

## ‘What’ clauses can and ‘which’ cannot: a Romanian puzzle

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**Abstract.** A previously unnoticed puzzle is presented. It concerns the distribution of *wh*-determiners in free relative clauses in Romanian: while *care* ‘which’ + NP can never introduce free relative clauses, *ce* ‘what’ + NP does it productively, as all the other *wh*-words. New evidence is provided showing that *care* ‘which’ + NP in interrogative clauses in Romanian exhibits strong discourse-anaphoric requirements, unlike *ce* ‘what’ + NP. This feature of *care* ‘which’ + NP is suggested to be responsible for the puzzle by triggering a clash with the basic set-denoting function of a free relative clause, along the lines of what is observed in light-headed relative clauses.\*

**Keywords:** *wh*-determiners, *wh*-words, free relative clauses, discourse-anaphoricity, interrogative clauses, light-headed relative clauses

### 1. The puzzle

Romanian exhibits a puzzling contrast that, to the best of our knowledge, hasn’t yet been noticed in the language nor has it been attested in any other Romance or Indo-European languages. Romanian interrogative *wh*-clauses can be introduced by the complex *wh*-phrases *ce* ‘what’ + NP or *care* ‘which’ + NP, as shown in (1) and (2), respectively.<sup>1</sup>

#### (1) Interrogative clauses introduced by ‘what’ + NP

Ana se întreabă [ **ce** { **carte/ cărţi/ mâncare** } i-ar plăcea].  
Ana REFL wonders what book/books/ food CL.DAT-would like  
‘Ana wonders what {book/books/food} she would like.’

#### (2) Interrogative clauses introduced by ‘which’ + NP

Ana se întreabă [ **care** { **carte/ cărţi/ mâncare** } i-ar plăcea].  
Ana REFL wonders which book/books/ food CL.DAT-would like  
‘Ana wonders which {book/books/food} she would like.’

By contrast, only one of these two options is available for two different kinds of free relative clauses (henceforth, FRs), non-interrogative *wh*-constructions whose distribution and interpretation resemble those of nominals or prepositional phrases: Maximal Free Relative Clauses

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<sup>1</sup> Glosses follow The Leipzig Glossing Rules (<https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf>; retrieved on June 2, 2019) with the following additions: CL: clitic.

(henceforth, Max-FRs), which have been argued to semantically behave like definites, and Existential Free Relative Clauses (henceforth, Ex-FRs), which only occur as complements of a restricted class of predicates and have been argued to semantically behave like narrow scope indefinites.<sup>2</sup> Both *wh*-clauses are extremely productive in Romanian: they can be introduced by all the *wh*-words and *wh*-phrases that can introduce interrogative *wh*-clauses (see Grosu 2013, Caponigro & Fălăuș 2018, a.o.). This includes *ce* ‘what’ + NP, as shown in (3) and (4) with a singular count, a plural count, and a mass NP complement.

(3) *Max-FRs introduced by ‘what’ + NP*

Ana a luat [**ce** {**carte/ cărți/ mâncare**} a luat și Maria].  
 Ana has taken what book books food has taken also Maria  
 ‘Ana took the book/books/food Maria took as well.’

(4) *Ex-FRs introduced by ‘what’ + NP*

Maria are [**ce** {**carte/ cărți/ mâncare**} să ia].  
 Maria has what book books food SBJV take.3SG  
 ‘Maria has a book/books/food to take.’

There is only one exception: *care* ‘which’ + NP cannot introduce either Max-FRs nor Ex-FRs regardless of the kind of NP complement occurring with the *wh*-determiner, as shown in (5) and (6).

(5) *Max-FRs introduced by ‘which’ + NP*

a. \*Ana a luat [**care** {**carte/ mâncare**} a luat-o și Maria].  
 Ana has taken which book/ food has taken-CL.ACC.3SG also Maria  
 b. \*Ana a luat [**care** **cărți** le-a luat și Maria].  
 Ana has taken which books CL.ACC.3PL-has taken also Maria

(6) *Ex-FRs introduced by ‘which’ + NP*

\*Maria are [**care** {**carte/ cărți/ mâncare**} să (o/le) ia].  
 Maria has which book books food SBJV CL.3SG/CL.3PL take.3SG

Note that *care* ‘which’ + NP triggers obligatory clitic doubling when generated in object position, as shown in (5) and (6) above, while *ce* ‘what’ + NP does not.<sup>3</sup> This difference does not affect the

<sup>2</sup> See Jacobson 1995, Dayal 1996, Caponigro 2003, 2004 for the semantics of Max-FRs. They all argue that Max-FRs are *wh*-clauses that denote the unique maximal individual of a set like definite DPs, borrowing from the analysis of definite DPs in Sharvy 1980 and Link 1983. Their proposals differ in the semantics they assume for *wh*-words in Max-FRs. See Šimík 2020 for a detailed and thorough overview of generalizations and proposals about Max-FRs and FRs in general.

See Izvorski 1998, Caponigro 2003, 2004, 2021, 2022, Grosu 2004, and Šimík 2011, 2013 for Ex-FRs. Their analyses are significantly different: Izvorski treats them as interrogative *wh*-clauses syntactically; Caponigro treats them as a subgroup of FRs independent from Max-FRs; Grosu and Šimík, instead, argue that they can be clauses or smaller constituents and, therefore, prefer to label them “Modal Existential Construction”. See Šimík 2017 for an overview of the work on this construction. See also Caponigro *et al.* 2021 for further generalizations and crosslinguistic evidence and comparison about Max-FRs and Ex-FRs from fifteen Mesoamerican languages. Here we follow Caponigro’s 2021 terminology and basic syntactic assumptions about Max-FRs and Ex-FRs, although no crucial aspect of the puzzle we are presenting hinges on that.

<sup>3</sup> An anonymous reviewer asked us to comment on this fact. See Pană Dindelegan 2013: ch. 3 for an overview on clitic doubling in Romanian and Comorovski 1996 for clitic doubling with *wh*-phrases.

puzzle we are investigating: the contrast between FRs introduced by *care* ‘which’ + NP and *ce* ‘what’ + NP also surfaces when the *wh*-phrase is generated as the subject, a syntactic position triggering no clitic doubling, as illustrated in (7) and (8).

- (7) *Max-FRs introduced by subject ‘what’ + NP*  
 A câștigat [**ce candidat** a muncit mai mult].  
 has won what candidate has worked more much  
 ‘The candidate who worked harder won.’

- (8) *Max-FRs introduced by subject ‘which’ + NP*  
 \* A câștigat [**care candidat** a muncit mai mult].  
 has won wich candidate has worked more much

We are thus dealing with a systematic difference between the Max-FRs and Ex-FRs introduced by the two *wh*-determiners *ce* ‘what’ and *care* ‘which’.<sup>4</sup> We are not aware of any variation about these judgments across Romanian varieties or speakers. The main goal of this Research Report is to present, discuss, and start solving the following puzzle: why, in Romanian, can *ce* ‘what’ + NP introduce Max-FRs and Ex-FRs, as all the other *wh*-phrases in the language do, while *care* ‘which’ + NP cannot, although it can introduce interrogative clauses?

We suggest a line of explanation that links this puzzle to a meaning difference in D-linking or discourse anaphoricity between ‘what’ + NP and ‘which’ + NP in interrogative clauses—a meaning difference that, we show, is even sharper in Romanian than in English and makes *care* ‘which’ + NP in Romanian resemble the partitive construction *care dintre* ‘which of the’ + NP. The fact that *ce* ‘what’ + NP can introduce Max-FRs and Ex-FRs follows as the default option for a language like Romanian that has a productive system of *wh*-clauses, where all *wh*-words and *wh*-phrases can undergo some systematic meaning change and be used in FRs as well, unless some extra factor intervenes and blocks this extension. We suggest that this is exactly the case for *care* ‘which’ + NP in Romanian. The strong presuppositional anaphoric requirement for its NP to refer to a set that has already been explicitly introduced in the discourse clashes with the inherently non-anaphoric nature of Max-FRs and Ex-FRs.

To the best of our knowledge, the contrast between the occurrence of ‘what’ + NP vs. the ban of ‘which’ + NP in Max-FRs and Ex-FRs has not been investigated in previous work on Romanian or any other language.<sup>5</sup> There is at least one Romance language, namely Italian, where neither option is allowed in either construction. Germanic languages do not seem to have Ex-FRs at all. On the other hand, English has a productive system of Max-FRs, including those introduced by *what* + NP. The latter exhibit a behavior that is partially different from and less clear-cut than the behavior of their Romanian counterpart, though. Andrews 1975 reports them as acceptable with a plural or mass NP complement, but unacceptable with a singular count NP complement, as shown in (9a,b).<sup>6</sup>

<sup>4</sup> Both *ce* and *care* can be used without NP complements (see e.g. Pană Dindelegan 2013), much like English *what* or the relativizer *which*. In this paper, we focus exclusively on the semantic and pragmatic properties of *ce* and *care* as *wh*-determiners with an overt NP complement and leave possible connections with other uses for future investigation.

<sup>5</sup> This contrast can be inferred from the description of Romanian FRs in Grosu 2013: 645 and the fact that *care* is missing from this list: “The relative elements that can head a DP (i.e., relative determiners) are *ce* ‘what’, *orice* ‘whatever’ and *oricare* ‘whichever’.”

<sup>6</sup> Example (9a) is adapted from Andrews 1975: 76, ex. (76b,c) and example (9b) from Andrews 1975: 76, ex. (77b,c). Andrews (1975) calls the bracketed clauses in 9a,b “internally headed relative clauses.” See de Vries 2002: ch. 2, sec.

- (9) a. I drank [{**what beer**}/{\***what glass of milk**} was provided].  
 b. Fred hid [{\***what weapon was**}/{**what weapons were**} on the table].
- (10)% Ana took [**what {book/books/food}** Maria took].

The English native speakers we asked confirmed Andrews' judgments, but found (10)—the English equivalents of the fully acceptable Romanian examples in (3)—either all degraded or all acceptable, regardless of the NP complement. This variation in acceptability of Max-FRs introduced by *what* + NP depending on the examples and the speakers needs a study of its own. On the other hand, FRs introduced by *which* + NP, which Andrews 1975 doesn't mention, are all less acceptable than their *what* + NP counterpart without any kind of variation, at least according to our consultants.

We hope that the puzzle we introduce in this Research Report, the analytical tools that are used to investigate it, and the proposed account in terms of anaphoric properties will foster crosslinguistic work on the behavior of these two *wh*-determiners in interrogative and non-interrogative *wh*-clauses.

The remainder of the paper is structured as follows. In Section 2, we show the discourse-anaphoric contrast between *care* 'which' + NP and *ce* 'what' + NP in interrogative clauses in Romanian building on insights from the literature on D-linking and Dayal 2017, 2020 (Section 2.1) and suggest ways to formalize it by adapting existing proposals about the meaning of *what* + NP and/or *which* + NP in English (Section 2.2). In Section 3, we use the findings from Section 2 to suggest an account for the contrast in Max-FRs and Ex-FRs illustrated in (3)–(8). Section 4 concludes with some general remarks and outstanding issues.

## 2. 'What' + NP versus 'which' + NP in interrogative clauses in Romanian

### 2.1. Empirical findings: a pragmatic contrast in anaphoricity

The literature on Romanian does not provide any systematic comparative investigation of *ce* 'what' + NP vs. *care* 'which' + NP in interrogative clauses in Romanian. Still, it seems to imply a pragmatic difference between the two *wh*-determiners: the *wh*-determiner *care* 'which', but not *ce* 'what', is assumed to come with a contextual salience/familiarity presupposition that is often cast in terms of Pesetsky's 1987 notion of D-linking (see Comorovski 1996, Rațiu 2011, Giurgea 2013, Giurgea & Grosu 2019, a.o.). Accordingly, *care* 'which' can only be used "when the domain of entities from which values are to be selected is contextually available" (Farkas 2013:220).

In this section, we probe the D-linking/discourse-anaphoric properties of *care* 'which' + NP and *ce* 'what' + NP in Romanian by applying some of the tests that Dayal (2017, 2020) develops to distinguish between *which* + NP and phrasal *what* (without an NP complement) in English. We conclude that *care* 'which' + NP in Romanian carries a strong presuppositional requirement: the set denoted by its NP must have been explicitly introduced in the discourse in a way that makes it akin to the partitive construction *care dintre* 'which of' + NP, as suggested in Comorovski 1996:11. On the other hand, *ce* 'what' + NP carries no presuppositional requirement whatsoever.

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6.3.2 for a thorough discussion and morphosyntactic and semantic arguments supporting our claim that the bracketed clauses in (9a,b) and in the Romanian examples in (3) and (4) are FRs, rather than internally headed relative clauses or correlative clauses.

Let us start by considering the three Romanian examples in (11): the interrogative clause in (11a) is introduced by *ce* ‘what’ + NP, the one in (11b) by *care* ‘which’ + NP, and the one in (11c) by the partitive *care dintre* ‘which of’ + NP. We investigated the felicity of each interrogative clause when uttered in two different contexts. In Context 1, the set denoted by the NP complement of *care* ‘which’ or *ce* ‘what’ is not mentioned explicitly but it can be inferred from other pieces of information that are provided. Ana’s mentioning her trip to the nearby bookstore to buy a book for Lia makes it clear that the book in question is a member of the set of books in that bookstore. Still, this contextual information is not enough to license the use of *care* ‘which’ + NP or the closely related partitive construction, whereas *ce* ‘what’ + NP is fully acceptable. If we slightly change the scenario as in Context 2, and have Ana explicitly mention a list of books Maria is familiar with, then *care* ‘which’ + NP and the partitive construction join *ce* ‘what’ + NP in being felicitous, as shown in (11a–c). Neither (11b) nor (11c) would be acceptable if Ana made reference to a list of books Maria is not familiar with.

(11) CONTEXT 1: *Ana says: “I went to the nearby bookstore and got a book for Lia.” Maria asks:*

CONTEXT 2: *Ana says: “I went to the nearby bookstore and got a book for Lia out of the list you recommended.” Maria asks:*

- |   |               |
|---|---------------|
| a. <b>Ce</b> <b>carte</b> ai            luat?     | √ (Context 1) |
| what book have.2SG taken                          | √ (Context 2) |
| ‘What book did you get?’                          |               |
| b. <b>Care</b> <b>carte</b> ai            luat-o? | # (Context 1) |
| which book have.2SG taken-CL.3SG                  | √ (Context 2) |
| ‘Which book did you get?’                         |               |
| c. <b>Care dintre cărți</b> ai            luat-o? | # (Context 1) |
| which of    books have.2SG taken-CL.3SG           | √ (Context 2) |
| ‘Which of the books did you get?’                 |               |

A similar point is made by the contrast in (12), modeled after an example discussed in Kroch 1998, as well as Dayal 2020. This time the interrogative clauses are used in a situation where the referent of the *wh*-phrase is contextually salient. This is not sufficient to make interrogative clauses felicitous when introduced by *care* ‘which’ + NP, as in (12b), or the partitive *care dintre* ‘which of’ + NP, as in (12c). On the other hand, interrogative clauses introduced by *ce* ‘what’ + NP are fully felicitous in this context, as shown in (12a).

(12) CONTEXT: *A man walks into an apartment building in front of Maria and Ana, who are conversing on the sidewalk. Maria asks:*

- |   |
|---|
| a. √ <b>Ce</b> <b>bărbat</b> a    intrat?   |
| what man    has entered                     |
| ‘What man entered?’                         |
| b. # <b>Care</b> <b>bărbat</b> a    intrat? |
| which man    has entered                    |
| ‘Which man entered?’                        |

- c. # **Care dintre bărbați** a intrat?  
 which of men has entered  
 ‘Which of the men entered?’

Let us now consider the set of examples in (13), which differ with respect to the *wh*-phrases introducing them as above: *ce* ‘what’ + NP in (13a), *care* ‘which’ + NP in (13b), and the partitive *care dintre* ‘which of’ + NP in (13c).

- (13) CONTEXT 1: *Ana just said that the Academy Award (aka Oscar) for Best Actress was announced. The list of nominees has not been introduced in the discourse. Maria asks:*  
 CONTEXT 2: *Ana just said that the Oscar for Best Actress was announced after she had mentioned the names of two nominees and made it clear that there were others. Maria asks:*  
 CONTEXT 3: *Ana just said that the Oscar for Best Actress was announced after she had listed the names of all the nominees. Maria asks:*

- |   |               |
|---|---------------|
| a. <b>Ce actriță</b> a câștigat premiul Oscar anul acesta?          | √ (Context 1) |
| what actress has won award-the Oscar year-the this                  | √ (Context 2) |
| ‘What actress won the Oscar this year?’                             | √ (Context 3) |
| b. <b>Care actriță</b> a câștigat premiul Oscar anul acesta?        | # (Context 1) |
| which actress has won award-the Oscar year-the this                 | # (Context 2) |
| ‘Which actress won the Oscar this year?’                            | √ (Context 3) |
| c. <b>Care dintre actrițe</b> a câștigat premiul Oscar anul acesta? | # (Context 1) |
| which of actresses has won award-the Oscar year-the this            | # (Context 2) |
| ‘Which of the actresses won the Oscar this year?’                   | √ (Context 3) |

This time, we investigate the felicity of each interrogative clause in three different contexts. In all contexts, Ana says that the Oscar for Best Actress was announced, and then Maria asks (13a–c). Both Ana and Maria know that every year there is a list of nominees for the Oscar for Best Actress. The contexts vary in the amount of knowledge of this list right before Ana’s announcement and Maria’s question: none in Context 1, a partial one in Context 2, and complete one in Context 3. While *ce* ‘what’ + NP is unaffected by these context differences, *care* ‘which’ + NP is only felicitous in Context 3, in which the full list of nominees had been introduced in the discourse—the same behavior that is exhibited by the partitive *care dintre* ‘which of’ + NP. Notice that introducing a list of three nominees that is clearly partial and doesn’t cover all the members of the set denoted by the NP *actriță* ‘actress’ is not enough to license *care* ‘which’ + NP, as shown by the infelicity of (13b) in Context 2. Once again, this is the same pattern as the one observed for partitive *care dintre* ‘which of’ + NP, as shown in (13c). This contrast also shows that *care* ‘which’ imposes anaphoric constraints not just on a subset of the set denoted by its NP complement, but on the whole set, to which standard domain restrictions for NP complement of determiners are expected to apply (e.g. *actriță* ‘actress’ in (13) is not expected to denote the set of all the actresses in the world, but, given the discourse context, is restricted to the set of actress that are nominees for the Oscar for Best Actress that year).<sup>7</sup>

To sum up, we have shown that *care* ‘which’ + NP in interrogative clauses in Romanian is subject to very strict discourse conditions: the set denoted by its NP is presupposed to have been

<sup>7</sup> We would like to thank one of the editors for remarks that made us reflect further on this aspect.

previously introduced in the discourse explicitly.<sup>8</sup> This presuppositional requirement also holds for embedded interrogative *wh*-clauses that are introduced by *care* ‘which’ + NP. In the example in (2), *care* ‘which’ + NP can be used felicitously only if the discourse makes it clear that Ana has a certain set of books (or food) in mind and the speaker is aware of that. On the other hand, *ce* ‘what’ + NP doesn’t exhibit this restriction and can be used regardless of the availability of a previously introduced set.

## 2.2. Formalizing the empirical findings

We now formalize the empirical findings in Section 2.1 by adapting a popular semantic analysis for *wh*-phrases in English—the one in Karttunen 1977, outlined in his ex. (32) and ex. (47). According to this approach, *what* + NP and *which* + NP receive the same semantic analysis: they both denote existential generalized quantifiers, exactly like *some* + NP. They differ in how they semantically combine with their sister constituent, that is the remainder of their clause. While *some* + NP combines with its sister constituent to return a truth value (or a proposition) by standard function application, a special rule is postulated to combine a *wh*-phrase in an interrogative clause with its sister constituent and produce a set of propositions (Karttunen 1977: ex. (33) and ex. (45b)). If we adapt Karttunen’s analysis of *wh*-determiners to Romanian by incorporating our findings about the pragmatic import of *care* ‘which’, the *wh*-determiner *ce* ‘what’ and the *wh*-determiner *care* ‘which’ can receive the logical translations in (14) and (15), respectively.

(14)  $ce_{\text{INTERR}}$  ‘what’  $\leadsto \lambda Q \lambda P \exists y [Q(y) \wedge P(y)]$

(15)  $care_{\text{INTERR}}$  ‘which’  $\leadsto \lambda Q \lambda P: Q \in \mathbf{D}_{\text{REF}}. \exists y [Q(y) \wedge P(y)]$

The *wh*-determiner *ce* ‘what’ in (14) semantically behaves like a plain indefinite determiner, returning the value true if and only if the intersection between the set of individuals *Q* denoted by its NP complement and the set of individuals *P* denoted by the rest of its clause is non-empty. The *wh*-determiner *care* ‘which’ in (15) adds to the semantic contribution of *ce* ‘what’ the presuppositional requirement that the set *Q*—the denotation of its NP complement—be already a member of the set of discourse referents; if this condition is not satisfied, *care* ‘which’ returns no semantic value.<sup>9</sup>

An anonymous reviewer and our editors encouraged us to consider also Rullmann and Beck’s (1998) analysis for *which*-phrases in interrogative clauses in English. Their analysis takes Groenendijk and Stokhof’s (1982, 1984) criticism of Karttunen’s proposal into consideration and treats *which* + NP as a (Fregean) singular definite DP: it refers to an individual in the set denoted by its NP and presupposes the uniqueness of such an individual. As shown in (16), Rullmann & Beck (1998) treats *which* as a determiner that combines with the set denoted by *Q* (its NP complement) to output the individual that is in the set and is identical to the individual denoted by

<sup>8</sup> A possible diachronic source for this presuppositional component may be the fact that in old Romanian *care* is the only *wh*-word that incorporates the enclitic definite determiner—*carele* (M.SG), *carii* (M.PL), *careia* (F.SG), *carele* (F.PL) (Pană Dindelegan 2016).

<sup>9</sup> The logical translation in (15) assumes that a set and its intensional counterpart (a property) can act as referents in the discourse (see Nouwen 2003). Also, we are assuming some form of quantifier domain restriction on the denotation of the NP complement of *care*, as it is usually done for the NP complement of any (quantificational) determiner. Syntactic, semantic, and pragmatic analyses have been proposed for quantifier domains restrictions (see Stanley and Szabó 2000 for an overview). As far as we can tell, our proposal in (15) is compatible with any of those approaches.

the variable  $x_i$ . Such an individual is presupposed to exist and be unique.<sup>10</sup> The variable over individuals  $x_i$  is then existentially bound by the interrogative complementizer.<sup>11</sup>

$$(16) \text{ which}_{\text{INTERR}} \rightsquigarrow \lambda Q \iota y [Q(y) \wedge y = x_i]$$

So for example a question like *Which actress won?* presupposes that the winner is an actress and denotes a set of propositions of the form ‘The actress  $x$  won’, as in {The actress Ingrid Bergman won, the actress Bette Davies won, the actress Anna Magnani won, ...}. Note however that, although presuppositional, the denotation in (16) does not impose any requirement that the set denoted by the NP must have been previously mentioned. In other words, Rullmann and Beck’s (1998) discussion of the presuppositional properties of *which* + NP does not make any reference to its discourse anaphoricity, a meaning component which we have shown to be crucial for Romanian *care* ‘which’. They also do not compare *which* + NP to *what* + NP, nor do they provide an analysis for *what* + NP. Most of the arguments motivating their analysis of *which* + NP apply to *what* + NP as well, meaning that *what* + NP should receive a similar analysis. Accordingly, insofar as we can tell, their proposal cannot capture the contrasts between *care* ‘which’ + NP and *ce* ‘what’ + NP we discussed in the previous section.

In the next section, we investigate whether the semantic analyses we just sketched for *ce* ‘what’ + NP in (14) and *care* ‘which’ + NP in (15) can be adopted as such or can at least be adapted to account for the two varieties of FRs under investigation, Max-FRs and Ex-FRs, and the puzzle presented in Section 1. In particular, we want to explore whether the “Karttunenian” analysis of the *wh*-determiner *care* ‘which’ in (15) provides reasons why *care* ‘which’ may be banned in Max-FR and Ex-FRs.

Before concluding this section, a cautionary crosslinguistic remark is needed. Some of the contexts that do not license *care* ‘which’ + NP in interrogative clauses in Romanian may, instead, be appropriate for *which* + NP in English (e.g. Context 1 in (11)). Similarly, the contexts licensing *ce* ‘what’ + NP may not be exactly the same as those licensing *what* + NP (e.g. Context 2 in (11)). These possible crosslinguistic differences deserve further investigation. Here we just want to raise the general issue that, even if the repertoire of complex *wh*-phrases in a language includes some form of ‘what’ + NP and ‘which’ + NP, it should not be taken for granted that the way these two complex *wh*-phrases are sensitive to discourse conditions and the way they differ from each other in this respect are necessarily identical across languages. Consequently, they should be carefully investigated in each language.

### 3. Back to the puzzle about free relative clauses

Let us now return to the puzzle we started with concerning the interrogative clauses in (1)–(2) vs. the non-interrogative *wh*-clauses in (3)–(8). In this section, we suggest a solution in light of the observations and conclusions in Sections 1 and 2. We first provide an explicit semantics for *ce*

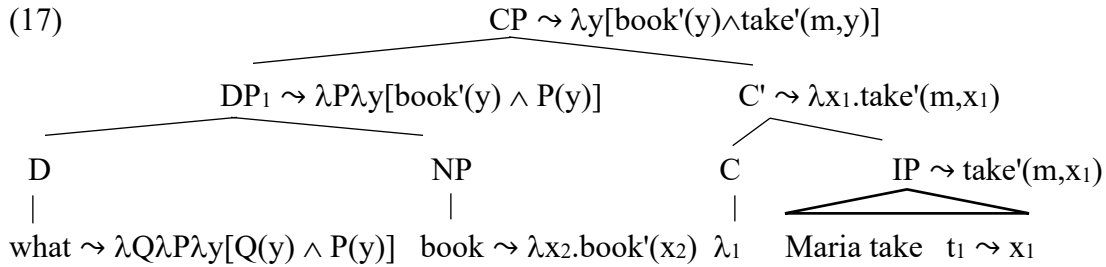
<sup>10</sup> See also den Dikken & Giannakidou’s 2002:41 remarks that *which* + NP in interrogative clauses in English is “existential” and “presuppositional”.

<sup>11</sup> The logical translation for *which* in (16) is inferred from Rullmann & Beck 1998:39 and related discussion. Rullmann and Beck (1998) formulate their proposal intensionally. We are providing an extensional version in order to facilitate its comparison with the analysis in (15).



‘what’ + NP in Max-FRs and Ex-FRs in Romanian and then speculate on why a similar move does not extend to *care* ‘which’ + NP.

As mentioned in Section 1, Max-FRs behave like definite DPs semantically, while Ex-FRs resemble narrow scope indefinites (see references in fn. 2). For the sake of simplicity, we assume that they are both fully clausal (CPs) and share most of their semantic derivation, including the meaning of their *wh*-phrases. If Ex-FRs are smaller than CPs, our core observations and suggestions would still hold. Let us look at the concrete example in (17), showing the semantic derivation of the CP of the Max-FR in (3) and the Ex-FR in (4) with lexical entries in English and the verbal form ‘take’ standing for both the indicative form in the Max-FR and the subjunctive form in the Ex-FR in the Romanian original clauses.<sup>12</sup>



The logical translation of C' in (17) denotes the set of objects that Maria took or can take. This is the standard semantic contribution of a *wh*-clause in general right before combining with its *wh*-phrase. The logical translation of the NP is standard as well, denoting a set of individuals. What characterizes FRs—regardless of whether Max-FRs or Ex-FRs—is the meaning of its *wh*-word and the whole *wh*-phrase. The logical translation of the *wh*-determiner *ce* ‘what’ in an FR (henceforth,  $ce_{FR}$ ) is given in (18), while the resulting translation for the whole *wh*-phrase is given in its general form in (19), with  $NP'$  standing for the logical translation of the NP complement of *ce* ‘what’.

$$(18) \quad ce_{FR} \text{ ‘what’} \rightsquigarrow \lambda Q \lambda P \lambda y[Q(y) \wedge P(y)]$$

$$(19) \quad [DP \text{ } ce_{FR} + NP] \rightsquigarrow \lambda P \lambda y[NP'(y) \wedge P(y)]$$

The *wh*-determiner  $ce_{FR}$  in (18) semantically behaves like a purely functional/logical element: it applies to two sets of individuals to return their intersection. Once  $ce_{FR}$  combines with the set denoted by its NP complement, the whole DP turns into a set restrictor: it applies to a set of individuals Q to return the subset of Q containing those members that are in the denotation of the NP complement as well, as shown in (19). In the semantic derivation in (17),  $ce_{FR}$  combines with ‘book’ to return the function that restricts whatever set it applies to next to its subset containing books. When the *wh*-DP combines with the C' denoting the set of individuals that Maria took or can take, it returns the subset of those individuals that are books, as shown by the logical translation of CP in (17). This set is existentially closed by the matrix existential predicate in an Ex-FR, while it is type-shifted into its maximal individual in a Max-FR (see references in fn. 2 for details).

If we compare the semantic contribution of  $ce_{FR}$  in FRs in (18) to the one of  $ce_{INTERR}$  in (14), we can see that both *wh*-words apply to two sets and trigger their intersection.  $ce_{FR}$  doesn't do

<sup>12</sup> The Ex-FR in 4 has a null subject that is obligatorily coreferential with the matrix subject *Maria*. This is a very common feature of Ex-FRs, as discussed in the literature we refer to in fn. 2. For the sake of simplicity, we are assuming the subject to be overt for the Ex-FR in our representation in (17).

anything else semantically, while  $ce_{\text{INTERR}}$  existentially quantifies over the intersection. In other words,  $ce_{\text{INTERR}}$  semantically behaves like a plain existential determiner (e.g. *a/some* in English or *un(M)/o(F)* in Romanian). This meaning change from existential quantification to  $\lambda$ -abstraction/set-formation applies not just to  $ce_{\text{FR}}$ , but to all the *wh*-words occurring in FRs.

If it is so natural for *wh*-words in Romanian to occur in FRs, what prevents *care* from joining all its *wh*-colleagues in FRs? In other words, why doesn't Romanian allow for a  $care_{\text{FR}}$  with a logical translation like the one in (20)?

$$(20) \text{ *}care_{\text{FR}} \text{ 'which'} \leadsto \lambda Q \lambda P \lambda y: \mathbf{Q} \in \mathbf{D}_{\text{REF}}. [Q(y) \wedge P(y)]$$

The denotation in (20) contains exactly the same presuppositional discourse-requirement as  $care_{\text{INTERR}}$  in (15) minus the existential quantifier, that is the meaning change we assume to take place with all other *wh*-words in Romanian when they occur in an FR. But  $care_{\text{FR}}$  is not an actual lexical item of Romanian—this is why it is starred in (20).

Although we do not have a full-fledged answer to this question, we provide evidence that the lack of  $care_{\text{FR}}$  should be analogized to a broader phenomenon: the incompatibility between headless relative clauses, that is relative clauses lacking a nominal head they modify, and an anaphoric/deictic determiner-like element. The semantic role of headless relative clauses is to denote a set by using all the richness and articulation of a clause. The core property of a discourse-anaphoric element is to refer back to a referent that has already been introduced in the discourse and, therefore, needs not to be described. These two meaning functions seem to be at odds.

For instance, the personal pronoun *he* refers back to the only contextually salient male, while the demonstrative pronouns *that* and *those* refers back to the only contextually salient object or objects. All these pronouns can introduce headless relative clauses in English that differ from FRs and are known as light-headed relative clauses (Citko 2004, Caponigro 2021). This use of *he*, *that*, and *those* matters for our investigation because it shows that, when followed by the rich content of a headless relative clause, these pronouns lose their anaphoric properties: both *those* and *he* in (21) and *that* in (22) introduce a bracketed *wh*- headless relative clause and none of them triggers reference to any contextually-salient individual.

(21) **Those/He** [who laugh(s) last, laugh(s) best].

(22) A very small part of acting is **that** [which takes place on the stage]!

(T.S. Eliot, *The Sacred Wood*)

Notice that the option of losing anaphoric features doesn't generalize to the whole class of anaphoric pronominals but crucially depends on the individual lexical item. For instance, it is permitted with *he*, although sounding archaic or proverb-like, and fully acceptable with *those* and *that*, as shown in (21) and (22), but it is completely banned with anaphoric pronouns like *it*, *they*, *this*, and *these*, as shown in (23) and (24).

(23) \***They/These** [who laugh last], laugh best.

(24) \*A very small part of acting is **it/this** [which/that takes place on the stage]!

Analogous facts hold for Romanian. Whatever mechanism is responsible for the loss of anaphoric features of some pronominals when they introduce headless relative clauses and the complete unacceptability of others in the same constructions, the very same mechanism can be used to

account for the ban on the *wh*-determiner \**care*<sub>FR</sub> ‘which’ as well. More generally, this mechanism would predict two options: (i) either *care* retains its anaphoric features and cannot occur at all or (ii) *care* has to lose its anaphoric features to be able to occur in a non-interrogative *wh*-clause. Romanian illustrates either option in different constructions. The first option is at the center of the puzzle we are discussing: \**care*<sub>FR</sub> ‘which’ is banned in both Max-FRs and Ex-FRs. Ex-FRs may add further evidence against the anaphoric *care*<sub>FR</sub> in (20). Remember that Ex-FRs very naturally occur as the complement of the existential predicate *a avea* ‘to have’. It looks like *care*<sub>INTERR</sub> cannot be base-generated in this syntactic position, as shown in (25a). On the other hand, *ce*<sub>INTERR</sub> exhibits no such restriction while triggering a ‘kind’ interpretation, as shown by the acceptability of the interrogative clause in (25b) and the ‘kind’ answer it licenses.

- (25) a. \*[ **Care prieteni**] îi ai \_\_? <sup>13</sup>  
           which friends CL.3PL have.2SG  
           (‘Which friends do you have?’)  
       b. [ **Ce prieteni**] ai \_\_?  
           what friends have.2SG  
           ‘What kind of friends do you have?’  
           (ANSWER 1: # ‘The friends you met yesterday.’; ANSWER 2: √ ‘Friends that I  
           can fully trust.’)

If existential ‘have’ existentially quantifies over its set-denoting complement triggering the assertion of its non-emptiness, it would trigger infelicity if combined with a complement like *care* that anaphorically refers to a set of individuals, which is already well-established as a discourse referent and, as such, non-empty.

The second option—*wh*-determiner *care* without its anaphoric features—is attested in non-interrogative *wh*-clauses other than Max-FRs and Ex-FRs. For instance, the bracketed clause in (26), taken from Braşoveanu 2008:49, is a correlative clause.

- (26) [**Pe care om** l-a interogat Securitatea], în *acela*  
       ACC which person CL.ACC.3SG-has interrogated Security-the in DEM.3M.SG  
       nu mai am încredere.  
       not anymore have.1SG trust  
       ‘I don’t trust any person interrogated by the secret police anymore.’

It occurs left dislocated, while Max-FRs and Ex-FRs occur clause-internally, as arguments or adjuncts. Also, it licenses the italicized demonstrative pronoun in the matrix clause, which can be optional in subject position (Romanian is subject pro-drop). Last, the bracketed clause in (26) cannot be replaced by nor be interpreted as a definite nor an indefinite DP. Its semantic

<sup>13</sup> Our consultants find (i) acceptable, with *care* ‘which’ + NP obligatorily preceded by the preposition *de* ‘of’. As made clear by the translation of the interrogative *wh*-clause and by its only possible answer, *care* ‘which’ in this use only allows for a ‘kind’ interpretation without any discourse anaphoricity. This is the same semantic behavior as the interrogative clause with *ce* ‘what’ in (25b).

(i) **De care prieteni** ai ?  
       of which friends have.2SG  
       ‘What kind of friends do you have?’  
       (ANSWER 1: # ‘The friends you met yesterday.’; ANSWER 2: √ ‘Friends that I can fully trust.’)

contribution adds a universal or free choice component to the interpretation of the whole sentence (see Braşoveanu 2008).

The bracketed clause in (27), instead, is a kind of *wh*-clause originally discussed in Rudin 1986 and recently described in Caponigro & Fălăuş 2020.

- (27) A   mâncat   [**care copil**   ce   a   vrut ].  
       has   eaten   which child   what has wanted  
       ‘Every child ate whatever they wanted.’

It obligatorily involves a *wh*-clause with more than one *wh*-phrase, each of which is related to an argument of *both* the matrix and the embedded predicate. For instance, in (27) the children eating are the ones that want to eat and the things they eat are the things they want to eat. Crucially, *care* ‘which’ + NP can only be replaced by a universally quantified DP or the free choice DP *oricare/orice copil* ‘any child’ in order to obtain a sentence that is roughly truth-conditionally equivalent to the original one.

The free-choice/quantificational interpretation of the bracketed *wh*-clauses introduced by *care* ‘which’ in (26) and (27) exhibits no anaphoric component. Why can’t that *care* introduce Max-FRs or Ex-FRs as well then? The syntactic and semantic differences between the constructions in (26) and (27) on the one hand, and Max-FRs and Ex-FRs on the other indicate that we are dealing with different constructions and possibly different *care* ‘which’, each of which has to be specifically licensed for that construction. If *care* ‘which’ in (26) and (27) contributes to the free choice/quantificational interpretation those constructions receive, then that *care* ‘which’ would not be able to occur in Max-FRs and Ex-FRs, whose interpretation is incompatible with free-choice or universal quantification.

The acceptability of the *wh*-determiner *care* ‘which’ in (26) and (27) raises various questions on the lack of anaphoricity displayed in these *wh*-clauses. Why and how does the anaphoric component of *care*<sub>INTERR</sub> ‘which’ (described in Section 2) disappear in correlative clauses for example? Is this a systematic difference between *wh*-determiners in interrogative vs. correlative clauses across languages or are there languages where the semantic/pragmatic properties of *wh*-determiners are identical in interrogative clauses, correlative clauses and FRs? These are open questions, which can only be addressed based on thorough crosslinguistic investigation. Typologically, it is common to observe variation across non-interrogative *wh*-constructions within the same language with respect to the subset of *wh*-words introducing them (Caponigro 2003, 2021). We are not aware of any general account of this variation within a language and the crosslinguistic variation in the use of *wh*-words would disfavor such a general approach. Language specific or idiosyncratic restrictions are likely to be at play.

In the specific case of Romanian, if the *wh*-determiner *care* had undergone a meaning change in order to be licensed in Max-FRs and Ex-FRs, it would have become fully identical to *ce*<sub>FR</sub> ‘what’ + NP in (18). Some form of blocking may disfavor a lexical item from assuming exactly the same meaning as another lexical item with exactly the same distribution.<sup>14</sup> Also, *care* ‘which’ would have to change its meaning along two dimensions (loss of existential quantification and loss of anaphoricity) in order to be able to occur in Max-FRs and Ex-FRs, while *ce* ‘what’ loses its existential strength only. Although neither ban is absolute, the combination of both may be harder to overcome and explains the lack of *care*<sub>FR</sub>. Interestingly, *care* ‘which’ + NP in the non-

<sup>14</sup> See Embick & Marantz 2008 and references therein for the general notion of blocking and Chierchia 1998 for blocking applied to semantic rules and type shifting.

interrogative *wh*-clauses in (26) cannot be replaced by *ce* ‘what’ + NP: the result is judged degraded and only a kind reading is marginally available. This pattern may be taken as showing blocking as well, although in the reverse direction: the meaning switch that has taken place with the *care* ‘which’ occurring in these constructions blocks *ce* ‘what’ from doing exactly the same.

## 4. Conclusions

We have presented a previously unnoticed and puzzling contrast between the unconstrained productivity of *ce* ‘what’ + NP in Max-FRs and Ex-FRs and the complete ban on *care* ‘which’ + NP in the same two constructions in Romanian—a language in which both types of FRs are highly productive and can be introduced by all the other *wh*-words and *wh*-phrases that are attested in interrogative clauses. We have also advanced and supported the novel observation that *care* ‘which’ + NP in interrogative clauses in Romanian exhibits strong discourse-anaphoric requirements, unlike *ce* ‘what’ + NP. We have connected the two findings by suggesting that a clash may be triggered if discourse anaphoricity and set denotation are directly combined by means of just a clause, without a nominal that the clause modifies. Lexical blocking and further restrictions on the complement of existential predicates may play a role as well.

The constraints we have invoked (and their interplay) are neither absolute nor exhaustive. Some languages may apply further constraints and ban both ‘what’ + NP and ‘which’ + NP from introducing FRs. This would be the case for Italian, as mentioned earlier. Others may ban ‘which’ + NP from FRs and allow ‘what’ + NP in FRs, but with restrictions, rather than as freely as in Romanian. This would be the case for English, if Andrews’ 1975 generalizations hold under further scrutiny: ‘what’ + NP in Max-FRs in English would apply to two sets to return not their intersection, but rather a kind—the kind that is instantiated by the members of the intersection of those two sets.<sup>15</sup> Because these constraints are “soft”, there may be languages that overcome the ban on complex anaphoric descriptions and/or semantic lexical blocking and allow for ‘which’ + NP in FRs. We have no clear evidence of any language of this kind yet.<sup>16</sup>

Overall, our findings contribute to the growing body of crosslinguistic evidence showing that *wh*-words occurring in non-interrogative clauses need to be licensed not only construction by construction but also *wh*-word by *wh*-word in each language. While ‘which’ + NP can never introduce a Max-FR nor an Ex-FR in Romanian, it can introduce other non-interrogative *wh*-constructions like correlative clauses, as seen in (26), or Rudin’s sentence, as seen in (27) above, in the very same language. The full nature of this licensing is one of the main open issues deserving further investigation.

We hope that our paper will encourage further language-specific and crosslinguistic investigation on clauses introduced by ‘what’ + NP and ‘which’ + NP, with special attention to the semantic/pragmatic properties that these *wh*-phrases exhibit in interrogative clauses and the way these properties transfer to FRs and non-interrogative *wh*-constructions in general.

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<sup>15</sup> Heim 1987 suggests that *what* + NP in interrogative clauses in English licenses a variable ranging over subkinds of the kind denoted by its NP complement, while *which* + NP is inherently partitive and licenses a variable ranging over individuals.

<sup>16</sup> Royer 2021 reports that in Chuj (Mayan) Max-FRs can be introduced by both ‘what’ + NP and ‘which’ + NP (Royer 2021: ex. 49 and 50); the only example with ‘which’ seems to be heavily discourse dependent, based on its translation, but it lacks an overt NP complement.

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