Type-shifters in headless relative clauses[1]

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Abstract

Research on the (in)definiteness of bare nouns has developed various proposals regarding which type-shifters exist in human language and which principles are needed to govern their distribution (Carlson 1977; Partee 1987; Chierchia 1998; Dayal 2004 i.a.). At the same time, literature on headless relative clauses (HRCs), primarily focusing on free relatives (FRs) in Indo-European languages, has also developed type-shifting principles (Jacobson, 1995; Caponigro, 2003, 2004). The type-shifting principles, however, from the FR literature are fundamentally different than those found in proposals for bare nouns. Here, we present case studies from two Mayan languages which diverge from one another in the behavior of bare nouns, and which possess several different kinds of headless relative clauses. We show that "super-free relative clauses" (Caponigro et al., 2021), which lack a wh-word, pattern in ways parallel to bare nouns in the respective languages. We also demonstrate that HRCs headed by a wh-word—i.e., FRs—diverge from bare nouns; they pattern similarly to one another across the languages under investigation, and in ways similar to what has been reported for FRs crosslinguistically. We provide evidence that there is a dedicated FR type-shifter (FR-ι), inserted as a last resort mechanism to resolve a type-mismatch, building on work by Caponigro (2004). Our novel contribution is that this type-shifter is available regardless of the presence or absence of other type-shifters in a language. This paper adds new data to our understanding of the range and applicability of different definiteness-related type-shifters as well as captures certain typological tendencies regarding HRCs.

1 Introduction

This paper investigates the meaning and distribution of *headless relative clauses* (HRCs): those that involve wh-words (so-called "free relatives"), and others that don't. HRCs, such as the English free relative (FR) in (1), look like clauses but have the distribution of arguments. A semantic property of the FR in (1) is that it has a maximal interpretation (Jacobson, 1995; Rullmann, 1995; Caponigro, 2004), meaning that it is possible to paraphrase this with a definite noun phrase: 'the things/the food that you cooked.'

(1) I ate [$_{\text{HRC}}$ what you cooked].

While such constructions in English are uniformly maximal in this way, looking beyond English, it appears to be more common to find that FRs allow either a maximal or an existential interpretation, depending on various factors such as the syntactic context in which they occur. Based on this observation, Caponigro (2004) claims that the FR in a sentence like (1) itself denotes a set of

[1]We thank Juan Jesús Vázquez Álvarez and Morelia Vázquez Martínez for help with and discussion of the Ch'ol data. We thank Miguel Oscar Chan Dzul and Edber Dzidz Yam for help with and discussion of the Yucatec Maya data. Other data is based on Gutiérrez Bravo (2015); AnderBois & Chan Dzul (2021); Vázquez Álvarez & Coon (2021); AnderBois et al. (2019) and cited throughout. We also thank Willie Myers and the audience at the Workshop on Structure and Constituency in Languages of the Americas (WSCLA) 25 for comments and discussion.

individuals, and proposes that if a type-mismatch occurs, it can be repaired by a type-shifter. Thus in order for the bracketed FR in (1) to be in argument position of the verb, there is a type-shifter that shifts the set of type $\langle et \rangle$ denoted by 'what you cooked' into a maximal individual of type e.

This analysis for the FR in (1) makes explicit appeal to the literature on type-shifters for bare nouns (Carlson 1977; Partee 1987; Chierchia 1998; Dayal 2004; Jenks 2018; Despić 2019; Moroney 2021, i.a.). This literature has developed various proposals regarding which type-shifters exist in human language, as well as which principles are needed to govern their distribution. In languages such as English and Spanish, overt morphemes such as *the* or *la* in (2) are needed in order for nouns to obtain a definite interpretation.

(2) a. **The** woman is working.
b. **La** mujer está trabajando.

However, many languages do not have the equivalent of the bolded definite articles in (2). Instead, a bare noun can refer to a definite entity, as the bare noun *kabai* 'horse' in (3) from Teotitlán del Valle Zapotec.[2]

(3) Ka-zhunih **kabai**.
PROG-run **horse**.
'The horse is running.' (Teotitlán del Valle Zapotec; Deal & Nee 2017: 317)

The question of how to derive these definite readings from a bare noun in the absence of an overt morpheme has received considerable attention. A range of work has proposed that the covert type-shifter ι, which shifts properties to individuals, is only available in languages which lack a definite article, such as Teotitlán del Valle Zapotec (Deal & Nee, 2017), but *not* in languages which have an overt article, like English or Spanish (Chierchia 1998; Dayal 2004; Jenks 2018; Despić 2019; Moroney 2021, i.a.).

Given this research on type-shifters cross-linguistically in the nominal domain, it is surprising that English or Spanish would have an equivalent ι type-shifter for FRs like the one in (1). That is, since English and Spanish have obligatory definite articles, we might expect them to lack a covert type-shifter of the sort needed to derive the FR in (1). In fact, if we were to take the analyses from the literature on languages with definite articles and apply them to HRCs, we would expect it to be the case that a definite article would appear in FRs in English, contrary to fact (cf. *'the what you cooked').

Why are the type-shifting principles for FRs different than those elsewhere within the same language? In this paper, we argue that there is an available ι type-shifter for FRs, FR-ι, in languages which have FRs—regardless of whether the language has overt definite articles in the nominal domain. We present evidence that while nominal ι (what we call N-ι) is available only in some languages to derive definite interpretations for bare nominals, FR-ι is needed to type-shift FRs,

[2]Glosses follow Leipzig Glossing Conventions with the following additions: A – "Set A" (ergative; possessive); AF – 'agent focus'; ANA – 'anaphoric clitic'; B – "Set B" (absolutive); DIM – diminutive; DIR – 'directional'; EXT – 'existential'; EXTRAF – 'extrafocal'; ICP – 'incompletive'; NC – 'noun class prefix'; OBLIG – 'obligative'; REP – 'reportative'. Language data in this paper comes from textual sources, cited throughout, or from elicitation with Ch'ol and YM speakers conducted by the authors following contextualized elicitation tasks (see e.g. Matthewson 2004). Data cited from Spanish-language sources have been translated to English by the authors, and in some cases glosses from other works have been simplified and modified for consistency.

regardless of properties of a language's nominal domain.

Empirically, we focus on the interpretation and distribution of bare nouns and HRCs in two Mayan languages: Yucatec Maya (YM) and Ch'ol. YM and Ch'ol differ in the possible interpretations of bare nouns: Ch'ol patterns like Teotitlán del Valle Zapotec in (3) in that it permits bare nouns to have definite interpretations in certain environments, while YM patterns more like the English and Spanish in (2) in that it requires articles for a definite interpretation. However, FRs such as in (4) for both languages are entirely parallel to each other—and also parallel to what has been reported for most other languages—in their distribution and interpretation.

(4) a. T-in wáantaj [$_{FR}$ **máax**$_j$ taal $\_\__j$ jo'oljeak].
PFV-A1 help who come.PFV yesterday
'I helped the people who came yesterday.' (YM; AnderBois & Chan Dzul 2021: 456)

b. Tyi k-mäñä [$_{FR}$ **chu**$_j$ choñkol i-choñ $\_\__j$ aj-Maria].
PFV A1-buy what PROG A3-sell NC-Maria
'I bought what Maria is selling.' (Ch'ol; Vázquez Álvarez & Coon 2021: 362)

We take this as evidence that the necessary type-shifter for FRs, FR-ι, is available for FRs across languages and crucially is not correlated with the availability of type-shifting in bare nouns within the same language. As we discuss below in detail (see especially Section 3.3 and Section 5.2), this lack of parallelism between FRs and bare nouns is all the more striking in Ch'ol and YM since FRs freely combine with the full range of determiners found with nouns.

Beyond bare nouns, we also compare FRs with another type of HRC we call "super-free relative clauses" (SFRC), following terminology in Caponigro et al. (2021), shown in (5a) for Ch'ol. The SFRC in Ch'ol has no wh-word and is marked with the relative clause second position enclitic *=bä* on the perfective aspect marker (the perfective marker *tyi* is an allomorph of *ta'*). Compare (5a) to (5b), which has a bare noun in the same syntactic position.

(5) a. Tyi k'otyi i-tyaj [$_{SFRC}$ ta'=bä yajli].
PFV arrive A3-find PFV=REL fall
'He came to find the (one that)/an (animal that) fell.'

b. Tyi k'otyi i-tyaj **me'**.
PFV arrive A3-find deer
'He came to find a/the deer.' (Ch'ol; Vázquez Álvarez & Coon 2021)

In Ch'ol, we provide evidence below that both the SFRC and the bare noun can be interpreted as definite or indefinite, depending on the context. We show that—unlike FRs headed by wh-words in (4) above—the distribution and definite vs. indefinite interpretation of SFRCs such as in (5a) parallel that of bare nouns in each language. Ch'ol and YM offer ideal test cases for this comparison because the two languages diverge substantially in how bare nouns may be interpreted. In Ch'ol, bare nouns can be definite or indefinite, paralleling the available interpretations for the SFRCs. YM, on the other hand, has an obligatory definite determiner: bare nouns and SFRCs are only licensed in theme position of existential predicates.

We propose that SFRCs are type-shifted via the same operations available to bare nouns in a given language, thus enriching our understanding of the applicability of definiteness-related type-shifters. Taken together, these findings challenge the restrictive nature of ι in Chierchia (1998) and

Dayal (2004), showing that a more nuanced picture is needed to capture variation across languages with respect to type-shifters. The analysis is previewed in (6), using data points (5a) and (4b) from above. We argue that [–Wh] HRCs are NPs, and thus their distribution parallels that of bare nouns in the language. Whatever type-shifting principles are available for bare nouns in the language are also available for SFRCs. SFRCs are headed by a null nominal head that is anaphoric a discourse salient set: $\emptyset_{dom}$. [+Wh] HRCs are CPs, as has been proposed before (e.g., Caponigro 2003, 2004), and thus are subject to different type-shifting principles. Maximality of [+Wh] HRCs comes through a proposed FR-ι, inserted as a last resort to resolve a type-mismatch.

(6) a. $[_{\text{NP}}\ \emptyset_{dom}\ [_{\text{RC}}$ ta'=bä yajli]] = (5a)
PFV=REL fall
'the (one that) fell' ⟶ [–Wh] HRCs are NPs

b. $[_{\text{CP}}$ chu$_j$ $[_{\text{IP}}$ choñkol i-choñ $\_\__j$ ajMaria]] = (4b)
what PROG A3-sell Maria
'what Maria is selling' ⟶ [+Wh] HRCs are CPs

The remainder of this paper is organized as follows. We begin with relevant background and overview of HRCs in each language in Section 2. We then turn to SFRCs in Section 3, demonstrating that SFRCs pattern differently in Ch'ol than they do YM, but that they parallel bare nouns in their respective languages. In Section 4, we tie this difference in interpretation and distribution of SFRCs to the presence of an obligatory definite article in YM, but not in Ch'ol. YM marks definites overtly and does *not* allow bare nouns or SFRCs in most contexts. Ch'ol, on the other hand, allows both bare nouns and SFRCs to be definite and indefinite, depending on the environment. We extend the analysis from Little (2020) for bare nouns to definite and indefinite SFRCs in Ch'ol. In Section 5, we turn to FRs (HRCs with overt wh-words) which have a primarily maximal/definite interpretation—a robust cross-linguistic pattern. In Section 6 we propose that there is a FR-ι available regardless of whether a language has an overt definite article. We conclude with a summary of the findings and theoretical implications, as well as some cross-linguistic predictions of our analysis for HRCs in Section 7.

2 Headless relative clauses in Yucatec Maya and Ch'ol

This section begins with relevant background on YM and Ch'ol in section 2.1, and then turns to a survey of the four basic types of HRCs in the two languages in section 2.2. We conclude this section by foreshadowing the basic outline of our analysis, to be developed below, that these HRCs require two distinct type-shifters, accounting for their different semantic properties.

2.1 Grammatical overview

Yucatec Maya (YM), or Maaya T'aan, as it is known to speakers, belongs to the Yucatecan branch of the Mayan family of languages. According to the Instituto Nacional de Lenguas Indígenas (INALI, 2008), YM is the most widely spoken indigenous language of Mexico. The 2020 census (INEGI, 2020) states that 774,755 people speak the language in Mexico. The bulk of the population is located in the Yucatan peninsula, with much smaller numbers of speakers in other states

of Mexico and other countries including the United States, Guatemala, and Belize with minimal dialectal differences (Bricker et al., 1998).

Ch'ol, known to speakers as Lakty'añ, belongs to the Ch'olan-Tseltalan branch of Mayan languages. It is spoken by 254,715 people (INEGI, 2020) in southern Mexico in the states of Chiapas, Tabasco, and Campeche, with most of the Ch'ol-speaking population in Chiapas. It is also spoken by diaspora communities in Mexico and the United States. It is the ninth most spoken language in Mexico (INEGI, 2020). There are three mutually intelligible dialects (Tila, Tumbalá and Sabanilla). Data here come from the Tila dialect.

Like other Mayan languages, YM and Ch'ol are head-marking, ergative-absolutive languages with basic verb-initial word order (see Bennett et al. 2016; Aissen et al. 2017 for general Mayan overviews). VOS is described as one of the basic word orders in both languages (see e.g., Durbin & Ojeda 1978 for YM and Coon 2010 for Ch'ol), illustrated in the examples in (7). We adopt the theory-neutral labels "Set A" and "Set B" for person markers in YM and Ch'ol, following Mayanist tradition. Set A markers index ergative subjects and possessors, and Set B index absolutive arguments. There are no overt reflexes of third person absolutives and as such we do not include third person absolutive marking in our glosses. We have not fully parsed out stem-internal morphology that is not relevant to the discussion at hand (e.g., derivational morphemes, stem-final "status suffixes").

(7) a. [$_V$ K-u kíinsik] [$_O$ le jchakmo'ol] [$_S$ le wíinik=o'].
IPFV-A3 kill DEF jaguar DEF person=DIST
'That person kills the jaguar.' (YM; England 1991: 460)

b. [$_V$ Tyi i-ch'ili] [$_O$ tyumuty] [$_S$ xWañ].
PFV A3-fry egg Juan
'Juan fried an egg.' (Ch'ol)

While arguments follow the verb in discourse-neutral contexts, YM and Ch'ol are like other Mayan languages in having preverbal positions for topics, foci, wh-elements, and relativized nouns (see discussion of information structure in Mayan in Aissen 1992, 2017). Wh-interrogatives must appear in a clause-initial A′-position in both languages, as shown by the YM and Ch'ol examples in (8) and (9). In-situ wh-interrogatives and multiple wh-questions are ungrammatical in both YM and Ch'ol (AnderBois & Chan Dzul, 2021; Vázquez Álvarez & Coon, 2021).

(8) a. **Ba'ax**$_j$ t-a wilaj $\_\__j$?
what PFV-A2 see
'What did you see?'

b. **Máax**$_j$ jaant le bu'ul=o' $\_\__j$?
who eat DEF bean=DIST
'Who ate the beans?' (YM; AnderBois & Chan Dzul 2021: 449)

(9) a. **Chu=ki**$_j$ ta' a-k'uxu $\_\__j$?
what=Q PFV A2-eat
'What did you eat?'

b. **Majch=ki**$_j$ ta' i-k'ele-yety $\_\__j$?
who=Q PFV A3-see-B2
'Who saw you?' (Ch'ol)

In YM, interrogative wh-words look morphologically the same as the wh-words that appear in FRs (AnderBois & Chan Dzul, 2021). Interrogative wh-words in Ch'ol occur with the *=ki* clitic, glossed as 'Q' in (9). As seen in examples like (4b) above, wh-words in Ch'ol FRs appear without this clitic, which Vázquez Álvarez & Coon (2021) take to be generated in *interrogative* C^0; FRs involve the same A′-movement of a wh-word, but to the specifier of a non-interrogative CP (see (6b)), discussed further below.

Turning now to relative clauses, headed relative clauses in YM and Ch'ol are externally headed, with the relative clause typically following the nominal. In YM, there is no overt complementizer or relativizing element present for relativized core arguments. Examples from YM are given in (10) with the noun head bolded.

(10) YM

a. T-in k'amaj le **despeensa**$_j$ [$_{RC}$ t-u síiaj __$_j$] =o'.
PFV-A1 receive DEF voucher PFV-A3 gift =DIST
'I got the voucher they gifted me.' (Monforte et al., 2010: p. 53)

b. jun-túul **karpinteero**$_j$ [$_{RC}$ __$_j$ meyajtik tak gitaaras]
one-CLF carpenter work even guitar
'a carpenter who even makes guitars' (AnderBois & Chan Dzul, 2021)

Unlike YM, Ch'ol has a relativizing morpheme, the second-position clitic *=bä*. This clitic is borrowed from neighboring Mixe-Zoquean languages and is required in argument relativization (Martínez Cruz, 2007; Zavala, 2007), as shown below. As exhibited in (11), heads are external to the relative clause, and the relative clause usually appears postnominally (see Coon (2018) on prenominal relatives in Ch'ol). The perfective marker *tyi* surfaces as *ta'* with the enclitic *=bä*.

(11) Ch'ol

a. Tyi k-mäñä karu$_j$ [$_{RC}$ choñkol**=bä** i-choñ __$_j$ aj-Maria].
PFV A1-buy car PROG=REL A3-sell NC-Maria
'I bought the car that Maria is selling.'

b. Tyi juli wiñik$_j$ [$_{RC}$ ta'**=bä** j-käñä __$_j$ tyi k'iñijel].
PFV arrive man PFV=REL A1-know PREP party
'The man who I met at the party arrived.'

As the examples above illustrate, wh-words or other relative pronouns are not used when core arguments are relativized in either Ch'ol or YM. Relativization of obliques (e.g., locative or temporal relatives) require a wh-word. These are not discussed further here, but see Vázquez Álvarez & Coon 2021 and AnderBois & Chan Dzul 2021 for examples and discussion.

2.2 Four types of Headless Relative Clauses

Having surveyed the relevant grammatical properties, we turn now to HRCs. We follow the works in Caponigro et al. 2021 in using the features [±Det] and [±Wh] throughout the paper to indicate whether HRCs have an overt determiner and/or a wh-word. HRCs in both languages have four

forms, corresponding to each possible combination of values of the features [±Det] and [±Wh].[3] For the most part, we translate the [–Wh] HRCs with 'the (one that)...' or 'a (person/thing that)...' in order to differentiate them from their [+Wh] counterparts.

Beginning with YM, we find all four HRCs in (12). Each can be translated into English as 'what he ate', though we will see below that there is variation in both the semantics and distribution of these forms. The first example in (12a) is an instance of a [+Wh] HRC, also referred to in the literature as a FR. FRs can also appear with determiners as in (12b). HRCs may also appear without a wh-word as in (12c) and (12d). The SFRC in (12c) bears neither a wh-word nor a determiner, and is formally identical to a full clause (i.e., 'He ate it.'). The same form can be introduced by a determiner, as in (12d). As we will see below, (12c) is only available in the theme position of existential predicates, a fact we will tie in to the available type-shifters in the language.

(12) YM (AnderBois et al., 2019: 4)

a. ba'ax t-u jaantaj
what PFV-A3 eat
'what he ate' "Free Relative" — [–Det, +Wh]

b. **le** ba'ax t-u jaantaj=o'
DEF what PFV-A3 eat=DIST
'what he ate' ' [+**Det**, +Wh]

c. t-u jaantaj
PFV-A3 eat
'the (one that) he ate' "Super-Free Relative Clause" — [–Det, –Wh]

d. **le** t-u jaantaj=o'
DEF PFV-A3 eat=DIST
'the (one that) he ate' [+**Det**, –Wh]

Ch'ol, like YM, also has four morphologically distinct HRCs, occurring with and without a wh-word and determiner, seen in (13). Ch'ol's relativizing clitic *=bä*—also present on the headed RCs from (11) above—appears obligatorily on [–Wh] HRCs, exhibited in (13c) and (13d) below.

(13) Ch'ol (AnderBois et al., 2019: 5)

a. chu tyi i-k'uxu
what PFV A3-eat
'what he ate' "Free Relative" — [–Det, +Wh]

b. **li** chu tyi i-k'uxu
DEF what PFV A3-eat
'what he ate' [+**Det**, +Wh]

[3]For reasons of both space and scope, we do not discuss HRCs that are in adjunct positions or free choice relative clauses in either language. While adjunct HRCs are attested in both languages they are not completely parallel and more work needs to be conducted in order to determine their semantics. For free choice relatives such as 'whatever he bought,' there are some confounding factors that need further investigation before they can be discussed in detail. The reader is referred to AnderBois & Chan Dzul (2021) and Vázquez Álvarez & Coon (2021) for more on these constructions in YM and Ch'ol and Caponigro & Fălăuş (2018) and Šimík (2021) for cross-linguistic variation in free choice relatives.

c. ta'=bä i-k'uxu
PFV=REL A3-eat
'the (one that) he ate' "Super-Free Relative Clause" — [–Det, –Wh]

d. **li** ta'=bä i-k'uxu
DEF PFV=REL A3-eat
'the (one that) he ate' [+**Det**, –Wh]

To foreshadow the analysis, we will argue below that the [+Wh] FRs in (12a) and (13a) correspond to CPs, in which the wh-word has undergone A′-movement to Spec,CP. These CPs may combine with a definite article, as in (12b) and (13b); be in theme position of existential or certain other verbal predicates; or may be type-shifted by the dedicated CP-selecting type-shifter FR-*ɪ*, available in both languages as a last-resort mechanism. Schematically, the Ch'ol [+Wh] FR in (13a) has the structures in (14). The corresponding YM form is parallel.

(14) $[_{CP}$ chu$_j$ $[_{IP}$ tyi i-k'uxu $\_\__j$]]
what PFV A3-eat
'what he ate' ⟶ [+Wh] HRCs are CPs

We argue that the [−Wh] HRCs in (12c)–(12d) and (13c)–(13d) above are entirely different creatures. The SFRCs in (12c) and (13c) have structures identical to *headed* relative clauses, but with a particular null nominal head ($\emptyset_{dom}$) anaphoric to a discourse salient set, properties of which are discussed in further detail below. The structure of the Ch'ol SFRC in (13c) above is schematized in (15); again the YM structure is parallel. These NPs may also combine with determiners, as in the [+Det, –Wh] forms in (12d) and (13d).

(15) $[_{NP}$ $\emptyset_{dom}$ $[_{RC}$ ta'=bä i-k'uxu]]
PFV=REL A3-eat
'the (one that) he ate' ⟶ [–Wh] HRCs are NPs

Overt morphological evidence for this analysis comes from the obligatory presence of the *=bä* second-position clitic in Ch'ol. Further evidence for this proposal, discussed in detail in the following section, comes from their distribution: the SFRCs pattern with bare nouns in their respective languages in terms of the availability of (in)definite readings in different syntactic positions. In Ch'ol, a language without obligatory determiners, SFRCs have access to the nominal type-shifter, N-*ɪ*. YM, on the other hand, is a language with obligatory determiners and—we claim—no access to N-*ɪ*. As predicted, the distribution of SFRCs in YM is thus highly restricted.

In the following sections, we discuss the semantics of each type of HRC in argument position. We adopt previous work for arguments that *li* in Ch'ol and *le… =o'* in YM contribute definiteness (see Vázquez Álvarez (2011) and Little (2020) for Ch'ol and Vázquez-Rojas Maldonado et al. (2018) for YM). We focus in on the interpretational differences of the two main types of HRCs *without* determiners: [+Wh] FRs and [–Wh] SFRCs. We show that FRs which we argue to be CPs are, outside of existential constructions, definite and maximal, which largely parallels cross-linguistic work on these constructions. SFRCs, on the other hand, parallel the distribution and interpretation of bare nouns in each language. We propose that this lends support to an analysis in which these are NPs, structurally identical to headed relative clauses, but headed by a null nominal element.

3 Bare nouns and [–Wh] headless relative clauses

Caponigro et al. (2021) labels HRCs in (16) as SFRCs due to the fact there is neither a wh-word nor a determiner; these are [–Det, –Wh] in the notation used here.

(16) a. t-u jaantaj
PFV-A3 eat
'the (one that) he ate' (YM)

b. ta'=bä i-k'uxu
PFV=REL A3-eat
'the (one that) he ate' (Ch'ol)

In sections 3.1 and 3.2, we provide evidence that these SFRCs in YM and Ch'ol entirely parallel the distribution and interpretation of bare nouns in each language. We will argue below that their respective distributional patterns are due to the presence or absence of an obligatory definite article within the two languages. In section 3.3 we briefly examine the contribution of determiners in [–Wh] HRCs in both languages, before turning to our analysis in the following section.

3.1 Bare nouns and super-free relative clauses in Yucatec Maya

Bare nouns are licensed in very restricted environments when in argument position in YM. They can either have a mass interpretation as in (17a) or collective interpretation when licensed by a quantificational or irrealis environment, such as when introduced by *utia'al* in (17b).

(17) a. Maria=e' t-u manaj **sakam**.
María=TOP PFV-A3 buy tortilla.dough
'Maria bought tortilla dough.' (YM; Vázquez-Rojas Maldonado et al. 2018: 211)

b. ... utia'al u chan manik **máak** ba'al u jaant bey=o'.
for A3 DIM buy person thing A3 eat bey=DIST
'...for people to buy a little thing to eat like that.' (YM; Vázquez-Rojas Maldonado et al. 2018: 211)

Otherwise, we only find very restricted cases of bare nouns and they are never interpreted as definite. They may be existential indefinites with the existential predicate *yaan* or its negative counterpart *mina'an*, as seen in (18).

(18) YM

a. Yaan **liibro**.
EXT book
'There are books./There is a book.'

b. Mina'an **liibro**.
NEG.EXT book
'There aren't books./There isn't a book.'

Apart from the examples above, bare count nouns are ungrammatical in argument position as shown in (19), even when modified by a relative clause (given in parentheses).

(19) YM

a. *T-u jaantaj **ko'olel** ([$_{RC}$ t-in k'ajóoltaj]).
PFV-A3 eat woman PFV-A1 know
Intended: 'A/the woman (that I know) ate them.' (external argument)

b. *K-in xokik **líibro** ([$_{RC}$ t-a ts'íibtaj)]).
IPFV-A3 read book PFV-A2 write
Intended: 'I am reading a/the book (that you wrote).' (internal argument)

c. *K-u xokik **máak** ([$_{RC}$ k-u bin biblyoteeka]).
IPFV-A3 read person IPFV-A3 go library
Intended: 'A/the person (who is going to the library) is reading.' (internal argument)

Vázquez-Rojas Maldonado et al. (2018) provide extensive diagnostics demonstrating that YM has an obligatory definite article, *le...=o'*. An example of a nominal with this article is given below in (20); the definite article is obligatory in this context.

(20) Context: A gourd is placed on the table. The speaker is asked how he/she would request the elicitor to pass him/her the gourd.

Ts'a teen **le** luuch**=o'**.
give 1SG DEF gourd=CL

'Give me the gourd.' (YM; Vázquez-Rojas Maldonado et al. 2018: 227)

We see the same pattern for SFRCs in YM as we saw for bare count nouns: SFRCs are possible in theme position of existential predicates but are ungrammatical in other positions, illustrated in (21).[4] Outside of existential contexts, SFRCs are not possible as external arguments or internal argument (transitive objects and unaccusative subjects).

(21) YM

a. Mina'an [$_{SFRC}$ t-a ts'íibtaj].
NEG.EXT PFV-A2 write
'You didn't write anything.' (existential)

b. *T-u jaantaj [$_{SFRC}$ t-in k'ajóoltaj].
PFV-A3 eat PFV-A1 know

[4]The only case where there is a difference between bare nouns and SFRCs is the irrealis usage. Some bare nouns are possible as in the example in (ia). A SFRC is not grammatical in the same position as exhibited in (ib). We speculate that this may be for processing reasons (i.e. without a head or an overt relativizer in YM, unlike Ch'ol, detecting the presence of the relative clause is difficult), but leave such cases to future work to investigate.

(i) YM

a. Yaan in beetik bey=o' utia'al in k'ey [**xoknaal beet k'aas way**]=e'.
OBLIG A1 do así=DIST for A1 yell.SBJV student do.AF bad here =TOP
I will do so to yell at the students that misbehave here.' (bare noun w/ RC)

b. *Yaan in beetik bey=o' utia'al in k'ey [**beet k'aas way**]=e'.
OBLIG A1 do así=DIST para A1 regañar.SBJV do.AF bad here =TOP
Intended: 'I'll do it so to yell at the (ones who) misbehave here.' (SFRC)

Intended: 'The (one that) I know ate them.' (external argument)

c. *K-in xokik [$_{SFRC}$ t-a ts'íibtaj].
IPFV-A1 read PFV-A2 write
Intended: 'I read the (one that) you wrote.' (internal argument)

d. *K-u xokik [$_{SFRC}$ k-u bin biblyoteeka].
IPFV-A3 read IPFV-A3 go library
Intended: '[The (one that) goes to the library] is reading.' (internal argument)

A summary of the distribution and interpretation of bare nouns and SFRCs is give in Table 1. As can be seen here, their distribution and interpretation is entirely parallel.

Table 1: Summary of the distribution and interpretation of bare nouns and SFRCs in YM

Language	**Construction**	**Ext. Arg.**	**Int. Arg (Unac. Subj)**	**Int. Arg. (Object)**	**∃ Predicate**
YM	Bare N	*	*	*	Indef
	SFRC	*	*	*	Indef

3.2 Bare nouns and super-free relative clauses in Ch'ol

As seen in YM above, in Ch'ol, nouns and SFRCs may may appear in theme position of existential predicates such as *añ* in (22a) and (22b).

(22) a. Añ **ts'äkajel** tyi otyoty.
EXT healer PREP house
'There is a healer in the house.

b. Añ [$_{SFRC}$ mu'=bä i-ts'äkañ-oñ=la] tyi otyoty.
EXT IPFV=REL A3-heal-B1=INCL.PL PREP house
'There is a (person that) heals us in the house. (Ch'ol)

For argument positions, however, both bare nouns and SFRCs differ substantially from what we have seen for YM. First, bare nouns may be arguments in Ch'ol, as in the sentence in (23). Vázquez Álvarez (2011) translates both bare nouns as definite in (23).

(23) Tyi y-ilä wiñik x'ixik.
PFV A3-see man woman
'The woman saw the man.' (Ch'ol; Vázquez Álvarez 2011: 21)

Little (2020) provides evidence that while a definite interpretation is available for all bare arguments, the positions in which nouns may be interpreted as *indefinite* in Ch'ol are syntactically restricted. Bare nouns as internal arguments (unaccusative subjects and transitive objects) can be definite or indefinite. Bare nouns as external arguments (transitive and unergative subjects) are always definite. We provide evidence that SFRCs show the same syntactic variation in their interpretation that bare nouns do.

Examples (24)–(27) show instances of SFRCs and bare nouns in internal argument position. In (24), we see an instance of a definite bare noun as an internal argument as well as a definite SFRC. In the context, the deer is an established discourse referent, referred to by the bare noun in (24a),

and by the SFRC in (24b). Examples (25) and (26) show that internal arguments (unaccusative subjects and transitive objects) can be indefinite, as can SFRCs in the same position. The examples in (27) show that bare nouns and SFRCs can receive definite interpretations when appearing as unaccusative subjects.

(24) Context (definite): story about a dog and one single deer, already mentioned in the discourse

a. Tyi k'otyi i-tyaj **me'**.
PFV arrive A3-find deer
'He came to find the deer.' (Ch'ol; Coon 2004: 183)

b. Tyi k'otyi i-tyaj [$_{SFRC}$ ta'=bä puts'i lok'el].
PFV arrive A3-find PFV=REL flee away
'He came to see the (one that) ran away.' (Ch'ol)

(25) Context (indefinite): Your child is sick, and your family is looking for someone to treat him. Any curer will do. You get home and report:

a. Tyi k-ilä **xts'äkajel**.
PFV A1-see healer
'I saw a healer.'

b. Tyi k-ilä [$_{SFRC}$ mu'=bä i-ts'äkañ-oñ=la].
PFV A1-see IPFV=REL A3-heal-B1-INCL.PL
'I saw a (person that) heals us.' (Ch'ol)

(26) Context (indefinite): it rained a lot in the village and the river flooded. You don't know if anyone died but someone tells you:

a. Ta'=bi chämi **wiñik**.
PFV=REP die man
'They say a man died.'

b. Ta'=bi chämi [$_{SFRC}$ ta'=bä i-k'axtyä ja']
PFV=REP die PFV=REL A3-cross water
'They say a (person that) crossed the river died.' (Ch'ol)

(27) Context (definite) A story about a woman and a jaguar: both have already been mentioned in the discourse

a. Ta' puts'i lok'el **x'ixik**.
PFV flee DIR:away woman
The woman fled away. (Little, 2021: *Bajlum*)

b. Ta' puts'i lok'el [$_{SFRC}$ ta'=bä iläñ-tyi].
PFV flee DIR:away PFV=REL see-PSV
'The (one that) was seen fled away.' (Ch'ol)

With external arguments, the subject always receives a definite interpretation. Examples with transitive subjects are shown in (28).

(28) Context (definite): a story about a jaguar and a woman, already established protagonists

a. Tyi i-tyaja x'ixik **bajlum**.
PFV A3-find woman jaguar
'The jaguar found the woman.'

b. Tyi i-tyaja x'ixik [$_{SFRC}$ ta'=bä y-ilä-yob a'bi.].
PFV A3-find woman PFV=REL A3-see-PL yesterday
'The (one that) they saw yesterday found the woman.' (Ch'ol)

In order to generate an indefinite interpretation for an external argument, the numeral *juñ* 'one' plus the appropriate numeral classifier obligatorily appears, as seen with the transitive subjects in (29a) and (29b).

(29) Context (indefinite): first mention of the jaguar in a story about a woman

a. Tyi i-tyaja x'ixik ***(juñ-kojty)** bajlum.
PFV A3-find woman one-CLF.animal jaguar
'A jaguar found the woman.'

b. Tyi i-tyaja x'ixik ***(juñ-kojty)** [ta'=bä y-ilä-yob a'bi.].
PFV A3-find woman one-CLF.animal PFV=REL A3-see-PL yesterday
'The (animal that) they saw yesterday found the woman.' (Ch'ol)

A summary of the findings for Ch'ol is given in Table 2. Here we observe that again, bare nouns and SFRCs behave entirely parallel to each other with respect to their distribution and possible interpretations. Internal arguments can have both definite and indefinite interpretations, but external arguments can only have definite interpretations. While not shown due to space constraints, the interpretation of bare nouns modified by relative clauses in Ch'ol also follows the same pattern reported in Table 2 for bare nouns and SFRCs.

Table 2: Summary of the distribution and interpretation of SFRCs and bare nouns in Ch'ol

Language	**Construction**	**Ext. Arg.**	**Int. Arg (Unac. Subj)**	**Int. Arg. (Object)**	**∃ Predicate**
Ch'ol	Bare N	Def	Indef/Def	Indef/Def	Indef
	SFRC	Def	Indef/Def	Indef/Def	Indef

3.3 [+Det, –Wh] headless relative clauses

One distinctive feature of HRCs in Mayan languages including Ch'ol and YM is that they allow a full range of determiners to co-occur with HRCs. We demonstrate this here for the [–Wh] HRCs, the focus of this section, though we will see the same thing below for [+Wh] HRCs. Examples are given here for external arguments. Determiners can also appear in HRCs that are in internal argument position. Note that if the determiner is removed from (30a) in YM, the example would be ungrammatical; in (30b) in Ch'ol if the determiner is removed the example is still grammatical. Further work is needed to understand the contribution that the determiner makes in optional contexts in Ch'ol.

(30) External argument

a. **Le** [t-in beetaj]=o' t-u tóokaj le meesa=o'.
DEF PFV-A1 make =DIST PFV-A3 burn DEF table=DIST

'The one that I made burned the table.' (YM)

b. The narrator is describing a supernatural entity whose feet are backwards and a speaker interrupts with the following sentence to ask if people have really seen him:

Mu=ba i-päs i-bäj **li** [mu'=bä i-tyä'lañ-oñ=la] ?
IPFV=INT A3-show A3-REFL DEF IPFV=REL A3-bother-B1=INCL.PL

'Does the one who bothers us reveal himself?' (Ch'ol; Vázquez Álvarez & Coon 2021: 395)

For the examples above, the determiner is a definite article, and therefore looks somewhat similar to what Citko (2004) has dubbed "light-headed relative clauses" in Polish. In contrast to Polish, however, both YM and Ch'ol allow for the full range of determiners that are available with nouns in the language, rather than a specific grammaticized set. Crucially, these determiners include demonstratives, quantifiers, and numerals—numerals which do not otherwise allow for pronominal uses. Examples are given in (31) and (32).

(31) Ch'ol

a. Tyi k-tyaja **cha'-tyikil** [mu'=bä i-mel k-otytoy].
PFV A1-find two-CLF.human IPFV=REL A3-make A1-house

'I found two (people) to build my house.' (Vázquez Álvarez & Coon, 2021: 398)

b. Jiñ=tyo jalbal **ixä** [mu'=bä j-käch=la tyi la=k-ñäk'].
FOC=still weaving DEM IPFV=REL A1-tie=INCL.PL PREP PL-A1-stomach

'That one that we tie around our stomachs is still weaving.' (Vázquez Álvarez & Coon, 2021: 398)

c. Tyi a-k'uxu **pejtyel** [ta'=bä k-mele].
PFV A2-eat all PFV=REL A1-make
'You ate everything that I made.'

(32) YM

a. **Tuláakal** [k-u púuts'ul-o'ob], k-u yáalkab-o'ob.
all IPFV-A3 flee-PL IPFV-A3 run-PL
'All those who escape run (from him).' (Can Canul & Gutiérrez-Bravo, 2016: 39)

b. Context: answering the question of whether there is a young person amoung a group who speaks Maya

Yaan, **jun-túul** [k-u taal Tahdziu]=i' beyo=o'.
EXT one-CLF IPFV-A3 come Tahdziu =ANA so=DIST

'Yes, one (young person that) is from Tahdziu is like that.' (Monforte et al., 2010: 306)

Again, [–Wh] HRCs pattern with bare nouns in each language: they appear with the full range of determiners possible on nouns.

3.4 Empirical summary

In this section, we have presented the major properties of [–Wh] HRCs. We have seen that within both YM and Ch'ol, their behavior parallels that of bare nouns very closely. We have shown that SFRCs pattern with bare nouns in two key respects. First, they combine with the same range of determiners of various kinds (the [+Det, –Wh] HRCs from §3.3). Second, when occurring without a determiner, as [–Det, –Wh] HRCs (i.e., the SFRCs from §3.1–3.2), they show the same distribution and range of interpretations in each language, as summarized in Table 3. YM disallows bare (count) nouns in all positions except in theme position of the existential predicate, this parallels the behavior of SFRCs. In Ch'ol, bare nouns are possible in all positions, but their possible interpretations vary depending on their syntactic position.

Table 3: Summary of the distribution and interpretation of bare nouns and SFRCs in YM and Ch'ol

Language	**Construction**	**Ext. Arg.**	**Int. Arg (Unac. Subj)**	**Int. Arg (Obj)**	**∃ Predicate**
YM	Bare	*	*	*	Indef
	SFRC	*	*	*	Indef
Ch'ol	Bare	Def	Indef/Def	Indef/Def	Indef
	SFRC	Def	Indef/Def	Indef/Def	Indef

In the next section, we take this pattern to provide evidence to the range and applicability of type-shifters and evidence for a particular syntactic structure of SFRCs, one that parallels headed relative clauses.

4 Super-free relative clauses are NPs

We begin with an analysis for the [–Det, –Wh] SFRCs, arguing that the type-shifting and argument-forming principles available to nouns in a given language also apply to SFRCs. The analysis for [+Wh] HRCs in section 6 will rely on pieces of the proposal we put forth for SFRCs here.

4.1 The gap in super-free relative clauses

Recall that SFRCs have similar morphological properties to headed relative clauses. This is especially apparent in Ch'ol as Ch'ol has a relative clause marker *=bä*, shown in (33). These two clauses are identical, except that where the head noun *wiñik* 'man' appears in (33b), there is a gap in the SFRC in (33a).

(33) a. Tyi juli ___ [$_{RC}$ ta'**=bä** j-käñä tyi k'iñijel].
PFV arrive PFV**=REL** A1-know PREP party
'The (one that) I met at the party arrived.'

b. Tyi juli wiñik [$_{RC}$ ta'**=bä** j-käñä tyi k'iñijel].
PFV arrive man PFV**=REL** A1-know PREP party
'The man who I met at the party arrived.' (Ch'ol)

We propose that the gap corresponds to a null nominal head anaphoric to a discourse salient set, which we represent as $\emptyset_{dom}$ below. We provide evidence that this null element in the SFRC in

(33a) is of semantic type ⟨et⟩, like nouns. However, instead of denoting some set of individuals with a lexically specified property *P*, as would be expected for the head of a relative clause, we provide evidence that the set of individuals that $\emptyset_{dom}$ denotes is anaphoric to some salient set in the discourse, *C*.[5] This is in contrast to what we will propose below for [+Wh] HRCs, which have a sortal domain, determined by the wh-word.

Clear evidence that the gap in SFRCs is anaphoric to a discourse-salient set comes form the following minimal pair in YM. The first sentence in (34) is continued in (35). The felicitous continuation in (35a) indicates that there were those who carried fiber amongst the group of forty-five people mentioned before. In contrast, speakers report that (35b), which is a [+Wh] HRC, sounds strange because it seems as if it is introducing another group and not the group of forty-five mentioned in the first sentence.

(34) Cuarenta y cinco máak k-u meyaj, u personal le maquina=o' tumen
forty and five person IPFV-A3 work A3 personel DEF machine=DIST because
k-u jo'och-kij-o'ob.
IPFV-A3 scrape-agave-PL
'Forty-five people worked there, staff of the machines, because they scraped the agave.'
(YM; Gutiérrez Bravo 2015: p. 130)

(35) a. Yaan $\emptyset_{dom}$ [k-u púutik-o'ob le fibra]=o'.
EXT IPFV-A3 carry-PL DEF fiber =DIST
'There were those who carried the fiber.' (YM; Gutiérrez Bravo 2015: p. 130)

b. #Yaan máax [k-u púutik-o'ob le fibra]=o'.
EXT who IPFV-A3 carry-PL DEF fiber =DIST
Intended: 'There were people who carried the fiber.' (YM)

Another example is shown below, where (37) is a continuation of (36). Here, the [–Wh] HRC is in theme position of the existential predicate *yaan* in (37). As above, the [+Wh] HRC in (37b) is infelicitous; it does not pick out students from the group originally introduced in (36), but rather sounds as if a new group of students is being discussed. What is notable here is that the NPs are existential, not definite. It is thus only the *domain* that is anaphoric in the examples in (35a) and (37a).

(36) Yaan ya'ab xoknáal te' unibersidaad=o'.
EXT many students DEM.LOC university=DIST
'There are many students at the university.'

(37) a. Yaan $\emptyset_{dom}$ [k-u bin biblyoteeka]=i'
EXT IPFV-A3 go library =ANA
'[Amongst them] there are ones that go to the library.'

b. #Yaan [máax k-u bin biblyoteeka=i']
EXT who IPFV-A3 go library=ANA

[5] A slightly more complicated alternative formulation would be to take the domain to be the set of individuals *x* such that *x* is a part of a contextually salient plural individual. This more complex alternative appears equivalent for present purposes, but perhaps clarifies somewhat the contrast with the competing account based on nominal ellipsis, where it is the property itself that is relevant, rather than the specific individuals instantiating it.

Intended: 'There are people who go to the library.' (YM; AnderBois et al. 2019: 9)

In contrast, [+Wh] HRCs sound more natural in a context without a previously mentioned set, for example at the beginning of a conversation in (38).

(38) Yaan [máax k-u k'aay ich maaya].
EXT who IPFV-A3 sing in maya
'Someone sings in Maya.' (YM; AnderBois & Chan Dzul 2021: 453)

Ch'ol parallels the data for YM; for reasons of space we do not provide it here.

Lastly, there is evidence that [–Wh] HRCs in YM and Ch'ol are not instances of nominal ellipsis, contra what Gutiérrez Bravo (2015) has posited for YM.[6] For instance, in Spanish it has been argued that there is nominal ellipsis in the following example where the noun *auto* is elided in the second conjunct, represented as $\emptyset_N$.[7]

(39) Compré el auto rojo y María compró el $\emptyset_N$ verde.
I.bought the car red and María bought the green.
'I bought the red car and Mary bought the green one.' (Spanish)

In nominal ellipsis like (39) for Spanish, the gap requires the semantics of a noun to be a property. That is, $\emptyset_N$ = { x: x is a car }. For [–Wh] HRCs, we have proposed that the gap is a salient set of entities in a discourse. In most cases, there is a common property in the members of the set (students or workers, as in the examples above). There are people *among those workers* who carried the fiber; the interpretation is not 'There are workers who carried fiber'. However, it is not necessarily the *property* that is relevant for [–Wh] HRCs in Ch'ol and YM, but rather being part of a particular salient group or set that just so happens to have this property within a particular situation. In contrast, for nominal ellipsis in Spanish, only that property is necessary—the elided nominal does not need to be the same entities previously mentioned. In Spanish in (40), the elided nominal, $\emptyset_N$ has the property of being a book, but the interpretation and use of the plural determiner makes it clear that the books denoted by the elided noun are not the same as the previously mentioned book.

(40) Leí el libro que donó Jaime y los $\emptyset_N$ que nos regaló tu padre.
I.read DEF book that donated Jaime and DEF.PL that OBJ.1PL gave your father
'I read the book that Jaime donated and those that your father gave us.' (Spanish)

Ch'ol offers clear morphological evidence against a simple nominal ellipsis account via its relative clause clitic =*bä*. As observed above, the clitic =*bä* occurs in [–Wh] relative clauses both with and without an overt head (see (13c) and (13d) above). As seen in (41), Ch'ol requires the presence of =*bä* in constructions parallel to the Spanish examples above. This provides evidence that these constructions involve relativization, just like the SFRCs, which also appear obligatorily with the =*bä* clitic.

[6] Gutiérrez Bravo (2015) in fact argues this not only for [–Wh] HRCs, but also for [+Wh] ones. See Vázquez Álvarez & Coon (2021), AnderBois & Chan Dzul (2021), and Aissen & Polian (2021) for arguments against this view for [+Wh] HRCs and related discussion.

[7] See also discussion about this construction and an analysis based on PF deletion in Ticio (2010).

(41) Ch'ol (AnderBois et al., 2019: 7)

a. Tyi k-mäñä li i'ik' *(=bä).
PFV A1-buy DET black =REL
'I bought the black one.

b. K-om li kolem *(=bä).
A1-want DET big =REL
'I want the big one.'

There is no definitive evidence morphosyntactically in YM, but neither is there evidence against the hypothesis for the relative clause analysis, or evidence that there is a difference between these constructions in the two languages. As such, we assume here that the same analysis applies to YM. Thus, we maintain that the [–Det, –Wh] SRFCs are NPs with a null head anaphoric to some previously mentioned set, represented as *C* in our semantics.

The SFRCs have structures identical to *headed* relative clauses, but with $\emptyset_{dom}$ occupying the position of the head of the relative clause. The structure of a Ch'ol SFRC is schematized in (42); again the YM structure is parallel. The SFRC 'the (one that) Maria bought' is the intersection of some discourse salient set of objects and that object or objects that were bought by Maria. The details of the analysis are given in the next section.

(42) $[_{\text{NP}}\ \emptyset_{dom}\ [_{\text{RC}}$ ta'=bä i-mäñä aj-Maria $]\ ]$
PFV=REL A3-buy NC-Maria
'the (one that) Maria bought' $\longrightarrow$ [–Wh] HRCs are NPs

4.2 Analyzing super-free relative clauses

We adopt a neo-Davidsonian approach in which verbs are predicates of events; denotations are given in (43) for unaccusative and transitive verbs and nouns. External arguments are generated in Spec,VoiceP and are not part of the denotation of the verbal predicate, following Kratzer (1996). Denotations for the Ch'ol unaccusative verb *jul* 'arrive' and the transitive verb *mäñ* 'buy' are given in (43a) and (43b). We assume that nouns are type $\langle et \rangle$, shown for the noun *otyoty* 'house' in (43c).[8]

(43) Ch'ol

a. $[\![jul]\!] = \lambda x \lambda e.[\text{ARRIVE}(x)(e)]$
b. $[\![mäñ]\!] = \lambda x \lambda e.[\text{BUY}(x)(e)]$
c. $[\![otyoty]\!] = \lambda x.[\text{HOUSE}(x)]$

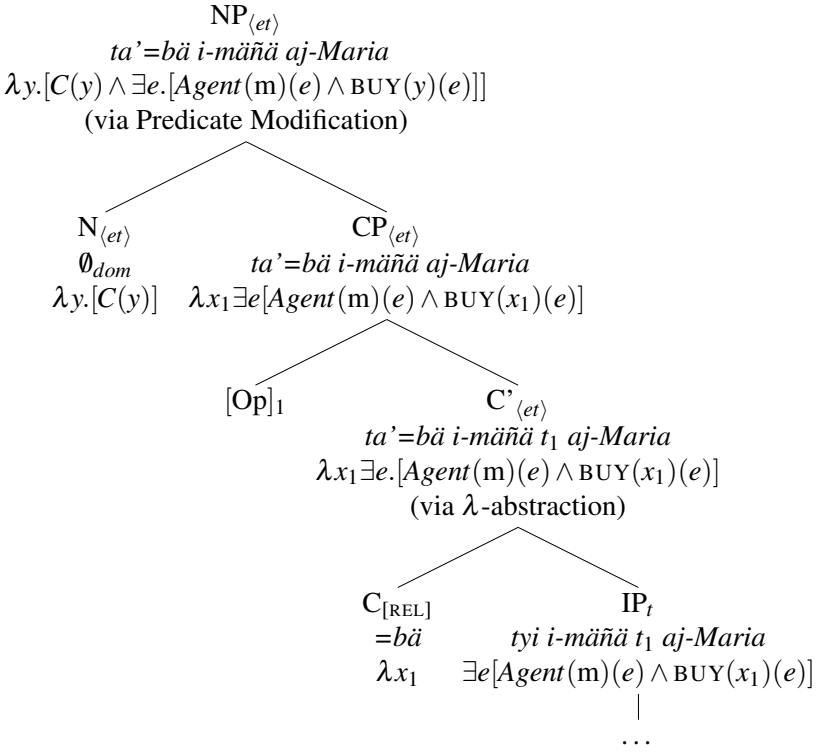
Our proposed syntax and semantics for SFRCs like the one repeated in (44a) is given in (44b). As proposed above, NP is headed by a null nominal element $\emptyset_{dom}$, which represents a contextually supplied set *C* of type $\langle et \rangle$, standing in for some set of individuals supplied by the context. The null nominal element combines with a CP relative clause. Within the relative clause, we introduce a semantically vacuous operator that moves to Spec,CP and leaves a trace of type *e*. We place Ch'ol's *=bä* relativizing clitic in the head of the relative clause, C^0, where lambda abstraction takes place.

[8]Note that Ch'ol unergative verbs are formally transitive (Coon, 2012) and make use of a transitive light verb *cha'le* and a nominal complement. Unergative subjects pattern with transitive subjects in the forms described here.

The syntactic structure in (44b) captures the fact that *=bä* appears in SFRCs and headed relative clauses. At the CP level the N head ($\emptyset_{dom}$) and CP combine via predicate modification to render the contextually supplied set of individuals such that Maria bought them. In YM, the semantic derivation proceeds in the same way, though C^0 is phonetically null as there is no relativizing clitic.

(44) a. [$_{NP}$ $\emptyset_{dom}$ [$_{RC}$ ta'=bä i-mäñä aj-Maria]]
PFV=REL A3-buy NC-Maria
'the (one that) Maria bought'

b.



Syntactically, the SFRC is *nominal*, which is a welcome result as SFRCs behave entirely parallel to the interpretation of bare nouns in the language (see Table 3 above). In Ch'ol, internal arguments can be definite or indefinite depending on context. External arguments are only possible as definite. In YM, bare (count) nouns as well as SFRCs are ungrammatical in argument position; they are only possible as the theme of existential predicates. We detail the proposal for how the possible interpretations are derived for Ch'ol, then discuss YM. The difference between these two languages hinges on the presence of obligatory articles.

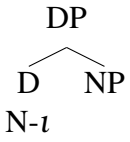
4.3 Definite interpretations for super-free relative clauses

Here we extend the analysis from Little (2020) for bare nouns in Ch'ol to SFRCs. We propose that the definite interpretation—available for both internal and external SFRCs arguments in Ch'ol—is achieved using a nominal ι type-shifter (N-ι) available for both bare nouns and SFRCs (i.e., NPs). This parallels much existing work in which ι is used to semantically type-shift bare nouns so they may serve as arguments (Chierchia, 1998; Dayal, 2004; Jenks, 2018; Despić, 2019; Moroney,

2021). N-ɪ applies to nominal arguments, which includes SFRCs, as per our structure above in (44b). This is shown in (45).

(45) a. N-ɪ: $\lambda P \iota[P(x)]$

b.



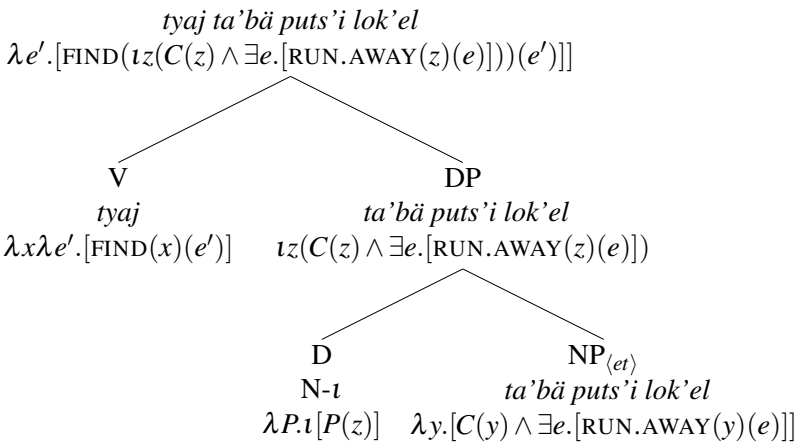
We place N-ɪ in a D^0 head in Ch'ol. Positing a syntactic D^0 head is in keeping with the fact that there appears to be an an in-progress grammaticalization process of a definite article in the language. In Ch'ol, both bare nouns and nouns modified by the determiner *li* can refer to definite entities. Little & Vázquez Martínez (2018) and Vázquez Martínez & Little (2020) demonstrate that nominals with and without *li* can refer to definites in the Tila dialect of Ch'ol, though *li* tends to appear more often with anaphoric definites. Locating N-ɪ in D^0 is also in keeping with the fact that other determiners can appear in D with SFRCs.

We propose that since N-ɪ is part of the nominal domain, it is available to merge with nouns in Ch'ol in any argument position. This correctly captures the fact that both SFRCs and bare nouns in Ch'ol can receive definite interpretations in any syntactic position (i.e, internal and external arguments). We propose that the grammar of YM, on the other hand, simply does not contain N-ɪ. Instead, both bare NPs and SFRCs require an overt determiner to appear in argument positions outside of existential constructions.

To derive the definite reading for the Ch'ol sentence (46a), the SFRC combines with the N-ɪ type-shifter, shifting the SFRC of type $\langle et \rangle$ to a definite individual of type e that can then be an argument of the verb *tyaj* 'find' in (46b).

(46) a. Tyi k'otyi i-tyaj [$_{\text{SFRC}}$ $\emptyset_{dom}$ ta'=bä puts'i lok'el].
PFV arrive A3-find PFV=REL flee DIR.away
'He came to find the (one that) ran away.' Ch'ol

b.



4.4 Deriving the indefinite interpretations of Ch'ol super-free relative clauses

We propose that N-ɪ is available to repair a type mismatch in SFRCs in any argument position in languages that have it—specifically, it is freely available in languages that allow bare nouns to be

definite, like Ch'ol. It is unavailable in YM, accounting for the highly restricted distribution of both bare nouns and [–Det, –Wh] SFRCs. On the other hand, as we observed in section 3, the environments in which SFRCs and bare nouns in Ch'ol can be interpreted as *indefinite* is more restricted: only *internal* arguments may receive an indefinite interpretation (recall that YM is yet more restrictive, only allowing this in the presence of an existential predicate). In order to account for low-scope indefinites, we adopt Little (2020)'s analysis of indefiniteness in Ch'ol. Little (2020) draws on Diesing's (1992) Mapping Hypothesis, in which existential closure occurs at the VP level, shown in (47).

(47) Mapping Hypothesis — Diesing (1992)

a. Material from VP is mapped into the nuclear scope.

b. Material from IP (above VP) is mapped into a restrictive clause.

Crucially, existential closure occurs *below* the external argument. This is a welcome result as it allows for only internal objects (unaccusative subjects and transitive objects, i.e., absolutive arguments) to be interpreted as indefinite. This is in keeping with the empirical picture in Ch'ol summarized in Table 2 above.

Following Little (2020), we propose that the verb and SFRC combine via Chung & Ladusaw's (2004) Restrict in (48).

(48) Restrict

$\lambda P_{\langle e\langle st\rangle\rangle}\lambda Q_{\langle et\rangle}\lambda x\lambda e.\ [P(x)(e) \wedge Q(x)]$ (Chung & Ladusaw, 2004)

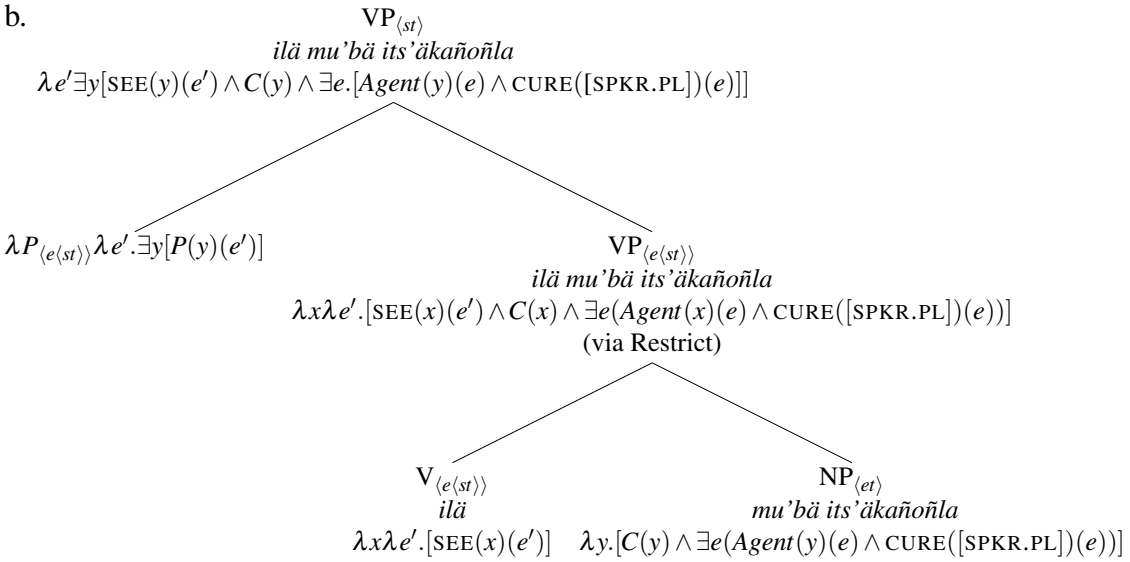
This analysis capitalizes on the notion that indefiniteness in Ch'ol is an instance of pseudo-noun-incorporation, accounting for the generalization that bare NP objects must be adjacent to the verb (e.g., Massam (2001) for Niuean and Coon (2010) for Ch'ol). The theme argument is then existentially closed at the VP, as per the Mapping Hypothesis (Diesing, 1992). Structurally constraining existential closure to the VP correctly predicts the interpretational possibilities of bare nouns *and* SFRCs in Ch'ol. Implicit in Chung & Ladusaw (2004) is that Restrict is invoked to apply to syntactically *nominal* arguments. A derivation for an indefinite object SFRC is given in (49b) for Ch'ol, using the SFRC semantics from (44b) from above in object position.

(49) a. Context (indefinite): Your child is sick, and your family is looking for someone to treat him. Any curer will do. You get home and report:

Tyi k-ilä [$_{\text{SFRC}}$ $\emptyset_{dom}$ mu'=bä i-ts'äkañ-oñ=la].
PFV A1-see IPFV=REL A3-heal-B1=INCL.PL

'I saw a (person) who heals us.' (Ch'ol)

b.



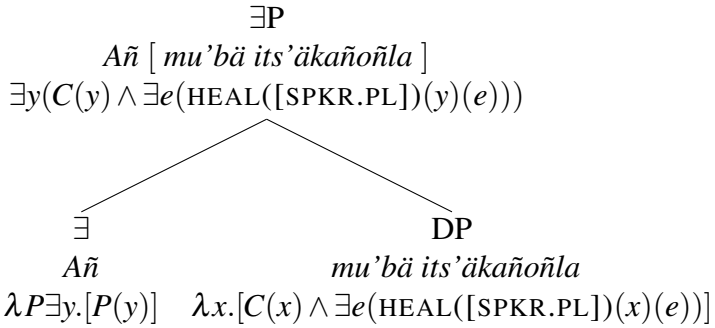
Recall that indefinite SFRCs are not possible in the external argument position, which is pre-

dicted by this approach. The SFRC is of type $\langle et \rangle$, and in external argument position it cannot combine with the predicate via Function Application due to a type clash. The SFRC also cannot combine with the predicate via Restrict since it is only compatible at the VP level with internal arguments. The only possibility is to resolve the type clash with the dedicated nominal type-shifter N-ι, correctly predicting that only definite SFRCs are possible in external argument position in Ch'ol.

In addition to VP-level existential closure of SFRCs, existential predicates can also provide the existential semantics, generating an indefinite interpretation. This is shown for a Ch'ol indefinite in (50b).

(50) a. Añ [$_{\text{SFRC}}$ $\emptyset_{dom}$ mu'=bä i-ts'äkañ-oñ=la].
EXT IPFV=REL A3-heal-B1=INCL.PL
'There is someone who heals us.' (Ch'ol)

b.



YM, in contrast, only allows SFRCs to appear as themes to existential predicates, as in (18) above; we assume the existential predicate existentially binds the unsaturated argument. There is no pseudo-incorporation in YM like there in Ch'ol, accounting for the absence of bare indefinites—and by extension SFRCs—in internal argument position of non-existential predicates. Instead, YM employs overt morphemes to derive indefinite interpretations.

4.5 Type-shifters for bare nouns = type-shifters for super-free relative clauses

In this section, we argued that allowing a dedicated nominal type-shifter, N-ι, to apply to SFRCs just as it does to bare nouns captures the fact that bare nouns and SFRCs behave identically with respect to their distribution and interpretation in Ch'ol. This fact falls out naturally under an account which takes SFRCs to be themselves NPs, albeit with a special null head. As per previous literature on the interpretation of bare nouns (Chierchia 1998; Dayal 2004 i.a.), N-ι is a possible type-shifter in languages that allow bare nouns to be definite, such as Ch'ol. An indefinite interpretation is derived for internal arguments only via existential closure at the VP level and existential predicates. External arguments are generated structurally outside of the VP so only N-ι may apply, accounting for the impossibility of indefinite interpretations for bare external arguments in Ch'ol.

In YM, on the other hand, definite nouns must be marked with an overt definite article, as extensively detailed in Vázquez-Rojas Maldonado et al. (2018). Languages such as YM and English must mark definite noun phrases with an overt morpheme, thus leading researchers to posit that these languages do not have a covert N-ι (Chierchia 1998; Dayal 2004; Moroney 2021 i.a.). This is why SFRC cannot be in argument position: they would induce an irreparable type clash. YM also

makes use of the numeral 'one' or an existential construction to mark indefinites, demonstrating that, at least for singular count nouns, indefinites must be marked overtly.

Outside of existential constructions, [–Wh] headless relative clauses in YM require a determiner element. In these cases, the semantics of the entire HRC come from the determiner. For instance, in the case of the following examples in YM, the determiner *le...=o* is a definite article.

(51) Nojoch **le** [k-u bisik t-u kool]=o'.
big DEF IPFV-A3 take PREP-A3 milpa DIST
'The (one that) he takes to the milpa is big.' (YM)

As mentioned in section 3.3, not only can definite determiners appear with [+Det, –Wh] HRCs, but numerals, demonstratives and other quantifiers are also possible. This provides evidence that syntactically these behave like headed relative clauses and other NPs, and are not a special type of headless relative (i.e., no special category of "light-headed relative clause" is needed here).

While not all languages have SFRCs (English being one), a recent survey of indigenous languages of Mesoamerica in Caponigro et al. 2021 provides evidence that more generally, when SFRCs are present in a language, their interpretations parallel that of bare nouns in that language. We provide examples below from Tseltal (Mayan), Matlatzinca (Oto-Manguean) and Pesh (Chibchan). In Tseltal (52), we see that SFRCs are possible in theme position of existential predicates, like bare nouns. Otherwise, definite nominals must be marked with a determiner (Polian, 2013); a definite reading of SFRC is not possible. In Matlatzinca (53), bare nouns, when plural, and SFRCs, in all contexts, are possible as definite (Palancar & Carranza Martínez, 2021). In Pesh (54), SFRCs are possible and their interpretation is definite (Chamoreau, 2021). Pesh also allows bare nouns to be definite. Bracketing and bolding below is our own.

(52) Tseltal: SFRCs and bare nouns in existential theme position

a. Ay [$_{\text{SFRC}}$ ya x-ch'i-ik ta' tsa'-wakax].
EXT ICP ICP-grow-PL PREP excrement-cow
'There are [some (species of mushrooms) that grow in manure]. (Aissen & Polian, 2021: 437)

b. Ay **ts'i'** ta alan.
EXT dog PREP downstairs
'There's a dog down there.' (Polian, 2013: 628)

(53) Matlatzinca: SFRCs and bare nouns may be definite

a. ga khwen hóhya [$_{\text{SFRC}}$ n gu khana pax-kwentu ...]
PART 1PL.INCL.ICP forget REL 3SG.ICP well keep-talk
'And we forget about the one who has a good command of the language...' (Palancar & Carranza Martínez, 2021: 168)

b. ka ron huxna ne **towa'a**.
PART 3PL.ICP get.stung.by.chili PL boy/child
'The children became overwhelmed by eating chili.' (Palancar & Carranza Martínez, 2021: 148)

(54) Pesh: SFRCs and bare nouns maybe definite

a. [SFRC Ø-tuh-u-ri=maa] Ø-ã?-aʃi
3SG.OBJ-cook.2SBJ-PST=TOP 3SG.OBJ-eat-1SG.SBJ-PST
'I ate what you cooked.' Chamoreau (2021: 542)

b. ta=ya ka-ka-pe?-k-i-si=sa **utʃa**.
DEM.DIST=ABS 3PL.OBJ-APPL-bring-?-2SBJ-PST=WH fish
'For whom(pl.) did you(sg.) bring the fish? (Chamoreau, 2021: 518)

While further work needs to be done to determine the details of the syntax and semantics of bare nouns in these languages, this preliminary survey of textual data provides tentative evidence from a wider sample of languages that bare nouns and SFRCs parallel one another in their interpretation and distribution. This adds to our knowledge of the range and applicability of N-ι across languages: it can apply freely to nouns, whether these are bare nouns or the SFRCs which we argued are headed by a special null nominal, $\emptyset_{dom}$.

5 [+Wh] headless relative clauses in Yucatec Maya and Ch'ol

We argued above that [–Det, –Wh] SFRCs are syntactically nominal and abide by the same argument-forming principles as bare nouns. This explains why YM does not allow SFRCs to be definite (since YM does not have N-ι in the nominal domain) but Ch'ol does. It also explains why they freely occur with other D^0 elements in each language, yielding [+Det, –Wh] HRCs.

This section turns to [+Wh] headless relative clauses, also known as Free Relatives (FRs). FRs pattern similarly cross-linguistically: they have a definite, maximal interpretation unless in theme position of existential or "coming-into-being" predicates (Jacobson, 1995; Caponigro, 2003, 2004). This consistent pattern leads us to propose that there is a special ι-type-shifter for FRs, distinct from N-ι, and this type-shifter is available regardless of whether a language marks definiteness with an overt article or not (i.e., regardless of language-specific properties of the nominal domain). We begin with FRs with no determiner in section 5.1, turning to their appearance with determiners in 5.2.

5.1 [–Det, +Wh] headless relative clauses

Free Relatives in both YM and Ch'ol are repeated in (55). We find that FRs, or [–Det, +Wh] HRCs, in both languages pattern alike: they are introduced by a wh-word, which corresponds to a gap in the FR. As previewed above, we take FRs to be CPs in which the wh-word has undergone A′-movement from a clause-internal position, represented below (we do not represent movement in all examples that follow). The FRs themselves are necessarily interpreted as definite in most cases, as in (55a) and (55b) where the FR appears in the internal argument position of a transitive verb.

(55) Internal argument

a. T-in wáantaj [**máax**$_j$ taal $\_\__j$ jo'oljeak].
PFV-A1 help who come.PFV yesterday
'I helped the people who came yesterday.' (YM; AnderBois & Chan Dzul 2021: 456)

b. Tyi k-mäñä [**chu**$_j$ choñkol i-choñ $\_\__j$ aj-Maria].
PFV A1-buy what PROG A3-sell NC-Maria
'I bought what Maria is selling.' (Ch'ol; Vázquez Álvarez & Coon 2021: 362)

FRs are also possible as subjects of adjectival predicates in (56). We illustrate in (56) that these sentences can be paraphrased by replacing the FR with a definite nominal, a diagnostic discussed in Jacobson 1995 and Caponigro 2003 for definiteness.

(56) Subject of an adjectival predicate

a. Jach ki' { **ba'ax** t-in jaantaj / le janal=o' }.
very tasty what PFV-A1 eat DEF food=DIST'
'What I ate/the food is very tasty (YM; AnderBois & Chan Dzul 2021: ex 21)

b. Weñ sumuk { **chu** tyi j-k'uxu / li waj }.
very tasty what PFV A1-eat DET food
What I ate/the food is very tasty. (Ch'ol)

The definiteness and maximal properties of these FRs are further confirmed by the following Ch'ol example in which the Ch'ol sentence corresponding to 'I read what the teacher assigned' is true only in the context where the speaker read all three books. It is false is in a context where the speaker only read two books.

(57) Context: A teacher assigns students three books to read over the summer, *Harry Potter*, *Anna Karenina*, and *War and Peace*.

Tyi k-pejkä [**chu** tyi i-sub-oñ xpäsjuñ].
PFV A1-read what PFV A3-tell-B1 teacher
'I read what the teacher assigned me.' (Ch'ol)

= *True* in the case the speaker read all three books
= *False* in the case the speaker only read *Anna Karenina* and *War and Peace*

When appearing in external argument position, must also be interpreted as definite and maximal, as shown in (58).

(58) External argument

a. [**Máax-o'ob** k-u k'a'abétkunsik-o'ob celular k-u meyaj yéetel
who-PL IPFV-A3 use-PL cell IPFV-A3 work with
Android]=e', yaan u béeytal u xak'altik-o'ob Google Maps kex mina'an
Android=TOP OBLIG A3 be.able A3 search-PL Google Maps even NEG.EXT
Internet.
internet
'People who use cell phones that work with Android will be able to search on Google Maps even without internet.' (YM; AnderBois 2018)

b. Tyi i-tyaja-yoñ [**chu** choñkol i-p'ojlel ñumel] / li k'amäjel.
PFV A3-find-B1 what PROG A3-replicate DIR:pass DEF illness
'What is going around/the illness got me.' (Ch'ol)

FRs can only be interpreted as indefinite when combining existential predicates, and with certain verbs that denote coming-into-being, view, or existence. Examples with the existential predicate *añ* in Ch'ol and *yaan* in YM are given below. These are often translated into English as 'someone' or 'something' (note these languages lack distinct indefinite pronouns). The FR in YM in (60) is interpreted as indefinite due to the verb 'look for.'

(59) Indefinite FRs

a. Yaan [**máax** k-u k'aay ich maaya].
EXT who IPFV-A3 sing in Maya
'Someone sings in Maya.' (YM; AnderBois & Chan Dzul 2021: 453)

b. Añ [**chu** tyi i-mäñä aj-Maria].
EXT what PFV A3-buy NC-Maria
'Maria bought something.' (Ch'ol)

(60) Wáa ma'=e' yaan in kaxtik [**máax** tsikbaltik teen bix]=ij.
if NEG=TOP OBLIG A1 look.for who chat DAT.1.SG how =EXTRAF
"If not, I have to find someone who will tell me how to." (YM; Gómez Navarrete 2008: 97)

Additional examples from YM and Ch'ol can be found in AnderBois & Chan Dzul 2021 and Vázquez Álvarez & Coon 2021, respectively. Note that in YM and Ch'ol there is no requirement that existential FRs have some modal, irrealis or circumstantial flavor. Existential FRs in many Indo-Euroean languages have been reported to require certain moods in existential FRs (Šimík, 2011), but this is not the case for YM or Ch'ol. As was mentioned in Caponigro (2021), this poses a challenge to Šimík's (2011) empirical generalization that existential FRs can only occur in infinitival form or some other non-indicative mood.

5.2 [+Det, +Wh] headless relative clauses

A key property of FRs in YM and Ch'ol, is that—unlike in English—they may appear with determiners, as illustrated in (61a) and (61b); an ungrammatical English example is shown in (61c). [+Det, +Wh] HRCs are shown in transitive object position below, but may also appear as transitive and intransitive subjects.

(61) Internal argument (transitive object)

a. T-in manaj **le** [**ba'ax** k-u konik le ko'olel]**=o'**
PFV-A1 buy DEF what IPFV-A3 sell DEF woman =DIST
'I bought what the woman was selling.' (YM)

b. Tyi k-mäñä **li** [**chu** choñkol i-mäñ aj-Maria].
PFV A1-buy DEF what PROG A3-sell NC-Maria
I bought what Maria was selling. (Ch'ol; Vázquez Álvarez & Coon 2021: 362)

c. *I bought the what the woman was selling.

We discuss the semantic contribution of the definite determiner further in section 6, but first focus on the implications of this for our understanding of FRs. Similar to what we observed in section 3.3 for [–Wh] HRCs, a full range of determiners is possible with [+Wh] HRCs. Again,

this provides evidence that these [+Det] HRCs are not a special type of light-headed relative clause construction as proposed by Citko (2004) for Polish. The Mayan facts provide evidence that there is parametric variation regarding whether HRCs in a given language can appear with determiners.

(62) Ch'ol

a. Tyi k-tyaja **cha'-tyikil** [majch mi i-mel k-otyoty].
PFV A1-find two-CLF.human who IPFV A3-make A1-house
'I found two (people) to build my house. (Vázquez Álvarez & Coon, 2021: 398)

b. Ma'añ tyi i-ch'ämä te **ixä** [chu mi i-k'äñe'].
NEG PFV A3-take DIR:come that what IPFV A3-use
'He didn't bring what he uses.' (Vázquez Álvarez & Coon, 2021: 398)

(63) YM

a. ti'al **tuláakal** [máax k'a'abéet ti'], unaj u káajal u meyaj...
for every who need DAT.3SG should A3 start A3 work
For all who need it, the work should begin...'[9]

b. **Ka'a-túul** [máax macha'ab]=e', túuxta'ab-o'ob k'albil t-u kúuchil
two-CLF who grab TOP send-PL incarcerated PREP-A3 place
Soto del Real
Soto del Real
'The two people who were apprehended were sent to be jailed at Soto del Real.' (AnderBois & Chan Dzul, 2021: 465)

Unless in theme position of an existential predicate or of a coming-into-being/view/existence predicate, FRs are interpreted as definite and maximal. No differences in FR distribution or interpretation were found between the two languages, a fact which we tie into our analysis of a type-shifter for FRs: FR-ι. FRs in YM and Ch'ol pattern with FRs in English and other languages in terms of their interpretation. Unlike in English, however, FRs in both Mayan languages may co-occur with determiners, which we take to be a point of parametric variation across languages. In the next section we provide an analysis for (i) the definiteness of these FRs and (ii) why the indefinite interpretation is restricted to certain positions.

6 [+Wh] free relatives are CPs

In the previous section, we observed that unlike SFRCs—whose interpretation closely parallels that of bare nouns in the respective language—FRs pattern similarly to one another across the two languages. In this section, we argue for an account of FRs that makes use of a definite type-shifter, FR-ι, which follows a very different set of principles than N-ι. The presence of N-ι is closely tied to nominal expressions and is sensitive to the existence of other determiners, and therefore its availability varies across languages. We propose that FR-ι, on the other hand, is specific to FRs, which are syntactically CPs, and is available regardless of the existence of competing determiners in the language. Section 6.1 provides an analysis for the syntactic and semantic properties of FRs,

[9] https://issuu.com/lajornadamaya/docs/la_jornada_maya___jueves_19_de_abri, p.40

section 6.2 discusses the FR-ι type-shifter, and section 6.3 summarizes and rejects an alternative account.

6.1 The syntax and semantics of [+Wh] headless relative clauses

As previewed above, we take FRs to be CPs, which involve A′-movement of a wh-word from a clause-internal position, repeated for a Ch'ol FR in (64).

(64) [$_{CP}$ chu$_j$ [$_{IP}$ tyi i-k'uxu $\_\__j$]]
what PFV A3-eat
'what he ate' $\longrightarrow$ [+Wh] HRCs are CPs

We adopt the proposal of Caponigro (2003, 2004) that the relative clause itself in FRs denotes a set, and that wh-words introduce a sortal domain. A′ movement of the wh-word triggers lambda abstraction that makes this denote a set, derived in the tree below in (66b). The wh-words corresponding to 'who' and 'what' have as their the sortal domain animate/human or inanimate as in (65).[10]

(65) Semantics of *wh*-words
wh-word: $\lambda x.[P(x)]$
where P = animate (*who*), inanimate (*what*), place/location (*where*), time/situation (*when*), manner *how*, amount (*how many*)

Putting these assumptions together, we exemplify the approach with the FR in Ch'ol in (66a) 'what Maria bought.' The derivation is given in (66b).

(66) a. [$_{FR}$ chu$_1$ tyi i-mäñä $\_\__j$ aj-Maria]
what PFV 3-buy NC-Maria
'what Maria bought'

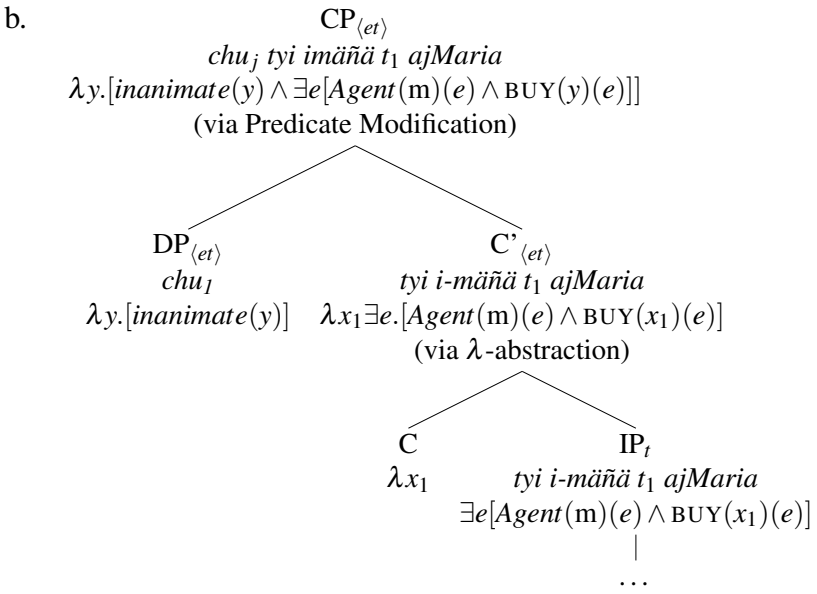
[10] In Caponigro (2003, 2004), the wh-word takes an additional argument of type $\langle et \rangle$, given below:

(i) Semantics of *wh*-words Caponigro (2004: 47)
wh-word: $\lambda X_{\langle et \rangle} \lambda x.[P(x) \wedge X(x)]$
where P = animate (*who*), inanimate (*what*), place/location (*where*), time/situation (*when*), and manner (*how*)

"[P]hrasal wh-words are assumed to act as set restrictors: they apply to a set and return a subset" (Caponigro, 2004: 47).

Here we focus on FRs headed by wh-words corresponding to 'who' and 'what', but note that in Ch'ol *bajche'* 'how', *jay*-CLF 'how many', *ba'* 'where', *chukoch* 'why', *jalaj* 'when' and *ba'bä* 'which' are possible in FRs (see Vázquez Álvarez & Coon 2021 for more details and examples). In YM, in addition to the examples discussed here, only *tu'ux* 'where' and *bix* 'how' are clearly acceptable in FRs (see AnderBois & Chan Dzul 2021 for details and discussion).

b.



In (66b), the wh-word moves from its position as an internal argument of the verb to Spec,CP and the verb *mäñä* 'buy' combines with the trace of type e. We introduce lambda abstraction over the moved *wh*-word at C then the *wh*-word and the predicate combine via predicate modification to return the set of individuals which are inanimate and such that Maria bought them, rendering a predicate of type $\langle et \rangle$. Next, we discuss how this structure interacts with FR-ι.

6.2 FR-ι: a type-shifter for free relatives

Recall that a central motivation for this research is to investigate the range and applicability of type-shifters cross-linguistically. It has been proposed that languages that allow bare nouns to be definite have an ι type-shifter available; this same type-shifter is not available in languages that must mark definite nominals overtly with an article (e.g., Chierchia 1998; Dayal 2004; Jenks 2018; Despić 2019; Moroney 2021, i.a.). At the same time, literature on FRs has proposed a type of ι type-shifter available even in languages that obligatorily mark definiteness overtly (Jacobson, 1995; Caponigro, 2003, 2004).

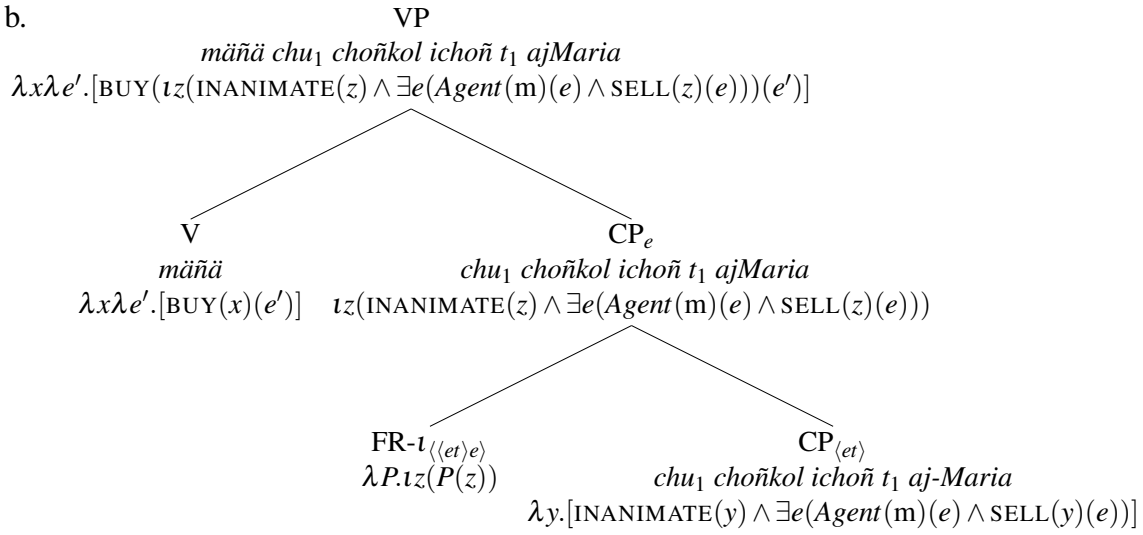
What is unclear from these previous discussions is whether different type-shifting principles apply to FRs because FRs in English (and many other languages) cannot be combined with determiners, or due to an intrinsic difference between the type-shifting processes in FRs and other nominals. Ch'ol and YM provide a clear answer to this question. Since FRs combine freely with determiners in both languages, if the same type-shifting mechanism were at play, we would expect that FRs in Ch'ol and YM would pattern quite different from one another, just as we saw for SFRCs. However, FRs pattern similarly in both languages, and crucially are different from SFRCs and bare nouns.

We therefore propose that there is a Free Relative ι (FR-ι) available to languages regardless of the presence or absence of obligatory definite articles. Following (Caponigro, 2003, 2004), we assume that FR-ι is inserted as a last resort in order to resolve a type-mismatch for CPs appearing in argument position. The derivation for an internal argument FR is given in (67b). FR-ι type-shifts CPs as a last-resort operation, making it quite different from N-ι—which we proposed above to be a D^0 head, available as a lexical item in some languages but not others—contrary to Caponigro's

suggestions that type-shifters for bare nouns and those for FRs are parallel.

(67) a. Tyi k-mäñä [chu$_j$ choñkol i-choñ $\_\_j$ ajMaria].
PFV A1-buy what PROG A3-sell Maria
'I bought what Maria was selling.' (Ch'ol; Vázquez Álvarez & Coon 2021: 362)

b.



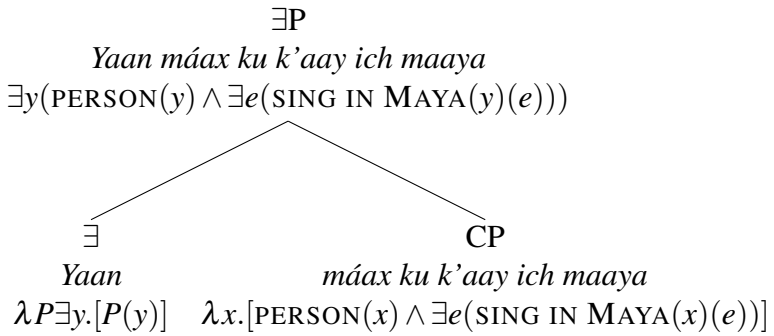
Indefinite interpretations for FRs are blocked in two different ways for each language. For YM, where indefiniteness via Restrict and type-shifting is ruled out on other grounds, there is no other operation that can type-shift the FR in order for it to receive an indefinite interpretation. Indefinite interpretations are only available with existential predicates, as discussed below.

For Ch'ol, we propose that indefinite interpretations are ruled out for FRs because Restrict is limited to combine things that are nominal. FRs are CPs, thus internal FR arguments cannot combine with the verb via Restrict, and consequently existential closure cannot apply. This restriction is not explicit in Chung & Ladusaw (2004)'s original proposal, but is arguably implicit since Restrict is indeed used in the Austronesian languages Chamorro and Maori for noun-incorporation structures and indefinites, respectively. Thus, a definite interpretation is the only one available for FRs in Ch'ol.

As FR-ι is a last-resort mechanism used to repair a type clash, certain predicates may override the need to use FR-ι. One example is with the existential predicate, in which case the semantics of the predicate existentially closes the unsaturated argument of the FR, deriving an indefinite interpretation. These FRs are usually translated into English with indefinite pronouns. An example from YM is given below, with the derivation in (68b). We assume that FRs with indefinite interpretations appearing in internal argument position of coming-into-being/view/existence predicates behave similarly.

(68) a. Yaan [$_{FR}$ **máax** k-u k'aay ich maaya].
EXT who IPFV-A3 sing in Maya
'Someone sings in Maya.' (YM; AnderBois & Chan Dzul 2021: 453)

b.



Note that in (68b), FR-ɪ is *not* present in the structure. The NP combines with the existential predicate via Function Application. Combining via FR-ɪ would cause a conflict with the existential meaning and be ungrammatical for the same reasons as a [+Wh] HRC with an overt definite article.

One final question raised by the data here is what difference, if any, there is between the [–Det, +Wh] FRs described in section 5.1, and the FRs which co-oocur with a determiner, [+Det, +Wh] HRCs, seen in 5.2. Consider, for example, the bracketed HRC in (69), which may appear with or without a determiner.

(69) (**Le**) [ba'ax tu jaantaj le máak]=o' páap.
DEF what PFV-A3 eat DEF person **=DIST** spicy
'What the person ate was spicy.' (YM)

Semantically, the inclusion of the definite article may be motivated by the fact that overt definite articles in both languages have not only uniqueness uses, but also anaphoric/familiar uses (see Vázquez-Rojas Maldonado et al. 2018 for YM, Little & Vázquez Martínez 2018; Little 2020 for Ch'ol). While the maximality/uniqueness contributed by FR-ɪ is not necessarily incompatible with anaphoricity, it seems that the overt article more readily allows it.

Indeed, we may make a similar observation about English FRs compared to corresponding definite descriptions. There is an intuition that there is some aversion to the obvious anaphoric interpretation in (70b). While (70b) is not strictly infelicitous on the relevant interpretation, it seems that the use of the overt definite article *the* more readily facilitates the anaphoric interpretation.

(70) A: There is a sandwich on the table
a. B: I'll eat the sandwich on the table
b. B: #I'll eat what's on the table.

In addition to semantic reasons, for YM at least, the use of the overt definite avoids temporary ambiguities. For example, the FR in (69) (the version with no definite article) is largely identical to the corresponding interrogative in (71).

(71) **Ba'ax** t-u jaantaj le máak=o'?
what PFV-A3 eat DEF person=DIST
'What did the person eat?'

The use of the overt definite version of (69), therefore, avoids the possibility of garden-pathing.

6.3 Summary and rejecting a semantic alternative

In this section we motivated a cross-linguistic FR-ι used to type-shift [–Det, +Wh] HRCs, or FRs. Such a type-shifter has been proposed for English as well as other languages (Caponigro, 2003, 2004), but this literature has largely not discussed the applicability of the type-shifter with respect to nouns. We proposed that FR-ι is a type-shifter available to FRs, regardless of whether a language has an obligatory definite article. The differences between SFRCs and FRs in our view are largely due to syntactic differences between the two. Whereas N-ι is a type-shifter that occurs with nominal expressions, FR-ι is limited to occur with CPs as a last resort.

To more semantically-minded researchers, this syntactic approach might seem like a missed opportunity. One might have hoped that the differences between SFRCs and FRs would instead be explained by differences between the semantics of wh-words and that of nouns rather than their syntactic differences. FRs make use of wh-words and therefore may plausibly have a more question-like semantics not shared with nouns.[11]

For example, Xiang (2020) proposes a "hybrid categorial' semantics in which question abstracts are functions from short answers to propositional answers. She then defines an operator, $\mathscr{A}$, that applies to the question meaning in FRs to return the complete true short answer to the question (Section 6.1.1). Since $\mathscr{A}$ takes question meanings as inputs, while N-ι takes common noun meanings, this semantic difference might appear to explain the different behavior of FRs and SFRCs.

While Xiang's $\mathscr{A}$ is potentially suitable for English, where FRs only have definite interpretations, it doesn't work for Ch'ol and YM for two reasons. First, as we have seen, FRs can systematically receive indefinite interpretations with existential predicates regardless of the FR's particular content.[12] Second, and perhaps more troublingly, we have seen that FRs in Ch'ol and YM combine with the full range of determiners available to ordinary nouns in each language. What a semantic alternative would require, therefore, is that FRs have a meaning that are at once different enough from those of nouns to require different type-shifters, yet similar enough to be able to combine freely with the full range of overt quantifiers, numerals, determiners, and demonstratives. Despite its initial appeal, we therefore conclude that a semantic alternative is not viable. In contrast, on our account, we have taken FRs and SFRCs to internally have very similar meanings (thus explaining their ability to compose with various determiners), but to differ in their syntactic category (thus triggering different type-shifting principles).

[11] Cross-linguistically, Caponigro (2003) argues that the wh-words found in FRs are a subset of the interrogative wh-words within a language, typically a proper subset. Crucially, this set is not necessarily related to the set of relative pronouns found for headed RCs within the same language (e.g. English *what* occurs in FRs, but not in headed RCs). See Section 2.1.1 of Xiang (2020) for further discussion of this generalization and its implications for the relationship between FR and interrogative semantics.

[12] Xiang (2020) discusses a different sort of 'existential' interpretation for English FRs as in (i).

(i) John went where he could get some help.

Whatever the status of this example, we note that its interpretation does not rely on a higher existential predicate as in the Ch'ol and YM cases, but on the mention-some semantics/pragmatics that Xiang discusses. Indefinite/existential FRs in Ch'ol and YM (and seemingly in most other languages) are similarly possible regardless of the particular FR's content and therefore represent a distinct phenomenon than English cases like (i).

7 Conclusions

We began this paper with a puzzle on type-shifting and HRCs. On the one hand, a range of previous literature has employed a type-shifting analysis for bare nouns in languages that allow bare nouns to be definite; these same principles are not employed in languages with obligatory articles. The literature on FRs, on the other hand, has adopted a type-shifting analysis, regardless of whether there is an obligatory definite article.

While previous literature has suggested that these two cases are different instantiations of a single type-shifting mechanism, in this paper, we have argued that there are two distinct type-shifting mechanisms—N-ι and FR-ι. The former is a nominal type-shifter available for bare nouns and SFRCs. Crucially, N-ι is sensitive to the presence or absence of an obligatory definite article within a given language. This was illustrated by the availability of N-ι in Ch'ol (no obligatory definite article), but not in YM (obligatory definite article). Conversely, FR-ι is particular to FR CPs and inserted as last resort regardless of the presence or absence of definite articles. We have seen this illustrated by the availability of FR-ι in both Ch'ol and Yucatec Maya, despite the difference in their determiner systems. The independence of FR-ι from N-ι is made all the more clear by the fact that both languages allow for both SFRCs and FRs to combine with all the same determiners found in other nominals.

This research offers a number of questions for future research, along with testable predictions. First, if a language has SFRCs, do they pattern as bare nouns elsewhere? Our analysis, as well as a preliminary look into other Mesoamerican languages, would predict they do. This future line of investigation involves both a look into the interpretation and distribution of bare nouns as well as SFRCs. Similarly, if SFRCs do pattern like bare nouns, we also expect the same range of determiners that occur with nouns to appear with SFRCs. If these pattern as expected, then this is further support for the range and applicability of nominal type-shifters for [–Wh] HRCs.

Second, we expect that regardless of how definiteness is expressed in a language, FR-ι is available for FRs in languages which possess these constructions. This has largely been supported by previous work, including a cross-linguistic survey of under-studied Mesoamerican languages (Caponigro et al., 2021). Given our findings, however, we do not necessarily expect FRs to pattern parallel to SFRCs. Further investigation into languages with SFRCs will bear on this.

Lastly, it is of note that much work on HRCs has concentrated on English and other Indo-European languages. We would like to highlight that the empirical findings here suggest that generalizations from Indo-European HRCs are not as representative as the literature may lead a reader to believe. For instance, the existence of SFRCs, existential FRs without any modal or irrealis flavor, and [+Det] HRCs are not found in English, but are possible—and common—in Mayan. Beyond their existence, we hope to have shown that the properties of these various HRCs pose challenges to prior theories of HRCs and the kinds of type-shifting operations they rely on.

Compliance with Ethical Standards

The authors have no potential conflicts of interest to declare.

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