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

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1. The puzzle

Romanian exhibits a puzzling contrast that, to the best of our knowledge, hasn’t yet been noticed nor is attested in any other Romance or Indo-European language. As common in Indo-European, Romanian interrogative wh-clauses can be introduced by the complex wh-phrases ‘what’ + NP (ce in Romanian) or ‘which’ + NP (care in Romanian), as shown in (1).

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

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

This parallelism breaks down in non-interrogative wh-constructions whose distribution and interpretation resemble those of NPs/DPs or PPs: Maximal Free Relative Clauses (henceforth, Max-FRs), which have been argued to semantically behave like definite DPs\(^1\), 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.\(^2\) Both wh-clauses are extremely productive in Romanian: they can be introduced by all the simple wh-words and complex wh-phrases that can introduce interrogative wh-clauses (see Grosu 2013, Caponigro & Fălăuş 2017,

\(^1\) See Jacobson (1995), Dayal (1996), Caponigro (2003, 2004). 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 (forthcoming) for a detailed and complete overview of generalizations and proposal about Max-FRs and free relative clauses in general, and Caponigro et al. (2020) for further detailed crosslinguistic evidence from fifteen Mesoamerican languages.

\(^2\) See Izvorski (1998), Caponigro (2003, 2004), Grosu (2004), and Šimík (2011, 2013). Their analyses are significantly different. All but Šimík assume that they are wh-clauses, while Šimík argues they are smaller constituents. Izvorski treats them as interrogative wh-clauses syntactically, Caponigro treats them as a subgroup of free relative clauses, Grosu and Šimík prefer to treat them as a separate construction (“Modal Existential Construction”). See Šimík (2017) for an overview of the work on this construction and Caponigro et al. (2020) for further crosslinguistic evidence from fifteen Mesoamerican languages.
a.o.). This includes ‘what’ + NP, as shown in (2) and (3) with a singular count, a plural count, and a mass NP complement.

(2) $Max$-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.’

(3) $Ex$-FRs introduced by ‘what’ + NP
Maria nu are [ce {carte/ cărți/ mâncare} să ia].
Maria not has what book books food SUBJ take.3SG
‘Maria doesn’t have any book/books/food to take.’

There’s only one exception: ‘which’ + NP, which cannot introduce either construction regardless of the kind of NP complement, as shown in (4) and (5). We are not aware of any variation about these judgments across Romanian varieties or speakers.

(4) $Max$-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 [FR care cărți le-a luat și Maria].
Ana has taken which books CL.ACC.3PL-has taken also Maria

(5) $Ex$-FRs introduced by ‘which’ + NP
* Maria nu are [care carte/ cărți/ mâncare să (o/le) ia ].
Maria not has which book books food SUBJ CL.3SG/CL.3PL take.3SG

Unlike the pattern in the interrogative wh-clause in (1), the pattern in Max-FRs and Ex-FRs in (2)–(5) in Romanian doesn’t generalize to other Indo-European languages. A systematic investigation of these two options in either construction across Indo-European languages is still lacking. There is at least one Romance language, namely Italian, where neither option is allowed in either construction. The incorrect generalization of this language-specific restriction to all languages with Max-FRs has led to theories of labelling that erroneously predict the impossibility of ‘what’ + NP in Max-FRs in any language. 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

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3 E.g., Donati & Cecchetto (2011); see also critical remarks in Caponigro (2019).
(1975) reports them as acceptable with a plural or mass NP complement, but unacceptable with a singular count NP complement, as shown in (6)a,b.\(^4\)

(6) a. I drank [{what beer}/*{what glass of milk} was provided}.
   b. Fred hid [{*what weapon was}/*{what weapons were} on the table}.

(7) % Ana took [what {book/books/food} Maria took].

The English native speakers we asked confirmed Andrews’ judgments, but found (7)—the English equivalents of the fully acceptable Romanian examples in (2)—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 on its own. On the other hand, FRs introduced by ‘which’ + NP, which Andrews (1975) doesn’t mention, are all less acceptable than their ‘what’ counterpart without any kind of variation, at least according to our consultants.

In this squib, we focus on the puzzle in (2)–(5) showing that, in Romanian, ‘what’ + NP can introduce Max-FRs without restrictions, while ‘which’ + NP cannot. 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 ‘which’ + NP in Romanian resemble the partitive construction ‘which of the’ + NP. The fact that ‘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 be used, unless some extra factor intervenes and blocks this extension. We suggest that this is exactly the case for ‘which’ + NP. 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 non-anaphoric nature of Max-FRs and Ex-FRs.

The remainder of the squib is structured as follows. In Section 2, we show the discourse-anaphoric contrast between ‘what’ + NP and ‘which’ + NP in interrogative clauses in Romanian building on insights from the literature on D-linking and Dayal (2017, in preparation). In Section 3, we use the findings in Section 2 to suggest an

\(^4\) Andrews (1975) calls the bracketed clauses in (6)a,b “internally headed relative clauses.” See de Vries (2002: Ch. 2), in particular Sec. 6.3.2, for a thorough discussion and morpho-syntactic and semantic arguments supporting our claim that the bracketed clauses in (6)a,b and in the Romanian examples in (2) and (3) are free relative clauses, rather than internally headed relative clauses or correlative clauses. Romanian lacks true internally headed relative clauses but does have true correlative clauses (see Brasoveanu 2008), which exhibit clear differences from free relative clauses (see Caponigro & Fălăuş 2020).

\(^5\) Adapted from Andrews (1975: p. 76, ex. 76b,c).

\(^6\) Adapted from Andrews (1975: p. 76, ex. 77b,c).
account for the contrast in Max-FRs and Ex-FRs in (2)–(5). Section 4 concludes with some general remarks and outstanding issues.

2. ‘What’ + NP versus ‘which’ + NP in interrogative clauses

We are not aware of any systematic comparative investigation of ‘what’ + NP vs. ‘which’ + NP in interrogative clauses in Romanian. The literature on Romanian seems to imply a difference between the two determiner wh-words that is usually cast in terms of D-linking (e.g. Pesetsky 1987, Dayal 2016). Specifically, it is assumed that care ‘which’, but not ce ‘what’, comes with a contextual salience/familiarity presupposition (see Comorovski 1996, Rațiu 2011, Giurgea 2013, Giurgea & Grosu 2019, a.o.). Accordingly, care 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 + NP and ce + NP by applying some of the tests that Dayal (2017, in preparation) develops to distinguish between which + NP and the phrasal what (without an NP complement) in English. We conclude that care + NP 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 ‘which of the’ + NP. Ce + NP, on the other hand, carries no presuppositional restriction whatsoever.

Let’s start by considering a context in which the set denoted by the NP complement of care or ce is part of common knowledge, but it is not introduced explicitly, like the one in (8). Both Ana and Maria know that every year there is a list of nominees for the Nobel prize. Still this shared knowledge is not enough to license the use of care ‘which’ in the absence of some explicit overt introduction of the set of relevant authors in the discourse. The partitive construction care dintre + NP patterns alike in being infelicitous in this context. Ce + NP, instead, is fully felicitous.

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7 In the case of direct objects, D-linking in Romanian is also reflected by clitic doubling: while ce + NP never gets clitic doubled, care + NP is obligatorily clitic doubled (Comorovski 1996, Giurgea & Grosu 2019). Since this difference is orthogonal to our discussion, we set it aside in the rest of the paper.
(8) CONTEXT: Ana just said that the Nobel prize for literature was finally announced. The list of nominees has not been introduced in the discourse. Maria asks:

{ #Care autor}/ { Ce autor}/ { #Care dintre autori} a câștigat which author / what author which of authors has won premiul Nobel anul acesta? prize-the Nobel year-the this ‘(Which author)/{What author}/{Which of the authors} won the Nobel prize this year?’

Let’s now consider Context 1 in (9), in which the set denoted by the NP complement of care or ce 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 book is out of the set of books in that bookstore. Still this is not enough to license the use of care + NP or the closely related partitive construction, whereas ce + NP is fully acceptable, as shown in (9)a–c.

If we slightly change the scenario as in Context 2 in (9), and have Ana explicitly mention a list of books Maria is familiar with, then care + NP and the partitive construction join ce + NP in being felicitous, as shown in (9)a–c.⁸

(9) 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. Care carte ai luat-o? which book have.2SG taken-CL.3SG # (in Context 1) √ (in Context 2)
   ‘Which book did you get?’

   ‘What book did you get?’

c. Care dintre cărți ai luat-o? which of books have.2SG taken-CL.3SG # (in Context 1) √ (in Context 2)
   ‘Which of the books did you get?’

⁸ Neither (9)a nor (9)c would be acceptable if Ana explicitly mentioned a list of books Maria is not familiar with.
The same pragmatic constraint holds for embedded interrogative *wh*-clauses that are introduced by *care* + NP. In the example in (1), *care* + NP can be used felicitously only if the discourse makes it clear that Ana has a certain set of books in mind and the speaker is aware of that. *Ce* + NP, instead, doesn’t exhibit this restriction and can be used regardless of the availability of a contextually salient/familiar set.

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 previously introduced in the discourse explicitly.9

If we assume Karttunen’s (1977) semantics for interrogative *wh*-clauses, we can extend his treatment of *wh*-words as existential generalized quantifiers to *ce* ‘what’ + NP and *care* ‘which’ + NP as in (10) and (11), respectively.

(10)  
\[ ce_{\text{INTER}} \rightarrow \lambda P \lambda Q \exists y [P(y) \land Q(y)] \]

(11)  
\[ care_{\text{INTER}} \rightarrow \lambda P \lambda Q: P \in D_{\text{REF}}. \exists y [P(y) \land Q(y)] \]

While *ce* semantically behaves like a plain indefinite determiner, *care* introduces the presuppositional requirement that the set *P*—the denotation of its NP complement—be already a member of the set of discourse referents.10

The reader may have noticed that (some of) the contexts above that do not license *care* + NP in Romanian may, instead, be appropriate for *which* + NP in English (e.g. Context 1 in (9)). Similarly, the contexts licensing *ce* + NP may not be exactly the same as those licensing *what* + NP (e.g., Context 2 in (9)). 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.

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9 A possible 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), *carîi* (M.PL), *carea* (F.SG), *carele* (F.PL) (Pană Dindelegan 2016).

10 The logical translation in (11) assumes that a set and its intensional counterpart (a property) can act as referents in the discourse (see Nouwen 2003). It is also possible to reformulate the presuppositional content in (11) without such an assumption, as shown in (i), with the referent being the maximal individual of the set *P* rather than *P* itself.

(i)  
\[ care_{\text{INTER}} \rightarrow \lambda P \lambda Q: \exists x P(x) \in D_{\text{REF}}. \exists y [P(y) \land Q(y)] \]
3. Back to the puzzle

Let’s now return to the puzzle in (2)–(5) we started with. In this section, we sketch a solution in light of the observations and conclusion in Sections 1 and 2. We first provide an explicit semantics for ‘what’ + NP in Max-FRs and Ex-FRs in Romanian and then speculate on why a similar move cannot extend to ‘which’ + NP.

As mentioned in Section 1, Max-FRs behave like definite DPs semantically, while Ex-FRs resemble narrow scope indefinites (see fn. 1 and 2). Still, we argue they share most of their semantic derivation, including the meaning of their wh-phrases. Let us look at the concrete example in (12), showing the semantic derivation of the CP of the Max-FR in (1) and the Ex-FR in (2) 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.

\[
\text{(12)}\quad \text{CP} \rightarrow \lambda y [\text{book}(y) \land \text{take}(m,y)]
\]

\[
\text{DP} \rightarrow \lambda Q \lambda y [\text{book}(y) \land Q(y)]
\]

\[
C' \rightarrow \lambda x_1. \text{take}(m,x_1)
\]

\[
\text{what} \rightarrow \lambda P \lambda Q \lambda y [P(y) \land Q(y)] \quad \text{book} \rightarrow \lambda x_2. \text{book}(x_2)
\]

\[
\lambda_1 \quad \text{Maria take} 
\]

\[t_1 \rightarrow x_1 \]

The logical translation of \( C' \) in (12) 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. The crucial new assumption is about the meaning of the wh-word \( ce \) ‘what’ in a free relative clause (henceforth, FR), regardless whether it is a Max-FR or an Ex-FR. The logical translation of determiner \( ce \)\(^1\) in a FR (henceforth, \( ce_{FR} \)) is repeated in (13), while the resulting translation for the whole wh-phrase is given in its general form in (14), with bolded NP standing for the logical translation of the NP complement of \( ce \).

\[
\text{(13)}\quad ce_{FR} \rightarrow \lambda P \lambda Q \lambda y [P(y) \land Q(y)]
\]

\[
\text{(14)}\quad [\text{DP } ce_{FR} + \text{NP}] \rightarrow \lambda Q \lambda y [\text{NP}(y) \land Q(y)]
\]

\( ce_{FR} \) semantically behaves like a purely functional/logical element: it applies to two sets of individuals to return their intersection. Once it combines with its NP complement, it turns into a set restrictor: it applies to a set of individuals \( Q \) to return the subset of \( Q \)

\(^{1}\) Like English what, \( ce \) can also occur as a whole wh-DP without an NP complement. Here we focus on \( ce \) behaving like a wh-D taking an NP complement.
containing those members that are in the denotation of the NP complement as well. In (12), \textit{ce}_FR combines with \textit{book} to return the function that restricts the set to which it applies to its subset containing \textit{books}. When the \textit{wh}-DP combines with the \textit{C'} denoting the set of individuals that Maria took or can take, it returns the subset of those individuals that are \textit{books}, as shown by the logical translation in CP in (12). 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.

If we compare the semantic contribution of \textit{ce}_FR in FRs in (13) to the one of \textit{ce}_\text{INTER} in interrogative \textit{wh}-clauses in (10), we can see that both \textit{wh}-words apply to two sets and intersect them. \textit{ce}_FR doesn’t do anything else semantically, while \textit{ce}_\text{INTER} in interrogative clauses existentially quantifies over the intersection. In other words, \textit{ce}_\text{INTER} semantically behaves like a plain existential determiner (e.g., \textit{a} in English or \textit{un(M)/lo(F)} in Romanian). This meaning change from existential quantification to simple lambda-abstraction/set-formation applies not just to \textit{ce}_FR, but to all the \textit{wh}-words that are allowed to occur in FRs. It is possible to provide a semantics for interrogative \textit{wh}-clauses that assumes the same set-restric tor meaning for \textit{wh}-words as the one in FRs, as sketched in Caponigro (2003: Ch. 6) and discussed more extensively in George (2011). This approach would account even more easily for the fact that all \textit{wh}-words in interrogative clauses can occur in FRs as well in Romanian, with the exception of \textit{care} ‘which’, to which we now turn.

If it is so natural for \textit{wh}-words in Romanian to occur in FRs, what prevents \textit{care} from joining all its \textit{wh}-colleagues in FRs? In other words, why doesn’t Romanian allow for a \textit{care}_FR whose logical translation would look like the one in (15)?

\begin{equation}
(15) \quad \neg \text{care}_FR \rightarrow \lambda P \lambda Q \lambda y: P \in D_{REF}. \ [P(y) \land Q(y)]
\end{equation}

(15) contains the same presuppositional discourse-requirement as \textit{care}_\text{INTER} in (11), minus the existential quantifier, i.e., the meaning change we have argued to take place with all other \textit{wh}-words in Romanian when they occur in a FR. But \textit{care}_FR is not an actual lexical item of Romanian—this is why it is starred in (15).

We speculate that the lack of \textit{care}_FR is due to a clash between its presuppositional requirement and the semantic/pragmatic function of an FR. Specifically, we can think of an FR as a device that natural language can make use of to define a set by means of the informational richness of a clause without relying on a nominal head, as in headed relative clauses. Once that set is identified, then it can be existentially quantified over as in Ex-FRs or type-shifted to its maximal individual, as in Max-FRs. If that is the primary semantic/pragmatic role of an FR, then a presuppositional component
imposing some form of preexisting familiarity with the set that the FR aims to define would defy the purpose of defining such set.

As for Ex-FRs, this would be equivalent to asserting the non-emptiness of a set the speaker and the hearer are already familiar with. If they are familiar with it, they should already know if it is empty or not. So, the output of the meaning calculation would be uninformative and infelicitous. As for Max-FRs, an analogy with definite descriptions introduced by the definite determiner in English (or Romanian or Italian) may help. The simple definite description the book in a sentence like Ana took the book presupposes that exactly one book has already been introduced in the discourse (or, equivalently, a singleton set containing just one book). If the definite description is enriched and turned into a complex one by having a headed relative clause modify book as in Ana took the book Maria just bought, then the presuppositional requirement disappears. The same is true for the distal demonstrative: that book presupposes some form of deixis, while that book Ana bought with richer descriptive content doesn’t. More generally, anaphoric elements tend to be simple, with reduced descriptive content (e.g., pronouns).

Why can’t care\textsubscript{FR} then just give up its discourse anaphoric requirement like the and that seem to be able to do with a complex NP complement? If care\textsubscript{FR} lost its presuppositional component, its meaning would become indistinguishable from the one of ce\textsubscript{FR}. Some form of blocking may disfavor a lexical item from assuming exactly the same meaning as another lexical item with exactly the same syntactic properties.\textsuperscript{12}

4. Conclusions

We have presented a previously unnoticed and puzzling contrast between the unconstrained productivity of ‘what’ + NP in Max-FRs and Ex-FRs and the complete ban on ‘which’ + NP from the same two constructions in Romanian, a language in which both constructions 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 shown that ‘which’ + NP in interrogative clauses in Romanian clearly exhibit strong discourse-anaphoric requirements, unlike ‘what’ + NP. We have connected the two findings by suggesting that discourse anaphoricity may disfavor complex set-denoting expressions like clauses.

The constraints we have invoked (no complex anaphoric description and blocking) 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

\textsuperscript{12} 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.
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.\(^{13}\) 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.\(^{14}\)

We hope that our squib will encourage further language-specific and crosslinguistic investigation on FRs 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 across wh-constructions.

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\(^{13}\) Heim (1987) suggests that *what* + NP in in interrogative clauses 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.

\(^{14}\) Royer (2020) reports that in Chuj (Mayan) Max-FRs can be introduced by both ‘what’ + NP and ‘which’ + NP (Royer 2020: 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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