Inanimate
<b>AN</b>	Animate	<b>INC</b>	Incompletive status
<b>APP</b>	Applicative	<b>INCH</b>	Inchoative
<b>ATP</b>	Antipassive	<b>LD</b>	Left-dislocation
<b>B</b>	Cross-reference Set-B	<b>NEG</b>	Negation
<b>CAUS</b>	Causative	<b>NMLZR</b>	Nominalizer
<b>CAUSE</b>	Causal/agentive preposition	<b>NP</b>	Noun phrase
<b>CG</b>	Common ground	<b>PASS</b>	Passive
<b>CL</b>	Classifier	<b>PERF</b>	Perfect
<b>CMP</b>	Completive status	<b>PL</b>	Plural
<b>COM</b>	Comitative preposition	<b>PREP</b>	Generic preposition
<b>CON</b>	Continuative connective	<b>PROG</b>	Progressive
<b>D1</b>	Proximal-deictic particle	<b>PRSV</b>	Presentative
<b>D2</b>	Distal/anaphoric particle	<b>PRV</b>	Perfective
<b>D3</b>	Locative focus particle	<b>QUD</b>	Question under discussion
<b>D4</b>	Place-anaphoric particle	<b>REL</b>	Relational
<b>DEF</b>	Definite article	<b>SG</b>	Singular
<b>DIM</b>	Diminutive	<b>SUBJ</b>	Subjunctive status
<b>DIS</b>	Dispositional stative form		

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