Relative embeddings:
A Circassian puzzle for the syntax/semantics interface

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Abstract This paper documents and analyzes the pattern used in the Northwest Caucasian language Adyghe (Circassian) to express what the following five different constructions convey in other languages: headed and headless relative clauses, embedded declaratives, embedded polar interrogatives, and embedded constituent interrogatives. We argue that Adyghe encodes the meanings of all these embedded structures by means of the same syntactic construction: a relative clause. This pervasive use of relative clauses is possible due to mechanisms that are independently attested not just in Adyghe but also in more familiar languages like English, namely: concealed questions, polarity operators, and nominals such as *fact* and *question* that can connect propositional attitude verbs or interrogative verbs with embedded clauses. We show that this extensive use of relative clauses in Adyghe is facilitated by their morphological visibility: a relativizer as a prefix on the verb, verbal clitics, a rich system of applicative heads hosting indirect arguments, and the availability of the determiner suffix on headless relatives. We conclude by discussing the implications of the Adyghe system for the general design of embedding and subordination in natural language.

Abbreviations ABS–absolutive, ADN–adnominal, ADV–adverbial, APPL–applicative, BEN–benefactive, COM–comitative, COMP–complementizer, COP–copula, DET–determiner, DIR–directional, DYN–dynamic, FUT–future, INF–infinitive, INSTR–instrumental, INV–inversion, NEG–negation, NOM–nominative, OBL–oblique, P–postposition, PL–plural, POSS–possessive, POT–potential, PRES–present, Q–question marker, REAS–reason, REC–reciprocal, REFL–reflexive, REL–relativizer, SG–singular, spec–specifier, SPEC–specific.

1 Introduction

Many familiar languages exhibit the syntax/semantics mapping exemplified by the bracketed strings in (1)--(5): five syntactically different embedded tensed clauses express five different meanings.

(1)   I admire the house [which Le Corbusier built].

(2)   [What Le Corbusier built] was not universally liked.

(3)   I am confident [that Le Corbusier worked in Cambridge].

(4)   She asked [whether Le Corbusier built that house].

(5)   She asked [what buildings Le Corbusier built in Cambridge].

In particular, a headed relative clause like *which Le Corbusier built* in (1) is mapped to the set of inanimate individuals that Le Corbusier built (cf. Quine 1960 and Montague 1973, a.o.). A free relative like *what Le Corbusier built* in (2) has been argued to be mapped to the maximal (plural) inanimate individual that Le Corbusier built (Jacobson 1995, Caponigro 2004). An embedded declarative like *that Le Corbusier worked in Cambridge* in (3) is standardly mapped to the proposition 'that Le Corbusier worked in Cambridge'. Finally, an embedded polar interrogative like *whether Le Corbusier built that house* in (4) is mapped to a set containing the proposition 'that Le Corbusier built that house' and/or its negation 'that Le Corbusier did not build that house', while an embedded constituent interrogative like *what buildings Le Corbusier built in Cambridge* in (5) is mapped to the set of propositions that are (true) answers to the question 'What buildings did Le Corbusier build in Cambridge?' (this is addressed in the work stemming from Hamblin's 1973 and Karttunen's 1977 seminal ideas).

These differences in meaning correspond to differences in the morphosyntax: the presence or absence of a *wh*-word, a relative pronoun, or an overt complementizer; syntactic transparency (in embedded declaratives) or syntactic opacity (in relatives and interrogatives); and differences in the nature of the complementizer heading the embedded clause.

The pattern above is so common that we may think that all languages should have some instantiation of it. But is this really the case? In what follows, we document and analyze a language, Adyghe, that conveys all these meanings via embedding, but does so by making use of just one construction, which we argue is a DP with a relative clause attached. Unusual as it may seem, we show that such different syntax/semantics interface is internally coherent and can be handled within the confines of the current syntactic and semantic theory.

The paper is structured as follows. Section 2 presents the basic information on Adyghe. Since the language is relatively little known, we present the general information about its morphosyntax that is needed in order to follow the crucial data. Sections 3 and 4 analyze the syntax and semantics of the construction in question by looking at the cases in which it conveys the same meaning as headed and headless relative clauses in other languages. Section 5 gives an account for how the same Adyghe construction can express what embedded constituent interrogatives convey in other languages. We also show that matrix constituent interrogatives in Adyghe are actually pseudo-clefts, where one of the constituents is a DP containing a relative clause, while the other constituent is made of a *wh*-word. Section 6 shows how the same Adyghe construction conveys what embedded declaratives and embedded polar interrogatives convey in other languages. Section 7 briefly looks at how Adyghe expresses what other languages encode by tensed adjunct clauses and shows that the very same construction is used in this case as well. Section 8 presents our overall conclusions and more general implications of our analysis.

2   General background on Adyghe

Adyghe is a Northwest Caucasian language spoken by approximately 500,000 people in Russia, Turkey, Iraq, and Syria (Gordon 2005). Together with Abkhaz, Abaza, Ubykh, and Kabardian, it forms the Northwest Caucasian (aka Abkhazo-Adyghe) language family. Adyghe is most closely related to Kabardian; together the two languages are often called Circassian (Smeets 1984, Colarusso 1992, 2006). The language has a number of dialects; unless otherwise noted, the data in this paper are based on the Abadzeh dialect which is quite close to the standard literary language.

Typologically, Adyghe is head-final with SOV basic word order. In matrix clauses, constituent order is relatively free; however, embedded clauses are typically verb-final. Adyghe has extensive

pro-drop for both subjects and objects. The language uses a null copula in both identificational and specificational constructions.[1]

(6) a. mə   bzəʎfeʁ-ər   qə-s-jə-thamat-Ø
       that woman-ABS   DIR-1SG.POSS-director-COP
       'That woman is my boss.'
    b. bzəʎfeʁ-ər   wən-əm   daχe-Ø-Ø
       woman-ABS   house-OBL   beauty-ABS-COP
       'A woman is the ornament of a home.'
    c. wən-əm   daχe-r   bzəʎfeʁ-Ø-Ø
       house-OBL   beauty-ABS   woman-ABS-COP
       'The ornament of a home is the woman.'

In what follows, we will briefly introduce the basic morphological and syntactic properties of nominals, verbs and clauses in Adyghe that will be relevant for the following discussion on relative clauses.

2.1   Nominals

Adyghe has a three-way morphological case system: ergative, absolutive, and oblique (Rogava and Keraševa 1966; Smeets 1984; Kumakhov *et al.* 1996). The absolutive marker is null, while there is syncretism of the ergative and the oblique, as shown in (7).

(7)   **Adyghe case marking**

absolutive (ABS)	-Ø
ergative (ERG)	-m
oblique (OBL)	-m

Adyghe has an overt suffixal determiner *-r*. Its absence on a noun forces a 'non-specific' interpretation of the nominal, i.e. a non-referential and non-quantificational interpretation. The presence of the determiner, instead, is compatible with both a specific and a non-specific interpretation. For instance, the word *psə* 'water' occurs with just the (silent) absolutive marker in (8) and can only be interpreted as non-specific (while the whole sentence can receive a generic or non-generic interpretation). On the other hand, if the very same word carries the suffixal determiner *-r*, then it can be interpreted as both specific and non-specific, as shown in (9).

(8) se   psə-Ø   sə-ŝ̂we
    1sg water-ABS   1SG-drink.PRES
    'I {drink/am drinking} water.'

(9) se   psə-Ø-r   sə-ŝ̂we
    1sg water-ABS-DET   1SG-drink.PRES
    'I {drink/am drinking} the water.'
    'I {drink/am drinking} water.'

The result of combining the suffixal determiner with the suffixal case markers is summarized by the table in (10).

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[1] See Rogava and Keraševa (1966: 169-176; 357-8), Lander (2004), Sumbatova (2005); see also Colarusso (1992: 53) for the null copula in Kabardian.

(10) **Adyghe case marking and suffixal determiner**

Case marker	Determiner	Case + Determiner
ABS: -Ø	-r	-Ø + -r → **-r**
ERG: -m	-r	-m + -r → **-m**
OBL: -m	-r	-m + -r → **-m**

As shown in (10), when the determiner follows the ergative/oblique case marker -*m,* it undergoes deletion according to the phonological rule in (11).

(11)   r → Ø / m __ #

Independent support to our morpho-phonological analysis comes from the fact that consonant clusters whose second member is a sonorant are not allowed in Adyghe, and this ban is enforced stringently in the suffixal domain (Kuipers 1960, Henderson 1970, Colarusso 1992, 2006). Therefore, the final -*r* deletes. This deletion is an instantiation of the general phenomenon that does not permit nasal-liquid clusters, (which are increasing in sonority), without a following vowel and dispenses of such clusters by deleting the *second* consonant (Selkirk 1982; Steriade 2008). Accordingly, in case forms other than the absolutive, the surface forms without the determiner and with the (deleted) determiner are indistinguishable. Since most of the cases we are concerned with have the absolutive with the overt determiner, in what follows we simplify the morphological analysis by transcribing the suffixal string -Ø-*r* as just -*r* and glossing it simply as 'ABS' rather than 'ABS-DET'.

   Proper names, first and second person pronouns, and some kinship terms always appear without a determiner. Bare NPs without the suffixal determiner can also appear as part of a predicate, as shown by the NP *č'elejeʁaǯe* 'teacher' in (12), to which the silent copula that we discussed above and the future marker attach as suffixes.

(12)   mə   č'ale-r   č'elejeʁaǯe-Ø-št
         this boy-ABS   teacher-COP-FUT
         'This boy will be a teacher.'

   First and second person pronouns do not have morphological case distinctions. Third person forms are expressed by the distal demonstrative *a* and exhibit the usual syncretism between ergative and absolutive, as shown in (10) (*xe-* is the plural marker).

(13)   **Third person pronouns**

	SINGULAR	PLURAL
absolutive	a-r	a-xe-r
ergative	a-ŝ	a-xe-me
oblique	a-ŝ	a-xe-me

Demonstratives and the numeral 'one', which acts as a demonstrative, precede the noun phrase:

(14)   mə   he-r
         this   dog-ABS.SPEC

(15)   zə   he-r
         one   dog-ABS.SPEC

The word *zə* 'one' co-occurs only with DPs and can also have the reading 'only' ("one alone"). Thus it can be used as a test for DP-hood.

If a demonstrative co-occurs with a relative clause, it normally precedes it. Relative clauses are prenominal; we will postpone their discussion until section 3.

Most expressions that can be compared to adjectives behave as nouns, and some researchers actually identify them as nouns (Rogava and Keraševa 1966, Smeets 1984).[2] Several arguments support this position. First, the contrast between main lexical categories in Adyghe is notoriously elusive; nouns can directly combine with tense, aspect and mood markers forming predicates, and verbs can be readily nominalized. True lexical nouns can appear without an overt case marker/determiner (Lander 2004, 2005, Sumbatova 2005).[3]

(16) sə-λeχ$_w$ə   wəne-m/wane-$\varnothing$
      1SG-look for   house-OBL/house-NULL
      'I am looking for a house.'

By that token, "adjectives" typically qualify as nouns because they can appear bare (subject to dialectal variation):

(17) thamate-šh$_w$-Ø
      director-big-NULL
      'a big boss' (based on Sumbatova 2005: ex. 3)

(18) k$_w$ə-ŝ'$_w$ə-Ø
      cart-good-NULL
      'a good cart' (Smeets 1984: 77)

Since Adyghe is head-final, the postnominal position of the "adjective" is more compatible with its status as the head noun. Rogava and Keraševa (1966) further support the view that adjectives are actually nouns by the observation that many "true nouns" can also appear as modifiers, forming one syntactic word with the head–similar to the English constructions *tile floor, coffee table*, etc.

2.2   Verbal morphology and clause structure

In this section, we briefly introduce some aspects of complex verbal morphology and the basic structure of matrix declarative clauses by looking at the morphosyntactic properties of direct arguments (section 2.2.1), indirect arguments (i.e. arguments licensed by applicative heads, section 2.2.2), and adjuncts (section 2.2.3).

2.2.1   Direct arguments

Adyghe verbs carry prefixes whose form depends on the case (ergative or absolutive), person, and number on their arguments.[4] We assume these prefixes to be clitics. They are presented in (19). In the dialect we are discussing here, the absolutive clitic is always null.[5] For simplicity, we will not show it in the glosses below unless needed.

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[2] Colarusso (1992), however, puts them in a separate adjectival class.

[3] This generalization is robust, but we have no explanation for it.

[4] See Rogava and Keraševa (1966: 135-170) and Smeets (1984: ch. 5); see also Colarusso (1992) for Kabardian and O'Herin (2002) for Abaza.

[5] In some other Adyghe dialects, the absolutive marker is overt. For example, it is *y-* in the closely related Abaza   (O'Herin 2002: 260) or *jə-/je-* in Shapsug (Keraševa 1957: 69; Smeets 1984: 251).

(19) **Adyghe verbal clitics**

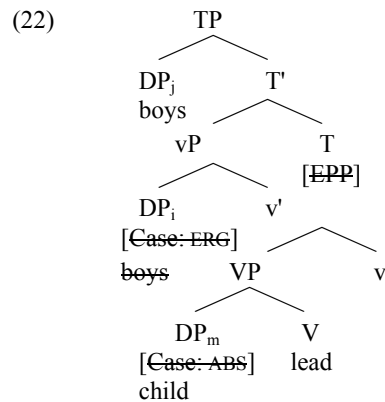|	*absolutive* (ABS)	*ergative* (ERG)/ *oblique* (OBL)[6]
1sg	sə-	s-/ŝ-
2sg	wə-/p-	w-/p-/b-
3sg	∅-	(r)jə-/ə-
1pl	de-	de-/t-
2pl	fə-	f-
3pl	∅-	a-

The ergative clitic precedes the root/stem, while the absolutive clitic occurs on the left edge of the verb complex. Examples illustrating these morphological patterns are in (20) and (21), with the clitic morphology boldfaced. The different order of constituents between the a. and b. examples in (20) and (21) illustrates the flexibility of word order.[7]

(20) a. se   axe-me   **s-a**-š'-e
          1SG   3PL-ERG   **1SG.ABS-3PL.ERG**-lead-PRES
      b. axe-me   se   **s-a**-š'-e
          3PL-ERG   1SG   **1SG.ABS-3PL.ERG**-lead-PRES
          'They are leading me.'

(21) a. č'ale-xe-m   sabəjə-r   **∅-a**-š'-e
          boy-PL-ERG   child-ABS   **3SG.ABS-3PL.ERG**-lead-PRES
      b. sabəjə-r   č'ale-xe-m   **∅-a**-š'-e
          child-ABS   boy-PL-ERG   **3SG.ABS-3PL.ERG**-lead-PRES
          'The boys are leading the child.'

(20) and (21) also show that verbal clitics co-occur with the corresponding full arguments. Adyghe is therefore a language with extensive clitic doubling that applies to all arguments.

The structure for the transitive clause in (21)a is as follows (strikethrough indicates feature checking):

(22)

```
                TP
              /    \
          DPⱼ       T'
          boys    /   \
               vP      T
              /  \    [E̶P̶P̶]
          DPᵢ      v'
        [C̶a̶s̶e̶:̶ ̶E̶R̶G̶]    / \
        b̶o̶y̶s̶   VP     v
              /  \
          DPₘ     V
        [C̶a̶s̶e̶:̶ ̶A̶B̶S̶]  lead
        child
```

The ergative DP is merged in spec,*v*, where the ergative case is also checked; the transitive *v* serves an external theta-role assigner (Woolford 2006, Aldridge 2008, Legate 2008). It then moves to spec,T satisfying the EPP. For the absolutive case, we assume, following Aldridge (2004, 2008)

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[6] Oblique clitics are often homophonous to ergative clitics; they will be discussed in the next section.

[7] We attribute differences in word order to scrambling, but we are not committed to any particular mechanism of scrambling since nothing in our analysis hinges on it.

and Legate (2008), that its checking depends on transitivity. In a transitive clause such as the one above, the object remains in its base position inside the VP and checks its case with *v*. In an intransitive clause (not shown) the absolutive DP would have its case checked by T, not *v*.

The ergative DP c-commands the absolutive argument. As we already mentioned, there is ample evidence of that asymmetrical relation: the ergative or the absolutive subject, but not the absolutive object, can undergo subject-to-subject raising (Polinsky and Potsdam 2006, Potsdam and Polinsky 2009a); the absolutive cannot bind into the ergative; the ergative is a pro-dropped argument of imperatives; the ergative is privileged under coreference across clauses; and the ergative-absolutive configuration shows weak crossover effects (discussed in section 3.2 below).

2.2.2 Indirect arguments

In addition to the ergative and absolutive arguments, Adyghe has indirect arguments that always appear in the generalized oblique case in -*m* (glossed as OBL). Each indirect argument is licensed by an applicative head which is incorporated in the verb complex; this applicative head always co-occurs with the oblique proclitic (see (19) above). Oblique verbal clitics are generally homophonous with the ergative verbal clitics. In the example in (23), the three elements under discussion are boldfaced and shown by boxes. The instrumental applicative head *r-* (boxed, in bold, glossed as APPL$_{INSTR}$) appears on the verb. It assigns the oblique case to the DP *ŝ$_w$ə?anə-m* 'hoe', and licenses the oblique verbal clitic *je-*, which immediately precedes the applicative head itself.[8] The syntactic structure we are assuming for (23) is given in (24).

(23) č'ale-m   ŝ$_w$ə?anə-*(m)   xatə-r   ∅-je-r-ə-pča-ʁ
      boy-ERG   hoe-*(OBL)   orchard-ABS   3SG.ABS-**3SG.OBL-APPL**$_{INSTR}$-3SG.ERG-weed-PAST
      'The young man was weeding the orchard with a hoe.'

(24)
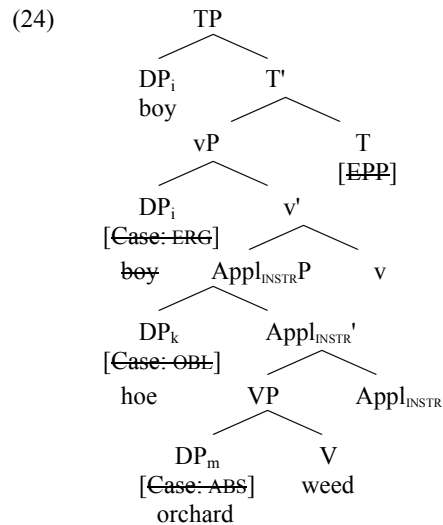
Note that unlike better-known applicatives, for instance the ones found in Bantu, Adyghe applicatives do not change the position or case of the base object (in the example above, it remains in the absolutive). Also unlike the more familiar applicatives, which are often limited to transitive verbs (cf. Baker 1988, Pylkkänen 2008, Polinsky 2008), Adyghe applicatives can combine with

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     8 In the glosses, we indicate all the cross-referenced arguments by their case function, so indirect arguments are glossed as oblique (OBL); their thematic role is recoverable from the meaning of the respective applicative head.

intransitive verbs, but still add an oblique, not absolutive, argument. Depending on a dialect, Adyghe can have over a dozen of such incorporated applicative heads (see Smeets 1984 for a detailed overview). The main applicative heads that will be used in this paper are listed in (25) below.

(25) **Applicative heads used in this paper**

Benefactive (BEN)/ *Motive* (MOT)	fe
Comitative (COM)/ *Locative* (LOC)	de
Locative (LOC)/ *Temporal* (TEMP)	š'e
Instrumental (INST)	r(ə)
Reason (REAS)	č'e

A verb form can host several indirect arguments as long as each is properly licensed by an applicative head; there does not seem to be any grammatical limit on the number of such arguments (of course, processing considerations make very heavy forms dispreferred). In the verb form, all the applicative heads precede the verbal root, and the linear order of licensing heads reflects their relative scope: the indirect argument licensed by the leftmost applicative is the highest. Thus, in (26), the leftmost applicative in the verb is the benefactive; its argument takes scope over the lower comitative object; and the surface order of arguments does not change scopal relations. Notice that each applicative head prefix on the verb in (26) is immediately preceded by its oblique clitic prefix.

(26) zeč'emjəč'ale-xe-m zə pŝ'aŝe-m
      all.OBL boy-PL-OBL one girl-OBL
                                          jə-fə-ra-də-jə-ŝə-ʁ
      zə pŝ'aŝe-m zeč'emjəč'ale-xe-m   3PL.OBL-BEN-PL.OBL-COM-3SG.ERG-make-PAST
      one girl-OBL all.OBL boy-PL-OBL

      'He made it for one girl with all the boys.'
      (ONE > ALL; *ALL > ONE)

The structure for a transitive clause with applied arguments is as follows:

(27)
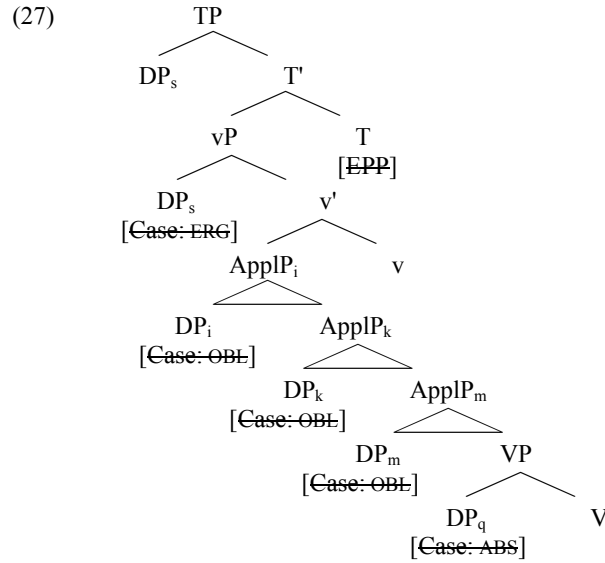
Applicatives in the closely related Abasa shows a similar pattern of case-marking, clitic licensing, stacking, and scope-taking (O'Herin 2001, 2002).

2.2.3 Adjuncts

In addition to indirect arguments, which are licensed by the applicatives, Adyghe also allows true adjuncts (Arkadiev and Letuchiy 2008). Adjunct expressions appear with one of the following suffixes or postpositions: -*č'e* (instrumental), -*ew* (a number of functions, including comitative), -*paje* 'for', *qazœfagwə* 'between', *əwəžəm* 'after', or in the oblique case. True adjuncts do not have an applicative host and accordingly are never doubled by a clitic on the verb. Any adjunct can always be turned into an argument by eliminating the post-position while adding the corresponding applicative head. Compare the example in (28) and (29). In (28) the instrumental *ŝwəʔanə-(m)-č'e* (in bold and in a box) is a PP adjunct with the instrumental suffixal postposition -*č'e* and optional oblique case marking; neither the oblique clitic prefix nor the instrumental applicative prefix can occur on the verb. In (29), instead, the instrumental *ŝwəʔanə-m* (in bold and in a box) is a DP argument requiring the oblique case suffix -*m*, while the verb carries both the oblique agreement marker -*je* and the instrumental applicative prefix -*r* (both boxed and in bold).

(28) č'ale-m   xatə-r   **ŝwəʔanə-(m)-č'e**   ∅-ə-pča-ʁ
boy-ERG   orchard-ABS hoe-(OBL-)-P$_{INSTR}$ 3SG.ABS-3SG.ERG-weed-PAST
'The boy was weeding the orchard with a hoe.'

(29) č'ale-m   **ŝwəʔanə-*(m)**   xatə-r   ∅-**je-r**-ə-pča-ʁ
boy-ERG hoe-*(OBL)   orchard-ABS   3SG.ABS-**3SG.OBL-APPL$_{INSTR}$** -3SG.ERG-weed-PAST
'The boy was weeding the orchard with a hoe.'

So far, our discussion has been limited to two-place verbs that take an ergative subject and an absolutive object, but there is also an extensive class of middles which take an absolutive subject and an oblique object (Arkadiev and Letuchiy 2008). In addition, the language has a distinction between so called dynamic intransitive verbs, which take the prefix (*m*)*e-*, if their absolutive argument is third person, and stative verbs, which do not form imperatives and do not combine with (*m*)*e-* (Rogava and Keraševa 1966: 104). Dynamic and stative verbs will appear in the glosses below, but their distinction plays little role in our discussion.

3 Headed relative clauses

We can now move to the relative construction that, as we are going to show, has a pervasive use in Adyghe. We start by looking at the one of its uses that more closely resembles relative clauses in other languages. After a description of the basic morphosyntactic features of this construction (section 3.1) and a closer look at its relativizer (section 3.2), we propose our syntactic and semantic analysis (section 3.3).

3.1   General description

A relative clause precedes the head noun and its predicate exhibits the same clitics, and same tense, and mood markers as a matrix clause. Two apparent morphological differences have to do with the present tense on dynamic predicates and negation.

Dynamic predicates in the affirmative present tense have zero marking (30), which changes to the suffix *–re* when these predicates occur in a relative clause (31):

(30)   č'ale-r   ∅-k$_w$əwe-∅
        boy-ABS   ABS-yell-PRES
        'A/The boy is screaming/yelling.'

(31)   [∅-k$_w$əwe-**re**-∅]   č'ale-r
         ABS-yell-**DYN**-PRES   boy-ABS
         'a/the boy who is screaming/yelling'

Negation in root clauses is expressed by the suffix *-(e)p*, which occurs at the right edge of the verb (32); in embedded forms (relative clauses and non-finite clauses), negation is expressed by the prefix *mə-* (33).

(32)   č'ale-r   ∅-k$_w$əwe-re-**p**
        boy-ABS   ABS-yell-PRES-DYN-**NEG**
         'A/The boy is not screaming/yelling.'

(33)   [∅-**mə**-k$_w$əwe-re-∅]   č'ale-r
         ABS-**NEG-**yell-DYN-PRES   boy-**ABS**
         'a/the boy who is not screaming/yelling'

Any argument of a clause (including the ones introduced by applicative heads) can be relativized. Only arguments can be relativized; adjuncts first undergo applicativization (see 2.3 above), which turns them into indirect arguments, and only then can be relativized.[9]

In the example in (34), the three elements that are crucial for our discussion are all highlighted in boxes. The boxed NP head *xatə* 'orchard' is preceded by the bracketed relative clause containing a boxed gap in object position and a related boxed absolutive clitic maker on the verb, which is null as for a regular absolutive (19).

(34)   [č'ale-m   ☐   ∅-ə-pča-š'te]   xatə-r
          boy-ERG   GAP **3SG.ABS**-3SG.ERG-weed-FUT   orchard-ABS
         'the orchard that the boy will weed'

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    [9] The same pattern of using applicative as the "way station" to relativization is observed in the closely related Abaza (O'Herin 2001, 2002).

The bracketed relative in (34) looks superficially identical to the matrix declarative in (35), except for the position of the DP *xatə-r* 'the orchard'. In particular, the morphological marking on the verb is the same.

(35) č'ale-m xatə-r ∅-ə-pča-š't
boy-ERG orchard-ABS 3SG.ABS-3SG.ERG-weed-FUT
'The boy will weed the orchard.'

However, the identity illustrated above breaks down when other constituents are relativized. Any relativized argument that is not absolutive is cross-referenced on the predicate of the relative clause by the prefix *z*V- (with V being *ə, e,* or null, depending on the phonological environment). We gloss *z*V- as the relative marker REL_X, with subscript *x* standing for the case of the relativized argument (e.g. REL.ERG or REL.ABS).[10] The position of *z*V- in the verb form corresponds to the position of the regular clitic associated with that DP (we come back to this fact at the end of this section). (36) shows the relativization of an ergative argument. The relative marker appears on the verb as the prefix *zə*, and as such it signals unequivocally that this is the verb of a relative clause. The corresponding matrix declarative with a non-gapped ergative DP allows for the plain 3sg ergative clitic *ə*- on the verb (37), but not for the relativizer *zə*- (38).

(36) [☐ xatə-r ŝ_wə?anə-m ∅-jə-re-zə-pča-š'te] č'ale-r
GAP orchard-ABS hoe-OBL 3SG.ABS-3SG.OBL-APPL_INSTR-**REL.ERG**-weed-FUT boy-ABS
'the boy who will be weeding the orchard with a hoe'

(37) č'ale-m ŝ_wə?anə-m xatə-r ∅-je-r-jə-pča-š't[11]
boy-ERG hoe-OBL orchard-ABS 3SG.ABS-3SG.OBL-APPL_INSTR- **3SG.ERG**-weed-FUT
'The boy will be weeding the orchard with a hoe.'

(38) * č'ale-m ŝ_wə?anə-m xatə-r ∅-je-re-zə-pča-š't
boy-ERG hoe-OBL orchard-ABS 3SG.ABS-3SG.OBL-APPL_INSTR- **REL.ERG**-weed-FUT
('The boy will be weeding the orchard with a hoe.')

The lack of the ergative argument within the clause in (36), the relativizer *z*V-, and the presence of the nominal head 'boy' to the right indicate the ergative argument underwent relativization. Notice that the lack of an overt ergative argument alone would not be enough, since Adyghe freely allows for null pronominals in argument positions, as shown in (39).

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[10] The relativizer *z*V- is homophonous with at least three other verbal markers in Adyghe: indirect object clitic (Smeets 1984: 264), reciprocal/reflexive (Rogava and Keraševa 1966: 271-279; Smeets 1984: 267; Letuchiy 2007), and resultative (Arkadiev and Gerassimov 2007). As the following example shows, the relativizer marker and the applicative head can co-occur with the reciprocal *ze-re*-:

(i) a-xe-r ze-re-ʁežʼeɣ_wə-ʁ-ex
3-PL-ABS **REC-APPL_REC**-play-PAST-PL
'They played together.'

(ii) [a-xe-r ze-re-ze-re-ʁežʼeɣ_wə-ʁ-exe]-r jane ə-?_wa-ʁ
3-PL-ABS **REL-APPL-REC-APPL_REC**-play-PAST-PL-ABS mother.ERG 3SG.ERG-say-PAST
'Mother said that they had played together.'

[11] The future marker in this example and in the other matrix clause in (39) is *-š't*, while it is *-š'te* in relative clauses in (36) and (40). This has nothing to do with relative *vs.* declarative clauses. The difference is due to the phonological constraint banning consonant clusters like [š't(#)C] even across words (Smeets 1984: ch. 1,2; Gordon and Applebaum 2006).

(39) *pro*   xatə-r   ∅-ə-pča-š't
      (he/she)   orchard-ABS   3SG.ABS-**ERG**-weed-FUT
      'He/she will be weeding the orchard.'

When an argument different from an absolutive or an ergative is relativized, then the relative marker occurs together with the applicative marker that usually licenses that argument. (40) shows the relativization of an instrumental. The prefix *zə-* appears on the verb in the same position as the instrumental clitic and signals that the clause is a relative clause. The instrumental prefix *-r* and the lack of an overt instrumental within the relative clause signal that it is the instrumental argument that has been relativized (compare it with the corresponding matrix declarative in (37) above).

(40) [č'ale-m   ☐   xatə-r   ∅-**ze**-**r**-jə-pča-š'te]   ŝ$_w$ə?anə-r
      boy-ERG GAP orchard-ABS 3SG.ABS-**REL.OBL-APPL**$_{INSTR}$-3SG.ERG-weed-FUT hoe-ABS
      'the hoe that the boy will be weeding the orchard with'

If the position of the relativizer *zə-* in (36) is compared with the position of the relativizer *ze-* in (40), it becomes evident that this position varies according to the argument that is relativized. The main generalization is that the relativizer always appears in the position of the verbal clitic doubling the argument that undergoes relativization. Thus, in (36), the relativizer *zə-* occurs right before the root (following the instrumental applicative), like the regular ergative clitic *ə-* in the corresponding declarative in (37). In (40), the relativizer *ze-* occurs immediately before the instrumental applicative, in the same position as the 3sg oblique clitic *j*V- in the corresponding declarative in (37). In the next section we analyze the relativizer in greater detail.

3.2   The relativizer and its syntax

In the previous section, we saw that the Adyghe construction that we are investigating looks like a relative clause. No special overt marking on the verb is observed if the missing constituent (gap) is in the absolutive. If the gap corresponds to any other argument, then what we called the relativizer *z*V- occurs on the verb, in the same position as the clitic in the corresponding matrix declarative clause without the gap. What exactly is this relativizer, and what is its function? If the construction in which it occurs is a relative clause, what is the syntactic structure of Adyghe relative clauses?

Our proposal is as follows. All the embedded clauses that we have encountered so far are relative clauses. All relative clauses in Adyghe have a relativizer: it is null (∅-) in a relative clause with an absolutive gap, and it is *z*V- in all the other relative clauses. The relativizer occurs in the clitic position and phonologically merges with (or possibly replaces) the existing clitic.[12] Semantically, it introduces a variable that must be bound by a c-commanding moved operator (in Spec,C of the relative clause), as shown in (41). The details of our semantic proposal will be discussed in the next section.

(41)   [$_{CP}$ Op$_1$ [$_{TP}$ e$_1$]]

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[12] The distribution of the relativizer in Adyghe is similar to Abaza (O'Herin 2002: ch. 8) and Kabardian (Colarusso 1992: 189, 191-193). O'Herin (2002) also makes a point of comparing and contrasting the Northwest Caucasian wh-agreement marker ('relativizer' in our terminology) with the Austronesian pattern proposed for Chamorro (Chung 1998) or Malagasy (Pearson 2005). We concur that the two phenomena are distinct and refer the reader to O'Herin's discussion for details.

Three arguments support our proposal: island effects, possessive marking in relative clauses, and weak crossover. The first argument is that a headed relative clause is syntactically an island, and we will show this by demonstrating that it is impossible to extract out of the relative clause, while it is possible to extract out of a simple DP. We start by proving that headed relative clauses are syntactic islands. Let's proceed step by step. Example (42) shows a simple declarative. (43)a shows that the relativization of the subject of (42) is possible. But, if we now try to extract the object out of the latter, the result is unacceptable (43)b. Similarly, the relativization of the object of (42) is possible, as shown in (44)a, but from (44)a nothing can be extracted, as shown by the unacceptability of the extraction of the subject in (44)b. Henceforth, we indicate the gap with the empty category symbol *e*. In the two examples immediately below, the head of the relative clause, and the associated gap and relativizer are all co-indexed for clarity.

(42)   č'ale-xe-m   pjǝsme-r a-   Ø-a-txe-ʁ
        boy-PL-ERG   letter-ABS   3SG.ABS-3PL.ERG-write-PAST
        'The boys wrote a/the letter.'

(43)   a. [e_1 pjǝsme-r   Ø-**zǝ$_1$**-txe-ʁe]   č'ale-xe-r$_1$
            letter-ABS   3SG.ABS-**REL.ERG**-write-PAST   boy-PL-ABS
            'the boys that wrote a/the letter'
        b.* [[e_1 e_2 Ø-**zǝ$_1$**-txe-ʁe]   č'ale-xe-r$_1$ č'elejeʁaže-m
            3SG.ABS-**REL.ERG**-write-PAST   boy-PL-ABS teacher-ERG
            $Ø_2$-ǝ-λeʁ$_w$ǝ-ʁe]   pjǝsme-r$_2$
            REL.ABS-3SG.ERG-see-PAST   letter-ABS
            ('the letter that the teacher saw the boys that wrote')

(44)   a. [č'ale-xe-m e_1 $Ø_1$-a-txe-ʁe]   pjǝsme-r$_1$
            boy-PL-ERG   **REL.ABS-**3PL.ERG-write-PAST letter-ABS
            'the letter that the boys wrote'
        b.* [[e_2 e_1 $Ø_1$-a-txe-ʁe]   pjǝsme-r$_1$ č'elejeʁaže-m
            REL.ABS-3PL.ERG-write-PAST letter-ABS   teacher-ERG
            $Ø_2$-ǝ-λeʁ$_w$ǝ-ʁe]   č'ale-xe-r$_2$
            REL.ABS-3SG.ERG-see-PAST boy-PL-ABS
            ('the boys that the teacher saw the letter that wrote')

The ban on extraction out of headed relative clauses cannot be due to them being embedded within a DP, since Adyghe allows extraction out of a DP, as the following examples show.[13] (45) provides an example of a complex DP containing the head nominal 'clusters' and another nominal 'strawberry' acting as a modifier. (46)a-b show that the modifying nominal can be extracted out of the DP--the predicate occurs between the two nominals.

(45)   [$_{DP}$ c$_w$ǝmpe   ʔerame-xe-r]   daxe-Ø-x
        strawberry   cluster-PL-ABS   be_beautiful-PRES-PL

(46)   a. [$_{DP}$ t_1 ʔerame-xe-r]   daxe-Ø-x   c$_w$ǝmpe$_1$
            cluster-PL-ABS   be_beautiful-PRES-PL   strawberry
        b. c$_w$ǝmpe$_1$ daxe-Ø-x   [$_{DP}$ t_1 ʔerame-xe-r]
            strawberry   be_beautiful-PRES-PL   cluster-PL-ABS
            'Strawberry clusters look beautiful.'

(47) contains another complex DP, in which the nominal head 'voice' is modified 'angry' and also includes the possessive 'girls'. (48) shows that the nominal head 'voice' can be extracted out of the DP and moved to its right. (49) shows that the modifier 'angry' can be extracted as well, though

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[13] See Gerasimov and Lander (2008) for the same observation with further supporting examples.

not all our consultants accepted it. Finally, (50) shows that the nominal 'voice' can be extracted and moved to the left to the DP as well, as demonstrated by the temporal 'in the morning' occurring in between.

(47) [DP pŝ'aŝe-me   ja-ɣwbžəʁe   maqe-x-er]   qeʔw-ʁ
         girl-OBL   3PL.POSS-angry   voice-PL-ABS   sound-PAST
      'One could hear the girls' angry voices.' (Rogava and Keraševa 1966: 381)

(48) [pŝ'aŝe-me   ja-ɣwbžəʁe   t₁]   qeʔw-ʁ   maqe-x-er₁
         girl-OBL   3PL.POSS-angry   sound-PAST   voice-PL-ABS
      'One could hear the girls' angry voices.'

(49) [pŝ'aŝe-me   t₁   maqe-x-er]   qeʔw-ʁ   ja-ɣwbžəʁe₁
         girl-OBL   voice-PL-ABS   sound-PAST   3PL.POSS-angry
      'One could hear the girls' angry voices.'

(50) maqe-x-er₁   pčedəž'əm   [DP pŝ'aŝe-me   ja-ɣwbžəʁe   t₁]   qeʔw-ʁ
      voice-PL-ABS   in_the_morning   girl-OBL   3PL.POSS-angry   sound-PAST
       'In the morning one could hear the girls' angry voices.'

The next piece of evidence in favor of a structural analysis of the Adyghe construction as a relative clause (41) comes from the marking of possessive DPs under relativization. The absolutive DP argument of the declarative clause in (51) carries the possessive proclitic *a-* that can be co-indexed with the ergative DP or can be free.

(51) č'ale-xe-m₁   a₁/₂-mašjəne-r   a-qwəta-ʁ
      boy-PL-ERG   **3PL.POSS**-car-ABS   3PL.ERG-break-PAST
      'The boys₁ broke their₁/₂ car.'

If the ergative DP argument in (51) is relativized, two options are available for the possessive clitic. First, as shown in (52), the possessive clitic can appear in the same morphological shape and have the same interpretative properties (co-indexed with the head or free), as in (52). Under the other option, the absolutive DP denoting the possession carries the relativizer clitic *z*V-. In this case, the only available interpretation is that the referent of the head noun is the possessor. This interpretation arises because the variable introduced by the relativizer clitic on the name of the possession (absolutive DP) is bound by the operator in the same way as the variable introduced by the relativizer on the verb:

(52) [**Op₁** e(ERG)₁ a₁/₂-mašjəne-r   zə-qwəta-ʁe]   č'ale-xe-r₁
                      3PL.POSS-car-ABS   3SG.ABS-**REL.ERG**-break-PAST   boy-PL-ABS
      'the boys₁ who broke their₁/₂ car'

(53) [**Op₁** e(ERG)₁ e(POSS)₁ zə-mašjəne-r   zə-qwəta-ʁe]   č'ale-xe-r₁
                              REL.POSS-car-ABS   3SG.ABS-**REL.ERG**-break-PAST   boy-PL-ABS
      'the boys₁ who broke their₁/*₂ car'

On the analysis of the relativizer as a clitic whose variable has to be bound by the c-commanding operator, these empirical facts follow in a straightforward manner.
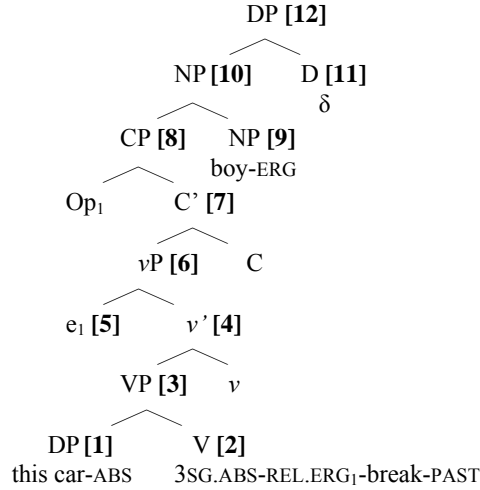
In the last argument we present, we again make use of possessive constructions in order to show that relative clauses in Adyghe exhibit weak crossover (WCO), as typical of constructions with a moved operator.[14] We start from the construction in (54), in which the absolutive object is

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[14] Thanks to Yakov Testelets who brought this effect to our attention.

relativized and the ergative subject carries the possessive affixal pronoun -*jə*. The pronoun can be free or co-indexed with the nominal head of the relative (though the latter option is dispreferred). If the possessive is replaced with the relativizer clitic, the result is unacceptable, regardless of the intended interpretation (55). Notice that a similar replacement was possible in (52)-(53), where the ergative subject was relativized, while the possessive pronoun/relativizer was on the absolutive object. The unacceptability is particularly striking given that WCO is usually further weakened in relative clauses (Lasnik and Stowell 1991).[15]

(54) [**jə$_{?1/2}$**-atəšə-m   **Ø**-q-əλeʁ$_w$ə-ʁe]   č'ale-r$_1$
      3SG.POSS-uncle-ERG   **REL.ABS**- DIR-3SG.ERG.see-PAST boy-ABS
      'the boy$_1$ that his$_{?1/2}$ uncle saw'

(55) [**zjə$_{*1/*2}$**-atəšə-m   **Ø**-q-əλeʁ$_w$ə-ʁe]   č'ale-r$_1$
      REL.POSS-uncle-ERG   **REL.ABS**- DIR-3SG.ERG.see-PAST boy-ABS
      'the boy$_1$ whom his$_{*1/*2}$ uncle saw'

To sum up, the island effects, the obligatory bound variable interpretation of the c-commanded possessive expression, and the weak crossover effects indicate that the relative clause contains an operator that binds variables introduced by constituents in its c-command domain, as shown in (41) above.[16] The relativizer *z*V- overtly marks clitics whose variable is bound by the c-commanding moved operator.

In conclusion, the Adyghe construction we are investigating no longer looks like an exotic mysterious phenomenon, but like an uncontroversial syntactic structure found in many languages: a headed relative clause. Its syntax/semantic interface is also quite straightforward, as we show in the next section.

3.3 Semantic analysis of headed relatives

The sentence in (56) contains a bracketed headed relative whose syntactic structure and semantic derivation are given in (57). Henceforth, we omit the TP projection and various applicative projections between the CP and the *v*P in all our trees (unless necessary) for the sake of simplicity. Also, the syntactic nodes that are semantically inert are not numbered in the trees and are ignored in the semantic derivations.

(56) mjərə [$_{DP}$[$_{CP}$ Op$_1$ e$_1$ mə mašine-r   ∅-zə$_1$-q$_w$əta-ʁ]   č'ale-r] jəwaʁ[17]
      Mira   this car-ABS 3SG.ABS-REL$_{ERG1}$-break-PAST boy-ABS beat
      'Mira beat the boy who broke this car.'

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[15] There is no evidence that Adyghe licenses parasitic gap, which makes another standard argument for a moved operator unavailable for Adyghe.

[16] An alternative analysis could be that Adyghe relative clauses are derived by head raising. However, idiom chunks do not relativize, and expressions like 'last' or 'first' co-occurring with the head noun only receives the high reading (Bhatt 2002; Heycock 2005). This argues against the head-raising analysis.

[17] We omit the morphological analysis of the matrix predicate since it is not directly relevant to our discussion.

(57)

```
                              DP [12]
                             /      \
                        NP [10]      D [11]
                        /    \         δ
                   CP [8]    NP [9]
                   /   \     boy-ERG
                 Op₁   C' [7]
                       /   \
                   vP [6]   C
                   /   \
               e₁ [5]   v' [4]
                        /   \
                   VP [3]    v
                   /   \
              DP [1]   V [2]
          this car-ABS  3SG.ABS-REL.ERG₁-break-PAST
```

[1]. [$_{DP}$ this car.ABS] $\rightsquigarrow c_{<e>}$ (*constant*)

[2]. [$_V$ 3SG.ABS-REL.ERG$_K$-break-PAST] $\rightsquigarrow \lambda y.\lambda x.\textbf{break}(y)(x)$

[3]. VP, $v' \rightsquigarrow \lambda x.\textbf{break}(c)(x)$

[4]. $e_1 \rightsquigarrow x_{1<e>}$ (*variable*)

[5]. vP, C $\rightsquigarrow \lambda x.[\textbf{break}(c)(x)](x_1) = \textbf{break}(c)(x_1)$

[6]. [$_{CP}$ Op₁ C'] $\rightsquigarrow \lambda x_1.\textbf{break}(c)(x_1)$ (*Lambda Abstraction*)

[7]. NP $\rightsquigarrow \lambda x.\textbf{boy}(x)$

[8]. NP $\rightsquigarrow \lambda x.[\textbf{break}(c)(x) \wedge \textbf{boy}(x)]$ (*Predicate Modification*)

[9]. $\delta \rightsquigarrow \lambda Q[\iota y[Q(y)]]$ (*Maximalization*)

[10]. DP $\rightsquigarrow \lambda Q[\iota y[Q(y)]](\lambda x.[\textbf{break}(c)(x) \wedge \textbf{boy}(x)]) = \iota y[\textbf{break}(c)(y) \wedge \textbf{boy}(y)]$

In the derivation in (57) (as in all the others to follow), we ignore the semantic import of tense (cf. step [2]); also, we translate referential DPs into individual constant without further analyzing them, unless relevant for the discussion (cf. step [1]). We assume that the gap (e_1) in a headed relative translates into a variable x_1 ranging over individuals (step [4]), which combines with the predicate first (step [5]) and is bound by the operator Op₁ via lambda-abstraction (step [6]). The whole CP ends up denoting a set of individuals, which is the standard denotation of a restrictive relative clause. As discussed earlier, the operator Op₁ is licensed by the verbal morphology, i.e. the ergative relativizer *zə-* in (56)-(57). The set of individuals the CP denotes combines with the set of individuals the nominal head denotes by standard predicate modification (Quine 1960; Montague 1973). The resulting set is turned into its maximal individual by the maximalization operation. This operation can be implemented by means of a type-shifting rule in the semantics or a silent maximality operator δ in the syntactic structure. We choose the latter and assume the operator δ to be the D head of the DP containing the relative CP. Partee (1986), Chierchia (1998), and Dayal (2004) independently argue for this operation in accounting for the semantic behavior of certain NPs/DPs, while Jacobson (1995) and Caponigro (2004) make a similar point for free/headless relatives.

In conclusion, we have shown that the Adyghe construction conveying what a headed relative conveys in other languages is actually a headed relative clause syntactically and semantically, despite the superficial differences. These differences are mainly due to the rich Adyghe verbal morphology, with a complex system of argument clitics and a relativizer that marks the argument that undergoes relativization. In the next section, we show that relative clauses in Adyghe can be used without a nominal head as well.

4 Headless relative clauses

4.1 Morphosyntactic structure of headless relatives

Adyghe headless relative clauses are morphosyntactically identical to the headed relatives we just discussed: same tense and clitic marking on the verb and same relativizer signaling which argument has been relativized. The predicate in the headless relative in (58) and the predicate in the headed relative in (59) are identical, except for their rightmost suffix.

(58)　　[e_1　xatə-r　　　∅-zə-pča-š'te]*(-r)
　　　　　　orchard-ABS　3SG.ABS-REL.ERG-weed-FUT-*(ABS)
　　　　　'the one/some who will weed the orchard'

(59)　　[e_1　xatə-r　　　∅-zə-pča-š'te](*-r)　　　　　č'ale-(r)
　　　　　　orchard-ABS　3SG.ABS-REL.ERG-weed-FUT(-*ABS)　boy-ABS
　　　　　'the/a boy who will weed the orchard'

The headless relative must have the determiner suffix on its predicate and it must be the rightmost suffix (58). (Recall from section 2.1 that the suffixal string -*r* is a shortcut for -*Ø-r* and its gloss 'ABS' actually stands for 'ABS-DET') On the other hand, the headed relative cannot have the determiner suffix on its predicate, but only (and optionally) on its nominal head (59). When the determiner on the head is lacking, only the non-specific interpretation is available. On the other hand, when the determiner is overt, either the specific or the non-specific interpretation is available, depending on the context. For example, the intensional matrix predicate and the optative marker on the embedded predicate in (60) below strongly favor the non-specific interpretation of the headless relative in complement position.

(60)　　[kjətajə-bze　　　　**zə**-ŝe-gwə-re]-m　　　　　sə-λeχwe
　　　　　Chinese-language　**REL.ERG**-know-POT-PRES-OBL　1SG-look
　　　　　'I am looking for someone who knows Chinese.'　　(*preferred reading*)
　　　　　'I am looking for the one/person who knows Chinese.' (*dispreferred reading*)

Headless relatives, like their headed counterparts, are islands for extraction. (61) shows an example of a headless relative with a relativized ergative subject and an overt absolutive object (we highlighted the gap and the associated relativizer in bold, in boxes, and by co-indexation). If the absolutive object is extracted by further relativization, as shown in (62), then the resulting string is completely unacceptable.

(61)　　[$\boxed{e_1}$　pjəsme-r　　∅-$\boxed{\textbf{zə}_1}$-txe-ʁe]-m
　　　　　　letter-ABS　　3SG.ABS-**REL.ERG$_1$**-write-PAST-OBL
　　　　　'the one that wrote a/the letter'

(62)　　* [[e_1　$\boxed{e_2}$　∅-**zə**$_1$-txe-ʁe]-m　　　　　　č'elejeʁaže-r　∅-$\boxed{\textbf{zə}_2}$-λeχwə-ʁ]
　　　　　　　3SG.ABS-**REL.ERG$_1$**-write-PAST-OBL teacher-ABS　3SG.ABS-**REL.OBL$_2$**-look-PAST
　　　　　$\boxed{\text{pjəsme-r}_2}$
　　　　　letter-ABS
　　　　　('a/the letter that the teacher was looking for the one that wrote it')

Headless relatives, therefore, can receive the same syntactic analysis as proposed for the headed relative clause:

(63)　　[$_{CP}$ Op$_1$　[$_{TP}$ e_1]]

A question that arises at this point is what the structure above the relative clause may be. There are at least two possibilities. A headless relative could be just a headed relative with a null NP as its head (64)a (Bresnan and Grimshaw 1978, a.o.) or it could consist of a D head that directly takes a CP complement (64)b.

(64) a. $[_{DP} [_{NP} [_{CP} Op_1 [_{TP} e_1]] [_N \varnothing]] D]$
      b. $[_{DP} [_{CP} Op_1 [_{TP} e_1]] D]$

The evidence in favor of one analysis or the other is hard to come by, given that many traditional properties that identify the category 'noun' do not hold in Adyghe. Although we cannot propose a definitive solution, we would like to offer at least one consideration that may tip the scales in favor of the analysis in (64)b.

Bare nouns are available in direct object position where they are interpreted as non-specific. This is particularly common with verbs of creation and transfer (Xolkina 2005), as shown by the contrast in (65)a-b.

(65) a. pš'aš'e-m   **ʒane**   ə-də-ʁ
          girl-ERG   dress   3SG.ERG-sew-PAST
          'The girl made <u>a</u> dress.'
      b. pš'aš'e-m   **ʒane-r**   ə-də-ʁ
          girl-ERG   dress-**ABS**   3SG.ERG-sew-PAST
          'The girl made <u>a/the</u> dress.'

However, even in the object position of creation verbs like the one in (65), a headless relative has to have the determiner (–*r*), as shown by the unacceptability of (66) without it.

(66) pš'aš'e-m $[_{CP}$ *pro* zə-š'i-λa]*(-r)   ə-də-ʁ
      girl-ERG   REL.OBL-APPL$_{Loc}$-dress.PRES   3SG.ERG-sew-PAST
   'The girl made what to put on/wear.' (Lit. 'what one dresses in')

Such a distribution is easier to account for if there is no null head, which could presumably appear bare.

Putting aside the details of the syntax of Adyghe headless relatives, we can conclude that they look very similar to headed relatives in Adyghe. In the next section, we give the detailed syntactic structure and semantic derivation of a headless relative to show how the whole meaning can be derived by standard compositional mechanisms that have already been invoked for other constructions and/or languages.

4.2 Semantic analysis of headless relatives

The bracketed string in (67) is the headless relative corresponding to the headed relative we discussed earlier (section 3.3: (56)-(57)). The only difference is that the relative in (67) lacks a nominal head and has the absolute marker/determiner -*r* occurring as a suffix on its predicate rather than on a nominal head. The syntactic structure and the complete semantic derivation for the example in (67) are given in (68).

(67) mjərə $[_{DP} [Op_1$ e$_1$ mə mašjəne-r $\varnothing$-zə$_1$-q$_w$əta-ʁe]-r]   jəwaʁ
      Mira   this car-ABS   3SG.ABS-REL.ERG$_1$-break-PAST-ABS   beat
      'Mira beat the one/those who broke this car.'

(68)

```
                              DP [10]
                          ╱         ╲
                    CP [8]            D [9]
                   ╱     ╲              δ
                Op₁      C' [7]
                        ╱     ╲
                    vP [6]      C
                   ╱     ╲
                e₁ [5]    v' [4]
                        ╱     ╲
                    VP [3]      v
                   ╱     ╲
               DP [1]    V [2]
            this car-ABS    3SG.ABS-REL.ERG₁-break-PAST
```
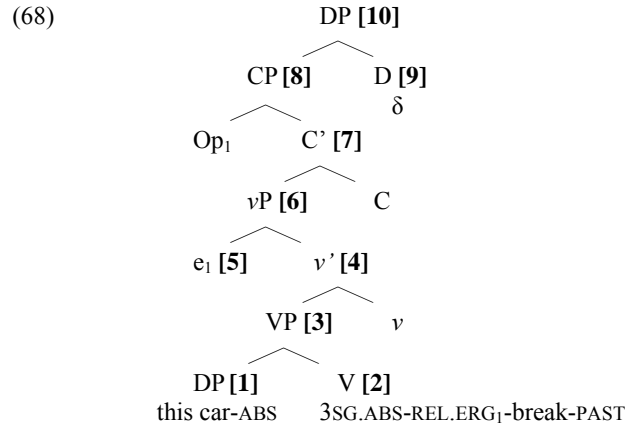
[1]-[8]. Same as the interpretation of the headed relative clause in (57): [1]-[8]

[9]. $\delta \leadsto \lambda Q\,[\iota y[Q(y)]]$ (same as in (57): [9])

[10]. $DP \leadsto \lambda Q\,[\iota y[Q(y)]]\,(\lambda x_1.[\textbf{break}(c)(x_1)]) = \iota y[\textbf{break}(c)(y)]$

The syntactic structure and the semantic derivation in (68) are almost identical to those of the headed relative (56)-(57). The only syntactic difference is the absence of a nominal head in (68), where the D head takes the CP as its complement. Semantically, the set of individuals the CP ends up denoting does not intersect with the set denoted by the nominal head, since the latter is missing (or semantically inert). Maximalization applies directly to the set denoted by the CP and turns the set of individuals into its maximal individual.

To summarize, this section and section 3 have investigated how Adyghe conveys what other languages convey by means of headed or headless relatives and found that Adyghe uses the same basic construction. Like standard relatives, the Adyghe construction is a CP with an operator binding a variable/gap. Unlike other languages, it does not have an overt wh-word, a relative pronoun, or a complementizer. A special relativizer (*zə-* or $\varnothing$-), instead, occurs as a prefix on the verb and marks the argument that has been relativized. The whole CP is adjoined to a nominal head in the case of the "headed relative" interpretation or occurs as the complement of a D head in the case of the "headless relative" interpretation. In conclusion, Adyghe turns out to be less exotic than at first glance: it has relative clauses and they are pretty standard both syntactically and semantically, despite the striking morphological make-up. In the next sections, we will see that Adyghe uses relative clauses to convey a number of other meanings.

5 Constituent interrogatives: matrix and "embedded"

In this section, we investigate the construction that Adyghe uses to encode what other languages convey by means of constituent interrogatives clauses. We will see that Adyghe does not have standard embedded interrogatives, which is why "embedded" appears in quotation marks above. Instead, as we show in section 5.1, Adyghe makes use of the headless relatives that we just discussed to convey the same meaning. We provide a compositional semantic account for this structure by appealing to the concealed question strategy, which has been independently argued for other constructions and/or languages (section 5.2). Finally, we examine matrix constituent interrogatives and conclude that they are copular constructions with a headless relative as the argument preceding or following the (null) copula (section 5.3).

5.1 "Embedded constituent interrogatives"

Adyghe uses two different strategies to covey what embedded constituent interrogative conveys in other languages. Neither resembles embedded constituent interrogatives the way we know them. One is the headless relative clause just discussed. (The other is direct quotation, which can be used to present declaratives or matrix constituent interrogatives—see Rogava and Keraševa 1966: 395-397, Sumbatova 2005.)

The bracketed clause in (69) is almost identical to the headless relative in (67) above: it has the same overt relativizer prefix *zə-* marking the ergative gap and an obligatory case/determiner suffix. The latter suffix is the oblique *–m* (rather than the absolutive *–r* in (67)) because of the different case assignment properties of the matrix verbs. The interpretation of (69), though, is different from the interpretation of (67). In particular, the bracketed clause in (69) no longer denotes an individual, but it is interpreted as an embedded interrogative in English, as shown by the translation.

(69) mjərə [DP[CP mə mašjəne-r ∅-**zə**-qʷəta-ʁe]-m]   qək̇eʷpčaʁ
      Mira   this car-ABS 3SG.ABS-**REL.ERG**-break-PAST-OBL asked
      'Mira asked who broke this car.'

If Mira's question is about the broken car, then the headless relative looks as it does in (70), the only difference with (69) being the null relativizer.

(70) mjərə [DP [č'ale-m   **∅**-ə-qʷəta-ʁe]-m]   qək̇eʷpčaʁ
      Mira   boy-ERG **REL.ABS**-3SG.ERG-break-PAST-OBL asked
      'Mira asked what the boy broke.'

"Embedded wh-questions" about other constituents also require headless relatives, as shown in (71) for the comitative argument.

(71) mjərə [DP[CP č'alem   mə mašjəner
      Mira   boy.ERG this car.ABS
      ∅-**zə-d**-jə-qʷəta-ʁe]-m]   qək̇eʷpčaʁ
      3SG.ABS-**REL.OBL-APPL**COM-3SG.ERG-break-PAST-OBL   asked
      'Mira asked with whom the boy broke this car.'

Just as was the case of headed and headless relative clauses, the constructions expressing "embedded constituent interrogatives" are syntactic islands. (72) shows that, if the absolutive object in (71) is extracted out of its clause, the result is completely unacceptable.

(72) * mə mašjəner mjərə [DP[CP č'alem
      this car.ABS Mira   boy.ERG
      ∅-**zə-d**-jə-qʷəta-ʁe]-m]   qək̇eʷpčaʁ
      3SG.ABS-**REL.OBL-APPL**COM-3SG.ERG-break-PAST-OBL   asked
      ('Mira asked, this car, with whom the boy broke.')

Notice that the same interrogative predicate that takes the headless relative as its complement in the examples above can take a plain DP complement as well, to which it still assigns oblique case, marked by the usual suffix *-m* (73). This shows that the selectional properties of an interrogative predicate like the Adyghe for 'ask' are compatible with our previous conclusion that headless relatives in Adyghe are DPs and with our current hypothesis that headless relative occur as complements of interrogative predicates.

(73) [_DP_ sə-ç̆e-m]   qəƙe_wəpč̆aʁ
      1SG.POSS-name-OBL asked
      'S/he asked my name.'

To sum up, Adyghe clausal complements of interrogative predicates are headless relative clauses, rather than embedded constituent interrogatives.

5.2 Semantics of "embedded constituent interrogatives"

We just concluded that the clausal complement of interrogative predicates in Adyghe is a headless relative. Therefore, the semantic analysis we discussed earlier (section 4.2) should apply in this case as well (at least, this should be the default hypothesis), and the headless relative would end up denoting an individual. But the interrogative predicate is looking for a clausal complement denoting a set of propositions. This leads to a type mismatch. This mismatch is reminiscent of the situation with "concealed questions."

Concealed questions are DPs denoting individuals, names, or numerical values that can occur as the complement of interrogative predicates and can be interpreted as embedded interrogatives. For instance, the DP *the capital of France* denotes an individual (a certain city in France), but in the sentence *Tell me [the capital of France]* the same DP is interpreted as the bracketed embedded constituent interrogative in *Tell me [what the capital of France is]*. Similarly, the DP *the price* denotes a certain numerical value (or an individual concept from worlds to numerical values); but it can also occur as the complement of the interrogative predicate *ask* as in *She asked me [the price]* and can be interpreted in the same way as the bracketed embedded constituent interrogative in *She asked me [what the price was]*. Adyghe has true concealed questions too, as shown by the bracketed DPs in (74)-(76) and their interpretation (see also example (73) above).

(74) [_DP_ ə-wase-r]   qaʔ_wə
      3SG.POSS-price-ABS say.IMPERATIVE
      'Say how much this costs.' (Lit.: 'Say its price.')

(75) [_DP_ mə səχatə-r] sə-ṣ̆er-ep
       this hour-ABS 1SG-know-NEG
      'I did not know what time it was.' (Lit.: 'I did not know the hour.')

(76) [_DP_ ʁ_wəg_wə-r]   qe-sə-a-ʔ_wətež̆er-ep
       road-ABS   INV-1SG-3PL-retell-NEG
      'They would not tell me how to get there.' (Lit.: '… tell me the road.')

(77) [_DP_ sša-m   jə-prezjədent(-ər)] we-ṣ̆-a?
       USA-OBL POSS-president-ABS 2SG-know-INTERR
       'Do you know who is the president of the USA?' (Lit.: 'Do you know the president…')

We suggest that the same mechanism that allows speakers of Adyghe or other languages to interpret plain DPs in the complement position of an interrogative predicate as embedded constituent interrogatives is at work in Adyghe when a headless relative occurs as the complement of an interrogative predicate. Let's exemplify our proposal by discussing the example in (69), repeated below as (78), and the semantic derivation we are suggesting for the complex DP containing a headless relative that occurs as the complement of the interrogative predicate (79).

(78) mjərə [_DP_ [_CP_ mə mašine-r ∅-zə-q_wəta-ʁe]-m]   qəƙe_wpč̆aʁ
      Mira   this car-ABS   3SG.ABS-REL.ERG-break-PAST-OBL asked
      'Mira asked who broke this car.'

(79)

```
                    DP [12]
                   /      \
            Op_CQ [11]    DP [10]
                        /        \
                    CP [8]       D [9]
                   /    \          δ
                 Op_1   C' [7]
                       /      \
                    vP [6]     C
                   /     \
                e_1 [5]   v' [4]
                        /      \
                    VP [3]      v
                   /     \
               DP [1]    V [2]
              this car-ABS   3SG.ABS-REL.ERG_1-break-PAST
```
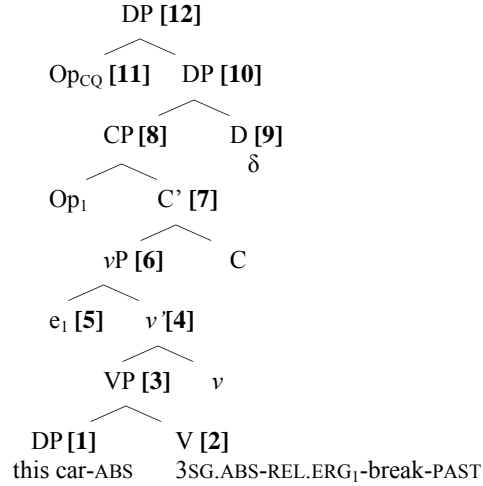
[1]-[10]: Same as the interpretation of the headless relative in (68): [1]-[10]

[10]: $DP \leadsto \lambda w_{1<s>}.\iota y[\mathbf{break}(w_1)(c)(y)]$ (*intension of (68): [10]*)

[11]. $Op_{CQ} \leadsto \lambda x_{<se>}.\lambda p_{<st>}.[\exists y[p = \lambda w[y = x(w)]]$

[12]. $[_{DP} Op_{CQ} DP] \leadsto \lambda x.\lambda p[\exists y[p = \lambda w[y = x(w)]] (\lambda w_1.\iota y[\mathbf{break}(w_1)(c)(y)])$

$= \lambda p[\exists y[p = \lambda w.[y = \iota y[\mathbf{break}(w)(c)(y)]]]$

In the semantic derivation in (79) above, we assume that the interrogative predicate licenses a Concealed Question operator (Op_{CQ} in [9]) that takes the intension of its complement (the individual concept in [8]) and returns an identity question, i.e. a set of propositions ([10]). The choice of Op_{CQ} is just for sake of simplicity and presentational purposes. The semantic contribution of Op_{CQ} could easily be incorporated in the lexical semantics of the interrogative predicate; alternatively, other type-shifting operations could be postulated. The specific details of the semantic analysis of concealed questions have been at the center of an ongoing debate, recently enriched with several contributions (Heim 1979; Frana 2006; Nathan 2006; Romero 2006; Caponigro and Heller 2007). As far as we can tell, any of the currently proposed solutions would be compatible with our analysis.

It has been noticed that the nature of the nominal within a DP plays a role in the availability of a concealed question interpretation for that DP. In particular, functional nouns (in the sense of Vikner and Jensen 2002) can more easily trigger a concealed question interpretation than non-functional nouns (see Nathan 2006; Romero 2006; Caponigro and Heller 2007, a.o.).

Also, Nathan (2006) and Caponigro and Heller (2007: ex. 51) note that a relative clause can facilitate the concealed question interpretation of DPs containing a non-functional noun. For instance, compare (80)a and (80)b (Nathan 2006: 116, ex. 70a and 71a, respectively). The main predicate of both sentences is *tell*, which selects for a proposition or a set of propositions in its complement position. In both cases, *tell* takes an individual denoting DP containing the non-relational noun *semanticist* as its complement. A concealed question interpretation of the DP complement is needed in order for the sentences to be acceptable. In (80)a, *semanticist* is modified by the genitive *USNDH's* and the sentence is judged awkward. In (80)b, *semanticist* is modified by a relative clause with virtually the same semantic content as the genitive and the acceptability of the sentence improves..

(80)   a. # Tell me [_{DP} USNDH's semanticist].
       b.   Tell me [_{DP} the semanticist who teaches at USNDH].

If Nathan's (2006) generalization is correct, it would support our proposal that a concealed question interpretation is always available with headless relatives in Adyghe. To be more precise, headless relatives always lack the potential obstacle to a concealed question interpretation, namely a nominal of the wrong semantic kind, since they do not have a (contentful) nominal head at all. On the other hand, headless relatives always include an element that facilitates a concealed question interpretation, namely a relative clause (since they are relative clauses according to our analysis).

To summarize so far, we have shown that Adyghe uses headless relatives to express what other languages convey with embedded constituent interrogatives—these headless relatives are interpreted as concealed questions. Before concluding, let's take a quick look at how Adyghe forms matrix constituent interrogatives.

5.3 Matrix constituent interrogatives

Example (81) shows a matrix constituent interrogative questioning the object, while (82) shows how a subject is questioned.

(81)   a. [$_{DP}$[$_{CP}$ č'ale-m   e$_1$ **Ø$_1$**-ə-q$_w$əta-ʁe]-r]   **səd-a/*Ø**
                boy-ERG   **REL.ABS**-3SG.ERG-break-PAST-ABS **what-Q**
      b. **səd-a/*Ø**   [$_{DP}$[$_{CP}$ č'ale-m **e$_1$**   **Ø$_1$**-ə-q$_w$əta-ʁe]-r]
          what-Q   boy-ERG   **REL.ABS**-3SG.ERG-break-PAST-ABS
          'What did the boy break?' (Lit. 'What is the thing the boy broke?')

(82)   a. [$_{DP}$[$_{CP}$ **e$_1$** mə mašjəne-r   Ø-**zə$_1$**-q$_w$əta-ʁe]-r]   **χet-a/*Ø**
                this car-ABS   3SG.ABS-**REL.ERG**-break-PAST-ABS **who-Q**
      b.   **χet-a/*Ø**   [$_{DP}$[$_{CP}$ **e$_1$** mə mašjəne-r   Ø-**zə$_1$**-q$_w$əta-ʁe]-r]
         who-Q   this car-ABS   3SG.ABS-**REL.ERG**-break-PAST-ABS
         'Who broke this car?' (Lit. 'Who is the one/person who broke this car?')

In both (81) and (82), the appropriate *wh*-word must occur and carry the interrogative marker *-a* (glossed Q) as its suffix (this suffix also appears on matrix polar interrogatives, and we will return to it in the discussion of embedded polar interrogatives below). As the examples a. and b. in (81) and (82) show, the wh-word can occur sentence-initially or finally. In the examples above, the bracketed constituent looks like the headless relatives we discussed: same relativizer on the verb (*Ø-* or *zə-*) and same absolutive case/determiner marker as the leftmost suffix on the verb (*-r*). This is why we bracketed the strings in (81) and (82) as DPs containing a CP, as we did for headless relatives earlier.

Examples of matrix constituent interrogatives questioning constituents other than subject and object are given in (83)-(86) below. In each example below, the *wh*-word and the question marker are required and can occur at the end of the sentence as well.

(83)   **təd-a**   [$_{DP}$[$_{CP}$ ar   **e$_1$**   Ø-**zə$_1$**-š'-jə-λeʁ$_w$e-ʁe]-r]
       where-Q   3SG.ABS   3SG.ABS-**REL.OBL-APPL**$_{LOC}$-3SG.OBL-see-PAST-ABS
       'Where did she see him/her?' (Lit. 'Where is the place s/he saw him/her (at)?')

(84)   **sədjəg$_w$-a** [$_{DP}$[$_{CP}$ č'ale-m mašjəne-r   **e$_1$**
       when-Q   boy-ERG car-ABS
       Ø-**zə$_1$**-š'-ə-q$_w$əta-ʁe]-r]
       3SG.ABS-**REL.OBL-APPL**$_{TEMP}$-3SG.ERG-break-PAST-ABS
       'When did the boy break the car?' (Lit. 'When is it that the boy broke the car?')

(85) **sədjəgʷ-a** [$_{DP}$ [$_{CP}$ ar e$_1$ Ø-**zə$_1$**-χʷə-ʁe]-r]
when-Q 3SG.ABS 3SG.ABS-**REL.OBL**- happen-PAST-ABS
'When did this happen?' (Lit. 'When is that this happened?')

(86) səd-a [$_{DP}$ [$_{CP}$ e$_1$ wə-**z-č'ə**-kʷawe-re]-r]
what-Q 2SG-**REL.OBL-APPL**$_{REAS}$-yell-PRES-ABS
'Why are you screaming?' (Lit. 'What is the reason that you are screaming for?')

Notice that (84) and (85) illustrate two different ways of questioning a temporal constituent: with both the relativizer and the temporal applicative prefix on the verb (84) or just with the relativizer but without the applicative clitic (85).[18]

The entire matrix constituent interrogative in Adyghe is therefore composed of a *wh*-word and a headless relative. Recall that Adyghe has a silent copula (section 2, ex. (6)). We suggest that this silent copula connects the two constituents, as highlighted by our literal translations above. The construction is syntactically a pseudo-cleft with the *wh*-word behaving like a syntactic predicate, and the interrogative marker attached to it, as schematized in (87).[19]

(87) **Structure of matrix constituent interrogatives in Adyghe**

a. [[wh-word+Q]$_{PREDICATE}$ [*silent copula*] [$_{DP}$ [$_{CP}$ Op$_1$ [$_{TP}$ e$_1$]] D]$_{SUBJECT}$]

HEADLESS RELATIVE

b. [[$_{DP}$ [$_{CP}$ Op$_1$ [$_{TP}$ e$_1$]] D]$_{SUBJECT}$] [*silent copula*] [wh-word+Q]$_{PREDICATE}$]

HEADLESS RELATIVE

This pattern of question formation is widely attested cross-linguistically (den Dikken *et al*. 2000; Potsdam 2007, 2009; Potsdam and Polinsky 2009b, a.o.). A semantic analysis for the structure in (87) is not directly relevant for our purposes (what really matters to us is that relative clauses are used in matrix constituent interrogatives as well). Nevertheless, such an analysis can be implemented straightforwardly along the line of Jacobson's (1994) and Sharvit's (1999) proposals on identity of copular constructions and pseudo-clefts: our headless relative ends up denoting an individual, the *wh*-word translates into a variable ranging over individuals, and the identity copula requires its two arguments to refer to the same individual.

The hypothesis in (87) receives further support from the fact that the *wh*-word can be replaced by a referential DP and the whole clause is turned into an uncontroversial identity statement, as shown in (88) and (89).

(88) [$_{DP}$ [$_{CP}$ č'ale-m e$_1$ Ø$_1$-ə-qʷəta-ʁe]-r] wə-mašjəne-ʁ
boy-ERG 3ABS-3SG.ERG-break-PAST-ABS 2SG.POSS-car-PAST
'The thing that the boy broke was your car.'

---

[18] This phenomenon is reminiscent of those temporal DPs that are interpreted as PPs even without an overt preposition in English and other language (e.g. *It happened* (*on*) [$_{DP}$ *that day*]/[$_{DP}$ *Monday*]) (Larson 1985; McCawley 1988; Caponigro and Pearl 2009, a.o.).

[19] A detailed analysis of this construction as a pseudo-cleft (as opposed to cleft) is beyond the scope of this paper. In brief, the arguments for it being a pseudo-cleft are as follows. First, the wh-word directly combines with the interrogative marker, as expected if it is part of the predicate rather than (part of) the clefted constituent. Second, the wh-word does not form a constituent with the headless relative. Third, the headless relative is syntactically a DP (which is compatible with being a pseudo-cleft) and not just a bare CP, (which is what the non-clefted constituent in a cleft is). Finally, the whole construction exhibits connectivity effects, like pseudo-clefts.

(89) mə qeba-r   [DP [CP e₁ wə-qə-zə₁-č'ə-se-gəjə-štə]-r]
      that news-ABS   2SG-DIR-REL.OBL-APPL_REAS-reproach-FUT-ABS
      'This news is the reason why you will reproach me.'

A matrix constituent interrogative, crucially, can never be embedded as such in Adyghe. As we saw in the previous section, headless relatives are embedded to convey what embedded interrogatives convey in other languages. In other words, only the subject DP in (87) can be embedded, but not the whole structure with a wh-word, regardless of the order or presence of the question marker –a, as shown in (90).

(90) a. * [[mə mašjəne-r   Ø-zə-q_wəta-ʁe]   χet-(a)]   qək̠e_wpčaʁ
             this car-ABS   3SG.ABS-REL.ERG-break-PAST who-Q   asked
      b. * [χet-(a) [mə mašjəne-r   Ø-zə-q_wəta-ʁe]]   qək̠e_wpčaʁ
             who-Q   this car-ABS   3SG.ABS-REL.ERG-break-PAST asked
         ('S/he asked who broke this car.')

Unlike English, multiple wh-words are impossible in Adyghe, both in matrix and in embedded interrogatives. An equivalent of the English multiple wh-interrogative in (91) is achieved by coordinating single wh-interrogatives, as shown in (92). Notice that no pair list reading is available in (92) for Adyghe, unlike the English (91).

(91) Mira asked [who broke what].

(92) mjərə [DP [CP Ø-zə-q_wəta-ʁe]-m]-jə
      Mira   3SG.ABS-REL.ERG-break-PAST-OBL-and
      [DP [CP Ø-ə-q_wəta-ʁe]-m]-jə   qək̠e_wpčaʁ
      REL.ABS-3SG.ERG-break-PAST-OBL-and   asked
      'Mira asked who broke something and what he/she broke'

To sum up, although Adyghe has a mechanism for constructing matrix constituent interrogatives with wh-words and a question marker, the entire matrix constituent interrogative cannot be embedded. Instead, Adyghe uses complex DPs containing a headless relative that lacks both the wh-word and the question marker, to convey what embedded constituent interrogatives convey in a language like English. In the next sections, we will see that there is much more Adyghe can convey by means of its relative clauses within DPs.

6 Declaratives and polar interrogatives: matrix and "embedded"

In this section, we investigate the Adyghe strategy of expressing what other languages convey by means of declaratives and polar interrogatives. In section 6.1, we briefly discuss matrix declaratives and matrix polar interrogatives in Adyghe. In section 6.2, we show that Adyghe does not have anything that resembles familiar embedded declaratives or embedded polar interrogatives. Instead the language again uses relative clauses. In section 6.3, we propose a compositional semantic analysis that derives both meanings. In section 6.4, we briefly touch on the similarities between Adyghe and more familiar languages that our analysis highlights, making Adyghe look less exotic than it may seem at a first glance. Finally, section 6.5 discusses and rejects an analysis according to which what we analyze as relative clauses are actually embedded declarative and polar interrogatives with a homophonous complementizer that surfaces as a verbal prefix.

6.1 Matrix declaratives and matrix polar interrogatives

(93) shows an example of a matrix declarative in Adyghe with the noun *č'ale-r* 'boy' behaving as the subject (as signaled by the case marker/determiner) and the noun *č'elejeʁaǯe-* 'teacher' behaving as the predicate (as signaled by the lack of case/determiner marking and the presence of a silent copula with the future suffix *–št*). Example (94) shows the corresponding matrix polar interrogative. The only difference between matrix declarative and polar interrogative is the already familiar question marker *–a*, which appears at the right edge of the predicate of the interrogative clause, regardless of the surface position of the predicate (cf. (94)a and (94)b). The matrix declarative in (95) and the matrix polar interrogative in (96) exemplify the same pattern but with an overt transitive predicate.

(93) a. č'ale-r č'elejeʁaǯe-Ø-št *Matrix declarative*
  boy-ABS teacher-COP-FUT
 b. č'elejeʁaǯe-Ø-št č'ale-r
  teacher-COP-FUT boy-ABS
  'The boy will be a teacher.'

(94) a. č'ale-r č'elejeʁaǯe-Ø-št-**a**? *Matrix polar interrogative*
  boy-ABS teacher-COP-FUT-**Q**
 b. č'elejeʁaǯe-Ø-št-**a** č'ale-r
  teacher-COP-FUT-**Q** boy-ABS
  'Will the boy be a teacher?'

(95) č'ale-m mə mašjəne-r Ø-ə-q$_w$əta-ʁ *Matrix declarative*
  boy-ERG this car-ABS 3SG.ABS-3SG.ERG-break-PAST
  'The boy broke this car.'

(96) a. č'ale-m mə mašjəne-r ə-q$_w$əta-ʁ-**a** *Matrix polar interrogative*
  boy-ERG this car-ABS 3SG.ERG-break-PAST-**Q**
 b. č'ale-m ə-q$_w$əta-ʁ-**a** mə mašjəne-r
  boy-ERG 3SG.ERG-break-PAST-**Q** this car-ABS
  'Did the boy break this car?'

6.2 "Embedded declaratives" and "polar interrogatives"

We now turn to the Adyghe equivalent of embedded declaratives or embedded polar interrogatives. Neither matrix declarative nor matrix interrogative clauses can be embedded. Example (97) shows an attempt to embed the matrix declarative in (95) above, while (98) shows the attempted embedding of the matrix polar interrogative in (96) above (with and without the question marker). Neither is acceptable.

(97) *[č'ale-m mə mašjəne-r ə-q$_w$əta-ʁ] sə-g$_w$pše-ʁ
  boy-ERG this car-ABS 3SG.ERG-break-PAST 1SG-think-PAST
  ('I thought that the boy broke this car.')

(98) *[č'ale-m mə mašjəne-r ə-q$_w$əta-ʁ-(a)] qə-ķe$_w$əpča-ʁ
  boy-ERG this car-ABS 3SG.ERG-break-PAST(-Q) INV-3SG.ABS-ask-PAST
  ('S/he asked if the boy broke this car.')

To express an embedded clause, a DP containing a relative clause has to be used, instead. Such DPs occur as the complement of a propositional attitude predicate like 'think' (99) or as the complement of an interrogative predicate like 'ask' (100).

(99) [_DP [_CP č'ale-m   mə   mašine-r   Ø-**ze-r**-je-q_wəta-ʁe]-**r**][20]
             boy-ERG   this   car-ABS   3SG.ABS-**REL.OBL-APPL**-3SG.ERG-break-PAST-**ABS**
      sə-g_wpšeʁ
      1SG-thought
      'I thought that the boy broke this car.'

(100) [_DP [_CP č'ale-m   mə   mašine-r   Ø-**ze-r**-je-q_wəta-ʁe]-**m**]
             boy-ERG   this   car-ABS   3SG.ABS-**REL.OBL-APPL**-3SG.ERG-break-PAST-**OBL**
      qəḳe_wpčaʁ
      asked
      'S/he asked if the boy broke this car.'

The bracketed strings are DPs because of the case marker/determiner suffix at their right edge (shown in boldface and boxed). That they are DPs containing a relative CP is apparent from the fact that the embedded verb carries the relativizer *ze-* (in boldface, boxed). Notice that the two DPs in (99) and (100) are identical, except for the case/determiner marker, which depends on the different case assigning properties of the respective main predicate.

   A further piece of evidence supports the identity of the two bracketed constructions in (99) and (100). Compare the predicate 'know' in English: it can take both declarative and interrogative complements (101)a-b. The Adyghe equivalent of 'know' takes only a DP with a relative clause attached, but that DP can receive two different interpretations, corresponding to the declarative and the interrogative readings in English (102).

(101) a. She doesn't know [_CP that Marina lives here].
      b. She doesn't know [_CP if Marina lives here].

(102) [_DP[_CP marine   məš'   ze-re-š'ə-pse_wre]-r]   aš'   jə-ŝer-ep
             Marina   here   REL.OBL-APPL-LOC-be_situated-ABS   3SG.ERG   3SG-knows-NEG
      'S/he does not know that Marina lives here.'
      'S/he does not know whether Marina lives here.'

   Also, both embedding predicates in the sentences above can take uncontroversial plain DPs (103)-(104), which further supports our analysis of "embedded clausal complements" as DPs.

(103) [_DP že_wape-r]   sə-g_wpše-ʁ-ep
          answer-ABS   1SG-think-PAST-NEG
      'I could not think of an answer.'

(104) [_DP sə-çe–m]   qəḳe_wəpčaʁ
          1sg.poss-name-OBL   asked
      'She asked my name.'

   Finally, both clausal complements in (99) and (100) are strong syntactic islands. (105)-(107) show that the bolded constituents cannot scramble out of the clauses, which is true for any constituent in headed and headless relatives, cf. (43)-(44) and (61)-(62) respectively.

(105) [č'ale-r   **txəλə-m**   **5_days-P_INSTR**   Ø-ze-r-jə-ža-ʁe-r]
        boy.ABS **book-OBL**   **5_days-P_INSTR**   3SG.ABS-REL.OBL-APPL-3SG.OBL-read-PAST-ABS
      marine   jəŝe[21]
      Marina   knows
      'Marina knows that the boy read the book in five days.'

---

[20] When the applicative prefix *re-* is followed by the 3sg ergative clitic *ə-*, the sequence is realized as *r-je* (Smeets 1984: 3.2, 4.7).

[21] The embedded clause is based on an example from Arkadjev and Letuchiy (2008: ex. 22).

(106) *[č'aler   txəλəm **t₁**   zerjəžaʁ-er]   marine   **mefjətfə-č'e₁**   jəŝe[22]
        boy   book   read-ABS   M   **5_ days-P_INSTR**   knows

(107) *__txəλəm₁__ marine [č'aler   **t₁**   mefjətfə-č'e   zerjəžaʁ-er   ]   jəŝe
       book   M   boy   5_days-INSTR read-ABS   knows

One could try to attribute these island effects to the fact that, if the complement of 'know' is a DP, then extraction out of a DP is banned or constrained in many languages, no matter what the internal structure of the DP is. Recall however, that DPs in Adyghe are transparent (e.g., (46)a-b), so this explanation would be unsupported by the empirical data.

6.3 Semantics for "embedded polar interrogatives" and "embedded declaratives"

In the previous section, we established that Adyghe does not have embedded declaratives or embedded polar interrogatives (this explains the quotation marks in the sections headings). It uses the same kind of complex DP containing a relative clause to convey what embedded declaratives and embedded polar interrogatives convey in other languages. What distinguishes this kind of relative clause from the other relatives we have seen so far is the verbal prefix *re-*, which looks like a prefixal applicative marker. As the following example shows, this marker occurs higher on the verb than any other applicatives—and unlike the other applicative markers, which can change their relative order, it cannot follow any other applicative (remember that a relativized applicative clitic is always immediately preceded by the relativizer *ze-*):[23]

(108) a.   __ze-r__-jə-fə-ra-de-s-ŝe-ʁe-r
           REL.OBL-APPL-3SG.OBL-BEN-3PL.OBL-COM-1SG.ERG-do-PAST-ABS
           'that I did that for him/her with them'
      b. * ə-fə-__ze-r__-a-de-s-ŝe-ʁe-r
           3SG.OBL-BEN-**REL.OBL-APPL-**3PL.OBL-COM-1SG.ERG-do-PAST-ABS

Like all relatives, the relatives in (99) and (100) instantiate an operator-variable configuration, as signaled by the relativizer prefix *ze-* and the applicative verbal clitic *re-*, and are syntactically opaque (they are islands). Their variable, though, ranges over a different kind of semantic object, as signaled by the high applicative verbal clitic prefix *re-*, which distinguishes them from the other relatives. We suggest it ranges over polarity operators.

A polarity operator is a function that takes a proposition p and returns either the very same proposition p (positive polarity operator, f_{POS}: $\lambda p.p$) or its negation ~p (negative polarity operator, f_{NEG}: $\lambda p.\sim p$). Therefore, the entire headless relative ends up denoting a set containing the two polar operators {f_{POS}, f_{NEG}} (shortcut for {$\lambda p.p$, $\lambda p.\sim p$}), after standard lambda abstraction over the variable has applied.

Polar operators and variables over them have been independently argued for to account for scope interactions within polar interrogatives in English and other languages (Guerzoni 2004: Romero and Han 2004). The intuition that we want to capture by appealing to polar operators is

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[22] The glosses of examples (106) and (107) have been simplified of irrelevant details for readability. See example (105) for detailed glosses.

[23] See the discussion of applicatives in Adyghe in section 2.2.2 above. See also Gerasimov and Lander (2008), who were the first to analyze *re-* in this construction as an applicative marker, and Lander (2009). In particular, Gerasimov and Lander (2008) analyze this *re-* as instrumental applicative. We believe there are at least two reasons to reject this proposal. First, the applicative in our construction and the instrumental applicative are phonologically different: our applicative is always *re-*, while the instrumental applicative marker is *rə-*. Second, the two applicatives can co-occur (see fn. 10).

that embedded declaratives and embedded polar interrogatives share a basic feature at the level of their semantic contribution: their denotations are built on the same proposition.

For instance, the denotations of the embedded declarative *(that) Mary left* and of the embedded polar interrogative *if/whether Mary left* in English depend both on the proposition 'that Mary left'. This proposition is either the actual denotation of the clause, as in the case of the embedded declarative, or the proposition that together with its complement/negation occurs as a member of the set-denotation, as in the case of the embedded polar interrogative (i.e. {that Mary left, that Mary didn't leave}).

According to our proposal so far, the semantic contribution of the relative clauses in (99) and (100) is the same: they both denote the set {f_{POS}, f_{NEG}} or, equivalently, {$\lambda p.p$, $\lambda p.\sim p$}. On the other hand, the two relative clauses (and the DPs containing them) are interpreted rather differently. The relative in (99) is interpreted as an embedded declarative in English, that is, denoting the proposition 'that the boy had broken this car'. On the other hand, the relative in (100) semantically behaves like embedded polar interrogatives in English and denotes a set containing the proposition 'that the boy had broken this car' and its complement/negation 'that the boy had not broken this car' (Hamblin 1973).

In English and other languages, a complementizer system overtly distinguishes the two kinds of clauses and may be taken to be responsible for their difference in meaning. In Adyghe, there is no evidence for any declarative or interrogative complementizers (see section 6.4 below for a discussion of why the prefix that we describe as a high applicative cannot be analyzed as a complementizer). More generally, there is no evidence for any morphological or structural difference between those two kinds of clauses. Also, as we saw in (102) above, when the matrix predicate is the Adyghe equivalent of a verb like 'know', our consultants judge the DP with the relative clause ambiguous between a declarative-like interpretation and an interrogative-like interpretation. Therefore, the difference in meaning between identical clausal complements like those in (99) and (100) must be due to some other factor.

One option is to stipulate that the lexical meaning of the matrix predicates is responsible for the difference in meaning of the whole sentence. Both propositional attitude and interrogative predicates would select for a set of polarity operators in Adyghe, but they would impose different truth conditions with respect to that set (and the other arguments they select for).[24] This possibility is hard to rule out but is also difficult to argue for—we have been unable to observe any independent special properties of Adyghe verbal lexicon that would support this approach.

We would like to pursue an alternative approach here and reduce this kind of complex DP containing a relative clause (i.e., complex DPs conveying what embedded declarative or polar interrogative convey in other languages) to another relative construction in Adyghe. We start by looking at the case in which the complex DP occurs as the complement of a propositional attitude predicate and is interpreted as an embedded declarative is in other languages. (109) shows such an example. Interestingly, our consultants judge (110) and (111) as truth-conditionally equivalent to (109)—despite the structural differences. (110) and (111) contain the same relative clause as in (109), except now the relative clause is immediately followed by a nominal head meaning 'news' or 'validity/verity/truth' (in bold and boxes in the examples below) which hosts the case marker/determiner suffix.

(109) [$_{DP}$ [$_{CP}$ č'ale-r   qə-zə-re-ƙ$_w$ežjə-š'tə]-r]   ə-g$_w$əreʁ
                boy-ABS   INV-REL.OBL-APPL-return-FUT-ABS 3SG-understood
        'S/he understood that the boy will arrive.'

---

24 Thanks to Chris Kennedy for suggesting this option.

(110) [_DP_ [_CP_ č'ale-r   qə-zə-re-ḳwežjə-š'tə]   [_NP_ **qeba**-r]   ]   ə-g_w_əreʁ
                boy-ABS INV-REL.OBL-APPL-return-FUT   **news**-ABS   3SG-understood
        'S/he understood that the boy will arrive.'

(111) [_DP_ [_CP_ č'ale-r   qə-zə-re-ḳwežjə-š'tə]   [_NP_ **ŝəpqə**-r]   ]   ə-g_w_əreʁ
                boy-ABS INV-REL.OBL-APPL-return-FUT   **verity**-ABS   3SG-understood
        'S/he understood that the boy will arrive.'

    Based on the morphosyntactic similarities in the data in (109)-(111) and our speakers'
intuitions about their truth conditions, we make the following two proposals for Adyghe: first, the
nominals like one in boldface and box in (110) or (111), are responsible for turning a set of
polarity operators into a proposition; second, when not overt, as in (109), a silent version of these
nominals occurs, with the same semantic contribution. Therefore, a more correct rendering of the
syntactic structure for the sentence in (109) would be as in (112), with a null nominal head
following the relative clause.

(112) [_DP_ [_CP_ č'ale-r   qə-zə-re-ḳ_w_ežjə-š'tə]   [_NP_ Ø]-r]   ]   ə-g_w_əreʁ
                boy-ABS   INV-REL.OBL-APPL-return-FUT   NULL.HEAD-ABS 3SG-understood
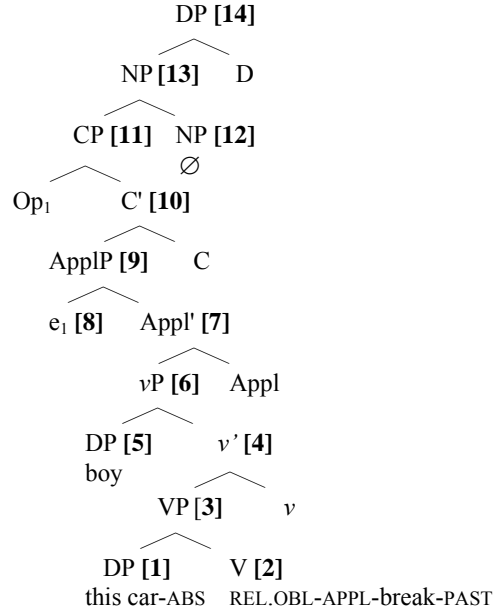   'S/he understood that the boy will arrive.'

    More generally, the structure that we are proposing for a relative clause within a complex DP
occurring as the complement of a propositional attitude predicate is the one in (113).

(113) [_DP_ [_NP_ [_CP_ Op_1_ [_TP_ e_1_]] [_N_ Ø]]   D]

    (115) presents the detailed semantic derivation of the bracketed complex DP in (114) according
to our proposal and shows how the same interpretation as an embedded declarative is achieved.

(114) [_DP_ [_CP_ **Op_1_** **e_1_** č'ale-m mə   mašjəne-r **ze_1_-re**-q_w_əta-ʁe**]**   [_NP_ Ø]-r]   ]
                boy-ERG this car-ABS   **REL.OBL_1_-APPL**-break-PAST   NULL.HEAD-ABS

    sə-g_w_pšeʁ
    1SG-thought
    'I thought that the boy had broken this car.'

(115)

```
                         DP [14]
                        /\
                  NP [13]    D
                   /\
             CP [11]  NP [12]
               /\       ∅
           Op₁   C' [10]
                  /\
            ApplP [9]   C
              /\
         e₁ [8]   Appl' [7]
                   /\
               vP [6]   Appl
                /\
          DP [5]   v' [4]
           boy      /\
                VP [3]   v
                 /\
            DP [1]   V [2]
         this car-ABS   REL.OBL-APPL-break-PAST
```

[1]. $[_{DP}$ this car-ABS$] \rightsquigarrow c_{<e>}$ (*constant*)

[2]. $[_V$ REL.OBL-APPL-break-PAST$] \rightsquigarrow \lambda y.\lambda x.\lambda w.\textbf{break}(w)(y)(x)$

[3]. VP $\rightsquigarrow \lambda x.\lambda w.\textbf{break}(w)(c)(x)$

[4]. $v' \rightsquigarrow \lambda x.\lambda w.\textbf{break}(w)(c)(x)$ (*same as [3]*)

[5]. $[_{DP}$ boy$] \rightsquigarrow b_{<e>}$ (*constant*)

[6]. $vP \rightsquigarrow \lambda w.\textbf{break}(w)(c)(b) =_{def} p_0$

[7]. Appl' $\rightsquigarrow p_0$ (*same as [6]*)

[8]. $e_1 \rightsquigarrow f_{X<st,st>}$ (*range of variable f_X*: $\{f_{POS:} \lambda p.p,\ f_{NEG:} \lambda p.\sim p\}$)

[9]. ApplP $\rightsquigarrow f_X(p_0)$

[10]. C' $\rightsquigarrow f_X(p_0)$ (*same as [9]*)

[11]. $[_{CP}$ OP₁ C'$] \rightsquigarrow \lambda f_X.f_X(p_0)$

[12]. $[_{NP} ∅] \rightsquigarrow \lambda F_{<<st,st>,st>}.F(\lambda p_{<st>}.p)$ (*equivalently,* $\lambda F.F[f_{POS}]$)

[13]. $[_{NP}$ CP $∅] \rightsquigarrow \lambda F.F(\lambda p.p) (\lambda f_X.f_X(p_0)) = p_0$

[14]. $[_{DP}$ NP D$] \rightsquigarrow p_0$ (*same as [13]*)

As in the previous semantic derivations, we assume in (115) that the *v*P ends up denoting a proposition p_0 ([6]) and the relative clause operator (Op₁) is in Spec, C. This time the operator binds an empty category in the specifier of the applicative projection (ApplP), which introduces the variable ranging over polarity operators ([8]). The operator triggers lambda abstraction over the co-indexed gap/variable and returns a function from polarity operators to propositions, as the meaning of the CP ([11]). The (silent) nominal ([12]) is defined as a complex function taking a function F from polarity operators to propositions as its argument and returning just the proposition that constitutes the value of the positive polarity operator. The combination of the silent nominal with the CP returns the proposition p_0 we started with as the denotation of *v*P ([13]). A proposition is the correct semantic object for a propositional attitude predicate like 'think'. Therefore type-shifting does not have to apply, the head D is semantically inert, and the whole complex DP inherits the same denotation as the NP, that is, the proposition p_0 ([14]).

The same nominals that can introduce the relative clause interpreted as an embedded declarative in (110) and (111) can also introduce relative clauses that are interpreted as embedded polar interrogatives. (116) shows a familiar relative clause without an overt head, while (117) shows the corresponding construction with one of those special nominals. They are both

interpreted as embedded polar interrogatives and our consultants judge them to be truth-conditionally equivalent.

(116) [DP [č'ale-r   qə-zə-re-ḵʷežjə-š'tə]-m]   qə-ḵeʷəpčaʁ
          boy-ABS   INV-REL.OBL-APPL-return-FUT-OBL   INV.3SG-asked
      'S/he asked if the boy will arrive.'

(117) [DP [č'ale-r   qə-zə-re-ḵʷežjə-š'tə]   **šəpqə**-m]   qə-ḵeʷəpčaʁ
          boy-ABS   INV-REL.OBL-APPL-return-FUT   **verity**-OBL INV.3SG-asked
      'S/he asked if the boy will arrive.'

We also found a nominal that can occur as the head of these relatives but only returns the interrogative interpretation. We gloss it as 'question'. (118) shows that when this nominal occurs as the head of a relative in the complement position of a predicate like 'know' that is compatible with both an interrogative-like or a declarative-like interpretations of its complement (as shown in (102) in above), then only the interrogative-like interpretation is available. On the other hand, with a nominal like 'verity', which we saw in (119), both interpretations are available.
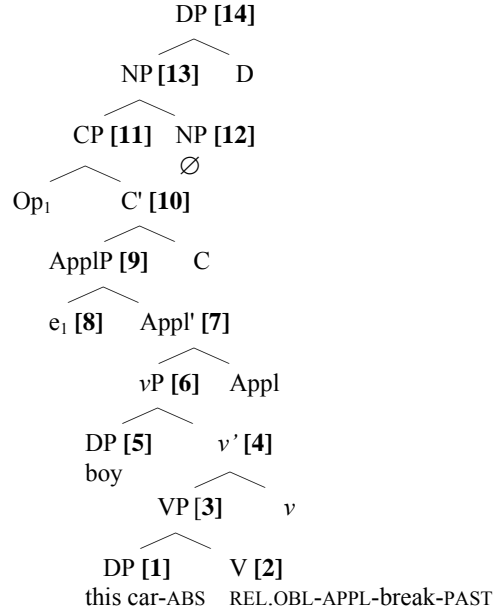
(118) [DP[CP marine   məš'   ze-re-š'ə-pseʷre]-r]   **wəpče**-r   aš'
           Marina   here   REL.OBL-APPL-APPL_LOC-be_situated   **question**-ABS   3SG.ERG
      jə-ṣ̂er-ep
      3SG-know-NEG
      'S/he does not know *that/whether Marina lives here.'

(119) [DP[CP marine   məš'   ze-re-š'ə-pseʷre]   **šəpqə**-r]   aš'
           Marina   here   REL.OBL-APPL-APPL_LOC-be_situated   **verity**-ABS   3SG.ERG
      jə-ṣ̂er-ep
      3SG-know-NEG
      'S/he does not know that/whether Marina lives here.'

We suggest that the syntax of the relative clauses interpreted as embedded polar interrogatives is identical to the syntax of the relative clauses that are interpreted as embedded declaratives. We suggest that their semantics is also similar. The only difference is in the meaning of the (silent) nominals. For example, the relative clause in (120) is interpreted as an embedded polar interrogative, and its syntactic structure is given in (121). This structure is identical to the structure in (115) above presented for the relative clause in (114), which is interpreted as an embedded declarative. The semantic derivation is the same as well, at least to the point when the silent nominal ([12]) combines with the CP ([11]). Therefore, in our discussion of the semantic derivation in (121) below, we will focus only on steps [11] to [14].

(120) [DP [CP **Op₁** **e₁** č'ale-m mə   mašjəne-r **ze₁-re**-qʷəta-ʁe]   [NP **∅**]-r]]
               boy-ERG this   car-ABS **REL.OBL₁-APPL**-break-PAST   NULL.HEAD-ABS
      ∅-a-ṣ̂ʷeṣə-ʁ
      3SG.ABS-2PL.ERG-think-PAST
      'They thought that the boy had broken this car.'

(121)

```
                        DP [14]
                       ╱╲
                  NP [13]   D
                 ╱╲
           CP [11]   NP [12]
          ╱╲          ∅
     Op₁     C' [10]
            ╱╲
      ApplP [9]    C
     ╱╲
  e₁ [8]   Appl' [7]
          ╱╲
      vP [6]    Appl
     ╱╲
  DP [5]    v' [4]
  boy      ╱╲
       VP [3]    v
      ╱╲
  DP [1]    V [2]
  this car-ABS   REL.OBL-APPL-break-PAST
```

[1]-[10]: Same as the interpretation of the relative in (115): [1]-[10]

[11]. $[_{CP}\,OP_1\,C']\rightsquigarrow \lambda f_X.f_X(p_0)$ (*same as (115): [11]*)

[12]. $[_{NP}\,\varnothing]\rightsquigarrow \lambda F_{<<st,st>,st>}.\lambda q_{<st>}[F(\lambda p.p)=q \vee F(\lambda p.\mathord{\sim} p)=q]$
     (*equivalently,* $\lambda F.\lambda q[F(f_{POS})=q \vee F(f_{NEG})=q]$)

[13]. $[_{NP}\,CP\,\varnothing]\rightsquigarrow \lambda F.\lambda q[F(\lambda p.p)=q \vee F(\lambda p.\mathord{\sim} p)=q]\,(\lambda f_X.f_X(p_0))$
     $= \lambda q.[p_0=q \vee \mathord{\sim} p_0=q]$

[14]. $[_{DP}\,NP\,D]\rightsquigarrow \lambda q[p_0=q \vee \mathord{\sim} p_0=q]$ (*same as [13]*)

The CP in [11] in (121) denotes the same function as in [11] in (115). The silent nominal in [12] now denotes a complex function taking a function F from polarity operators to propositions as its argument and returning the set containing the two propositions that constitute the values of the positive and negative polarity operators, respectively. The combination of the silent nominal with the CP returns the set $\{p_0, \sim p_0\}$ containing the values of both the positive and the negative operators when applied to p_0 ([13]). A set of propositions is the correct semantic object for the complement of an interrogative predicate like 'ask'; therefore no type-shifting is needed, D is semantically inert, and the whole complex DP inherits the same denotation as the NP, that is, the set $\{p_0, \sim p_0\}$ ([14]).

We would also like to elaborate on the syntactic and semantic role of the D head. In the relative constructions above, the determiner has to be present on the overt or covert nominal. Recall from section 2.1 that the determiner is compatible with both a specific and a non-specific interpretation; bare nominals without a determiner are possible, but they must have a non-specific interpretation. One may infer from this marking that the constructions under discussion must have only the specific interpretation, and the presence of the determiner is forced by this interpretation. However, we saw earlier (sections 4.1 and 4.3) that headless relatives require the determiner too, although they can also be interpreted as non-specific. Thus, the determiner is present to indicate the right boundary of the DP; its semantic contribution is not entirely clear. This is an unresolved puzzle of the Adyghe grammar; we believe that further investigation is necessary to understand fully the syntactic/semantic role of its determiners. Note, however, that more familiar languages may actually have a comparable design. In particular, the comparable English constructions *the fact that* or *the question whether* possibly exhibit a similar restriction: the determiner must be

present and only the definite determiner can occur (*_fact that_, *_a fact that_)—see also Kayne (2007) for similar observations.

Before concluding, we would like to offer one more comment on the high applicative prefix _re-_ that characterizes the relative constructions above. All applicative prefixes we had seen before could occur not just in relative constructions, but also in plain declarative sentences and license an overt argument. The applicative _re-_ is found only in the relative constructions and does not occur in root clauses. Why? We do not have a principled explanation for this restriction, but we believe our proposal is at least compatible with the facts. According to our analysis, _re-_ introduces an argument over a polarity operator. What kind of expression can realize that argument? In more familiar languages, this expression would be something like the complementizer _if/whether_ in English; but we already saw Adyghe does not have those. If a variable realizes the argument over a polarity operator, Adyghe relies on the only construction available (the relative clause) that allows binding and abstracting over that variable by means of an operator. In addition, there are several head nominals that can apply to the semantic result of that abstraction and return the correct semantic object. If the relative clause is not expressed, then the polarity operator is not introduced either. In syntactic terms, this proposal amounts to the idea that additional functional structure is optional and is projected only when needed (cf. Doherty 1993; Grimshaw 1997; Pesetsky 2000). Specifically, the applicative phrase licensing a polarity operator is not projected if there is no operator in the clause, which happens in root clauses.

In summary, we have argued that Adyghe uses relative clauses to convey what embedded declaratives and embedded polar interrogatives covey in languages like English. In particular, we have suggested that the way the denotation of a relative clause is turned into the appropriate denotation for the complement of a propositional attitude predicate or an interrogative predicate is by means of a nominal acting as the head of the relative and silent most of the time. A small number of nouns can overtly realize the nominal head too. These are nominals meaning 'rumor', 'fact' 'truth', 'news', and 'question'. When these nouns occur with a relative with _ze-re-_, though, they all seem to have the same light and "bleached" meaning. In fact, the whole sentence ends up being truth-conditionally equivalent to the one with a silent nominal and can be interpreted as either an embedded declarative or an embedded polar interrogative, depending on the matrix predicate (except the nominal 'question', which only license the interrogative interpretation – as we saw).

6.4   How different is Adyghe from other languages?

The Adyghe relative construction we just discussed may resemble the construction "_the fact/claim/rumor that ..._" in English and other languages. The idea that finite sentential complements are all relative clauses has been proposed for more familiar languages. Kayne (2007) argues that embedded declaratives in English and French form a subset of relative clauses. He suggests that embedded declaratives have the silent head noun _fact_ (see also Kiparsky and Kiparsky 1970) which allows _that_ relativization (_which_ relativization is ruled out by the restrictions on the determiners that can occur with _fact_). A sentence such as (122)a would be structurally identical to (122)b (but with a silent _the fact_) and they would be both derived from (122)c:

(122)   a.   I know that you are here
       b.   I know the fact that you are here.
       c.   You are here in fact//In fact you are here.

Closer to home, an analysis similar to Kayne's has independently been proposed for Adyghe. Building on Nichols' (2003) idea, Gerasimov and Lander (2008) suggest that Adyghe clauses with the high applicative *re* are relative *fact*-clauses.

In what follows, we would like to highlight similarities and differences between the Adyghe constructions and the *fact/rumor*-constructions in more familiar languages and point out some related open issues.

Both Adyghe and English can use a small class of meaning related nominals to introduce clauses that, without those nominals, would be interpreted as embedded interrogatives or declaratives. However, the presence of those nominals affects the interpretation differently in the two languages. In Adyghe, there does not seem to be any relevant meaning difference between the construction with the overt nominal and the construction with the silent nominal. On the other hand, the overt nominal can trigger semantic differences in English, as shown in (123)a-c.

(123) a. I know ∅ that the president was elected illegally.
       b. I know <u>the claim</u> that the president was elected illegally.
       c. I know <u>the rumor</u> that the president was elected illegally.

As we discussed above, all these nominals in Adyghe can trigger both the interrogative-like and the declarative-like interpretations, the only exception being the nominal 'question', which triggers only the interrogative-like interpretation. On the other hand, most of the English nominals that trigger the declarative-like interpretation do not seem to trigger an interrogative-like interpretation. For instance, nominals like *fact, news, claim,* or *rumor* can only introduce a declarative clause, but not an interrogative, as made clear by the different complementizers in (124).

(124) We won't discuss the fact/news/claim/rumor {**that**}/*{(of) **whether**} the president was elected illegally.

At the same time, English has nominals like *puzzle* or *problem* that can introduce both kinds of clauses and trigger both interpretations, as shown by the acceptability of both complementizers in (125). The overt and silent nominals in Adyghe seem closer to the English *puzzle* than to the English *fact,* etc.

(125) We won't discuss the puzzle/problem {**that**}/{(of) **whether**} the president was elected illegally.

Another similarity between the two languages regarding this construction is that English requires the definite determiner in this construction (126) and Adyghe always requires the determiner on its "embeddings" (127).

(126) We won't discuss **the/*a/*some/*one/*every** fact that the president was elected illegally.

(127) [$_{DP}$ [č'ale-r   qə-zə-re-ḳwežjə-š'tə]   **qeba***(-r)]   ə-g$_w$əreʁ
            boy-ABS INV- REL$_{OBL}$-APPL-return-FUT   **news**-ABS   3SG-understood
         'S/he understood that the boy would return.'

The clausal complements of this class of nominals in English are clearly distinguishable between embedded interrogatives and embedded declaratives, because they have different complementizers. In Adyghe, however, there is no difference between the clauses that occur with the nominals: they are all relative clauses. Thus, Adyghe uses relative clauses to convey what is conveyed by embedded declaratives or polar interrogatives in English.

To account for the complex pattern and the various restrictions concerning the Adyghe relative construction we just discussed, a better understanding of the semantics of these constructions across languages would be extremely helpful (maybe even necessary). Unfortunately, we are not aware of any detailed investigations of the semantics of "*the fact/claim/rumor that ...*" construction (but see Zucchi 1993 and Kim 2009 for relevant remarks). It could very well be that further research into these constructions across languages may affect the details of our semantic analysis, for instance, our assumptions about the meaning of these nominals. Nevertheless, we believe that our core generalization on the relative nature of these clauses will not be affected.

6.5   Could *ze-re* be a complementizer?

Could the analogy with the English construction in section 6.4 suggest that what we have called relative clauses in sections 6.2 and 6.3 above are actually something else? In particular, why can't the marker(s) *ze-re-* be analyzed as an interrogative/declarative complementizer, so that the syntax/semantics mapping in Adyghe would look much more similar to the majority of the languages we are familiar with?[25] Such an analysis would capture the syntactic distribution and island effects and would also capitalize on the well-attested parallels between relative and non-relative complementizers like English *that,* Romance *que*, Russian *čto*, etc. (Bresnan 1970: 318; Stahlke 1976; van Auwera 1985 a.o.).

As far as we know, homophony between declarative and interrogative complementizers is not common across languages—the familiar English contrast between the declarative *that* (and *how*, see below) and interrogative *if/whether* instantiates a typical scenario. No languages that we are familiar that have homophony between relative and non-relative complementizers can extend the same complementizers to polar interrogatives. Further, there is no independent evidence of any complementizer system in embedded clauses in Adyghe.[26] Adyghe has only one other kind of embedded clause, besides the relative construction we are investigating. It is uncontroversially an infinitival and converbal TP, not a CP (Polinsky and Potsdam 2006; Potsdam and Polinsky 2009a; Höhlig 2007).

If *ze-re-* were to be analyzed a complementizer, its morphological shape would be totally accidental. Our analysis allows us to decompose it into the relativizer *ze-* (the same marker that appears in the other relative clauses) and the high applicative prefix *re-*, which distinguishes this relative from the others. A further argument for the relative clause analysis of *ze-re-* clauses comes from the observation that these clauses never stack with those relative clauses whose status would not be under dispute. In more familiar languages, a *fact*-clause and a relative clause can stack, as shown for English in (128), for Japanese in (129), and for Korean in (130). In Adyghe, however, such stacking is impossible regardless of the order of the two CPs (131).

(128)   a.The fact [that gas consumption is diminishing] [that/which CNN ignored]
        b. % The fact [that/which CNN ignored] [that gas consumption is diminishing]

(129)   [CNN-ga   hookokushi-ta] [shitsugyo-ritsu-ga   agatteiru] (to-iu)   jijitsu
        CNN-NOM report-PAST   unemployment-rate-NOM rising   (COMP-say) fact
        'the fact that the unemployment rate is rising that CNN reported'

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[25] This suggestion is implicit in Smeets' account: he glosses *ze-re-* as 'that' (Smeets 1984: 255).

[26] See Rogava and Keraševa (1966: 75, 336, 434) for explicit statements that Adyghe lacks embedding in the familiar, "average standard European" sense; see Gerasimov and Lander (2008) for remarks that no overt complementizers have been reported.

(130) [ku kica-ka   enkupha-n] [Libby-ka koso-toy-n]   sasil
    that reporter-NOM mention-ADN   Libby-NOM indict-undergo-ADN fact
    'the fact that the reporter mentioned that Libby got indicted'

(131) a.* [dak̄ʷeme   ze-re-ŝʷejəʁʷe]
            marrying   REL.OBL-APPL-desire_have
      [mʷerat Ø-qə-s-f-jə-ʔʷeta-ʁe]   qeba-r
        M   REL.ABS-DIR-1SG.OBL-APPL_BEN-3SF.ERG-deliver-PAST   news-ABS
      b.* [mʷərat qəsfjəʔʷeta-ʁe   [dak̄ʷeme ze-re-ŝʷejəʁʷe]   qeba-r
           M   REL.ABS-DIR-1SG.OBL-APPL_BEN-3SF.ERG-deliver-PAST   marrying
      REL.OBL-APPL-desire_have news-ABS
        ('the news/rumor that she wants to get married which Murat told me')

Note that two uncontroversial relatives (modifying a noun head) cannot stack either
(132)-(133), which suggests that whatever the reason for the ban on stacking in Adyghe is, it
applies across the board.[27]

(132) * [a-r   zə-χʷə-ʁe]   [wə-qə-z-č'ə-se-ʷepčə-re]
      that-ABS REL.OBL-happen-PAST 2SG.ABS-INV-REL.OBL-APPL_REAS-1SG.OBL-ask-PRES
      qale-r
      town-ABS
      ('the town where this happened which you are asking me about/on the account of')

(133) * [wə-qə-z-č'ə-se-ʷepčə-re]   [a-r   zə-χʷə-ʁe]
         2SG.ABS-INV-REL_OBL-APPL_REAS-1SG.OBL-ask-PRES that-ABS REL.OBL-happen-PAST
      qale-r
      town-ABS
      ('the town that you are asking me about where this happened')

The restriction on stacking and the identity of embedded declaratives and embedded polar
interrogatives argue against the treatment of *ze-re-* as a complementizer. The relative clause
analysis does not have such problems.

Finally, the reader may be tempted to draw a parallel between *ze-re-* and the English *how* in a
sentence like (134)a. This sentence is truth-conditionally equivalent to (134)b, in which the
wh-word *how* has been replaced with the declarative complementizer *that*. This could be taken as
an example of a construction that syntactically looks like a wh-construction but semantically
behaves like a declarative (cf. Legate in press).

(134) a. She remembers <u>how</u> Jerry would sit on the porch all day long.
      b. She remembers <u>that</u> Jerry would sit on the porch all day long.

Despite the superficial similarity, there are several major differences between the English
construction and our Adyghe construction. The English *how*-complements presuppose the truth of
their propositional content. (134)a presupposes that Jerry sat on the porch all day long. This is
why, if the matrix predicate in (134) is replaced with a non-factive predicate like *believe*, then the
that-clause is still acceptable (135)b, but the *how*-clause no longer is (135)a.

(135) a. * She believes <u>how</u> Jerry would sit on the porch all day long.
      b.   She believes <u>that</u> Jerry would sit on the porch all day long.

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[27] It is worth noting that the stacking of relative clauses, generally available for postnominal relatives
(Hudson 1990: 396; Sag 1997), is much more constrained in head-final languages (Suzuki 2005; Larson and
Takahashi 2007). Whatever the reasons behind the ban on the stacking of prenominal relative clauses, this
ban is clearly categorical in Adyghe.

On the other hand, Adyghe clauses do not exhibit any presuppositional restrictions. Also, what looks like the very same construction in Adyghe is used to trigger both the interrogative-like and declarative-like interpretations, while the English *how*-construction cannot occur as the complement of an interrogative predicate. In (136)a, *how* is interpreted as a true wh-word, and this interpretation is different from that of (136)b, in which *how* has been replaced by the interrogative complementizer *whether*.

(136) a. She asked <u>how</u> Jerry would sit on the porch all day long.
       b. She asked <u>whether</u> Jerry would sit on the porch all day long.

We cannot rule out some diachronic connection between the manner applicative *re-* and the "high applicative" *re-* in Adyghe, but we hope that this discussion shows that synchronically the latter cannot be compared to the English declarative *how*.

6.6 Taking stock: Embedded declaratives and polar interrogatives

We have shown that Adyghe does not have syntactic structures that resemble the more familiar embedded declaratives or embedded polar interrogatives. Once again, the language fills that void by using a relative construction. The corresponding relatives always carry the relativizer *zٰ-* (like many other relative clauses), but are morphologically distinguishable from the rest by the presence of the high applicative *re-* . We argued that these two prefixes together signal abstraction over a variable associated with a polarity operator. As a result, the relative clause denotes a set of polarity operators. Nevertheless, this cannot be the end of the semantic story since these relative clauses end up being interpreted as either embedded declaratives or embedded polar interrogatives. We notice that their semantic behavior is identical to another construction in which the very same kind of relative clause occurs, but this time with an overt head, drawn from a restricted class of abstract nominals such 'news', 'truth', 'question', etc. We conclude that all these relatives (with or without a head) have the same syntactic and semantic structure: they are headed relatives (with a possibly silent head) and their head, denoting an abstract ontological object, is responsible for turning the denotation of the clause from a set of polarity operators to a proposition (or a set of propositions).

7   Adjunct clauses

So far we have not seen any evidence that Adyghe allows for embedded tense clauses, unless they are relative clauses within a complex DP. This restriction is not accidental. We believe Adyghe has no other way of embedding tensed clauses, and we will speculate more on why this is the case at the end of the paper (section 8). In this section, we will further strengthen our proposal by demonstrating that Adyghe also uses DPs with a relative clause attached to convey what tensed adjunct clauses convey in other languages.

Adjuncts in Adyghe can be expressed in three ways. Non-clausal adjuncts are realized by adverbials from a small inventory of true adverbs or a larger set of nouns turned into adverbs by means of an adverbial suffix *–ew* or a postposition (Rogava and Keraševa 1966: 91-95, 383-385). As for expressing clausal adjuncts, one option is to use matrix sentences loosely coordinated with other clauses paratactically, or with the help of particles (Sumbatova 2005; Höhlig 2007; Smeets 1984: ch. 5). The other option for expressing clausal adjuncts is to make use of complex DPs that contain a relative clause, are marked with oblique case, are not licensed by an applicative head, and can be governed by a postposition. In this section, we focus on the latter option, since it constitutes another example of how Adyghe uses the same 'relative clause' strategy to convey what in other languages would be expressed by means of several dissimilar syntactic structures.

The bracketed string in (137) shows how a tensed temporal adjunct clause is realized in Adyghe. It has all the properties of the headless relative we discussed in section 4: the determiner/case marker (-*m*) at its right edge and the relativizer verbal prefix *zə-* immediately followed the temporal applicative verbal prefix (*š'ə-*). which together signal that is a relative clause with a relativized temporal argument. (138) shows how a very similar headed relative with the temporal nominal 'day/time' as its head can be used to convey a very similar meaning

(137) [DP [CP pŝaŝə-r **zə-š'ə**-čeje-ʁe]-**m**]   jane me-ķwe-z'ə-ʁ
   girl-ABS **REL.OBL-APPL**TEMP-sleep-PAST-**OB**L   mother DYN-go-back-PAST
   'The mother came back while the girl was asleep.'

(138) [DP [CP pŝaŝə-r**zə-š'ə**-čeje-ʁe]   **dež'-əm**] jane me-ķwe-z'ə-ʁ
   girl-ABS **REL.OBL-APPL**TEMP-sleep-PAST **time-OBL** mother DYN-go-back-PAST
   'The mother came back at the time the girl was asleep.'

In (137) and (138), the matrix predicate 'go-back' does not carry any temporal applicative prefix, which means that the bracketed complex temporal DP with the relative inside is a true adjunct of the matrix clause and not an indirect argument. These "adjunct clauses" are syntactic islands, which of course would be compatible both with the relative clause analysis—the one we pursue— and the regular adjunct clause analysis. However, the morphological signature of these clauses (*z*V-marking and applicative heads) is specific to the relative clause analysis.

How is the connection between the adjunct and its matrix clause established in the absence of a postposition? This phenomenon is not peculiar to Adyghe. English and other languages have temporal DPs that seem to behave syntactically and semantically as PPs, though there is no P. For instance, the DP *that day* in the sentence *It happened that day* looks syntactically and semantically equivalent to the PP *on that day* in *It happened that day*. It has been argued that a silent preposition occurs with DPs that behave like PPs (McCawley 1988; also Larson 1985) or with headless/free relatives introduced by *when*, *where*, and *how* in English when they behave like PPs (Caponigro and Pearl 2009). A similar approach can be easily developed for the syntax/semantic mapping of adjunct clauses in Adyghe, but it is not directly relevant for our purposes. What is crucial for us is that Adyghe uses complex DP containing relative clauses to convey what other languages convey by means of adjunct clauses.

The use of such "adjunct clauses" is extremely productive and involves embedded declaratives, as we discussed in section 6 above. Thus, (139)a-b show a morphological/syntactic/semantic pattern similar to the one we just saw except that the relativized argument is introduced by the high applicative *re-* discussed in section 6 and the whole bracketed complex DP with a relative inside behaves like an adjunct denoting the cause of the event in the main clause. Note that in this particular example, there is a postposition (*paje* 'for'/'because') but the structure of the adjunct is not different from the temporal adjunct discussed above. Also, the head in (139)b is more generic-- an indefinite expression with the meaning 'one'/'something':

(139) a. a-r   jənstət_wətə-m   čeha-ʁ   [_DP [_CP bere   **ze-r**-jə-žešta-ʁe] -**m**]
          3SG-ABS institute-OBL   enter-PAST   much **REL.OBL-APPL**-3SG.ERG-study-PAST-OBL
          paje[28]
          for
          'He got into college because he studied a lot.' (Lit.: on the account of it that…)
       b. a-r   jənstət_wətə-m   čeha-ʁ   [_DP [_CP bere   **ze-r**-jə-žešta-ʁe]
          3SG-ABS institute-OBL   enter-PAST   much **REL.OBL-APPL**-study-PAST
          zə-m]   paje
          one-OBL   for
          'He got into college because he studied a lot.' (Lit.: on the account of it that…)

8   Conclusions

Our investigation of clausal embedding in Adyghe has brought us to conclude that this language uses complex DPs containing a headed or headless relative clause to convey what other languages convey by means of not only relative clauses, but also other constructions like embedded constituent interrogatives, embedded declaratives, embedded polar interrogatives, or adjunct clauses. In other words, Adyghe starts from a syntactic construction that is found in other languages (relative clauses) and maps it into the same meanings that are conveyed in other languages, but the way the syntax/semantics interface itself is handled is different. This shows that the familiar mapping (roughly, a different embedded construction for each meaning) is not the only one available.

Although different, the syntax/semantics interface in Adyghe only makes use of mechanisms like concealed questions, polarity operators, and nominals like *fact* or *question* that are independently attested not just in Adyghe but also in more familiar languages, as we showed in the previous sections.

This is the core conclusion we arrive at: Adyghe stretches its use of relative clauses further than the more familiar languages but it does nothing in violation of the fundamental principles of language design. Thus, the seeming exoticism of Adyghe is only skin-deep. Under closer scrutiny, it can be accounted for within the existing theories of language structure and meaning.

If our analysis is on the right track, Adyghe is the type of language whose verbs take DPs or TPs, but not CPs as their complements. This can be simply due to the lack of non-relative complementizers. The lexicon of a language is expected to shape its syntax, and just as there are languages without determiners, there can be languages without certain complementizers. Because of this apparent lexical gap, the large majority of predicates that in other languages would take a CP, in Adyghe only subcategorize for a DP. The TP-taking verbs are a smaller class of volitional and aspectual predicates (Kumakhov and Vamling 1998, Polinsky and Potsdam 2006, Potsdam and Polinsky 2009a). The only way of embedding a tensed clause in Adyghe is inside a DP using the relativization strategy. This implies that the only complementation strategy in Adyghe is the one using a relative C head (which happens to be silent). The language therefore draws a critical distinction between relative complementation and the complementation of all other types (viz., embedded declaratives and interrogatives).

The difference between complementation and relativization is therefore categorical and can be implemented using Rizzi's (1990) typology of complementizer features. According to Rizzi (1990: 68), complementizers differ in the feature [± predicative]. Those C that are [+ predicative] can head a clause which can be predicated of an entity. Relative C's are predicative, whereas

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[28] From Sumbatova (2005: ex. 22).

complement clauses are headed by non-predicative C's. Tensed complementizers, overt or silent, in the relative clause domain thus form a class by themselves. Rizzi's typology correctly predicts that a language may have one type of complementizer but not the other. It remains to be seen if there are languages that have only non-predicative complementizers, but no relative clause complementizers. We are not aware of such languages, which may point to an intriguing asymmetry between complementizer types.

Based on our analysis, we can also outline several broader implications which we leave as questions for future research. First, if a language exhibits the embedding of complementizers encoding illocutionary force (as is the case, for example, in Japanese or Korean, where question markers embed freely), then those embedded constructions cannot be relative clauses, since relative clauses lack higher functional projections associated with the illocutionary force (Rizzi 1997). Therefore, it is no longer surprising that the question marker *–a* in Adyghe never embeds, as we saw earlier. This is expected since a relative clause does not have enough functional architecture to house the relevant projection.

Second, recall that our account of Adyghe "embeddings" crucially relied on the independently attested concealed question strategy. If a language does not independently employ concealed questions (as has been proposed for Macedonian – see Caponigro and Heller 2007), it naturally follows that it would not use extensive relativization to convey constituent interrogatives.

Last, if independent evidence is found in a language that its propositional attitude or interrogative predicates do not allow for DP complements, then the same language is expected not be able to use the Adyghe strategy; that is, it should not use relative clauses embedded within DPs to convey what other languages express with embedded declaratives or interrogatives. Further cross-linguistic work is needed to determine whether these predictions are on the right track.

Acknowledgments

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