RESEARCH

A comparative syntax of internally-headed relative clauses in Gur

Ken Hiraiwa[1,2], George Akanlig-Pare[3], Samuel Atintono[4], Adams Bodomo[5], Komlan Essizewa[6] and Fusheini Hudu[3]

[1] Meiji Gakuin University, JP

[2] MIT, US

[3] University of Ghana, GH

[4] University of Winneba, GH

[5] University of Vienna, AT

[6] University of Lome, TG

Corresponding author: Ken Hiraiwa (hiraiwa@alum.mit.edu)

Gur (or Mabia) languages which are spoken in West Africa have so-called internally-headed relative clauses (IHRCs), but they have not received serious attention in syntactic and typological research on IHRCs. In this article, building on detailed first-hand data, we describe the syntax and semantics of IHRCs in five Gur languages: Buli, Dagaare, Dagbani, Gurenɛ, and Kabiyé. It is demonstrated that their IHRCs refute the syntactic and semantic generalizations proposed in the literature (Gorbet 1976; Cole 1987; Grosu 2002; Watanabe 1991; 2004). We also compare IHRCs in Gur and Japanese and argue that the existing semantic typology of IHRCs must be reconsidered, showing that properties of two types of IHRCs—restrictive and maximalizing IHRCS—do not necessarily show predicated correlations.

1 Introduction

Relativization in natural languages comes in limited varieties. Depending on a structural position in which a relativized head noun (H) appears, relative clauses are classified into two types: an externally-headed relative clause (EHRC) and an internally-headed relative clause (IHRC) (see especially Bodomo & Hiraiwa 2010; also Lehmann 1984; Keenan 1985; Bianchi 2002; de Vries 2002; Andrews 2007; Cinque 2013). Some languages have only one type (e.g. Lakhota; Williamson 1987), but others have both types (e.g. Japanese; Kuroda 1992), as illustrated in (1). In EHRCs, the relativized head noun (H) appears structurally outside the relative clause CP, as shown in example (1a). On the other hand, in IHRCs, it appears structurally inside the relative clause CP, as shown in example (1b) (we will present a more detailed definition shortly in Section 2).

(1)   *Japanese*
        a. Naomi-wa   [[$_{CP}$ Ken-ga   katte-kite-kure-ta]   ringo]-o   tabe-ta.
            Naomi-TOP   Ken-NOM buy-come-BEN-PAST   apple-ACC   eat-PAST
            'Naomi ate the apple that Ken bought for her.'   (EHRC)
        b. Naomi-wa [$_{CP}$ Ken-ga   ringo-o   katte-kite-kure-ta   no]-o   tabe-ta.
            Naomi-TOP   Ken-NOM apple-ACC buy-come-BEN-PAST C-ACC eat-PAST
            'Naomi ate the apple that Ken bought for her.'   (IHRC)
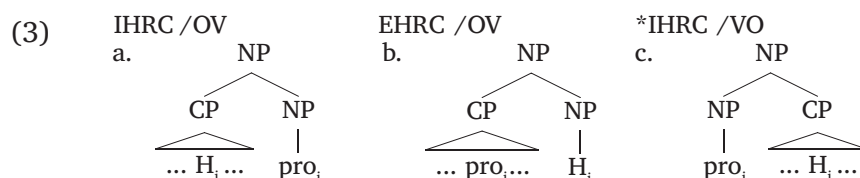
IHRCs have attracted much attention in light of the search for universals and parameters: namely, an ultimate question that generative linguists want to answer is what makes IHRCs possible in some languages and impossible in others.

For example, in the generative literature, it was often observed, in particular in the 1970s and the 1980s, that IHRCs are only found in OV languages (see Kuroda 1974; Gorbet 1974; Langdon 1977; Downing 1978). Cole (1987) asks a deeper question how such a word order generalization can be derived and goes on to link the word order generalization to the availability of a null pronoun, as formulated in (2).

(2)　　Cole's Generalization (Cole 1987)
　　　　IHRCs are restricted to languages with (i) SOV word order and (ii) a null anaphor.

According to Cole (1987), a null anaphor is subject to the Command Condition that an anaphor cannot both precede and command its antecedent (Langacker 1969, Ross 1969). He assumes that IHRCs have the same structure as EHRCs, with a difference being which of the head nouns is pronounced, as shown in (3a)–(3b) (see also Ito 1986; Erlewine & Gould 2016 for a similar proposal). In OV languages, IHRCs and EHRCs do conform to the Command Condition. Therefore, IHRCs form a legitimate structure. On the other hand, in VO languages, IHRCs are not licit, because the null pronoun *pro* precedes and commands its antecedent, namely, the internal relativized head noun, as shown in (3c).

(3)　　IHRC /OV　　　　　　EHRC /OV　　　　　　*IHRC /VO

　　a.　　　NP　　　　b.　　　NP　　　　c.　　　NP

　　CP　　NP　　　　CP　　NP　　　　NP　　CP

　　… H$_i$ …　　pro$_i$　　　… pro$_i$…　　H$_i$　　pro$_i$　　… H$_i$ …

Gur (or Mabia) languages which are spoken in West Africa offer an indispensable testing ground for Cole's Generalization in (2) as well as for the simple OV generalization. Tellier (1989) was the first, to the best of our knowledge, to point out a counterexample to Cole's Generalization. He observes that Mooré, a Gur language spoken in Burkina Faso, has SVO word order and disallows null pronouns, but still allows IHRCs, as shown in example (4) (see also Gil 2000; Aldridge to appear; and Wilbur 2016 for similar evidence from Riau Indonesian, Tagalog, and sign languages).[1]

(4)　　*Mooré* (Tellier 1989; see also Peterson 1971; 1974)
　　　　[Fo　sẽ　yã　daw　ninga　zaamẽ　wã]　kula　　　me.
　　　　you　C　saw　man　REL　　yesterday　DEM　went-home　PRT
　　　　'The man who you saw yesterday went home.'　　　　　　　　　(IHRC)

Mooré is not a single, accidental exception, however. Hiraiwa (2003; 2005b; 2009a; 2009b; in press) have shown that Gur languages in general present consistent evidence against Cole's Generalization or the word order generalization.[2] As we show in the following sections in detail, (at least) five Gur languages allow IHRCs, even though they are VO languages, their noun phrases are modified postnominally, and none of these languages allows null anaphora. An example is given in (5) from Buli.

---

[1] Cole's Generalization is built on a tacit premise that OV languages have post-nominal relative clauses and VO languages have prenominal relative clauses. But this is actually an oversimplification. See footnote 19 for relevant discussion.

[2] In Hiraiwa (2009a; b), Kɔnni is listed as one of the Gur languages without IHRCs based on the second-hand data in Cahill (1999), but Anne Schwarz p.c. informs us that actually IHRCs are rather common and productive in Kɔnni.

(5)   *Buli*
        Amoak nya [Atim ale sua naa buui la].
        Amoak saw Atim C   own cow REL DEM
        'Amoak saw the cow that Atim owned.'   (IHRC)

As we will see below, various linguists have made alternative generalizations, but none of them predicts that Gur languages can have IHRCs. Despite such empirical and theoretical importance of Gur IHRCs, however, they have not duly attracted attention in the literature on IHRCs. Thus, the main goal of this collaborative article is to present the result of our careful study on IHRCs in five Gur languages—Buli, Dagaare, Dagbani, Gurenɛ, and Kabiyé—and to advance the current understanding of the syntactic mechanism underlying IHRCs. We show that data from the Gur languages demand reconsideration of the various existing proposals on the syntax (and semantics) of IHRCs. We also compare the syntax of IHRCs in Gur with the syntax of IHRCs in Japanese. This is important in two respects. First, most, if not all, of the languages that attest IHRCs are not easily accessible, but highly delicate grammatical judgement is vastly available in Japanese. Second, for that reason, Japanese is one of the very few languages whose IHRCs have been studied in great detail since the 1970s. Thus, we believe that it is illuminating to compare IHRCs in Gur and Japanese.

   The organization of this paper is as follows. Section 2 gives an overview of general syntactic characteristics of IHRCs in the Gur languages. Section 3 examines various syntactic and semantic generalizations proposed in the literature and shows that Gur IHRCs do not fall under any of them. Section 4 compares IHRCs in Gur and Japanese and argues that the Gur languages resist the existing semantic typology. Section 5 concludes the article and discusses future issues.

   Each of the five Gur languages is represented by a native speaker linguist/co-author of this article (except the first author). The following is a classification of the Gur languages discussed below, with those discussed in this article boxed.

(6)   Classification of Gur (or Mabia) languages[3]

---
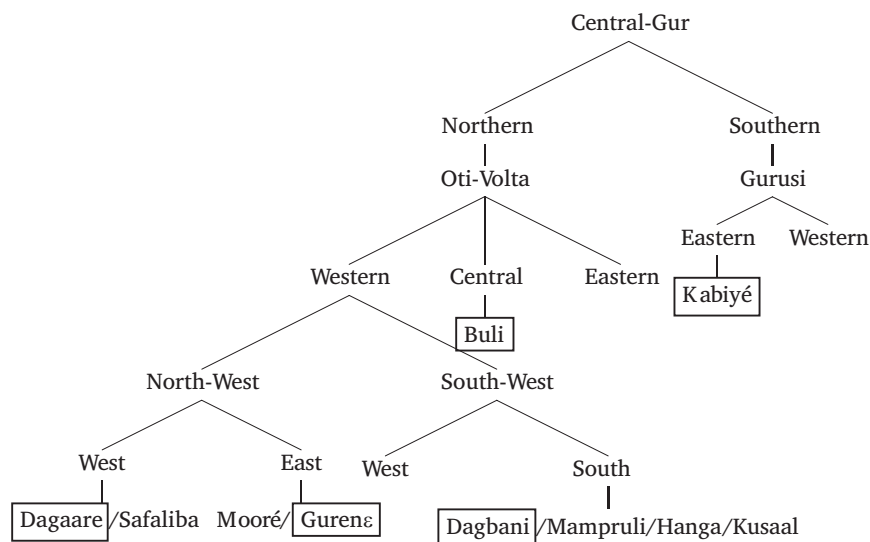
[3] Adapted from Atintono (2013) and Dakubu (2005: 4), with classification of Dagaare modified based on Naden (1988: 16–19) and Naden (1989: 141–145). There are about 70 Gur languages as of 2016. An alternate name for Gur languages is Voltaic languages. Bodomo (1993) calls Western Oti-Volta, as a subgroup of Gur, Mabia (*ma* 'mother' *bia* 'child'), denoting a sibling relationship between languages such as Dagbane, Mampruli, Dagaare, and Kusaal (see Olawsky 1999). General syntactic descriptions, dictionaries of each Gur languages, and/or relevant work on Gur relative clauses are found in: Kröger (1992); Akanlig-Pare & Kenstowicz (2003); Kiesewetter (2004); Schwarz (2004); Akanlig-Pare (2005); Sulemana (2012; in prepration) for Buli, Bodomo (1997; 2000); Hiraiwa & Bodomo (2008); Bodomo & Hiraiwa (2010); Bodomo (2004) for Dagaare, Wilson (1963); Olawsky (1999); Blench (2004); Hudu (2010) for Dagbani, Dakubu (1996); Dakubu et al. (2007); Atintono (2002; 2003; 2011; 2013) for Gurenɛ, and Lébikaza (1999); Essizewa (2007) for Kabiyé.

2 General syntactic features of IHRCs in Gur

Following Lehmann (1984), Bodomo & Hiraiwa (2010), and Hiraiwa (in press), we assume the following (representational) definitions of structural classification. First, relative clauses are divided into two types, depending on *structural* positions of H. A relative clauses is *externally-headed* when H appears structurally outside the relative clause (CP by our definition) and projects an NP that dominates it (or has it as an adjunct). In contrast, a relative clause is *internally-headed* if H appears structurally inside the relative clause and the NP is dominated by the relative clause. In addition to this structural classification, relative clauses are also divided into three types, depending on *linear* positions of a relativized head noun H. A relative clause is *left-headed*, if H appears to the left of the relative clause, while it is *right-headed*, if H appears to the right. It is called *in-situ*, when H appears within the relative clause. This is summarized in (7) below.

(7)   Typology of relative clauses

	Externally-headed	Internally-headed
In-situ	—	$[_{DP} [_{CP} ... [_{NP} H] ...]]$
Left-headed	$[_{DP} [_{NP} H [_{CP} ... e_H ...]]]$	$[_{DP} [_{CP} [_{NP} H] ... t_H ...]]$
Right-headed	$[_{DP} [_{NP} [_{CP} ... e_H ...] H]]$	(unattested)

A mere linear typology is not sufficient because a relative clause can be internally-headed or externally-headed when H appears at either edge. Namely, the fact that H appears at the edge does not automatically mean that it is located outside the relative clause CP. Among the six possibilities, in-situ EHRCs are logically impossible. On the other hand, right-headed IHRCs have not been attested yet to the best of our knowledge, even though they are logically possible.[4,5]

In the following subsections, we will show that the four Gur languages (except Dagaare) have in-situ IHRCs (Section 2.1) and that all the five Gur languages also have left-headed IHRCs (Section 2.2). It should be emphasized, however, that what is important for our main goal of this article is the fact that the Gur languages have in-situ IHRCs (except Dagaare) and hence discussions of left-headed IHRCs will be kept to minimum.

2.1 In-situ IHRCs

---

[4] An anonymous reviewer points out that what we call left-headed IHRCs have a structure syntactically equivalent to Kayne's (1994) raising analysis of EHRCs (or to a similar proposal by Bianchi 1999). Even though that is the case, Kayne's original analysis of externally-headed relative clauses (i.e. the structure in which a D takes a CP as its complement and H remains in the specifier of the CP) has met various objections (see Bhatt 2002, and in particular Donati & Cecchetto 2015). Most notably, Donati & Cecchetto (2011; 2015), rightfully point out that Kayne's analysis suffers from a problem that a D in those languages with EHRCs (such as English and Italian) cannot take a CP as its complement. To the extent that their objection is correct (and we think it is), EHRCs cannot have the same structure as that of left-headed IHRCs in (7). Rather, they have the structure in which an external D takes an NP outside the relative clause (see Iatridou et al. 2001; Bhatt 2002; Donati & Cecchetto 2011; 2015). This in turn suggests an interesting possibility that syntax of (at least a certain type of) IHRCs is dependent on a clausal determiner that takes a CP. See Hiraiwa (2005b; in press) for relevant discussions.

[5] An anonymous reviewer asks whether the apparent absence of right-headed IHRCs might be due to the prohibition against rightward movement (see Kayne 1994). It is a little more complicated, however, because it is possible for H to be moved leftward (e.g. to the specifier of CP), followed by a leftward movement of a remnant constituent (e.g. TP). This strands H at the right periphery, but it may still count as internally-headed in that H is not completely outside the entire relative clause. Therefore, right-headed IHRCs should be logically/syntactically possible, but still they are unattested so far.

IHRCs in the Gur languages focused on in this article are illustrated below (we will return to Dagaare in Section 2.2). The following examples are in-situ IHRCs, in which the relativized head noun appears in its original (i.e. in-situ) position.[6]

(8)   *Buli*
       Amoak nya [Atim ale sua   naa buui la].
       Amoak saw Atim C   own cow REL DEM
       'Amoak saw the cow that Atim owned.'   (in-situ IHRC)

(9)   *Dagbani*
       N   ŋubi   [a   ni she   nim sheli maa].
       1SG eat.PERF 2SG C roast.PERF meat REL D
       'I ate the meat that you roasted.'   (in-situ IHRC)

(10)   *Gurenɛ*
       [Atia n da'   bua sɛka da'a   zaam   la] bɔi   mɛ.
       Atia C buy.PERF goat REL market yesterday D lose.PERF PRT
       'The goat that Atia bought at the market got lost.'   (in-situ IHRC)

(11)   *Kabiyé*
       [Ma-na   ha nga ɖeɖe   yɔ], kɛ-goma.
       1SG-see.PAST dog REL yesterday D   3SG-come.PAST
       'The dog I saw yesterday came.'   (in-situ IHRC)

IHRCs in these languages show a determiner/demonstrative element at the right edge of the relative clauses. Note also that in all the Gur languages except Kabiyé, an overt C(omplementizer) appears in IHRCs (see Hiraiwa 2005a; b for an analysis). Thus the in-situ IHRCs in the Gur languages have the following syntactic structure.

(12)   [$_{DP}$[$_{CP}$ … (C) … H-REL …] D]
                                (Buli, Dagbani, Gurenɛ, Kabiyé: in-situ IHRC)

A determiner element D uniformly follows the relative clause CP in IHRCs: *la* in Buli and Gurenɛ, *maa/la* in Dagbani, and *yɔ* in Kabiyé. This is what Lefebvre (1992; 1998) and Larson (2003) call a clausal determiner. A clausal determiner, as its name indicates, is a determiner element for clausal constituents. In relative clauses, it takes a relative clause CP as its complement as shown in (8)–(12) (see also Williamson 1987 for Lakhota IHRCs, Platero 1974 for Navajo IHRCs, and Gordon & Munro 2016 for Chikasaw and Choctaw IHRCs). In some languages (like Buli and Fɔngbe), a clausal determiner can also take a matrix clause. In the examples below, the clausal determiner "asserts the content of the proposition, relating to something that has been said earlier in the conversation" (Lefebvre 1998; Larson 2003).[7]

(13)   a. *Buli* (Hiraiwa 2005b)
         [[Atim nagi Amoak] la].
         Atim   hit Amoak DEM
         'Atim hit Amoak, as I said.'

---

[6] Other than those Gur languages discussed in this article, Mooré is known to allow IHRCs (Tellier 1989), but it is not discussed in this article, as the first-hand data are not available to us.

[7] The semantics of clausal determiners are quite complex, interacting with the presuppositions of their containing clauses. In addition to the readings in (13b) and (13c), there are two other readings that refer to a VP event and a clausal event. These readings require the object and both the subject and the object to be definite, respectively. See Lefebvre (1998) and Larson (2003) for detailed discussions.

b. *Fɔngbe* (Lefebvre 1998)
[[Súnù ɔ́ gbà   mɔ́tò ɔ́] ɔ́].
man   D destroy car   D D
'Actually, the man destroyed the car.'

c. *Haitian Creole* (Lefebvre 1998)
[[Mounn nan kraze   manchinn nan] an].
man   D   destroy car   D   D
'Actually, the man destroyed the car.'

Compare the examples of relative clauses with clausal determiners in (8)–(11) with the examples of nominal determiners in (14)–(17). Both show morphologically identical determiners/demonstratives.
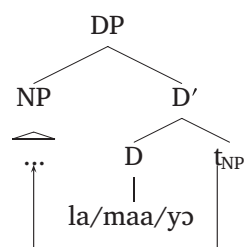
(14)   *Buli*
naa   bu   la
cow   NC   DEM
'that cow'

(15)   *Dagbani*[8]
nimdi maa/la
meat   D
'the/that meat'

(16)   *Gurenɛ*
bua   la
goat D
'the goat'

(17)   *Kabiyé*
ha   nga   yɔ
dog   DEM   D
'that dog over there'

We assume that the post-nominal placement of the nominal determiner is due to movement of NP to the specifier of DP (we assume that D has an EPP/edge feature).[9]

(18)   Structure of DP

---

[8] There is a semantic difference between *maa* and *la*. Both are definiteness markers, but *la* is used when both interlocutors know what is being referred to and its existence is part of the world knowledge of the speaker and the hearer. In that sense, it is more like a distal demonstrative and similar to *yɔ* in the Kabiyé example in (17). In this article, we will use *maa* in all the Dagbani relative clause examples for consistency.
[9] "NP" here is simplified and there should be more functional projections, such as noun class/gender. Some Gur languages (e.g. Buli and Kabiyé) still retain a productive noun class system with different class pronouns and agreement, and others only have a relatively simplified system.

Similarly, the right-edge placement of the clausal determiner in the Gur languages results from essentially the same derivation. In this case, CP moves to the specifier of DP (assuming the same feature on D).

(19)   Structure of IHRC
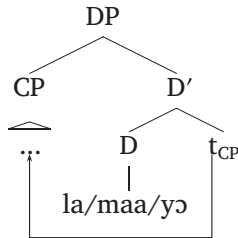
Just as a nominal determiner makes a noun definite, a clausal determiner makes the entire relative clause necessarily definite. The four Gur languages with in-situ IHRCs require the clausal determiner at the edge of the relative clause, as shown in (20)–(23) and hence an indefinite interpretation is not allowed in IHRCs. This indicates that its function is to mark definiteness of the noun phrase modified by the relative clause.[10,11]

(20)   *Buli*
        Amoak nya [DP[CP   Atim ale   sua   naa buui] *(la)].
        Amoak saw   Atim C   own cow REL   DEM
        'Amoak saw the/*a cow that Atim owned.'   (in-situ IHRC)

(21)   *Dagbani*
        [DP[CP   Ata ni nya   yili   sheli] *(maa)] vela.
                  Ata C see.PERF house REL   D   nice
        'The/*A house that Ata saw is nice.'   (in-situ IHRC)

(22)   *Gurɛnɛ*
        [DP[CP   Atia n da'   bua sɛka da'a   zaam]   *(la)] bɔi   mɛ.
                  Atia C buy.PERF goat REL market yesterday D   lose.PERF PRT
        'The/*A goat that Atia bought at the market got lost.'   (in-situ IHRC)

(23)   *Kabiyé*
        [DP[CP   Ma-na   ha nga ɖeɖe]   *(yɔ)], kɛ-goma.
                  1SG-see.PAST dog REL yesterday D   3SG-come.PAST
        'The/*A dog that I saw yesterday came.'   (in-situ IHRC)

---

[10] Lakhota has different clausal determiners used in IHRCs and the interpretation of the relative clause changes accordingly.

  (i) *Lakhota* (Williamson 1987: 171)
       [[Mary owížạ wạ kağe] ki/cha/k'ụ] he   ophewathụ.
       Mary   quilt ID   make D/IND/the-P DEM 1SG-buy
       'I bought {the/a/the (perviously mentioned)} quilt that Mary made.'   (in-situ IHRC)

[11] In some Gur languages such as Dagbani, some verbs may allow an indefinite interpretation under certain metaphorical interpretations, as shown in example (i). We will not go into details here, because relative clauses in Dagbani are generally followed by definite determiners and an investigation of the nature of such a phenomenon as (i) goes beyond the scope of this article.

  (i) *Dagbani*
       [DP[CP   Ata ni bori   pag   so] (maa)] ka   na.
                 Ata C like.IMPERF woman REL D   come LOC
       'The woman that Ata likes has come.'
       'A woman with (some) qualities that Ata likes has come.'   (in-situ IHRC)

Turning our attention to the composition of internal head nouns in these Gur languages, note that they are obligatorily marked by determiner-like elements, glossed as REL(LATIVIZER). Williamson (1987) makes an important observation that internal head nouns in IHRCs must be indefinite and this is called the *Indefiniteness Restriction*. Thus, the definite internal head nouns are excluded as shown below.

(24)   *Buli*[12]
        *Amoak nya [DP[CP   Atim ale sua   naa-mu] la].
        Amoak saw   Atim C   own cow-D   DEM
        'Amoak saw the cow that Atim owned.'   (in-situ IHRC)

(25)   *Dagbani*
        *[DP[CP   Ata ni nya   yili   maa] maa] vela.
               Ata C see.PERF house D   D   nice
        'The house that Ata saw is nice.'   (in-situ IHRC)

(26)   *Gurɛn*
        *[DP[CP   Atia n da'   bua la da'a   zaam]   la] bɔi   mɛ.
               Atia C buy.PERF goat D market yesterday D   lose.PERF PRT
        'The goat that Atia bought at the market got lost.'   (in-situ IHRC)

(27)   *Kabiyé*[13]
        *[DP[CP   Ma-na   ha ńgá ɖeɖe]   yɔ], kɛ-goma.
               1SG-see.PAST dog D   yesterday DEM 3SG-come.PAST
        'The dog that I saw yesterday came.'   (in-situ IHRC)

The relativizers in Gur languages share a function of indefiniteness marking. Indeed, just as Williamson (1987) observes for Lakhota, they are morphologically identical with specific-indefinite determiners in Dagbani and Gurɛn, as shown in examples (28)–(29).

(28)   *Dagbani*
        a.   N   nye   [Ken ni bori   pag   so   maa].
              1SG see.PERF Ken C like.IMPERF woman REL D
              'I saw the woman who Ken likes.'   (in-situ IHRC)

        b.   pa   so
              woman SID
              'a certain woman'

(29)   *Gurɛn*
        a.   [Atia n da'   bua sɛka da'a   zaam   la] bɔi   mɛ.
              Atia C buy.PERF goat REL market yesterday D   lose.PERF PRT
              'The goat that Atia bought at the market got lost.'   (in-situ IHRC)

        b.   bua-sɛka
              goat-SID
              'a certain goat'

The relativizer in Buli is not a specific indefinite determiner per se, but still it yields indefiniteness. As shown in (30), the first part of the relativizer changes according to the

---

[12] This sentence is grammatical under the factive/perceptual interpretation 'Amoak saw Atim owning the cow.' Culy (1990: 203) makes a pertinent observation that "a language will have IHRCs only if it also has other similar nominalized sentences with the independent properties." (see also Gorbet 1977). All the five Gur languages confirm his generalization, as they have factive/perceptual clauses similar to IHRCs. See Hiraiwa (2003; 2005b; 2009a) for more data and discussions.

[13] Note that the distal demonstrative and the relativizer in Kabiyé are morphologically identical but tonally distinguished. The former has HH tone, while the latter has LH tone. See (32) below.

noun class of the head noun it attaches to. Thus, it is possible to analyze the relativizer *baai* as consisting of a noun class pronoun *ba* (accompanied by vowel lengthening) and an element expressing indefiniteness *-i*, which is in parallel with the specific indefinite determiner in Dagbani and Gurenɛ. In fact, Buli expresses an NPI/an indefinite pronoun by combining the relativizer and another noun class pronoun, as shown in (31) (*wa*: Class 1, *ba*: Class 2).

(30) *Buli*
      [Atim ale nya   nur   baai la] sua   buo.
      Atim   C   saw   people REL   DEM own   goat.PL
      'The people who Atim saw owned goats.'   (in-situ IHRC)

(31) *Buli*
      a. Waa waa-i   kan   jam.
          NC   NC-ID   NEG   come
          'No one will come.'

      b. Ba   baa-i   le   jam.
          NC   NC-ID   FUT   come
          'Some (of them) will come.'

The relativizer in Kabiyé does not function as a specific-indefinite determiner by itself, either. But at least it has an indefinite meaning, in that it is the same form as a *wh*-pronoun. As shown in (32), the relativizer in Kabiyé is decomposed into a homorganic nasal morpheme *N* and a noun class pronoun. The homorganic nasal morpheme also appears in demonstratives, *wh*-expressions, numerals, etc. Notice that the *wh*-expression in (32b) is exactly the same as the relativizer in (32a). Furthermore, the distal demonstrative in (32c) is also morphologically identical with the relativizer except the tone on the homorganic nasal morpheme (HL vs. HH).

(32) *Kabiyé*
      a. Mən-zole [ɛ-na   ha   ǹ-gá   tede   yɔ].
          1SG-like   3SG-see.PAST   dog   N-NC   yesterday   D
          'I like the dog that he saw yesterday.'   (relativizer)

      b. Ha   ǹ-gá-a   ɛ-na?
          dog N-NC-F   3SG-see.PAST
          'Which dog did he see?'   (*wh*-pronoun)

      c. Ma-na   ha   ń-gá   yɔ.
          1SG-see.PAST   dog   N-NC   D
          'I saw that dog over there.'   (demonstrative)

Given the semantic difference between (32a)/(32b) and (32c), we assume that the high tone has definite semantics, while the low tone has (specific) indefinite semantics in Kabiyé.[14]

   At the current stage of understanding of the syntax of noun class pronouns, we are not yet in a position to propose a precise position of those relativizers within the noun phrase. This has to be left for future research.

---

[14] This suggests (i).

(i) Definiteness is carried by a high tone in the D-system in Kabiyé.

Sulemana (2016) also reaches the same conclusion for Buli. In fact, definite determiners/demonstratives (as well as focus markers) in all of these Gur languages, including Dagaare discussed in the next section, have high tone. Thus, we can generalize (i) to (ii).

(ii) Definiteness is carried by a high tone in the D-system in Gur languages.

2.2 Left-headed IHRCs

In addition to in-situ IHRCs, all the five Gur languages have what we call left-headed IHRCs (see also Basilico 1996 for The Mesa Grande dialect of Diegueño and Mojave).[15] In the following examples, the relativized head noun appears at the left periphery—left-headed IHRCs. Left-headed relative clauses can be internally-headed or externally-headed, but there is reason to believe that those left-headed relative clauses in the Gur languages are internally-headed, considering some evidence presented in Hiraiwa (2005b; 2009a; 2009b) and Bodomo & Hiraiwa (2010) (see (39c)–(40c) below).

(33)   *Buli*
       Amoak nya [naa buui ate Atim sua   la].
       Amoak saw cow REL C   Atim own DEM
       'Amoak saw the cow that Atim owned.'   (left-headed IHRC)

(34)   *Dagbani*
       N   ŋubi   [nim sheli a   ni she   maa].
       1SG eat.PERF meat REL 2SG C   roast.PERF D
       'I ate the meat that you roasted.'   (left-headed IHRC)

(35)   *Gurenɛ*
       [Bua sɛka ti Atia da'   da'a zaam   la] bɔi   mɛ.
       goat REL C Atia buy.PERF market yesterday D lose.PERF PRT
       'The goat that Atia bought at the market yesterday got lost.'   (left-headed IHRC)

---

[15] Basilico (1996) refers to this kind of movement of H as *head fronting*. In (ib), the relativized head noun is fronted to the left edge position of the relative clause (cf. (ia)). The fact that the fronted H in example (ic) cannot receive subject case-marking from the main clause shows that the head noun still remains internal the the relative clause.

(i)   *The Mesa Grande dialect of Diegueño* (Basilico 1996: 501, 505)
      a. [xaṭcok(-Ø)   wi:m   tuc-pu]-c   nʸiLʸ.
         dog-OBJ   rock-COMIT   I.hit-DEM-SUBJ   black
         'The rock that I hit the dog with was black.'   (in-situ HIRC)

      b. ['wilʸ 'xaṭ(-Ø)   nʸi-m   'tu:-pu]-c   nʸiLʸcis.
         rock dog-OBJ   that-COMIT   I.hit-DEM-SUBJ   black.indeed
         'The rock that I hit the dog with was black.'   (left-headed HIRC)

      c. *['wilʸ-pu-c   'xat(-Ø)   nʸi-m   'tu:-pu]-c   nʸiLʸcis.
         rock-DEM-SUBJ   dog-OBJ   that-COMIT   I.hit-DEM-SUBJ   black.indeed
         'The rock that I hit the dog with was black.'

Tellier (1989) observes that a head noun in IHRCs in Mooré (a Gur language) can undergo VP-internal short movement from the base order in (iia) to the derived order in (iib).

(ii) *Mooré* (Tellier 1989: 310–311)
      a. M   yãã [Maari sen tool kwasã sebr ninga zaame   wã].
         1SG see Mary C   send vendor book REL yesterday D
         'I saw the book that Mary sent to the salesman yesterday.'   (IDO-DO)

      b. M   yãã [Maari sen tool sebr ninga_i kwasã t_i zaame   wã].
         1SG see Mary C   send book REL   vendor   yesterday D
         'I saw the book that Mary sent to the salesman yesterday.'   (DO-IDO)

While the similar "short" head fronting phenomena have been documented in the literature, as Basilico (1996) points out (e.g. Cocopa and the Imperial Valley dialect of Diegueño (Gorbet 1976)), we would like to note here that the five Gur languages discussed in this article fail to replicate such short VP-internal head fronting and parasitic gap licensing as stated in Tellier (1989) (and one of the co-authors' brief consultant work with a Mooré speaker (October, 2003) could not confirm Tellier's data). It remains to be seen if short VP-internal head fronting is a peculiar feature of Mooré IHRCs among Gur languages, calling for more extensive work. It is also worth noting here that none of the relativizers in the five Gur languages has any clear focusing function, contrary to the focusing function ascribed to the relativizer *ninga* in Mooré in Watanabe (2004).

(36)   *Kabiyé*
       [Ha   nga ma-na   tede   yɔ], kɛ-goma.
       dog   REL 1SG-see.PAST   yesterday D   3SG-come.PAST
       'The dog I saw yesterday came.'   (left-headed IHRC)

Dagaare is strikingly different from the other languages in that its in-situ IHRCs are very marginal. Therefore, in this article, only examples of left-headed IHRCs are provided for Dagaare. An example of a left-headed IHRC and a highly marginal in-situ IHRC example in Dagaare are illustrated below (see Bodomo & Hiraiwa 2010: 959 for the left-headed structure of IHRCs and its supporting evidence in Dagaare).

(37)   *Dagaare*
       a. *N   di   la [a Dakoraa nang da   (a) mongo na].
           1SG eat F D Dakoraa C   buy D   mango REL
           'I ate the mango that Dakoraa bought.'   (in-situ IHRC)

       b. N   di   la [a mongo na   Dakoraa nang da].
           1SG eat F D mango REL Dakoraa C   buy
           'I ate the mango that Dakoraa bought.'   (left-headed IHRC)

Thus, left-headed IHRCs in the Gur languages have the following schematic structures.

(38).   a. $[_{DP} [_{CP} H_i\text{-REL} \ldots (C) \ldots t_i \ldots] D]$
                                     (Buli, Dagbani, Gurenɛ, Kabiyé: left-headed IHRC)

         b. $[_{DP} D [_{CP} H_i\text{-REL} \ldots (C) \ldots t_i \ldots]]$
                                     (Dagaare: left-headed IHRC)

One piece of evidence that the relativized head noun of left-headed relative clauses in the Gur languages is still located internally to the relative clause CP comes from pied-piping in PP relativization and possessor relativization (see Hiraiwa 2005b; 2009a; 2009b; Bodomo & Hiraiwa 2010).

In the left-headed IHRC example in (39c)–(40c), the postposition and the possessed noun phrase are pied-piped with the head noun, respectively. If [*gbong kuui zuk*] 'roof REL on' in (39c) were outside the relative clause CP, it would be incompatible with the matrix predicate *zyuagi* 'big' as its subject, just as example (39d) shows. Thus, the pied-piped relativized head noun [*gbong kuui zuk*] in (39c) must be still internal to the relative clause CP. Similarly, in example (40c), [*gban kaai naang-ka*] 'book REL cover-D' appears at the left edge of the relative clause CP, but example (40d) shows that when the verb *da* 'buy' takes the same pied-piped phrase as its object, it necessarily means 'Atim bought the cover of the book'. Again, this shows that [*gban kaai naang-ka*] in (40c) is still inside the relative clause CP.[16]

---

[16] The same evidence is also available in Dagaare, a language that only allows left-headed IHRCs. See Bodomo & Hiraiwa (2010) for more data and detailed discussion.

(i)   *Dagaare*
       a. N   da   la a [lɔɔre na   [Dakoraa nang gang   o   poɔ]].
           1SG buy.PERF F   D car   DEM Dakoraa C   lie.PERF 3SG in
           'I bought the car in which Dakoraa slept.'

       b. N   da   la a [lɔɔre na   poɔ [Dakoraa nang gang]].
           1SG buy.PERF F   D car   DEM in Dakoraa C   lie.PERF
           'I bought the car in which Dakoraa slept.'

       c. *N   da   la a lɔɔre na   poɔ.
           1SG buy.PERF F   D car   DEM in
           '*I bought the car.'

An anonymous reviewer asks whether the interpretive differences between (39c)/(40c) and (39d)/(40d) is due to the difference between the relativizing suffix and the definite determiner. However, Dagaare shows that it is not the case, because Dagaare lacks a dedicated relativizing suffix.

(39)   *Buli*
    a. [N   ale   gwa   gbong   kuui   zuk   la]   zyuagi.
        1SG   C   slept   roof   REL   on   DEM   big
        'The roof that I slept on is big.'

    b. [Gbong   kuui   ate   n   gwa   ku   zuk   la]   zyuagi.
        roof   REL   C   1SG   slept   3SG   on   DEM   big

    c. [[Gbong   kuui   zuk]   ate   n   gwa   la]   zyuagi.
        roof   REL   on   C   1SG   slept   DEM   big

    d. *[Gbong-ka   kuui   zuk]   zyuagi.
        roof   REL-D   on   big
        '*The roof is big'

(40)   *Buli*
    a. Atim   da   [Amoak   ale   ngmirisi   gban   kaai   naang-ka   la].
        Atim   bought   Amoak   C   designed   book   REL   cover-D   DEM
        'Atim bought the book whose cover Amoak designed.'

    b. Atim   da   [gban   kaai   ate   Amoak   ngmirisi   *(ka)   naang-ka   la].
        Atim   bought   book   REL   C   Amoak   designed   3SG   cover-D   DEM

    c. Atim   da   [[gban   kaai   naang-ka]   ate   Amoak   ngmirisi   la].
        Atim   bought   book   REL   cover-D   C   Amoak   designed   DEM

    d. Atim   da   [gban-ka   naang-ka].
        Atim   bought   book-D   cover-D
        'Atim bought the cover of the book'.
        '*Atim bought the book (with the cover).'

These facts indicate that left-headed relative clauses are internally-headed in the Gur languages. In the remainder of this article, we will mainly use in-situ IHRCs (Buli, Dagbani, Gurenɛ, and Kabiyé) and left-headed IHRCs (Dagaare), in examining the existing typological generalizations.

Before closing this subsection, let us comment on some differences exhibited by Dagaare. The definite determiner *a* in Dagaare also functions as a clausal determiner in relative clauses, just as in the other Gur languages. This determiner is, again, obligatory in relative clauses, as shown in (41). Within a DP, the same element functions as a nominal determiner.
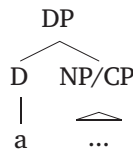
(41)   *Dagaare*
    N   di   la [$_{DP}$ *(a) [$_{CP}$ mongo   na   Dakoraa   nang   da]].
    1SG   eat   F   D   mango   REL   Dakoraa   C   buy
    'I ate the mango that Dakoraa bought.'   (left-headed IHRC)

(42)   *Dagaare*
    a   mongo   na
    D   mango   DEM
    'that mango'

Dagaare is distinct, however, in that the determiner precedes an NP and a CP, unlike the other four Gur languages. We can make sense of this fact if we assume that D in Dagaare uniformly lacks an EPP/edge feature and does not attract NP/CP to its specifier.

(43)   Structure of DP/CP (Dagaare)

```
        DP
       /\
      /  \
    D    NP/CP
    |     /\
    a    ...
```

The relativizer *na* in Dagaare is also in a sharp contrast with the other Gur languages in that it is identical with the distal demonstrative *na* and optional even in definite relative clauses (and its omission does not affect semantics), as shown in (44a)–(44b). In other words, Dagaare lacks a dedicated relativizer element. Neither does it have any indefiniteness function, unlike the other Gur languages.[17] Thus, this morpheme is completely distinct from the specific-indefinite determiner *kanga* in (44c).
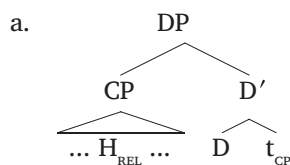
(44)   *Dagaare*
   a. N   di   la   [a   mongo   (na)   Dakoraa   nang   da].
       1SG   eat   F   D   mango   REL   Dakoraa   C   buy
       'I ate the mango that Dakoraa bought.'   (left-headed IHRC)

   b. a   mongo   na
       D   mango   DEM
       'that mango'

   c. (a)   mongo   kanga
       D   mango   SID
       'a certain mango'

Each of these asymmetries between Dagaare and the other Gur languages might be contributing factors for the absence of in-situ IHRCs in Dagaare. The internal head noun, being definite and unmarked in Dagaare, must always be positionally marked at the left periphery of the relative clause (see Basilico 1996). But we do not have any conclusive evidence at this moment (see also Hiraiwa 2009a; b for relevant discussions).
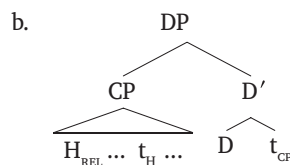
2.3 Structure of IHRCs in Gur and summary

Given the right-most placement of the determiner in these Gur IHRCs (except Dagaare), we have proposed that the word order is derived from a remnant CP movement, as shown in (36a)–(36b). In-situ IHRCs have H in-situ within CP, while left-headed IHRCs have H dislocated to the left-edge of CP (and H remains there). Dagaare, which only has left-headed IHRCs, is different in that CP does not undergo movement to the specifier of DP, while H is obligatorily dislocated to the edge of CP, as shown in (46). The movement of the head noun to the specifier of CP is probably best analyzed as A-bar movement because Gur languages lack scrambling and the movement of H requires the same complementizers as the ones required by *wh*-movement and focus movement (see Hiraiwa 2005b).
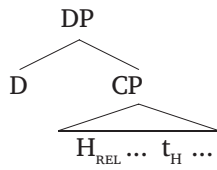
(45)   In-situ IHRC   Left-headed IHRC

   a.   DP   b.   DP
              /   \   /   \
            CP   D′   CP   D′
           / \   / \   / \   / \
      ... H_REL ... D t_CP   H_REL ... t_H ... D t_CP

---

[17] For this reason, in Bodomo & Hiraiwa (2010), *na* in relative clauses is glossed as DEM(ONSTRATIVE). In this article, we will gloss it as REL(ATIVIZER) for consistency. See Bodomo & Hiraiwa (2010) for relevant discussion.

(46)   Left-headed IHRC (Dagaare)

```
            DP
           /  \
          D    CP
               / \
          H_REL ... t_H ...
```

We have shown that the four Gur languages (except Dagaare) have both in-situ IHRCs and left-headed IHRCs. In the remainder of this article, we will focus on examples of in-situ IHRCs (except Dagaare) as they are uncontroversially internally-headed.

3 Syntactic generalizations and counter-examples

In this section, we examine syntactic and semantic generalizations proposed in the previous literature and argue that Gur languages provide important counter-evidence against them.
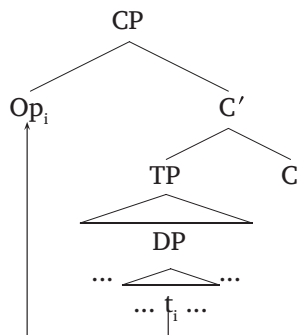
As mentioned in Section 1, the Gur languages refute the word order generalization because they have consistent VO order and disallow null pronouns. In addition to the word order generalization, there have been other typological generalizations proposed in the literature on IHRCs (see also Basilico 1996; Watanabe 2004 for summaries). In this section, we will test each of the generalizations against IHRCs in Gur and show that none of them predicts that IHRCs are allowed in Gur.

Watanabe (1991) proposed that a mechanism of *wh*-in-situ is crucially at work in making IHRCs available.
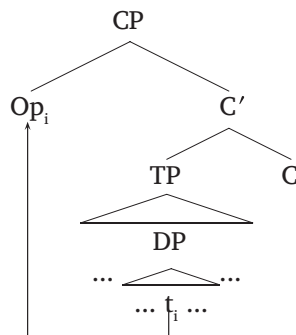
(47)   *Wh*-in-situ Generalization (Watanabe 1991)
        IHRCs are limited to languages with *wh*-in-situ.

In *wh*-in-situ languages, only a null operator moves to the specifier of CP in *wh*-questions, leaving the *wh*-phrase itself in-situ. Watanabe argues that the same happens in IHRCs: only a null operator moves, making it possible to leave the head noun in-situ, as shown in (48).

(48)   a. *Wh*-question   b. IHRCs

```
            CP                                   CP
           /  \                                 /  \
        Op_i    C'                           Op_i    C'
          ↑    /  \                            ↑    /  \
          |  TP    C                           |  TP    C
          |  / \                               |  / \
          | DP                                 | DP
          |/  \                                |/  \
        ... /\ ...                           ... /\ ...
         ... t_i ...                          ... t_i ...
```

As his generalization predicts, *wh*-movement is optional in all the Gur languages above (except Dagaare), as shown in (49)–(52). Overt *wh*-movement in Gur, unlike relativization, is either accompanied by focus marking or a different complementizer, but an overt complementizer does not appear in *wh*-in-situ.[18]

---

[18] Bodomo (1997) notes an example of *wh*-in-situ.

(i)   *Dagaare* (Bodomo 1997)
       Fo   yuori la   bong?
       2SG   name   F   what
       'What is your name?'   (*Wh*-in-situ)

(49) *Buli*
  a. Ka   wana ate   Amoak   nya?
      F   who   C   Amoak   saw
      'Who did Amoak see?'   (*wh*-movement)

  b. Amoak nya ka   wana?
      Amoak saw F   who
      'Who did Amoak see?'   (*wh*-in-situ)

(50) *Dagbani*
  a. Bo   ka   a   da?
      what C   2SG buy.PERF
      'What did you buy?'   (*wh*-movement)

  b. A   da   bo?
      2SG buy.PERF   what
      'What did you buy?'   (*wh*-in-situ)

(51) *Gurenɛ*
  a. Ani   ti   fu   nyɛ?
      who   C   2SG   see.PERF
      'Who did you see?'   (*wh*-movement)

  b. Fu   nyɛ   la   ani?
      2SG   see.PERF   F   who
      'Who did you see?'   (*wh*-in-situ)

(52) *Kabiyé*
  a. Anɛ-ɛ   ɛso   na?
      who-F   Eso   see.PAST
      'Who did Eso see?'   (*wh*-movement)

  b. ɛso   na   anɛ?
      Eso   see.PAST   who
      'Who did Eso see?'   (*wh*-in-situ)

(53) *Dagaare*
  a. Bong   la   ka   fo   da   nyɛ?
      what   F   C   2SG   PAST   see
      'What did you see?'   (*wh*-movement)

  b. *Fo   da   nyɛ la bong?
      2SG   PAST   see F   what
      'What did you see?'   (*wh*-in-situ)

The null operator movement also explains why IHRCs in some languages are island-sensitive. Both *wh*-movement and IHRCs show island-sensitivity (Hiraiwa 2003; 2005b; 2009a; 2009b; in press; *wh*-question in Buli, see Sulemana 2016; in prepration). The following examples demonstrate that *wh*-movement out of a relative clause is simply ungrammatical, whether it is overt or covert.

This seems to be limited to a copular construction, however, and in fact, *wh*-movement results in ungrammaticality in this case.

(ii)   *Dagaare* (Bodomo 1997)
       *Bong   la   fo   yuori?
       what   F   2SG   name
       'What is your name?'   (*wh*-movement)

Given that *wh*-in-situ is generally not good in Dagaare, we leave open how (i) is analyzed.

(54)   *Buli*
     a. *Ka wana ate Amoak nya [t$_i$ ale sua   naa buui la]?
          F   who C   Amoak saw   C   own cow REL DEM
          '(Lit.) Who did Amoak see the cow that owned?'

     b. *Amoak nya [ka wana ale sua   naa buui la]?
          Amoak saw   F   who C   own cow REL DEM
          '(Lit.) Who did Amoak see the cow that owned?'

(55)   *Dagbani*
     a. *ŋuni$_i$ ka Ata di   [t$_i$ ni dugi   sag sheli asibaashi ŋo   maa]?
          who C Ata eat.PAST   C cook.PAST TZ REL   morning DEM D
          '(Lit.) Who did Ata ate the TZ that cooked this morning?'

     b. *Ata di   [ŋuni ni dugi   sag sheli asibaashi ŋo   maa]?
          Ata eat.PAST who C cook.PAST TZ REL   morning DEM D
          '(Lit.) Who did Ata ate the TZ that cooked this morning?'

(56)   *Gurenɛ*
     a. *An$_i$ ti fu nyɛ   [t$_i$ n da'   bua sɛka da'a   zaam   la]?
          who C 2SG see.PERF   C buy.PERF goat REL market yesterday D

     b. *Fu nyɛ   [ani n da'   bua sɛka da'a   zaam   la]?
          2SG see.PERF   who C buy.PERF goat REL market yesterday D
          '(Lit.) Who did you see the goat that bought at the market?'

(57)   *Kabiyé*
     a. *Anɛ-ɛ$_i$ ɛso ɖo [t$_i$ yaba   mangu ŋgʊ yɔ]?
          who-F Eso ate   bought mango REL D
          '(Lit.) Who did Eso ate the mango that bought?'

     b. *ɛso ɖo   [anɛ(-ɛ) yaba   mangu ŋgʊ yɔ]?
          Eso ate   who-F bought mango REL   D
          '(Lit.) Who did Eso ate the mango that bought?'

(58)   *Dagaare*
     a. *Bong$_i$ la ka fo   da   nyɛ [a pɔgɔ   na   nang ngmaa t$_i$ deyang]?
          what F C   2SG PAST see D woman REL   C   wrote   last.year
          'What did you see the woman that wrote last year?'

     b. *Fo   da   nyɛ [a pɔgɔ   na nang ngmaa bong deyang]?
          2SG PAST see D woman REL C   wrote   what last.year
          'What did you see the woman that wrote last year?'

Although the Gur languages apparently conform to the *wh*-in-situ generalization, the generalization itself is not without an exception: as Watanabe (2004) admits, Imbabura Quechua has obligatory *wh*-movement, while it allows IHRCs (Cole & Hermon 1994). In light of this, Watanabe (2004) extends the notion of *wh*-in-situ and its analysis in (41a) to focus-in-situ as well. This is because Imbabura Quechua still allows focus-in-situ, while it has obligatory *wh*-movement. He argues that *wh*-in-situ and focus-in-situ share the same mechanism in which some element agrees with/ checks a feature without movement as shown in (48). Furthermore, being a *wh*-in-situ or focus-in-situ language is not sufficient for a language to have IHRCs because there are languages like Mandarin Chinese, which is a *wh*-in-situ language, but lacks IHRCs.

Watanabe, then, goes on to argue that languages also make use of the same mechanism in determiner systems, proposing the HIRC-Indeterminate Generalization.

(59)   HIRC-Indeterminate Generalization (Watanabe 2004: 88) Languages with an indeterminate system make available for ordinary nominal expressions the long-distance dependency (checking or binding) used by the indeterminate. This recruitment makes HIRC possible.

The correlations are illustrated in the following table in (60). Note that in these languages with IHRCs, *wh*-pronouns and indefinite pronouns show morphological similarity. Such a system is called an *indeterminate system* in Watanabe (2004). Setting theoretical details aside, the generalization in (59) states that IHRCs are only found in languages in which indefinite pronouns are built based on *wh*-pronouns. Under this generalization, English lacks IHRCs because it does not have an indeterminate system. Mandarin Chinese, although it has an overt indeterminate system, disallows IHRCs because it lacks a determiner system that instantiates the long-distance dependency required by (59).

(60)   HIRC-Indeterminate Generalization and cross-linguistic patterns

	Wh-pronoun	Indefinite Pronoun	IHRC	D
Lakhota	taku 'what'	taku 'something'	✓	✓ binding
Japanese	nani 'what'	nani-ka 'something'	✓	✓ checking
I. Quechua	pi-taj 'who'	pi-pash 'someone'	✓	✓ checking
Chinese	shenme 'who'	shenme 'someone'	*	*
English	who	someone	*	✓

None of the five Gur languages, however, possesses an indeterminate system. The data in the following table indicate that their *wh*-pronouns and indefinite pronouns show no morphological similarity. Thus, the Gur data demonstrate that the HIRC-Indeterminate generalization must be reconsidered.

(61)   HIRC-Indeterminate Generalization and Gur

	Wh-pronoun	Indefinite Pronoun	IHRC	D
Buli	boan 'what'	jaab 'something'	✓	✓
Kabiyé	abɛ 'what'	nabeyo 'something'	✓	✓
Dagbani	bo 'what'	binsheli 'something'	✓	✓
Gurenɛ	beni 'what'	sɛla 'something'	✓	✓
Dagaare	bong 'what'	bone kanga 'something'	✓	✓

In conclusion, we have shown that IHRCs in Gur disconfirm two of the existing syntactic generalizations—the word order generalization and the indeterminate generalization, while the *wh*-in-situ generalization is refuted by Imbabura Quechua.[19]

---

[19] An anonymous reviewer raises a question whether the word order generalization could be reinterpreted as a generalization about the directionality of D: IHRCs may be found only in D-final languages. While this can straightforwardly explain the absence of in-situ IHRCs in Dagaare (because it is the only D-initial language

4 A comparative syntax-semantics of IHRCs in Gur and Japanese

As we have seen above, the Gur languages pose an important challenge for existing syntactic typological generalizations. Grosu (2002), in contrast, investigates semantic aspects of IHRCs and their correlations with syntactic properties. He proposes to classify IHRCs into two different semantic types: restrictive IHRCs and maximalizing IHRCs.

   Restrictive IHRCs allow existential interpretation, while maximalizing IHRCs do not. Consider the following paradigm from Grosu (2002). While Lakhota IHRCs allow existential interpretation as shown in (62), Quechua IHRCs do not. In other words, the Quechua example in (63) cannot be continued by '… and two were bad.' (Srivastav 1991:683).

(62)   *Lakhota* (Restrictive IHRC) (Williamson 1987)
   a.   [[Thaspa wa-ži   tayayužaža pi] cha] wachi.
         apple   ID-IRRE well.wash   PL   IND 1SG.want
         'I want an apple that is well washed.'

   b.   [[[[wowapi wa Deloria owa] cha] blawa]   ki/cha] …
         book   ID Deloria wrote IND 1SG.read D/IND
         'The/A book that Deloria wrote that I have read …'

(63)   *Quechua* (Maximalizing IHRC) (Srivastav 1991)
   [Nuna ishkay bestya-ta   ranti-shqa-n alli] bestya-m   ka-rqo-n.
   man   two   horse-ACC   buy-PERF-3   good horse-VALID be-PAST-3
   'The two horses that the man bought were good horses.'

According to Grosu (2002), there are further interesting correlations between the semantic types and syntactic properties. As shown in table (64), restrictive IHRCs allow existential interpretation and stacking, and are insensitive to island. Maximalizing IHRCs do not allow existential interpretation or stacking, and exhibit island-sensitivity.

(64)   Grosu's semantic typology of HIRCs (Grosu 2002)

	Interpretation	∃	Island	Stacking
Lakhota, Mojave, etc.	Restrictive	✓	*	✓
Quechua, Japanese etc.	Maximalizing	*	✓	*

In the rest of this article, we will examine whether the predicted correlations exist in Gur IHRCs, through a comparison with Japanese. Given the island-sensitivity of IHRCs in Gur (Section 3.1) and Japanese (Watanabe 1991, Kuroda 1999), it is predicted that they belong to the maximalizing type.[20] In other words, Grosu's (2002) typology expects Gur IHRCs (i) to resist existential interpretation and (ii) to disallow stacking. Moreover, they should also pattern with IHRCs in Japanese (as well as Quechua and Navajo) in other important respects. As we will see, however, the expected correlations are not observed.

---

among the five Gur languages), we are aware of a number of D-initial languages that have IHRCs. Passamaquoddy is one such language (Bruening 2001). *The Word Atlas of Linguistic Structures* (WALS) also lists 10 languages that are D-initial and have IHRCs (accessed on July 29, 2016).

[20] Island-(in)sensitivity of Japanese IHRCs has been a point of controversy. Uchibori (1991), Mihara (1994), and Hoshi (1995) argue that IHRCs in Japanese are not sensitive to islands. But Kuroda (1999) has detailed counterarguments that they are indeed subject to the Complex NP Constraint. We also add here that constructing an island-insensitive example of IHRC requires a lot of control over contexts and other factors, while it is quite simple to show that EHRCs in Japanese are island-insensitive.

4.1 Existential interpretation

First of all, we show that semantic interpretation of Gur IHRCs is the same as Japanese IHRCs: IHRCs in these languages do not allow existential interpretation. In example (65a), the second sentence leads to a contradiction because the IHRC indicates that the three mangoes are the only mangoes that were there. On the other hand, the EHRC is felicitous in the same discourse as shown in example (65b).

(65)   *Japanese*
  a. #[Ken-ga   mittu-no mangoo-o   kattekitekure-ta no]-wa tabe-ta   ga,
     Ken-NOM 3-GEN   mango-ACC buy.come-PAST   C-TOP   eat-PAST   but
     (hoka-no) mittu-wa tabe-nakat-ta.
     other   3-TOP   eat-NEG-PAST
     'I ate three mangoes that Ken bought for me, but I didn't eat other three.'
                                                                              (IHRC)

  b.   [[Ken-ga kattekitekure-ta] mittu-no mangoo]-wa   tabe-ta   ga,
        Ken-NOM buy.come-PAST   3-GEN   mango-ACC-TOP eat-PAST   but
        (hoka-no) mittu-wa   tabe-nakat-ta.
        other   3-TOP   eat-NEG-PAST
        'I ate three mangoes that Ken bought for me, but I didn't eat other three.'
                                                                              (EHRC)

IHRCs in the five Gur languages all disallow existential interpretation, however. Note that the IHRCs themselves are perfectly fine, irrespective of the position of the head noun, in-situ (66a)–(69a) or left-headed (66b)–(70).

(66)   *Buli*
  a. #[Atim ale da   mango-ta nga-ta tii   la]   masa. Alege nga-ta an
     Atim   C   bought mango-PL NC-3   REL   DEM good but   NC-3 NEG
     masa.
     good
     'Three mangoes that Atim bought were good. But three were not good.'
                                                                    (in-situ IHRC)

  b. #[Mango-ta nga-ta tii   ate Atim da   la]   masa. Alege nga-ta an
     mango-PL NC-3   REL C   Atim bought DEM good but   NC-3   NEG
     masa.
     good
     'Three mangoes that Atim bought were good. But three were not good.'
                                                                  (left-headed IHRC)

(67)   *Dagbani*
  a. #[Ata ni da   moonsi   ayi shenga maa] vela, ka diba   ayi
     Ata   C   buy.PERF mango.PL 2   REL   D   good but NC.PL 2
     mii   bi vela.
     contrast NEG good
     'Two mangoes that Ata bought were good. And two were not good.'
                                                                    (in-situ IHRC)

  b. #[Moonsi   ayi shenga Ata ni da]   maa vela, ka diba   ayi mii
     mongo.PL 2   REL   Ata C bought D   good but NC.PL 2   contrast
     bi   vela.
     NEG good
     'Two mangoes that Ata bought were good. And two were not good.'
                                                                  (left-headed IHRC)

(68)   *Gurenɛ*

    a. #[Atia n da'   mɔn   seko bayi la] ani suŋa.   Dee/Gee bayi
       Atia C buy.PERF mango.PL REL 2   D COP good/nice and   2
       n ka   suŋa.
       F NEG good/nice
       'Two mangoes that Atia bought were good. But two were not good.'

                                        (in-situ IHRC)

    b. #[Mɔn   seko bayi ti Atia da'   la] ani suŋa.   Dee/Gee bayi
       mango.PL REL 2   C Atia buy.PERF D COP   good/nice and   2
       n ka   suŋa.
       F NEG good/nice
       'Two mangoes that Atia bought were good. But two were not good.'

                                      (left-headed IHRC)

(69)   *Kabiyé*

    a. #[ɛso yaba   mangu-wa naalɛ mba yɔ] pɛ-wɛ ɖeu, ɛlɛ naalɛ fɛı   ɖeu.
       Eso bought mango-PL 2   REL D 3SG-be good but 2   be.NEG good
       'Two mangoes that Eso bought were good, but two were not good.'

                                        (in-situ IHRC)

    b. #[Mangu-wa naalɛ mba ɛso yaba   yɔ] pɛ-wɛ ɖeu, ɛlɛ naalɛ fɛı   ɖeu.
       mango-PL 2   REL Eso bought D 3SG-be good but 2   be.NEG good
       'Two mangoes that Eso bought were good, but two were not good.'

                                      (left-headed IHRC)

(70)   *Dagaare*

    #[A   mongo-ri ata na Dakoraa nang da] veɛlɛ   la kyɛ ka ata na   meng
    D   mongo-PL 3   REL Dakoraa C   buy be.good F but and 3   DEM also
    ba   veɛlɛ.
    NEG be.good
    'Three mangoes that Dakoraa bought were good, but three were not good.'

                                      (left-headed IHRC)

The Gur languages exactly pattern with Japanese IHRCs in the absence of existential interpretation. This means that the IHRCs in these languages belong to the maximalizing type, in Grosu's typology.

4.2 Stacking of IHRCs

With this in mind, let us look at stacking of IHRCs. According to the semantic typology in (64), IHRCs of the maximalizing type are expected not to allow stacking. This prediction, however, is not completely borne out by the Gur languages.

    Buli, Dagbani, and Gurenɛ permit stacking of relative clauses as shown in examples (71)–(73), where two relative clauses are stacked without any overt coordinator.[21]

(71)   *Buli*

    a. [Atim ale dɛ [Amoak ale da   mango kuui diem]   la]   masa.
       Atim C   ate Amoak C   bought mango REL yesterday DEM delicious
       'The mango that Atim ate that Amoak bought yesterday was delicious.'

                                        (in-situ IHRC)

---

[21] Notice the absence of a clausal determiner in the inner IHRCs. Recall, as we observed in Section 2, that a clausal determiner makes the entire relative clause definite. If there were a clausal determiner in an inner IHRC in the stacking examples, that would violate the so-called Indefiniteness Restriction (see Williamson 1987), because the inner IHRC would become definite. In other words, stacking data show that the Indefiniteness Restriction is also at work in the Gur languages.

     b.   [Atim ale dɛ [mango kuui ate Amoak da   diem]   la] masa.
           Atim C   ate mango REL C   Amoak bought yesterday DEM delicious
           'The mango that Atim ate that Amoak bought yesterday was delicious.'
                                                    (left-headed IHRC)

(72)   *Dagbani*
     a.   [N ni di   [Ata ni da   moon sheli] maa] nyagsa.
           1SG C eat.PERF Ata C buy.PERF mango REL   D   delicious
           'The mango that I ate that Ata bought is delicious.'   (in-situ IHRC)
     b.   [N ni di   [moon sheli Ata ni da]   maa] nyagsa.
           1SG C eat.PERF mango REL Ata C buy.PERF D   delicious
           'The mango that I ate that Ata bought is delicious.'   (left-headed IHRC)

(73)   *Gurenɛ*
     a.   [Ma n di   [Atia ni da'   mɔnkɔ sɛka] la] ani suŋa.
           1SG C eat.PERF Atia C buy.PERF mango REL   D F   good
           'The mango that that I ate that Atia bought was good.'   (in-situ IHRC)
     b.   [Ma n di   [mɔnkɔ sɛka ti Atia da']   la] ani suŋa.
           1SG C eat.PERF mango REL C Atia buy.PERF D F   good
           'The mango that I ate that Atia bought was good.'   (left-headed IHRC)

Given that coordination of clauses in these languages require overt coordinators, it is reasonable to think that the relative clauses above are stacked.

In contrast, Kabiyé and Dagaare do not allow stacking of relative clauses. Instead, both languages require the coordinator *ni/ka*, as shown below.[22]

(74)   *Kabiyé*
     [mangu ngʊ [ɛso yaba]   *(ni) [mɪn-dɔ] yɔ] ki-wɛ ɖeu.
     mango REL Eso bought   and 1SG-ate D   3SG-be good
     'The mango that Eso bought that I ate was good.'   (left-headed IHRC)

(75)   *Dagaare*
     [A mongo na   [n nang di] *(ka) [Dakoraa nang da]] veɛlɛ la.
     D   mango DEM 1SG C   eat and Dakoraa C   buy good F
     'The mango that I ate that Dakoraa bought was good.'   (left-headed IHRC)

While the split among the Gur languages remains to be explained ultimately, it is at least worth pointing out that there is no principled correlation between stackability of IHRCs and the other properties of the IHRCs. Thus, the data from the Gur languages call the semantic typology into question.

In fact, Japanese also refutes the alleged correlation between maximalizing IHRCs and stackability. In the following example, an IHRC is stacked by another IHRC.[23]

---

[22] Example (i) becomes fine, if a heavy pause with a comma is placed after yɔ. In that case, however, it is likely to be two sentences ('Eso bought the mango that I ate' and 'it was good') rather than a single sentence with stacking of relative clauses.

  (i)   *Kabiyé*
     *[[ɛso yaba   mangu] ngʊ mɪn-dɔ yɔ] ki-wɛ   ɖeu.
     Eso   bought mango REL 1SG-ate D   3SG-be good
     'The mango that Eso bought that I ate was good.'   (in-situ IHRC)

[23] Grosu (2002: 154) in fact presents a Japanese example, which is supposed to show that IHRCs in Japanese cannot stack (grammatical errors in the original example are corrected).

  (i)   *Japanese* (Grosu 2002: 154)
     *[John-ga [Mary-ga nagai ronbum-o yonda no]-o kaita no]-ga LI-ni   notta.
     John-NOM Mary-NOM long paper-ACC read   C-ACC wrote C-NOM LI-LOC appeared
     'The long paper that John wrote that Mary read appeared in LI.'

(76)   *Japanese*
       Ken-wa   [Naomi-ga   [teeburu-no   ue-ni   ringo-ga   at-ta   no]-o
       Ken-TOP   Naomi-NOM   table-GEN   on-DAT   apple-NOM   be-PAST   C-ACC
       kitte-kure-ta   no]]-o   tabe-ta.
       cut-BEN-PAST   C-ACC   eat-PAST
       'Ken ate the apple that was on the table that Naomi cut for him.'

4.3 Question-answer

Another hallmark property of maximalizing IHRCs is that they cannot be used as an answer to a *wh*-question, as they are not semantically restrictive. Matsuda (2002) makes an observation that an IHRC in Japanese cannot be used as an answer to a *wh*-question. Consider the discourse in (77). Japanese IHRCs are allegedly not restrictive (Kuroda 1992; Shimoyama 1999; Grosu 2002) and they are not felicitous when used to answer a *wh*-question (see Hiraiwa in press).

(77)   *Japanese*
       a.   Dono   ringo-o   tabe-ta   no?
            which   apple-ACC eat-PAST   C?
            'Which apple did you eat?

       b.   [[Teeburu-no-ue-ni   at-ta]   ringo]-o   tabe-ta   yo.
            table-GEN-on-LOC   be-PAST   apple-ACC   eat-PAST   PRT
            'I ate the apple that was on the table.'   (EHRC)

       c.   #[Ringo-ga   teeburu-no-ue-ni   at-ta   no]-o   tabe-ta   yo.
            apple-NOM   table-GEN-on-LOC   be-PAST   C-ACC   eat-PAST   PRT
            'I ate the apple that was on the table.'   (IHRC)

In all of the five Gur languages, however, it is perfectly grammatical to answer a *wh*-question with an IHRC.

(78)   *Buli*
       a.   Ka mango kuna   ate fi   de?
            F   mango which   C   2SG   eat
            'Which mango did you eat?'

       b.   N   de-ka [Atim ale da   mango kuui la].
            1SG eat-F Atim C   buy mango REL   D
            'I ate the mango that Atim bought.'   (in-situ IHRC)

       c.   N   de-ka [mango kuui ate Atim da   la].
            1SG eat-F mango REL   C   Atim buy   D
            'I ate the mango that Atim bought.'   (left-headed IHRC)

However, this example is ungrammatical not because of the stacking, but because of two other conditions being not satisfied. First, there is a conflict in the temporal order of the events expressed by the relative clauses. It would mean that Mary read a long paper before John wrote it. Second, the two IHRCs do not satisfy Kuroda's Relevancy Condition (Kuroda 1974; 1975–76; 1976–77; 1992).

(ii)   The Relevancy Condition (Kuroda 1975–76: 86)
       For a pivot-independent [KH: internally-headed] relative clause to be acceptable, it is necessary that it be interpreted pragmatically in such a way as to be directly relevant to the pragmatic context of its matrix clause.

(79) *Dagbani*

    a. Sag dini   ka a   di?
        TZ   which F   2SG eat.PERF
        'Which TZ did you eat?'

    b. N   di   [Ata ni dugi   sag sheli maa].
        1SG   eat.PERF Ata C cook.PERF TZ REL   D
        'I ate the TZ that Ata cooked.'   (in-situ IHRC)

    c. N   di   [sag sheli Ata ni dugi   maa].
        1SG   eat.PERF TZ   REL Ata C cook.PERF D
        'I ate the TZ that Ata cooked.'   (left-headed IHRC)

(80) *Gurenɛ*

    a. Na   kuna   ti   fu   nyɛ?
        goat which C   2SG see.PERF
        'Which goat did you see?'

    b. N   nyɛ   [Atia n da'   bua sɛka da'a   zaam   la].
        1SG see.PERF Atia C buy.PERF goat REL market yesterday D
        'I saw the goat that Atia bought at the market.'   (in-situ IHRC)

    c. N   nyɛ   [bua sɛka ti Atia da'   da'a   zaam   la].
        1SG see.PERF goat REL C Atia buy.PERF market yesterday D
        'I saw the goat that Atia bought at the market.'   (left-headed IHRC)

(81) *Kabiyé*

    a. Halu   wei   n-zɔle?
        woman which 2SG-like
        'Which woman did you like?'

    b. Man-zɔle [ma-na   halu   wei ɖeɖe   yɔ].
        1SG-like   1SG-saw woman REL yesterday D
        'I like the woman who I saw yesterday.'   (in-situ IHRC)

    c. Man-zɔle [halu   wei ma-na   ɖeɖe   yɔ].
        1SG-like   woman REL 1SG-saw yesterday D
        'I like the woman who I saw yesterday.'   (left-headed IHRC)

(82) *Dagaare*

    a. Mongo boo   la ka fo   di?
        mango which F   C   2SG eat
        'What did you eat?'

    b. N   di   la [a mongo na Dakoraa nang da].
        1SG   eat F   D mango REL Dakoraa C   buy
        'I ate the mango that Dakoraa bought.'   (left-headed IHRC)

This would be unexpected if IHRCs in Gur were really of the maximalizing type as those in Japanese are. The fact that they can answer a *wh*-question indicates that they are restrictively interpreted, just as English relative clauses can answer a *wh*-question, as shown in example (83).

(83) Q: Which apple did you eat?
    A: I ate the apple that John bought for me.

4.4 *Negation and IHRCs*

Finally, Japanese IHRCs are incompatible with sentential negation.

(84)   *Japanese (see Hoshi 1995; Shimoyama 2001)*
   a.   #Boku-wa [Ken-ga   ronbun-o   yondeinakatta   no]-o   yon-da.
         1SG-TOP Ken-NOM paper-ACC read.NEG.PAST C-ACC read-PAST
         'I read a paper that Ken had not read.'   (IHRC)

   b.   Boku-wa [[Ken-ga   yondeinakatta]   ronbun]-o   yon-da.
         1SG-TOP Ken-NOM read.NEG.PAST paper-ACC read-PAST
         'I read a paper that Ken had not read.'   (EHRC)

Again, it is surprising that none of the IHRCs in those Gur languages shows sensitivity to negation. Thus, negation does not cause semantic crash.[24]

(85)   *Buli*
   a.   Amoak nya [Atim ale kan sua   naa buui la].
         Amoak saw Atim C   NEG own cow REL DEM
         'Amoak saw the cow that Atim did not own.'   (in-situ IHRC)

   b.   Amoak nya [naa buui ate Atim an   sua   la].
         Amoak saw cow REL C   Atim NEG own DEM
         'Amoak saw the cow that Atim did not own.'   (left-headed IHRC)

(86)   *Dagbani*
   a.   [Ata ni bi   tu   do   so] kpe   na.
         Ata C   NEG insult.PERF man REL enter.PERF LOC
         'A man that Ata has not insulted has entered.'   (in-situ IHRC)

   b.   [Do so   Ata ni bi   tu]   kpe   na.
         man REL Ata C   NEG insult.PERF enter.PERF LOC
         'A man that Ata has not insulted has entered.'   (left-headed IHRC)

(87)   *Gurenɛ*
   a.   [Atia n ka   da'   mɔn   seko la] ani suŋa.
         Atia C NEG buy.PERF mango.PL REL D   be good
         'The mangoes that Atia did not buy were good.'   (in-situ IHRC)

   b.   [Mɔn   seko la ti Atia ka   da'   la] ani suŋa.
         mango.PL REL D C Atia NEG buy.PERF D   be good
         'The mangoes that Atia did not buy were good.'   (left-headed IHRC)

(88)   *Kabiyé*
   a.   [ɛso tɪ   ya   mangu ngʊ yɔ] ki-we   ɖeu.
         Eso NEG bought mango REL D   3SG-be good
         'The/A mango that Eso did not buy was good.'   (in-situ IHRC)

   b.   [Mangu ngʊ ɛso tɪ   ya   yɔ] ki-we   ɖeu.
         mango REL Eso NEG bought D   3SG-be good
         'The mango that Eso did not buy was good.'   (left-headed IHRC)

---

[24] Japanese has an "adverbial" clause, which looks exactly the same as the IHRCs discussed here, but have a number of distinct properties (see Mihara 1994; Murasugi 1994). An anonymous reviewer points out that replacing the head noun with a definite head noun *sono ronbun* 'the/that paper' improves example (84a). Such an example, however, is clearly an adverbial clause, because IHRCs are subject to the Indefiniteness Restriction cross-linguistically (see Section 2.1) and adverbial clauses in general can contain negation. We will only focus on IHRCs that are not adverbial in this article. See Kuroda (1999) for a detailed discussion about non-adverbial IHRCs and adverbial IHRCs.

(89)   *Dagaare*
        N   di   la   [a   mongo   na   Dakoraa   nang   ba   da].
        1SG eat   F   D   mango   REL Dakoraa   C   NEG   buy
        'I ate the mango that Dakoraa did not buy.'   (left-headed IHRC)

The results of our study are summarized in the table below.

(90)   Summary

	IHRC	∃	Island	Stacking	QA	Negation
Buli	in-situ/left-headed	*	✓	✓	✓	✓
Dagbani	in-situ/left-headed	*	✓	✓	✓	✓
Gurɛnɛ	in-situ/left-headed	*	✓	✓	✓	✓
Kabiyé	in-situ/left-headed	*	✓	*	✓	✓
Dagaare	left-headed	*	✓	*	✓	✓
Japanese	in-situ	*	*	*	*	*

These asymmetries between Japanese IHRCs and Gur IHRCs suggest, again, that the latter is not of the maximalizing type, if we take Grosu's (2002) typology as its face value. A weaker interpretation of the results is that the cluster of properties bifurcating maximalizing and restrictive IHRCs may not correlate as previously thought. It should be noted that stacking may not offer a reliable test for semantic classification.

5 Conclusion and further discussion

First of all, syntactically, the Gur languages present conclusive evidence against the word order generalization and the HIRC-indeterminate generalization. Semantically, they show that the cluster of properties attributed to by the semantic typology of IHRCs do not necessarily correlate as predicted. While Gur IHRCs and Japanese IHRCs are classified into the maximalizing type as far as the existential interpretation test is concerned, the other syntactic and semantic tests give opposite results. Furthermore, even within the Gur languages, the availability of stacking of IHRCs is not uniform.

Of course, the results may still suggest a possibility that Gur IHRCs and Japanese IHRCs are of the same type with the different properties. In any case, any new generalization on IHRCs proposed in the future needs to take into account the data that we have presented in this article.

We are not yet in a position to propose an alternative typological generalization for the (un)availability of IHRCs in natural languages. Even though it is neither an exceptionless nor a sufficient condition, Watanabe's *wh*-in-situ/focus-in-situ generalization nicely accounts for the asymmetry between Buli, Dagbani, Gurɛnɛ, and Kabiyé, on the one hand, and Dagaare, on the other hand. We have no doubt that the results of our study will shed light on some new aspects of IHRCs and contribute to revealing universals and parameters responsible for IHRCs in the future.

Abbreviations

ACC = accusative, BEN = benefactive, C = complementizer, COMIT = comitative, COP = copula, D = determiner, DEM = demonstrative, DIST = distant, F = focus, GEN = genitive, ID = indefinite determiner, IMPERF = imperfective, IND = indicative, IRRE = irrealis, LOC = locative, NC = noun class, NEG = negative, NOM = nominative, OBJ = object marker, PERF = perfective, PL = plural, PRT = particle, REL = relativizer,

SG = singular, SID = specific indefinite determiner, SUBJ = subject marker, TOP = topic, VALID = validator

Acknowledgements

Competing Interests

The authors have no competing interests to declare.

References

Akanlig-Pare, George. 2005. *Buli tonology: A non-linear analysis.* Legon: University of Ghana dissertation.

Akanlig-Pare, George & Michael Kenstowicz (eds.). 2003. *Studies in Buli grammar.* (MIT working papers on endangered and less familiar languages, vol. 4). Cambridge, MA: MITWPL.

Aldridge, Edith. To appear. Internally and externally reduced relatives in Tagalog. Under review for Glossa special collection on internally-headed relative clauses.

Andrews, Avery. 2007. Relative clauses. In Timothy Shopen (ed.), *Language typology and syntactic description, vol. 2: Complex constructions (2nd edition).* 206–236. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/cbo9780511619434.004

Atintono, Awinkene Samuel. 2002. *The relative clause in Gurenε.* A long essay submitted to the Department of Linguistics, University of Ghana, Legon.

Atintono, Awinkene Samuel. 2003. A functional analysis of Gurenε relative clause. Ms., University of Education, Winneba, Ghana.

Atintono, Awinkene Samuel. 2011. *Verb morphology: Phrase structure in a Gur language (Gurenε).* Saarbrücken: LAP LAMBERT Academic Publishing.

Atintono, Awinkene Samuel. 2013. *The semantics and grammar of Gurenε positional verbs: A typological perspective.* Manchester: University of Manchester dissertation.

Basilico, David. 1996. Head positions and internally headed relative clauses. *Language* 72(3). 498–532. DOI: https://doi.org/10.2307/416277

Bhatt, Rajesh. 2002. The raising analysis of relative clause: Evidence from adjectival modification. *Natural Language Semantics* 10(1). 43–90. DOI: https://doi.org/10.1023/A:1015536226396

Bianchi, Valentina. 1999. *Consequences of antisymmetry: Headed relative clauses.* Berlin: Mouton de Gruyter. DOI: https://doi.org/10.1515/9783110803372

Bianchi, Valentina. 2002. Headed relative clauses in generative syntax (part I & II). *GLOT* 197–204 & 235–247.

Blench, Roger. 2004. *Dagbani-English dictionary.* http://www.rogerblench.info /Language/ Niger-Congo/Gur/Dagbani%20dictionary%20CD.pdf

Bodomo, Adams. 1993. Complex predicates and event structure: An integrated analysis of serial verb constructions in the Mabia languages of West Africa. University of Trondheim master's thesis (published in Working Papers in Linguistics, no. 20).

Bodomo, Adams. 1997. *The structure of Dagaare.* Stanford, CA: CSLI.

Bodomo, Adams. 2000. *Dagaare* (Languages of the world materials, no. 165). München: Lincom Europa.

Bodomo, Adams. 2004. *A Dagaare-Cantonese-English lexicon for lexicographical field research training (afrikawissenschaftliche lehrbüher, vol. 14).* Cologne: Rüdiger Köppe Verlag.

Bodomo, Adams & Ken Hiraiwa. 2010. Relativization in Dàgáárè and its typological implications: Left-headed but internally-headed. *Lingua* 120(4). 953–983. DOI: https://doi.org/10.1016/j.lingua.2009.06.008

Bruening, Benjamin. 2001. *Syntax at the edge: Cross-clausal phenomena and the syntax of Passamaquoddy.* Cambridge, MA: MIT dissertation.

Cahill, Michael. 1999. *Aspects of the morphology and phonology of Kɔnni.* Ohio, OH: The Ohio State University dissertation.

Cinque, Guglielmo. 2013. *Typological studies: Word order and relative clauses.* New York, NY: Routledge.

Cole, Peter. 1987. The structure of internally headed relative clauses. *Natural Language & Linguistic Theory* 5(2). 277–302. DOI: https://doi.org/10.1007/BF00166587

Cole, Peter & Gabriella Hermon. 1994. Is there LF movement? *Linguistic Inquiry* 25(2). 239–262. http://www.jstor.org/stable/4178860.

Culy, Christopher. 1990. *The syntax and semantics of internally headed relative clauses:* Stanford, CA: Stanford University dissertation.

Dakubu, Kropp M.E. 1996. A grammar of Gurune (corrected trial edition). Ms., Language Centre, University of Ghana, Legon.

Dakubu, Kropp M.E. 2005. *Dagaare* (Collected language notes, vol. 26). Legon: Institute of African Studies, Legon.

Dakubu, Kropp M.E., Samuel Awinkene Atintono & E. Avea Nsoh. 2007. *Gurenɛ-English dictionary with English-Gurenɛ glossary.* Legon: University of Ghana.

Donati, Caterina & Carlo Cecchetto. 2011. Relabeling heads: A unified account for relativization structures. *Linguistic Inquiry* 42(4). 519–560. DOI: https://doi.org/10.1162/LING_a_00060

Donati, Caterina & Carlo Cecchetto. 2015. *(Re)labeling.* Cambridge, MA: MIT Press.

Downing, Bruce T. 1978. Some universals of relative clause structure. In Joseph H. Greenberg (ed.), *Universals of human language,* vol. 4, 375–418. Stanford, CA: Stanford University Press.

Erlewine, Michael Yoshitaka & Isaac Gould. 2016. Unifying relative clauses: copy-chains and context-sensitivity. To appear in Ken Hiraiwa (ed.), *Glossa special collection on internally-headed relative clauses.* Ubiquity Press.

Essizewa, Komlan Essowe. 2007. *Sociolinguistic aspects of Kabiye-Ewe bilingualism in Togo.* New York, NY: New York University dissertation.

Gil, David. 2000. Riau Indonesian: A VO language with internally-headed relative clause. *Snippets* 1. 6–7.

Gorbet, Larry. 1974. *Relativization and complementation in Diegueño.* University of California, San Diego dissertation.

Gorbet, Larry. 1976. *A grammar of Diegueño nominals.* New York: Garland.

Gorbet, Larry. 1977. Headless relatives in the Southwest: Are they related? In Paul M. Peranteau, Judith N. Levi & Gloria C. Phares (eds.), *The Chicago which hunt,* 270–278. Chicago, IL: CLS.

Gordon, Lynn & Pamela Munro. 2016. Relative clauses in Western Muskogean languages. To appear in Ken Hiraiwa (ed.), *Glossa special collection on internally-headed relative clauses*. Ubiquity Press.

Grosu, Alexander. 2002. Strange relatives at the interface of two millennia. *GLOT* 6(6). 145–167.

Hiraiwa, Ken. in press. Internally headed relative clauses. In Martin Everaert & Henk van Riemsdijk (eds.), *The Blackwell companion to syntax (2nd edition)*. New York, NY: Wiley-Blackwell.

Hiraiwa, Ken. 2003. Relativization in Buli. In George Akanlig-Pare & Michael Kenstowicz (eds.), *Studies in Buli grammar* (MIT working papers on endangered and less familiar languages, vol. 4), 45–84. Cambridge, MA: MITWPL.

Hiraiwa, Ken. 2005a. C: Locality of EPP and its morphosyntax in Bùlì. In Leah Bateman & Cherlon Ussery (eds.), *The proceedings of the NELS 35,* 267–278. Amherst, MA: GLSA.

Hiraiwa, Ken. 2005b. *Dimensions of symmetry in syntax: agreement and clausal architecture.* Cambridge, MA: MIT dissertation.

Hiraiwa, Ken. 2009a. The head-internal relativization parameter in Gur: D and EPP. In Anisa Schardl, Martin Walkow & Muhammad Abdurrahman (eds.), *The proceedings of the NELS 38,* 297–310. Amherst, MA: GLSA.

Hiraiwa, Ken. 2009b. A note on the typology of head-internal relativization. In Peter K. Austin, Oliver Bond, Monik Charette, David Nathan & Peter Sells (eds.), *The proceedings of conference on language documentation and linguistic theory 2 (LDLT2),* 123–131. London: SOAS, University of London.

Hiraiwa, Ken & Adams Bodomo. 2008. Object-sharing as symmetric sharing: Predicate clefting and serial verbs in Dàgáárè. *Natural Language & Linguistic Theory* 26(4). 795–832. DOI: https://doi.org/10.1007/s11049-008-9056-y

Hoshi, Koji. 1995. *Structural and interpretive aspects of head-internal and head-external relative clauses.* Rochester, NY: University of Rochester dissertation.

Hudu, Fusheini. 2010. *Dagbani tongue-root harmony: a formal account with ultrasound investigation.* Vancouver, BC: University of British Columbia dissertation.

Iatridou, Sabine, Elena Anagnostopoulou & Roumyana Izvorski. 2001. Some observations about the form and meaning of the perfect. In Michael Kentowicz (ed.), *Ken Hale: A life in language,* 189–238. Cambridge, MA: MIT Press.

Ito, Junko. 1986. Head-movement at LF and PF: The syntax of head-internal relatives in Japanese. In *Umass occasional papers in linguistics 11,* 109–138. Amherst, MA: GLSA.

Kayne, Richard. 1994. *The antisymmetry of syntax.* Cambridge, MA: MIT Press.

Keenan, Edward. 1985. Relative clauses. In Timothy Shopen (ed.), *Language typology and syntactic description (vol. 2): Complex constructions*, 141–170. Cambridge: Cambridge University Press.

Kiesewetter, Astrid. 2004. *Relativkonstruktionen im Gurenɛ.* Humboldt-Universität, Berlin M.A. thesis.

Kröger, Franz. 1992. *Buli-English dictionary.* Verlag: LIT.

Kuroda, S.-Y. 1974. Pivot-independent relativization in Japanese I. *Papers in Japanese Linguistics* 3. 59–93.

Kuroda, S.-Y. 1975–76. Pivot-independent relativization in Japanese II. *Papers in Japanese Linguistics* 4. 85–96.

Kuroda, S.-Y. 1976–77. Pivot-independent relativization in Japanese III. *Papers in Japanese Linguistics* 5. 157–176.

Kuroda, S.-Y. 1992. Pivot-independent relativization in Japanese. In S.-Y. Kuroda (ed.), *Japanese syntax and semantics,* 114–174. Dordrecht: Kluwer Academic Publishers. DOI: https://doi.org/10.1007/978-94-011-2789-9_4

Kuroda, S.-Y. 1999. Syubunaizai kankeisetu [Head-internal relative clauses]. In S.-Y. Kuroda & Masaru Nakamura (eds.), *Kotoba no kaku to syuuen.* 27–103. Tokyo: Kurosio Publishers.

Langacker, Ronald. 1969. On pronominalization and the chain of command. In D. Reibel & S. Schane (eds.), *Modern studies in English,* 160–187. Englewood Cliffs, NJ: Prentice-Hall.

Langdon, Margaret. 1977. Syntactic change and SOV structure. In Charles N. Li (ed.), *Mechanisms of syntactic change,* 255–290. Austin: University of Texas Press.

Larson, Richard. 2003. Event descriptions in Fon and Haitian Creole. In Dany Adone (ed.), *Recent development in creole studies,* 67–90. Tübingen: Niemeyer. DOI: https://doi.org/10.1515/9783110948318.67

Lébikaza, Kézié Koyenzi. 1999. *Grammaire kabiyé: Une analyse systématique phonologie, tonologie et morphosyntaxe.* Köln: Rüdiger Köppe.

Lefebvre, Claire. 1992. On the distribution of clausal *wè* in Fongbe. In *Travaux de recherche sur le créole haïtien: Numéro 8 – Avril 1992,* 49–68. Université du Québec à Montréal: Groupe de rechercher sur le créole haïtien, Départment de linguistique.

Lefebvre, Claire. 1998. Multifunctionality and variation among grammars: The case of the determiner in Haitian and Fongbe. *Journal of Pidgin and Creole Languages* 13(1). 93–150. DOI: https://doi.org/10.1075/jpcl.13.1.04lef

Lehmann, Christian. 1984. *Der relativsatz.* Tübingen: Gunter Narr Verl.

Matsuda, Yuki. 2002. Event sensitivity of head-internal relatives in Japanese. In Noriko Akatsuka (ed.), *Japanese/Korean linguistics 10,* 629–643. Stanford, CA: CSLI Publications.

Mihara, Ken-ichi. 1994. *Nihongo no toogo koozoo* [Syntactic structures of Japanese]. Tokyo: Shohakusha.

Murasugi, Keiko. 1994. Head-internal relative clauses as adjunct pure complex NPs. In Shuji Chiba et al. (eds.), *Synchronic and diachronic approaches to language: A festschrift for Toshio Nakao on the occasion of his sixtieth birthday*, 425–437. Tokyo: Liber Press.

Naden, Tony. 1988. The Gur languages. In Kropp M.E. Dakubu (ed.), *The languages of Ghana,* 12–49. London: Kegan Paul International for the International African Institute.

Naden, Tony. 1989. Gur. In Bendor-Samuel John (ed.), *The Niger-Congo languages: A classification and description of Africa's largest language family,* 141–168. Lanham, NY & London: University Press of America.

Olawsky, Knut J. 1999. *Aspects of Dagbani grammar.* München: Lincom Europa.

Peterson, Thomas. 1971. *Mooré structure: A generative analysis of the tonal system and aspects of the syntax.* Los Angeles, CA: University of California, Los Angeles dissertation.

Peterson, Thomas H. 1974. On definite restrictive relatives in Mooré. *Journal of West African Languages* 9(2). 71–78.

Platero, Paul. 1974. The Navajo relative clause. *International Journal of American Linguistics* 40(3). 204–246. DOI: https://doi.org/10.1086/465313

Ross, John Robert. 1969. Guess who? In Robert I. Binnick, Alice Davison, Georgia M. Green & James L. Morgan (eds.), *The proceedings of CLS 5,* 252–286. Chicago, IL: The University of Chicago Press, Chicago Linguistic Society.

Schwarz, Anne. 2004. *Aspekte der morphosyntax und tonologie im Buli mit Schwerpunkt auf dem Buli von Wiaga.* Berlin: der Humboldt-Universität zu Berlin dissertation.

Shimoyama, Junko. 1999. Internally headed relative clauses in Japanese and E-type anaphora. *Journal of East Asian Linguistics* 8(2). 147–182. DOI: https://doi.org/10.1023/A:1008338020411

Shimoyama, Junko. 2001. *WH-constructions in Japanese.* Amherst, MA: University of Massachusetts, Amherst dissertation.

Srivastav, Veneeta. 1991. The syntax and semantics of Hindi correlatives. *Natural Language & Linguistic Theory* 9(4). 637–686. DOI: https://doi.org/10.1007/BF00134752

Sulemana, Abdul-Razak. 2012. *The structure of the determiner phrase in Bùlì.* Legon: University of Ghana, Legon, MPhil. thesis.

Sulemana, Abdul-Razak. 2016. The definite morpheme in Bùlì. Ms., MIT.

Sulemana, Abdul-Razak. in prepration. Syntax generals paper, MIT.

Tellier, C. 1989. Head-internal relatives and parasitic gaps in Mooré. In Isabelle Haïk & Laurice Tuller (eds.), *Current approaches to African linguistics, vol. 6,* 298–318. Dordrecht: Foris.

Uchibori, Asako. 1991. Head-internal relatives in Japanese. In *The proceedings of KLS 11,* 81–90. Kansai Linguistic Society.

de Vries, Mark. 2002. *The syntax of relativization.* Utrecht: LOT.

Watanabe, Akira. 1991. *Wh-in-situ, subjacency, and chain formation* (MIT occasional papers in linguistics 2). Cambridge, MA: MITWPL.

Watanabe, Akira. 2004. Parametrization of quantificational determiners and head-internal relatives. *Language and Linguistics* 5(1), 59–97. Taipei: Academia Sinica.

Wilbur, Ronnie. 2016. Internally-headed relative clauses in sign languages. To appear in Ken Hiraiwa (ed.), *Glossa special collection on internally-headed relative clauses.* Ubiquity Press.

Williamson, Janis. 1987. An indefiniteness restriction for relative clauses in Lakhota. In Eric Reuland & Alice G. B. ter Meulen (eds.), *The representation of (in)definiteness,* 168–190. Cambridge, MA: MIT Press.

Wilson, W.A.A. 1963. Relative constructions in Dagbani. *Journal of West African Languages* 2(2). 139–144.