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de Vries, Mark

*Published in:*  
Oxford Research Encyclopedia of Linguistics

*DOI:*  
[10.1093/acrefore/9780199384655.013.56](https://doi.org/10.1093/acrefore/9780199384655.013.56)

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2018

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*  
de Vries, M. (2018). Relative Clauses in Syntax. In *Oxford Research Encyclopedia of Linguistics*  
<https://doi.org/10.1093/acrefore/9780199384655.013.56>

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# Relative Clauses in Syntax

Mark de Vries  
*University of Groningen*

2018, postprint version  
Oxford Research Encyclopedia of Linguistics  
<http://linguistics.oxfordre.com/>

## Summary

A relative clause is a clausal modifier that relates to a constituent of the sentence, typically a noun phrase. This is the antecedent or ‘head’ of the relative construction. What makes the configuration special is that the subordinate clause contains a variable that is bound by the head. For instance, in the English sentence *Peter recited a poem that Anne liked*, the object of the embedded verb *liked* is relativized. In this example, the relative clause is a restrictive property, and the possible reference of *a poem* is narrowed to poems that Anne likes. However, it is also possible to construct a relative clause non-restrictively. If the example is changed to *Peter recited this poem by Keats, which Anne likes*, the relative clause provides additional information about the antecedent, and the internal variable, here spelled out by the relative pronoun *which*, is necessarily coreferential with the antecedent.

Almost all languages make use of (restrictive) relative constructions in one way or another. Various strategies of building relative clauses have been distinguished, which correlate at least partially with particular properties of languages, including word order patterns and the availability of certain pronouns. Relative clauses can follow or precede the head, or even include the head. Some languages make use of relative pronouns, others use resumptive pronouns, or simply leave the relativized argument unpronounced in the subordinate clause. Furthermore, there is cross-linguistic variation in the range of syntactic functions that can be relativized. Notably, more than one type of relative clause can be present in one language. Special types of relative constructions include free relatives (with an implied pronominal antecedent), cleft constructions and correlatives.

There is an extensive literature on the structural analysis of relative constructions. Questions that are debated include: How can different subtypes be distinguished? How does the internal variable relate to the antecedent? How can reconstruction and anti-reconstruction effects be explained? At what structural level is the relative clause attached to the antecedent or the matrix clause?

## Keywords

appositive relative clause, correlative, cleft, free relative, internally headed relative clause, modification, restrictive relative clause, operator construction, relative pronoun, resumptive pronoun

## 1. Main characteristics of relative clauses

Relative constructions enable speakers to use a complex expression within another, larger expression. In this way, relativization embodies the recursive power of language *par excellence*.

Traditionally, a relative clause is described as a clausal modifier of a noun phrase, the ‘antecedent’. For a deeper understanding, a more precise characterization is required. In (1), the complex noun phrase between brackets is the internal argument of the predicate *read* and functions as the object of the main clause. It consists of an outer determiner (underlined), a

relativized NP (in bold-face), and a relative clause (italicized). The meaning of the sentence is roughly specified in (1b).

- (1) a. Peter read [**the book about linguistics** *that Anne published last month*].  
 b. Peter read the *x*. *x* = book about linguistics & Anne published *x* last month.

The relativized constituent, although technically a phrase (potentially), is often referred to as the *relative head* or the *head noun* of the relative construction. Crucially, it does not only combine as a property with the outer determiner to form a referential expression, it also binds a variable within the embedded clause (here, in the internal argument position of *published*). This is a defining property of the relative construction. Notably, in a restrictive relative construction, the outer determiner takes as a restrictive term the combination of both the head noun and the relative clause, implying that it is hierarchically higher.

Relative clauses must be distinguished from various other types of embedded clauses. In (2a), a relative clause (RC) modifies the object of the main clause; in this case it specifies which woman it is that Peter admired. The RC itself contains a subject variable. In (2b) and (2c), there is no relativization: in the former, the italicized embedded clause itself is the object of the main clause; in the latter, the embedded clause functions as an adverbial. Both clauses are internally complete.

- (2) a. Peter admired the woman *that went to Paris*. (relative clause)  
 b. Peter said *that Anne went to Paris*. (complement clause of V)  
 c. Peter was unhappy *because Anne went to Paris*. (adverbial clause)

Even within complex noun phrases there is a difference between RCs and complement clauses, as is illustrated by the minimal pair in (3). Again, the RC in (3a) contains a variable that is bound by the head (i.e., Anne told *x*, and *x* is a rumor), whereas the complement clause in (3b) is internally complete. In effect, the RC serves to identify the referent of the complex NP (which rumor, as opposed to potential other ones?) by attributing another property to it. By contrast, the complement clause specifies what NP stands for (here, it reveals the content of the rumor).

- (3) a. Peter denied the rumor *that Anne told*. (relative clause)  
 b. Peter denied the rumor *that Anne told a secret*. (complement clause of N)

There are also cases where the head is tacit. The so-called free or headless relative construction in (4a) can be understood as *the thing that Anne had bought*. The pronoun *what* is said to contain an implicit antecedent. Given rather common syncretisms in the pronominal domain, this can lead to confusion with embedded questions as in (4b).

- (4) a. Peter admired *what Anne had bought*. (free relative clause)  
 b. Peter asked *what Anne had bought*. (embedded question)

It depends on the lexical semantics of the matrix predicate which interpretations – with associated syntactic configurations – are possible.

In principle, the syntactic function and theta role of the noun phrase containing a RC and those of the variable inside the RC are independent. In (5) all four permutations of subject and object are illustrated. On a par with commonly used terminology, ‘subject/object relative’ here means a RC of which the subject/object has been relativized.

- (5) a. The man *that Anne saw* \_ read a book. (object RC related to Subject)  
 b. The man *that \_ likes Anna* read a book. (subject RC related to Subject)  
 c. The man read a book *that Anna likes* \_ . (object RC related to Object)  
 d. The man read a book *that \_ is interesting*. (subject RC related to Object)

Every noun phrase, whatever its function in the matrix, can contain a relative clause. However, the internal role of the variable is not equally free. There appears to be an ‘accessibility hierarchy’,<sup>1</sup> which roughly translates to the following hierarchy of syntactic functions: SU > DO > IO > Prepositional > Possessive > Adverbial > Comparative > Conjunct. If a language allows for, say, possessive relatives, all higher functions can also be relativized, but not necessarily the lower ones. The examples in (6) show that most functions are accessible in English, but not all. The examples in (7) show that the syntactic function of complex noun phrases in the matrix is unrestricted.

- (6) a. the man *that I gave a book* (indirect object RC)  
 b. the painting *that Peter looked at* (prepositional object RC)  
 c. the man *whose mother Peter knows* (possessive RC)  
 d. the pen *with which Peter wrote this book* (prepositional adjunct RC)  
 e. the reason *why Peter did this* (adverbial RC )  
 f. \* the man (*than*) *whom Peter is more intelligent (than)* (comparative RC)  
 g. \* the man {who and Peter}/{Peter and who} went to school together (conjunct RC)
- (7) a. Peter is more intelligent than the man *who Anne admires*. (RC inside comparative)  
 b. Peter and a guy *he went to school with* bought a house together. (RC inside conjunct)

Psycholinguistic measurements have also shown that subject relatives are usually easier to process than RCs with lower functions, though this may not be universally the case.<sup>2</sup>

## 2. Cross-Linguistic Typology and Parametric Variation: A Concise Overview

Relativization is a universally available process, but it comes in various shapes. This section addresses some relevant aspects of the attested cross-linguistic variation, taking a parametric perspective. Important subtypes of relative constructions are highlighted further in section 3.

One striking property in which relative constructions differ is the position of the RC with respect to the head: it can be *postnominal* (as in English) or *prenominal*. This is illustrated with different languages in (8), where the heads are boldfaced and the RCs are put between brackets for expository purposes. In (8a), RP indicates a relative pronoun. In (8b), cited from Lehmann (1984:64)<sup>3</sup>, the case particle *bǎ* is prenominal (i.e. it relates to the book); the particle *de* is a nominalizer with an attributive function.

<sup>1</sup> The original proposal is in Keenan & Comrie (1977, 1979), which has triggered a great deal of discussion, e.g. Cinque (1981).

<sup>2</sup> See e.g. contributions in Kidd (2011) and references there for discussion. Note that there is a substantial and ever growing literature about processing, parsing, and L1/2 acquisition of RCs. These topics fall outside the scope of this article.

<sup>3</sup> Glosses and translations from Lehmann (1984) are adapted to English throughout.

- (8) a. (Dutch)  
Ik lees het **boek** [dat jij me gegeven hebt].  
I read the book RP you me given have  
'I'm reading the book that you gave me.'
- b. (Mandarin Chinese)  
Wǒ bǎ [nǐ gěi wǒ de] **shū** diūdiào-le.  
I ACC you give I NR book loose-PERF  
'I have lost the book that you gave me.'

There are no strong correlations between basic word order and the type of relative clause a language has. Although prenominal relative clauses tend to occur in OV languages, there are exceptions, and the reverse is not true: postnominal relatives are attested in both VO and OV languages.<sup>5</sup>

Interestingly, a relative head NP can also surface inside a RC in some languages. This is the *head-internal* or *circumnominal* pattern; see (9), from Lehmann (1984:117). Here, *nə* is a subordinating particle.

- (9) (Dagbani)  
A mi [o nə ti **saan-so** ləgri] la.  
you know he SR give stranger-SPC/LIV money PTL  
'You know the stranger whom he gave the money.'

It appears that this is hardly ever the only available relative strategy in a language. Dagbani, for example, also has postnominal relatives.

Usually, a relative construction (the head plus the RC) functions as a noun phrase in its context. Thus, the RC is structurally embedded inside an NP/DP. A systematic exception to this is the *correlative* construction illustrated in (10), from Lehmann (1984:135). It involves a preposed clause that functions as an RC with an internal (normally fronted) head that is anaphorically resumed in the matrix. In this example, the resumptive element is a demonstrative.

- (10) (Bambara)  
[n ye **tyè mìn ye**], ò be finì fère  
I COMPLETIVE man *wh* see DEM IMPF cloth:DEF sell  
'The man whom I saw, he is selling the (piece of) cloth.'

As is the case for circumnominal relatives, the correlative construction can be the principal relativization strategy in a particular language, but it usually coexists with one or more other strategies.

The possibility of *right-extraposition*, which seems related to postnominal construal,<sup>6</sup> is discussed in section 3.1.

A variant of the regular *headed* relative construction is the *free* or *headless relative*, in which the head noun is completely suppressed. This gives rise to a default definite or universal interpretation:

<sup>5</sup> See De Vries (2005) for discussion and references.

<sup>6</sup> See also Srivastav (1991), who shows that 'right-adjoined' RCs behave differently from left-adjoined correlatives.

- (11) a. Peter actually saw [who stole his car].  
 b. Peter eats [what(ever) we serve him].

Here, the relative pronoun can be interpreted as *the person who* or *every thing that*, for instance.

Many Indo-European languages make use of relative pronouns. These serve both to introduce a relative clause as an attribute and to represent the RC-internal function of the head. Since a relative clause is an embedded clause, it can alternatively contain a clause-initial or final complementizer. In some cases, neither is found. All three possibilities can be illustrated in English:

- (12) a. Peter visited the museum *which* I recommended.  
 b. Peter visited the museum *that* I recommended.  
 c. Peter visited the museum I recommended.

Examples like (12c), without any linker, are sometimes called *reduced relative clauses*.<sup>7</sup>

In the absence of a relative pronoun, the internal function of the head can be expressed by a resumptive pronoun, as in (13), from Givón (1984:655). Here, the relative element *she* is a complementizer; the relevant *in situ* pronoun is *ota*.

- (13) (Israeli Hebrew)  
 ... ha-isha [she-Yoav ohev ot-a] ...  
 the-woman C<sub>REL</sub>-Yoav loves ACC-her  
 ‘... the woman that Yoav loves ...’

Generally, relative elements can express various functions: (i) subordination, (ii) an attributive link with the head NP by means of  $\phi$ -feature agreement and a clause-peripheral position, (iii) a link with the RC-internal function via the expression of case and/or an *in situ* position.<sup>8</sup>

Relative pronouns occur in postnominal and correlative RCs only. They combine functions (ii) and (iii), often in an underspecified way (which makes classification difficult). Many involve a *w(h)/q*-morpheme like interrogative pronouns, which is consistent with preposing. Examples are English *who* and Serbo-Croatian *koje*. Some have a demonstrative core, like Dutch *die* or Danish *den*. Some consist of or contain a morpheme specialized to relativization, like Hindi *jo* or Slovenian *kdòr*. A final case involves the use of a classifier as a relative marker; this is illustrated in (14), from Lehmann (1984:102):

- (14) (Hungana)  
 ... kit [ki a-swiim-in Kipes zoon] ...  
 CL7:chair CL7 SU:CL1-bought-PRET Kipes<sub>CLI</sub> yesterday  
 ‘... (the) chair which Kipes bought yesterday ...’

If there is no sign of D-related features (a paradigm of  $\phi$ -features, case, *wh*, or DEM), a peripheral ‘relative element’ is likely a Complementizer. Many of these simply equal a regular subordinating C like Norwegian *som* or Farsi *ke*. Some, however, are specialized for relative contexts, such as Czech *co*. Nominalizing particles, like Chinese *de*, are also used in relative constructions; these are normally clause-final.

A final class of relative elements consists of relative affixes on the finite verb inside the RC. These, too, come in various kinds. Either they are additional morphemes of an attributive,

<sup>7</sup> See Doherty (2000), among others.

<sup>8</sup> See De Vries (2002:Ch5) for a more elaborate discussion and further references.

subordinative, nominalizing, or specialized relative sort, or they replace a tense or agreement morpheme with a more specialized form. An example is (15), from Lehmann (1984:78):

- (15) (Yaqui)  
 Hu-me kari-m [in ačai-ta attea-k-aʔu]-m tuʔi.  
 DET-PL house-PL POSS1 father-OBL possess-REAL-REL-PL good  
 ‘The houses that my father possesses, are good.’

Here, *aʔu* is an additional relativizing morpheme.

Despite all these possibilities, some languages do not mark RCs in any way. An example is (16), from Lehmann (1984:83), where both a subject interpretation and an object interpretation are possible.

- (16) (Yucatecan)  
 ... hun-tul maak [u k’ahool Pedro] haʔs u kon-ik ...  
 a-CL man 3 know Pedro banana 3 sell-TRANS  
 ‘... a man who knows Pedro sells bananas...’ *or*:  
 ‘... a man who Pedro knows sells bananas...’

Note that this is different from the situation in English, where *zero relatives* as in (12c) are optional, and used only in certain configurations.

The finiteness of the RC is also subject to cross-linguistic variation. An example of a non-finite RC is (17), from Lehmann (1984:54), which is prenominal.

- (17) (Turkish)  
 ... [iç-in-den sİK-tİğ-İm-İz] ev ...  
 inside-POSS.3-ABL leave-NR-POSS.1-PL house  
 ‘... the house from which we came out ...’

Participial relatives tend to be prenominal, but this is not universally the case. Also, the English construction *a man to fear* can be considered a postnominal non-finite relative.

Finally, consider definiteness and case. If an outer determiner is used, it may surface in various positions with respect to the head NP and the RC. A minimal pair is in (18):

- (18) a. Jag talade med mann-en [vilkenkänner dig]. (Swedish)  
 b. I spoke with *the* man [who knows you]. (English)

A definiteness marker can also follow the RC, as in (19), from Lehmann (1984:95). Compare also the RC-final plural marking in (15) above.

- (19) (Indonesian)  
 Dia menulis buku [yang tebal] itu.  
 he ACTIVE-write book C<sub>REL</sub> thick DEF  
 ‘He wrote the book that is thick.’

Similarly, case marking of the relative construction is variable, depending on the particular language. Two examples are in (20); (20b) is from Lehmann (1984:79):

(20) (German)

- a. Ich fürchte de-*n* Herr-*n* [de-r ein-e Pistole trägt].  
I fear the-ACC gentleman-ACC who-NOM a-ACC gun carries  
'I fear the man who carries a gun.'

(Shoshoni)

- b. Ni u pui-“ka-ha-<sup>n</sup>ti tu”ku-*i* [u<sup>n</sup> ti“ka-”pih]-*a*.  
I it see-RESULT-REF-PART meat-ACC [POSS.3 eat-PART.PERF]-ACC  
'I see the meat that he ate.'

It is quite common to mark case on the head NP (and/or the external determiner), as in (20a), but (20b) shows that the RC as a whole can also receive a case morpheme. The case corresponding to the internal role of the head can be expressed on a relative or resumptive pronoun, if available, e.g., *der* in (20a). Importantly, the external and internal syntactic role of the head are – in principle – independent (recall the examples in section 1). Somewhat confusingly, there are attested instances of unexpected case matching between the head NP and a relative pronoun, e.g. in ancient Greek and Latin. Relative case attraction (*attractio relativi*) is the situation where the relative pronoun takes over the case assigned to the antecedent in the matrix; inverse case attraction (*attractio inversa*) is the reverse process where the antecedent takes over the case assigned to the pronoun RC-internally.<sup>9</sup>

All in all, there is a great deal of cross-linguistic and intra-linguistic variation in the morpho-syntactic appearance of relative constructions, as might be expected.

### 3. Subtypes of Relative Constructions, and Issues Concerning Their Analysis

What follows is a catalogue of different classes of RCs and closely related constructions, each with a brief description of important properties and related theoretical discussions. Section 4 continues with analytical considerations.

#### 3.1. Postnominal Headed Relative Clauses

Headed relatives of the postnominal variant are cross-linguistically widespread, and have been subject to intensive syntactic research, especially since the 1960s.

Traditionally, RCs are considered as adjuncts to the antecedent. However, this is not exactly true for restrictive RCs because they are clearly within the scope of determiners and quantifiers related to the head. For instance, (21) does not entail that “Peter loved all the women” or that “all the women left”.

- (21) All the women who Peter loved, left.  
# all x: woman(x) => (loved(Peter, x) AND left(x)).  
OK all x: (woman(x) AND loved(Peter, x)) => left(x)

This implies that an outer determiner does not form a constituent with the head noun: \*[[ D N] RC]. The hierarchical structure must therefore be [ D [ N RC]], very roughly, and the term ‘relative head (NP)’ is to be understood as excluding outer determiners/quantifiers. In a more elaborate structure, the RC can still be analyzed as an adjunct to NP or N’, or as a complement

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<sup>9</sup> See Bianchi (1999) for a theoretical discussion and further references.



of N, but within a DP shell: [<sub>DP</sub> D [<sub>NP</sub> N(P) RC]].<sup>10</sup> A more intricate alternative is the idea that the relative clause is in fact the complement of D, and somehow includes the preposed head: [<sub>DP</sub> D [<sub>CP</sub> NP ...]]; see section 4.1 for more discussion.

Relative clauses containing a relative pronoun are A'-movement constructions.<sup>11</sup> The examples in (22) show that movement is unbounded (potentially successive cyclic) but sensitive to strong islands: *who* in (22c), for instance, crosses a complex NP boundary, which is ungrammatical.<sup>12,13</sup>

- (22) a. the [ man [ who<sub>i</sub> Peter knows *t<sub>i</sub>* ] ]  
 b. the [ man [ who<sub>i</sub> Peter says [ *t<sub>i</sub>*' that he knows *t<sub>i</sub>* ] ] ]  
 c. \* the [ man [ who<sub>i</sub> I heard [ the claim [ *t<sub>i</sub>*' that Peter knows *t<sub>i</sub>* ] ] ] ] ]

Since the same constraints apply in the absence of a visible relative pronoun, it is assumed that *that*- and *zero* relatives involve the exact same configuration, but abstractly so. In (23), OP represents an empty operator or an elided copy of the head.

- (23) the [ man [ OP<sub>i</sub> (that) Peter knows *t<sub>i</sub>* ] ]

A relative pronoun/operator instantiates the relative 'gap', the internal function related to the head NP. As such, it captures the internal theta role and case, as resumptive pronouns do. Furthermore, it is obligatorily linked to the visible external head NP. Fronting is one step in this process, but that in itself may be insufficient. Some sort of referential dependency or co-indexing under c-command is a theoretical possibility:

- (24) the [man]<sup>k</sup> who<sup>k</sup> Peter knows *t*

Notice, however, that the head, contrary to the RP/OP, is not a full DP, and is in fact not referential: semantically it expresses a property that is intersected with the RC that contains the variable. There is no generally accepted solution to this puzzle (but see section 4.1).

The example in (25) illustrates again that a relative 'head' has in fact a phrasal status (*deliberate attack on a city*). Moreover, it shows that there can be *pied piping* of a larger phrase containing a relative pronoun, here *from whose consequences*.<sup>14</sup>

<sup>10</sup> The traditional view was still present in Chomsky (1965) and Ross (1967). The issue concerning scope was formulated in Stockwell, Schachter & Partee (1973), among others. Jackendoff (1977) proposed a more articulate hierarchical structure, which paved the way for modern approaches.

<sup>11</sup> This goes back to Chomsky (1977).

<sup>12</sup> See Taraldsen (1981) for an exception in Swedish, and Cinque (2010) for a brief overview of problematic data from other languages and further references.

<sup>13</sup> The use of an intrusive resumptive pronoun has a reported alleviating effect in English:

- (i) ? the man who I heard the claim that Peter knows *him*

Such an intrusive pattern is not universally allowed, however. In languages where resumptive pronouns are a regular relative strategy (e.g., Hebrew, Irish), the use of intrusive resumptives can create the appearance of an across-the-board insensitivity to island boundaries in RCs. However, bound reading tests can be used to distinguish both configurations: intrusive pronouns are never bound variables; and island-insensitivity is an illusion. See Sells (1984), McCloskey (2006), Sichel (2014) for discussion and references.

<sup>14</sup> The alleged difference between appositive and restrictive RCs with respect to pied piping (going back to Ross 1967) is contradicted in De Vries (2006a): RRCs do allow for (very) heavy pied piping, provided they are introduced by a preposition. See also Heck (2008) for relevant discussion and references.

- (25) The government officially regrets [DP any [ [NP deliberate attack on a city]<sup>k</sup> [CP [PP from whose<sup>k</sup> consequences]<sub>i</sub> the inhabitants will suffer  $t_i$  for a long time]]].

In many languages, a relative clause can be *extraposed* to the right, like certain other modifiers and major constituents, mainly PPs and CPs. This is illustrated in (26). Here, the RC is extraposed across the participle, which marks the right edge of the clause in Dutch. Resultingly, it is separated from the head. Note that extraposed restrictive material is included in the intonational contour of its matrix.<sup>15</sup>

- (26) (Dutch)  
 Ik heb gisteren een man gezien die een rode hoed droeg.  
 I have yesterday a man seen who a red hat wore  
 ‘I saw a man yesterday who was wearing a red hat.’

Extraposition is clause-bound,<sup>16</sup> so an RC extraposed from within a subject clause or any other non-peripheral embedded clause ends up in a clause-final but sentence-medial position:

- (27) a. [That a relative clause can be extraposed that relates to an object], is well-known.  
 b. \* [That a relative clause can be extraposed] is less well-known that relates to a subject.

- (28) (Dutch)  
 a. Het meisje [dat gisteren een hoed droeg die niemand mooi vond],  
 the girl who yesterday a hat wore which nobody nice found  
 is fotomodel.  
 is photo.model  
 ‘The girl who was wearing a hat yesterday that nobody liked is a photo model.’  
 b. \*Het meisje [dat gisteren een hoed droeg], is fotomodel die niemand mooi vond.

An intriguing phenomenon that seems to build on the possibility of coordination and extraposition are *split-antecedent RCs* as in (29):<sup>17</sup>

- (29) Mary met a man<sub>i</sub> and John met a woman<sub>i</sub> who<sub>i+j</sub> know each other well.

Such cases require an overt relative pronoun in English. See also section 3.6 on correlatives.

### 3.2. Non-Restrictive/Appositive vs. Restrictive Relative Clauses

Non-restrictive or *appositive RCs* (ARCs) add information about the antecedent but do not restrict its reference. The antecedent can be unique, definite, generic or specific indefinite, but normally not non-specific:

<sup>15</sup> The theory of extraposition as such is a highly debated topic. See De Vries (2002:Ch7), Göbbel (2013) for discussion and references.

<sup>16</sup> This restriction is known as the Right Roof Constraint, originally described in Ross (1967) as “upward boundedness”.

<sup>17</sup> The first explicit reference is Perlmutter & Ross (1970). See Hoeksema (1986), Zhang (2007), McKinney-Bock (2013), De Vries (2017) for discussion and further references.

- (30) {Peter, this/the man, little boys, a particular man, all these men, \*someone, \*any boy, \*everybody}, who Anne happens to like

Semantically, the relative pronoun is constructed as coreferential with the entire antecedent; hence, the antecedent cannot be non-referential. This contrasts with the situation for RRCs: a noun phrase containing a RRC can be nonspecific/nonreferential in its context; compare (31a) to (31b), where negation induces nonreferentiality of the direct object:

- (31) a. I don't know *a man/anyone* that/who can fix this problem. (restrictive)  
 b. \* I don't know *a man/anyone*, who can fix this problem. (appositive)

However, in certain contexts involving modal subordination (where a piece of discourse is interpreted as conditional on a scenario described in a previous one), the antecedent of an ARC can be considered referential within a possible world, and the relative pronoun behaves as an E-type pronoun:<sup>18</sup>

- (32) You should never approach *a poisonous snake*, which could bite you.

In appositive constructions, it is clear that outer determiners/quantifiers do not outscope an ARC. For this reason, the syntactic configuration must be different from the one in restrictive relative constructions. Specifically, ARCs have a different site of attachment than RRCs. Roughly, the difference appears to be this: [ D [ N RRC] ] versus [ [ D N ] ARC ]. See section 4.2 for more discussion about the syntactic position of ARCs, and their resemblance to parentheticals.

Internally, ARCs are structured similarly to RRCs. The V-final word order in Dutch clearly shows that both are subordinate clauses. Also, the same relative pronouns can be used. The example in (33) is therefore ambiguous, and the intended reading must be provided by the context and the intonational pattern. As a rule, ARCs receive a 'comma intonation' or, more precisely, a phonological Intonational Phrase (ι), unlike RRCs.<sup>19</sup>

- (33) (Dutch)  
 Peter zag een man<sub>(ι)</sub> die een rode hoed droeg.  
 Peter saw a man who a red hat wore  
 'Peter saw a man that/,who was wearing a red hat.'

In English, an ARC is normally introduced by an overt relative pronoun (although some speakers accept *that*-ARCs), but other languages (e.g., French, Danish) do allow for ARCs constructed with just a complementizer. A zero strategy for postnominal ARCs has not been attested (but see section 3.4).

- (34) a. John, who/<sup>%</sup>\*that/\*∅ I have seen at school (English)  
 b. Jean, que/\*∅ j'ai vu à l'école (French)

For evident reasons, a restrictive RC cannot be attached to a proper name, unless this name can be interpreted as non-unique, hence restrictable, in the relevant context:

<sup>18</sup> See Sells (1985), Del Gobbo (2007), Busch & Schumann (2016), among others.

<sup>19</sup> ARCs provide separate speech acts, and as such give rise to a separate intonational phrase; see Dehé (2017), Güneş (2015), Truckenbrodt (2015).

- (35) a. \* John that I saw at school  
 b. the John that we all know

In this respect, RCs are no different from PP-modifiers: cf. *the London of the past*, etc.

Like restrictive RCs, appositive RCs can be extraposed, as in (36a), pending certain proximity constraints. Especially ARCs that receive a continuative or resultative reading are likely to be so (36b).<sup>20</sup>

- (36) a. I visited my sister (, who has brown hair,) the other day (, who has brown hair).  
 b. Peter fixed the car last month, which he then sold to John.

If the intonational separation between the main clause and an extraposed ARC appears to be a full sentence division, the construction is called a **relative junction** (Fr. ‘relatif de liaison’). In such cases, the relative pronoun is usually (but not necessarily) a *wh*-pronoun that selects an event, an entire proposition or even a larger piece of discourse as its antecedent:

- (37) a. John touched my leg. Which I hate.  
 b. If it rains, we get wet. It rains. Hence we get wet. *Quod erat demonstrandum*.

More generally, ARCs can take nonnominal antecedents, provided an appropriate context; see (38).<sup>21</sup> In certain cases, a nominal retention of the antecedent is acceptable, e.g. *fact* in (38b).

- (38) a. John is blond, which his sister is not.  
 b. Paris is the capital of France, which fact is well-known.

None of this appears to be possible in restrictive relative constructions (but see section 3.7 concerning head retention).

### 3.3. Amount Relatives and the Like

Certain relative constructions receive a special interpretation in that they involve quantification over a variable that is not an individual variable, but a variable over degrees, amounts, kinds, or events.<sup>22</sup> Examples are provided in (39):

- (39) a. We observed the four birds that there were in the cage.  
 b. The (amount of) effort it took was actually wasted.  
 c. They are not quite the musicians that their parents were.  
 d. Every time the king entered the room, the servants rose to their feet.

All of these involve a semantic *maximalization* operation, they cannot be combined with a (weak) indefinite external determiner, and stacking is impossible. For example, (39a) can be paraphrased as “There were exactly four birds in the cage, and we observed all of them”. *The four birds* cannot be replaced by an indefinite expression like *a bird* or *some birds*. Combination

<sup>20</sup> See Holler (2005), among others, for discussion.

<sup>21</sup> See Fabb (1990), among others. For a more elaborate discussion of this and related phenomena, see Cardoso & De Vries (2010).

<sup>22</sup> See Grosu & Landman (2017) for a recent overview. The discussion goes back to Carlson (1977).

with an additional restrictive RC is possible, but stacking with another degree relative is impossible: *the four birds that there were in the cage that (\*there) had been flying freely before.*

### 3.4. Prenominal Relative Clauses

A Basque example of a prenominal relative clause is given in (40), from Lehmann (1984:59); see also (17) above, from Turkish:

- (40) (Basque)  
 Aita-k irakurri nai d-u [ama-k erre  
 father(DEF)-ERG read want ABS.3-PRES(ERG.3) mother(DEF)-ERG burnt  
 d-u-en] **liburu-a.**  
 ABS.3-PRES(ERG.3)-NR book-DEF  
 ‘Father wants to read the book that mother burnt.’

Relative pronouns are not attested in prenominal constructions. Relative complementizers or particles are normally clause-final and do not equal the regular embedding complementizer.<sup>23</sup>

The status of potential appositive prenominal relatives is debated. To the extent that prenominal RCs can be interpreted nonrestrictively, they seem to behave like decorative or non-intersective adjectives.<sup>24</sup>

### 3.5. Internally Headed Relative Clauses

Internally headed or circumnominal RCs are nominalized clauses containing a noun phrase that is interpreted as the head of a relative construction. The IHRC as a whole surfaces in a noun phrase position within the matrix. Internal relative pronouns (let alone resumptives) are excluded. An illustration from Quechua is given in (41), from Cole (1987:277); see also (9) above, from Dagbani:

- (41) (Ancash Quechua)  
 [Nuna **bestya-ta** ranti-shqa-n] alli bestya-m ka-rqo-n.  
 man horse-ACC buy-PERF-3 good horse-EVID be-PAST-3  
 ‘The **horse** that the man bought was a good horse.’

The (ambiguous) example in (42), from Lehmann (1984: 111), shows that there can be external determiners and case markers, which, if present, are always right-peripheral.

- (42) (Mohave)  
 [Hatčooq ʔavi:-m ʔ-u:ta:v]-n<sup>y</sup>-č n<sup>y</sup>əʔi:l<sup>y</sup>-pč.  
 [dog stone-INST SBJ.1-hit]-DEF-NOM black-REAL  
 ‘The stone with which I hit the dog was black.’ *or*  
 ‘The dog which I hit with the stone, was black.’

If the head NP happens to surface RC-peripherally, it requires further investigation to determine if the RC construction is actually internally headed, or in fact pre- or postnominal instead.<sup>25</sup>

<sup>23</sup> See Wu (2011).

<sup>24</sup> See Larson & Takahashi (2007), Del Gobbo (2010), Constant (2011), and Lin & Tsai (2015), among others.

<sup>25</sup> See especially Basilico (1996) and Bodomo & Hiraiwa (2010).

There appear to be two different main types of IHRCs, along the lines of a semantic split: IHRCs are restrictive in some languages (e.g., Lakhota, Mojave) but obligatorily maximalizing in others (e.g., Quechua, Japanese, Korean).<sup>26</sup> Restrictive IHRCs allow for an indefinite reading (i.e., existential quantification); maximalizing ones do not, and resist stacking (cf. section 3.3). In maximalizing IHRCs, the internal head position may exhibit strong determiners (roughly, definites and universal quantifiers), contrary to the situation in restrictive ones, where only an external determiner can be strong.

The syntactic and semantic derivation of IHRCs is debated. A major question is how the internal noun phrase can be interpreted as the relative head, and hence be related to the nominalized clause as a whole (and/or a potential external D-position): the linking problem. Covert A'-movement of an operator or even the entire internal head is an imaginable solution, but the reported lack of island effects in some languages suggest a more conservative approach in terms of scope marking or an E-type dependency. It seems likely, however, that the two different main types of IHRCs require a somewhat different analysis.

### 3.6. Correlatives

Correlatives are also internally headed. They are in a left-peripheral position with respect to the matrix, which itself contains a resumptive element (also called the *correlate*): a personal or demonstrative pronoun, possibly even a retention of the relative head. An illustration from Hindi is given in (43), from Grosu & Landman (1998:164); see also (10) above, from Bambara.

- (43) (Hindi)  
 [jo laRke KhaRe hai], ve lambe haiN.  
 wh boys standing are those tall are  
*lit.* 'Which boys are standing, they are tall.'  
 = 'The boys who are standing are tall.'

Unlike IHRCs, correlative clauses are not nominalized: external determiners, case markers and adpositions are excluded. On the other hand, an internal relative pronoun seems obligatory.

Correlatives have been shown to be maximalizing, hence the resumptive is necessarily definite or universal (i.e., weak determiners cannot be used); moreover, stacking of correlatives is impossible.<sup>27</sup>

There are attested locality constraints on the hierarchical distance between correlative clauses and the resumptive in the matrix, as well as reconstruction effects (such that the head noun behaves as if it occupies the position of the correlate in terms of scope; see also section 4.1). This suggests that correlatives are moved from a base-position next to the correlate to their left-peripheral position within the matrix.<sup>28</sup> If so, instances of *multiple relativization* like (44), slightly adapted from Bhatt (2003: 492), which contain more than one different head noun, must be treated as exceptional constructions.

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<sup>26</sup> For discussion see Grosu (2012), and earlier work by Itô (1986), Williamson (1987), Cole (1987), Culy (1990), Bonneau (1992), Hoshi (1995), Shimoyama (1999), Watanabe (2004), Hiraiwa (2005), and Kim (2007), among others.

<sup>27</sup> See Srivastav (1991) and Grosu (2002). Surprisingly, Cinque (2009) also reports the existence of non-restrictive correlatives in Marathi and a few other languages, suggesting, however, that these could be reanalyzed as postnominal ARCs with a deleted antecedent.

<sup>28</sup> See Bhatt (2003), Cinque (2009).

(44) (Marathi)

[jya mula-ne jya muli-la pahila] [tya mula-ne tya muli-la pasant kela]  
REL boy-ERG REL girl-ACC saw DEM boy-ERG DEM girl-ACC like did  
*lit.* ‘Which boy saw which girl, that boy liked that girl.’

Such possibilities are cross-linguistically very restricted. A somewhat related problem seems to be the (marked) option of a split antecedent, which can be found in English:<sup>29</sup>

(45) A boy<sub>i</sub> entered the room and a girl<sub>i</sub> went out who<sub>i+j</sub> were the same age.

Here, the extraposed relative clause cannot easily be reconstructed as a postnominal RC belonging to one or each of the two antecedents separately.

### 3.7. Double-Headed Relative Clauses

It has been reported for various languages that children acquiring RCs may repeat an external head inside a RRC, as in (46), from Pérez-Leroux (1995: 114). In effect, this results in a blend between externally and internally headed RCs:

(46) (Child French)

L'ourse pousse **la souris** [que la vache lave **la souris**].  
the-bear pushes the mouse that the cow washes the mouse  
‘The bear pushes the mouse that the cow washes.’

Notably, a full resumptive DP inside a RRC is unacceptable in the adult language. However, some unrelated languages do seem to allow for doubling of the head.<sup>30</sup> Example (47a) is from Kuno (1973: 237); (47b) is from Cinque (2011: (24b)).

(47) a. (Japanese)

[watakusi ga **sono hito** no namae o wasurete-simatta] **okyaku-san**  
I [NOM] that person 's/GEN name [ACC] forgotten-have guest  
‘a guest whose name I have forgotten’

b. (Bundeli)

**ba moRii** [jo **moRii** ThaRii hε], ba moRii lambii he  
that girl which girl standing is that girl tall is  
‘The girl who is standing is tall.’

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<sup>29</sup> See De Vries (2017) for some discussion and further references. Furthermore, Kayne (2015) reports that even true instances of multiple relativization can be found in English; see (i) and (ii). It is to be noted, however, that these involve appositive constructions.

(i) ? That car over there belongs to my old friend John Smith, whose long-standing attachment to which is well-known to all his friends.

(ii) ? My old friend Mary Jones is still unaware of yesterday's discovery, the capacity of which to surprise whom cannot be exaggerated.

<sup>30</sup> See Cinque (2011) for an overview and discussion. Cinque's term ‘double-headed RCs’ is not to be confused with the qualitatively different constructions involving multiple relativization discussed in section 3.6.

Such data are potentially problematic for certain relativization theories, including the raising analysis to be discussed in section 4.1. For each case to be valid, it must be made plausible that the construction is neither correlative nor appositive (recall (38b) concerning ARCs).

### 3.8. Free Relatives

Free relatives are relative constructions without a visible head noun or external determiner. They occur in languages with all major relativization types, as is illustrated in (48a-d), cited from Lehmann (1984: 97, 295, 295, and 124), respectively.

- (48) a. (Malagasy) – *compare to postnominal RC*  
 Saka [izay tia trondro].  
 cat REL loves fish  
 ‘Who loves fish is a cat.’
- b. (Lahu) – *compare to prenominal RC*  
 [Bù? phî? ā ve] c`o mâ hé.  
 wrong write PERF NR are many probably  
 ‘There are probably many wrongly written ones.’
- c. (Yavapai) – *compare to circumnominal RC*  
 [Ku?u puva-k k-ono:-ha] tokatoka lowa:-v-č yu-m.  
 basket braid-SS REL-AUX-FUT Tokatoka wife-DET-NOM be-ASS  
 ‘Who will braid a basket, is Tokatoka’s wife.’
- d. (Hittite) – *compare to correlative*  
 [Nu kwit LUGALu-s tezzi] nu apāt iyami.  
 CON REL:ACC.SG.NLIV king-NOM says CON D3.ACC.SG.NLIV do:1SG.NOM  
 ‘What the king says, I do even that.’

Typically, free relatives are nominalized clauses and occur in noun phrase positions. The semantics is maximalizing, which implies that only a definite or universal interpretation is possible, and that stacking is excluded; see (49a), from Grosu (2002: 148).<sup>31</sup> Note that in languages with relative pronouns, the internal head position of a FR may sometimes be expressed overtly as a restriction on the operator, as in (49b):

- (49) a. John is listening to what Mary bought (\*what he likes best).  
 b. I will read *whichever books* you ask me to read.

Theoretical discussion in syntax concerns the status of an external determiner and – possibly – head position, and the surface position of the relative pronoun: is it RC-internal (in the CP domain) or directly related to the external determiner position, which would otherwise be abstract?<sup>32</sup>

It may be relevant that in addition to headed RCs and FRs, there are lightheaded or semi-FRs, in which there is just an external determiner, e.g. an article, demonstrative, or quantifier, but no external head noun.<sup>33</sup> It is not easy to decide what counts as lightheaded, since pronominal forms and strong paradigms indicating noun ellipsis are frequently used. Notably,

<sup>31</sup> See Jacobson (1995), Grosu & Landman (1998), Caponigro (2003).

<sup>32</sup> For discussion and some opposing views, see Bresnan & Grimshaw (1978), Groos & Van Riemsdijk (1981), Citko (2002), De Vries (2002), Gračanin-Yuksek (2008), Ott (2011), Ojea (2013), Bertollo (2014).

<sup>33</sup> See Rebuschi (2003) and Citko (2004), among others.



these pattern with regular headed relatives in relevant respects: they can be indefinite, as in (50), and they do not display (Case) matching effects.

- (50) (German)  
 einer der zu spät kam  
 a REL too late came  
 ‘someone who came (too) late’

It appears that FRs can also be nonnominal, especially when they are adverbial:<sup>34</sup>

- (51) a. I will go where/{to whatever place} you go.  
 b. I will do it how/{in whichever way}/{however carefully} you want me to.  
 c. The doctor came when John broke his leg.

Special mention should be given to so-called *transparent free relatives*, which involve a phrase – italicized in (52) – that is predicated of the *wh*-operator and that intuitively functions as the semantic and syntactic nucleus of the construction.

- (52) a. He made [what appears to be *a radically new proposal*].  
 b. I didn’t get a chance to talk to him [what you might call *privately*].

It is debated to what extent these constructions differ from regular free relatives, and how they are to be analyzed.<sup>35</sup>

### 3.9. Non-Finite Relative Clauses and Modal Existential Wh-Constructions

Relative clauses can be non-finite. Example (53a) illustrates an infinitival relative in English;<sup>36</sup> (53b) and (53c) may be considered to contain a prenominal present and past participial relative clause, respectively. However, the distinction between (deverbal) adjectives and reduced forms of relative clauses is unclear, if it exists at all.

- (53) a. the clothes to wash  
 b. the washing man  
 c. the washed clothes

The construction in (53c) appears to be a hidden passive, cf. *the clothes washed by my father*. Participial relatives, then, always involve subject relativization in English and related languages. But this is not universally the case, witness examples like the following, from Lehmann (1984:50):

- (54) (Telugu)  
 [Mīru nāku ic-cin-a] pustukamu cirigipō-yin-adi.  
 you<sub>pl</sub> me give-PRET-PART book<sub>nom</sub> tear.up-PRET-3.SG  
 ‘The book you gave me has been torn up.’

<sup>34</sup> It is far from obvious how such constructions are to be analysed. For some discussion, see Bresnan & Grimshaw (1978), Larson (1987), Grosu (1996).

<sup>35</sup> See Wilder (1999), Grosu (2003, 2016), Van Riemsdijk (2000), and Kluck (2011), among others.

<sup>36</sup> See Douglas (2016) for a recent discussion.

So-called *modal existential wh-constructions* (or ‘irrealis free relatives’), are illustrated in (55), from (Šimík 2011:2 and 6):

- (55) a. (Czech)  
 Mám co číst.  
 have:1SG what:ACC read:INF  
 ‘I have something that I can read.’
- b. (Spanish)  
 No tengo quién me ayude.  
 NEG have:1SG who me:DAT help:SUBJ.3SG  
 ‘I don’t have anyone who can help me.’

Here, an infinitival or subjunctive *wh*-relative clause is embedded under an existential predicate, and receives a modal interpretation.<sup>37</sup>

### 3.10. Cleft and Pseudocleft Constructions

Cleft and pseudocleft constructions are predicational focus constructions that share certain characteristics with appositive and restrictive relative clauses, depending on the subtype. English *it*-clefts are illustrated in (56). As (56b) shows, the focus does not need to be a noun phrase.

- (56) a. It was John who opened the door.  
 b. It was in the garden that John proposed to Mary.

Pseudoclefts contain a free relative clause; see (57) in English. The interpretation can be either specificational or predicational, that is, the predicate either contributes to the identification of the referent of the subject or attributes a property to it.

- (57) a. What John told me was a secret.  
 b. Flowers were what John gave to Mary. (inverted)

There is a substantial literature on the structure and meaning of clefts and pseudoclefts, which cannot be treated here.<sup>38</sup>

### 3.11. Pseudo-Relatives and Quasi/V2-Relatives

Pseudo-relatives are constructions that look like subject relatives, documented for Romance languages (and Greek) in particular; see (58), from Moulton & Grillo (2015: 2):

- (58) (Spanish)  
 He visto a Juan que corría.  
 have seen to Juan that ran.IMPF  
 ‘I saw Juan running.’

<sup>37</sup> See Šimík (2011) for extensive discussion and further references.

<sup>38</sup> For some recent discussion and further references, see Reeve (2012), Hartmann & Veenstra (2013), Bertollo (2014) and Vercauteren (2016).

Given their interpretation, possible positions, and certain restrictions (including tense agreement and the form of the relative linker), they have been analyzed differently from regular relative clauses.<sup>39</sup>

Quasi-relatives or V2-relatives are found in Dutch and German. In these languages, main clauses are verb second, but subordinate clauses are (normally) not. Therefore, the V2 order in the apparent relative clause in (59) is remarkable:

- (59) (Dutch)  
Ik ken een man [die kan zijn oren bewegen].  
I know a man who can his ears move.  
'I know a man who can move his ears.'

There is consensus in the literature, however, that such examples do not involve relativization at all, for various reasons: the linker is a demonstrative, not a relative pronoun; the relative clause is sentence-final; the coordinator *en* 'and' can be inserted. Therefore, despite the cohesive intonation pattern, the connection between the clauses must involve parataxis of some sort.<sup>40</sup>

#### 4. Further Theoretical Discussion

Two general theoretical questions have received ample attention in the literature: the *connectivity problem* and the *modification problem*. (i) How can the pivotal role of the relative head be explained, and specifically, how is the variable corresponding to the relative head represented internally to the relative clause? (ii) How and at which hierarchical level is the relative clause integrated in its syntactic context (potentially depending on the type of relative clause)? These issues are briefly addressed in the two following subsections.

##### 4.1. Raising and Matching

In an externally headed relative construction containing a relative pronoun, it seems evident that a pronominal representation of the head is fronted within the relative clause. If there is only a complementizer or no clausal linker at all, an abstract operator can be postulated; recall the discussion in section 3.1.:

- (60) [DP D [ NP<sub>head</sub> [CP RP<sub>i</sub>/OP<sub>i</sub> (C) [IP ... *t<sub>i</sub>* ...]]]]

For decades, variants of (60) have been the most common analysis of (head-external) relative constructions.<sup>41</sup>

However, there are reasons to assume a full representation of the head within the relative clause; this has to do with reconstruction and other connectivity effects.<sup>42</sup> In (61), for example,

<sup>39</sup> See e.g. Rafel (2000) and Moulton & Grillo (2015) for discussion and references.

<sup>40</sup> For discussion, see Gärtner (2001), Zwart (2005), De Vries (2012), Catasso (2014).

<sup>41</sup> See Chomsky (1977) or Jackendoff (1977), for instance.

<sup>42</sup> See early work by Schachter (1973), Vergnaud (1974), Carlson (1977), and later Kayne (1994), Bianchi (1999), De Vries (2002), and others. Cardoso (2017) adds an interesting argument for raising that involves a stranded modifier inside the relative clause. Furthermore, see Zwart (2000) concerning selection effects between a relative pronoun and a quantifier head noun; Bhatt (2002) concerning scope effects with certain adjectives; Pankau (2015)

the head must be reconstructed into the relative clause in order to obtain the correct interpretation. The relevant thematic position is indicated with an underscore. In (61a), *take advantage (of)* is a fixed expression (idiomatic collocation); in (61b) the anaphor *each other* is bound by the RC-internal subject *John and Bill*; in (61c) the pronominal variable *her* is bound by (hence its interpretation covaries with) the RC-internal quantified expression *every granny*; in (61d) there is an inverse scope interpretation *every > six*, that is, ‘for every insect: it has six legs’ rather than the nonsensical interpretation ‘for six particular legs: every insect has them’, which would correspond to the surface order.

- (61) a. Let’s forgive him for the advantage he took    of us.  
 b. We were surprised by the interest in each other<sub>i</sub> that [John and Bill]<sub>i</sub> showed   .  
 c. The period of her<sub>i</sub> life that [every granny]<sub>i</sub> likes to talk about    is her childhood.  
 d. Consider the six legs that every insect has   .

A possible solution is the assumption of *head raising* (or promotion): the head NP finds its origin at the thematic base position inside the relative clause, and is subsequently raised to its surface position. An important advantage of this idea is that it allows a generalization over head-external and head-internal relative constructions (cf. sections 3.6–3.8).

Potential (technical) difficulties involved concern the status of relative pronouns, the distribution of case (cf. (20a)), and restrictions on movement. A familiar implementation of raising is sketched in (62). Here, the relative clause is analyzed as the complement of the external determiner (hence the entire construction comes down to a nominalized clause, which is evident for (semi-)free relatives and IHRCs).<sup>43</sup> A relative pronoun can be viewed as a determiner related to the head NP.<sup>44</sup> The DP<sub>rel</sub> is generated RC-internally in its thematic base position, and subsequently A'-moved to the CP-domain (note that D<sub>rel</sub>, whether overt or abstract, is an operator). Finally, the head NP is moved to its surface position left of the relative pronoun, where it can be case-associated with the external determiner.

- (62) [DP D<sub>ext</sub> [CP NP<sub>h</sub> [DP DRP *th*]<sub>i</sub> ... *ti* ...]]

It is important to note that this straightforwardly solves the pertinent coindexing problem mentioned around (24) of section 3.1.

Despite the possibility of reconstruction in sentences like (61), there are also non- or even anti-reconstruction effects. For instance, in (63a) there is no idiom reconstruction; in the most sensible interpretation of (63b), *two* scopes over *every*; in (63c), there is no Principle C effect, which says that a pronoun like *he* cannot bind a referential expression like *John* (which would be the case after reconstruction); in (63d), the anaphor can be bound by the subject of the matrix clause.

- (63) a. \*I regretted the bucket that John kicked.  
 b. The professor graded the two obligatory tests that every student had to make.  
 c. There is a [report on John<sub>i</sub>’s team] which he<sub>i</sub> won’t like.  
 d. John<sub>i</sub> bought the picture of himself<sub>i/j</sub> that Bill<sub>j</sub> liked.

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concerning relativization in antipronominal contexts; Gondra (2016) for experimental confirmation of reconstructed readings; Grosu & Landman (2017) concerning amount relatives.

<sup>43</sup> The modern underpinning of this idea is due to Kayne (1994); an early proposal is Smith (1964). See Donati & Cecchetto (2011) for an alternative raising analysis involving ‘reprojection’.

<sup>44</sup> See Bianchi (1999) in particular.

An alternative analysis is the *matching analysis*,<sup>45</sup> shown in (64), which can be considered an enhanced version of (60). There are both an external and an internal representation of the head NP. The internal one is obligatorily deleted by means of NP-ellipsis (which raises questions to be answered).

(64) [DP D [ NP [CP [DP DRP/OP NP]<sub>i</sub> (C) [IP ... *t<sub>i</sub>* ...]]]]

Originally, it was assumed that only the external interpretation of NP is compatible with this structure (as in the regular head-external analysis). Relatedly, it could be said that raising and matching do not exclude each other, but coexist, giving rise to the interpretations in (61) as well as (63).<sup>46</sup> It has also been claimed, however, that the raising analysis is superfluous if the internal representation of the head in (64) can also be interpreted, that is, if matching can account for reconstruction as well as non-reconstruction.<sup>47</sup> The most intricate (and debated) examples that may support such an approach are sentences with conflicting requirements, that is, where both reconstruction and non-reconstruction are necessary for the interpretation:

- (65) a. I like the picture of John<sub>i</sub> that he<sub>i</sub> himself<sub>i</sub> took.  
 b. Paul<sub>i</sub> showed me the picture of himself<sub>i</sub> that Mary took.

Here, the interpretation of the collocation *take a picture* requires reconstruction of the relative head *picture of John/himself* into the complement position of *took* inside the relative clause, but in (65a) this would lead to a principle C violation inside the relative clause (*he* would then bind *John*), and in (65b) the anaphor *himself* could then not be bound by the nonlocal antecedent *Paul* across the finite clause boundary.<sup>48</sup>

#### 4.2. Level of Attachment and the Syntactic Status of Appositives

A restrictive relative clause must be attached within the scope of an external determiner. In a traditional head-external or matching analysis, it could be an adjunct to the external NP or a complement of the head N (see section 3.1). In many current raising analyses, the RC is directly the complement of the external D, as in (62).

For appositive (non-restrictive) relatives, the situation is different. First, as discussed in section 3.2, these relatives outscope external determiners (in fact, by definition), with structural consequences. However, it has been established that it is insufficient to simply adjoin them at the DP level. While they are formally embedded clauses, appositives do bear (semantic) similarities to main clauses: they embody speech acts, carry illocutionary force, and may contain discourse particles and speaker-oriented adverbs:<sup>49</sup>

- (66) John, who unfortunately doesn't have a car, does he?, will be coming over tomorrow.

<sup>45</sup> See Chomsky (1965) and Hulsey & Sauerland (2006), among others.

<sup>46</sup> See Bhatt (2002), Aoun & Li (2003), and Cinque (2015), for instance.

<sup>47</sup> See Citko (2001), Boef (2013), Douglas (2016), Salzmann (2017).

<sup>48</sup> See Douglas (2016) and Salzmann (2017) for recent critical discussions of all the complex (non-)reconstruction data. Note that additional issues to take into account are the possibility of vehicle change and late merger of modifiers.

<sup>49</sup> See Emonds (1979), Safir (1986), Fabb (1990), Demirdache (1991), and De Vries (2012), among others. See also De Vries (2006b) for an overview of relevant literature.

Furthermore, they are outside the scope of quantifiers higher up in the matrix. Compare the appositive construction in (67a) to the restrictive one in (67b):

- (67) a. \* [No single stewardess]<sub>i</sub> spoke about Amsterdam, which she<sub>i</sub> visited last month.  
b. [No single stewardess]<sub>i</sub> spoke about the city she<sub>i</sub> visited last month.

It is also relevant to note that none of the reconstruction data summarized in (61) in the previous subsection carry over to appositives; see (68), for instance.

- (68) \* We were surprised by that interest in each other<sub>i</sub>, which [John and Bill]<sub>i</sub> showed \_ the other day, by the way.

Thus, appositives are much like parentheticals, and it is tempting to treat them as ‘orphans’, that is, not part of sentential syntax at all.<sup>50</sup> However, there are also arguments to incorporate them in syntax (but in a special way).<sup>51</sup> For instance, it is clear that they do have a fixed position adjacent to the antecedent (modulo right-extraposition to the edge of the containing clause), contrary to independent parentheticals.

### **Oxford Bibliographies Online**

Oxford Bibliography on Relative Clauses

DOI: <http://dx.doi.org/10.1093/obo/9780199772810-0120>

### **Further Reading**

There is a large and ever growing amount of published work on relative constructions. This section contains a few useful points of access to the existing literature that largely complement specifically directed references in sections 1-4, emphasizing recent overview literature and state-of-the-art work rather than classics. A much more elaborate annotated list of studies is the Oxford Bibliography on Relative Clauses.

A general, theoretically oriented overview of headed relatives, including a bibliography, is Bianchi (2002); it is complemented by Grosu (2002), which discusses ‘peripheral’ types of RCs. A more typologically oriented impression is Andrews (2007). See also De Vries (2002) and the paper collection in Alexiadou et al. (2000) on various theoretical and typological aspects of RCs. A recent accessible theoretical overview can be found in Salzmann (2017).

A rich source of cross-linguistic data is Lehmann (1984). More recently, one can also consult the WALS Online database (Dryer & Haspelmath 2011; see especially chapters 60, 90, 96, 122, 123). Smits (1988) contains more details about the Germanic and Romance languages; Murelli (2011) focuses on non-standard varieties from different language families in Europe; the contributions in Comrie & Estrada-Fernández (2012) address languages in the Americas. A relatively recent update on RC-related universals and tendencies is De Vries (2005). Hendery (2012) discusses the typology of RCs from a diachronic perspective.

Wu (2011) gathers findings about prenominal relatives. Studies on correlatives are collected in Lipták (2009), which also contains an introduction to the topic. A division of internally-headed relatives into subtypes is discussed in Grosu (2012). An overview on Free Relatives is Van Riemsdijk (2006); a more recent discussion, especially on Transparent Free

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<sup>50</sup> A recent discussion is Ott (2016).

<sup>51</sup> See Arnold (2007), and Griffiths & De Vries (2013, to appear).

Relatives, is Grosu (2016). Amount relatives are discussed in detail in Grosu & Landman (2017). Concerning Modal Existential wh-Constructions, see especially Šimík (2011). Quasi/V2-relatives are examined in De Vries (2012). A recent theoretical discussion of appositive relative clauses can be found in Griffiths (2015); discourse functions of nonrestrictives are investigated in Loock (2010).

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