‘Why’ without asking, in Romanian

IVANO CAPONIGRO
University of California San Diego

ANAMARIA FĂLĂUȘ
CNRS, Laboratoire de Linguistique de Nantes

Draft, 2021/4/1

Many languages make use of a specialized *wh*-expression to form a *wh*-interrogative clause that conveys the meaning of a question about reasons.[1] For instance, English employs the *wh*-word *why*, as shown by the bracketed string in (1), while Romanian uses the complex *wh*-phrase *de ce*, which consists of the preposition *de* ‘of’ and the *wh*-word *ce* ‘what’[2], as shown by the bracketed string in (2).

(1) Ana wonders [why Maria left].

(2) Ana se întreabă [**de ce** a plecat Maria].
Ana REFL asks why has left Maria
‘Ana wonders why Maria left.’

Unlike English, Romanian also allows its ‘why’ *wh*-expression to introduce non-interrogative *wh*-clauses. For instance, the bracketed *wh*-clause in the Romanian sentence in (3) is an instantiation of a clausal construction known as a *free relative clause* (*FR*): it is introduced by *de ce* ‘why’, occurs in a position in which an interrogative clause cannot occur, and is not interpreted as conveying a question, as its English translation makes it clear. The whole sentence in (3) is judged fully acceptable by our Romanian consultants. Therefore, *FRs introduced by ‘why’* (*why-FRs*) are allowed in Romanian. By contrast, the corresponding *why*-FR in English in (4) is judged completely unacceptable by our English consultants.

(3) Ana a plecat din țară [**de ce** a plecat și Maria].
Ana has left from country why has left also Maria
‘Ana left the country for the reason(s) Maria left.’

(4) *Ana left the country [**why** Maria left the country].

---

[1] Examples of languages that do not make use of specialized *wh*-expressions to convey *why*-questions are Tlaxcala Náhuatl (Uto-Atzecan; Flores-Nájera 2021) and Q'anjob'al (Mayayan; Mateo Toledo 2021) (see Caponigro *et al*. 2021).

[2] Note that the lexicalized *wh*-phrase *de ce* ‘why’ is to be distinguished from the homophonous fully compositional *de ce* ‘of what’, a complex PP *wh*-phrase where *de* functions as an independent preposition taking *ce* or other *wh*-expressions as its complement. This is illustrated in (i), where the complex PP *de ce/de cine* is selected by the predicate *be proud of*.

(i) **De {ce/ cine}** ești mândru?
of what who are.2SG proud
‘What/Whom are you proud of?’

Detailed descriptions of the Romanian *wh*-system in interrogatives and beyond can be found in Comorovski (1996), Pană Dindelegan (2013), Grosu (2013), Giurgea & Grosu (2019), Caponigro & Fălăuș (2018, 2020).

Notice that FRs are extremely productive in English as well, not just Romanian, including when other adjunct *wh*-expressions introduce them, as shown in (5) for Romanian and (6) for English.

(5) Am făcut-o [**unde / când/ cum** ai făcut-o și tu].
have.1SG did-CL.3SG where when how have.2SG did-CL.3SG also you
'I did it where/when/how you did it.'

(6) I did it [**where/when/how** you did it].

Interrogative clauses introduced by the *wh*-word *why* or its equivalents across languages have received some attention, although mostly limited to their syntactic properties (see e.g., Rizzi 2001 for Italian, Shlonsky & Soare 2011 for Romanian, Jędrzejowski 2014 for Polish, Irurtzun 2021 for Basque). *Why*-FRs, instead, have been completely ignored as far as we know, not just in Romanian. Our chapter provides the first detailed description of *why*-FRs in Romanian (or in any other language we know of) together with their compositional semantic analysis and its implication for the meaning switch between 'why' in an FR and 'why' in an interrogative clause. We also briefly discuss the behavior of *de ce* in other non-interrogative *wh*-constructions in Romanian and consider the challenges currently raised by the attempt to develop a unified analysis of *de ce* across *wh*-clauses.

Our findings in Romanian show that the unacceptability of *why*-FRs in English and most other Indo-European languages cannot be an absolute ban—a ban that would be due to a violation of core grammatical principles—a conclusion further supported in recent work on Mesoamerican languages (Caponigro *et al.* 2021).[3] The existence of *why*-FRs in typologically unrelated languages strongly suggests that the grammar in general, and the syntax/semantic interface in particular, must be such to allow for language variation in this area. More generally, we show that the properties of *why* and its cross-linguistic equivalents constitute a fruitful, albeit understudied area to investigate the way in which the meaning of *wh*-phrases varies across *wh*-clauses. The resulting insights may help situate *why*-expressions with respect to other, more productively used *wh*-phrases in non-interrogative constructions and as such are relevant not only for a more complete description of *wh*-clauses, but also for a better understanding of the semantic behavior of *wh*-words.

1. Introducing 'why' free relative clauses

Free relative clauses are embedded *wh*-clauses with the distribution of DP/PP arguments or PP adjuncts. Semantically, they behave like definite DPs or PPs with a definite DP as their complement. These properties are attested in *why*-FRs as well. The bracketed *why*-FR in (3), repeated in (7)a below, can be replaced and paraphrased by the bracketed PP adjunct in (7)b whose P head takes a singular or plural definite DP as its complement (like in English, 'why' in Romanian is unspecified for number).

[3] See also Mantenuto & Caponigro (forthcoming) for evidence of an Italian language, Teramano, that, unlike Italian, also has *why*-FRs.

(7) a. Ana a plecat din țară [FR **de ce** a plecat și Maria].
Ana has left from country why has left also Maria
'Ana left the country for the reason(s) Maria left.'

b. Ana a plecat din țară [PP **[**P **din [**DP **{ același motiv}/{ aceleași motive}**
Ana has left from country from the-same.SG reason/ the-same.PL reasons
ca Maria]].
as Maria
'Ana left the country for the same reason(s) Maria did.'

Other examples of *why*-FRs and their PP equivalents are provided in (8) and (9), showing that we are dealing with a productive pattern.

(8) a. Eu mănânc dulciuri [FR **de ce** tu bei alcool], să uit de probleme.
I eat.1SG sweets why you drink.2SG alcohol SUBJ forget.1SG of problems
'I eat sweets for the same reason you drink alcohol, to forget about problems.'

b. Eu mănânc dulciuri **[**P **din [**DP **același** **motiv** pentru care tu bei alcool]].
I eat.1SG sweets from the-same.SG reason for which you drink.2SG alcohol
'I eat sweets for the same reason you drink alcohol.'

(9) a. Profesorii au intrat în grevă [FR **de ce** au protestat și studenții].
teachers-the have.3PL entered on strike why have.3PL protested also students-the
'Teachers have gone on strike for the same reason students protested.'

b. Profesorii au intrat în grevă **[**P **din [**DP **același** **motiv** pentru care
teachers-the have.3PL entered on strike from the-same.SG reason for which
au protestat și studenții]].
have.3PL protested also students-the
'Teachers have gone on strike for the same reason students protested.'

Notice that the same *why*-FR can be paraphrased with a PP whose DP complement contains a nominal other than 'reason', like 'purpose' or 'cause', depending on the context, as shown in (10).

(10) a. Ana a plecat din țară [PP **cu [**DP **același** **scop** ca Maria]], pentru libertate.
Ana has left from country with the-same.SG purpose as Maria for freedom
'Ana has left with the same purpose as Maria, for freedom.'

b. Ana a plecat din țară [PP **din [**DP **aceeași** **cauză** ca Maria]], de frică.
Ana has left from country from the-same.SG cause as Maria of fear
'The cause/reason for Ana leaving the country is the same as for Maria, fear.'

c. Ana a plecat din țară [PP **din [**DP **aceleași** **cauze** ca Maria], de frică și disperare.
Ana has left from country from the-same.PL causes as Maria of fear and despair
'The causes/reasons of Ana leaving the country are the same as for Maria, fear and hopelessness.'

This same pattern is observed in 'why' interrogative clauses, as shown in (11)a and its different paraphrases in (11)b,c.

(11) a. **De ce** ai plecat din țară?
why have.2SG left from country
'Why did you leave the country?'

b. **Din ce <u>motiv</u>/<u>cauză</u>** ai plecat din țară?
from what reason cause have.2SG left from country
'For what reason did you leave the country?'

c. **Cu ce <u>scop</u>** ai plecat din țară?
with what purpose have.2SG left from country
'With what purpose did you leave the country?'

The same multiplicity of paraphrases is attested in 'why' interrogative clauses in English (as shown by the translations in (11)b,c), as well as Italian, according to the intuitions of one of the authors (see also e.g., Tsai 2008, Jędrzejowski 2014 for similar facts in other languages). In conclusion, it seems unlikely we are dealing with a true ambiguity of the *wh*-expression for 'why', since ambiguity doesn't systematically replicate across constructions and languages. Therefore, the semantic restrictions associated with 'why' have to be broad enough to encompass all those specifications. In what follows, we assume that 'why' triggers a restriction to 'reason', with 'reason' being the subset of entities that includes reasons, causes, purposes, etc. Along those lines, we'll call a PP that can replace and paraphrase a *why*-FR a *reason-PP*.

Another similarity between *why*-FRs and the reason-PPs that can replace them is their interaction with negation. Specifically, sentences with clausal negation in the matrix clause and a w*hy*-FR are ambiguous. For instance, the Romanian sentence in (12)a can be paraphrased as Reading 1 or Reading 2 in (12)b,c.

(12) Ana nu a plecat [**de ce** a plecat Maria].
Ana not has left why has left Maria
'Ana did not leave for the same reason(s) Maria left.'

Reading 1: It is not the case Ana left for the same reason Maria left (i.e., Ana left for a reason that is different from the reason for which Maria left).

Reading 2: Ana's reason for not leaving is the same as Maria's reason for leaving (e.g., there were a lot of smokers at the party and Ana likes social smoking, while Maria can't stand smoking at all; so Ana didn't leave and the reason was people smoking, while Maria left and the reason was people smoking).

Similar ambiguities are attested with sentences in which a reason-PP replaces and paraphrases the *why*-FR in (12), as shown in (13), or sentences with a *because* clause, as in (14), or sentences with a *because* PP, as in (15), or sentence with a purpose clause or purpose PP, as in (16).

(13) Ana nu a plecat [PP **[**P **din [**DP**{același motiv}/{aceleași motive}** ca Maria]].
Ana not has left for the-same.SG reason the-same.PL reasons as Maria
'Ana did not leave for the same reason Maria left.'

Reading 1: Ana left for a reason that was different from Maria's reason to leave.

Reading 2: Ana didn't leave and the reason was the same as the reason for Maria to leave.

(14) Ana nu a plecat [**pentru că** a plecat Maria].
Ana not has left for that has left Maria
'Ana didn't leave because Maria left.'

Reading 1: Ana didn't leave and the reason was the fact that Maria left.

Reading 2: Ana left but the reason was not the fact that Maria left.

(15) Ana nu a plecat [**din cauza plecării** Mariei].
Ana not has left for cause-the departure-the.GEN Maria.GEN
'Ana didn't leave because of Maria's departure.'

Reading 1: Maria didn't leave and the reason for that was Maria's departure.

Reading 2: Ana left, but her reason to leave was not Maria's departure.

(16) Ana nu a plecat {**pentru**}/{**ca** să se bucure de} o viață mai liniștită.
Ana not has left for to SUBJ REFL enjoy.3SG of a life more peaceful
'Ana didn't leave {for}/{to enjoy} a more peaceful life.'

Reading 1: In order to enjoy a more peaceful life, Ana didn't leave.

Reading 2: Ana left but her goal in doing so was not to enjoy a more peaceful life.

Also, notice that similar facts hold for the English translations in single quotation marks in (13)–(16) (not the disambiguated paraphrased labelled as Reading 1 or Reading 2). One of the authors finds Italian closest translations of (13)–(16) ambiguous in the same way. In conclusion, once again we are dealing with something systematic across constructions and languages. We use this evidence to further strengthen our conclusion of a close semantic and structural connection between reasons, causes, purposes and the constructions that realize them that we have briefly mentioned above, despite their superficial differences. The pervasive intuition seems to be that all these constructions occupy the same syntactic position and exhibit the same scopal interaction with respect to the clausal negation in the matrix clause. The analysis for *why*-FRs we propose in §2 builds on this intuition and captures the observed interaction of *why*-FRs with negation.

Last, based on the examples we discussed in the previous section (7)–(10), *why*-FRs may seem to behave like other adjunct FRs, such as those in (17).

(17) Muncesc [FR **unde/ când/ cum** muncești și tu.]
work.1SG where when how work.2SG also you
'I work where/when/how you work.'

Just like we have seen to be the case for *why*-FRs, the adjunct FRs in (17) can be paraphrased and replaced by PPs, as illustrated in the sentence in (18).

(18) Muncesc [PP **în** [DP **locul / momentul / felul** în care muncești și tu.]]
work.1SG in place-the/ moment-the/ way-the in which work.2SG also you
'I work in the place/at the time/in the way you work.'

There are however differences between *why*-FRs and the FRs introduced by 'where', 'when', or 'how' in Romanian. In particular, the latter kinds of FRs are also acceptable in sentences such as (19), where they occur as the argument of a matrix predicate that selects for a DP argument in that position. In fact, they can be replaced and paraphrased with a DP, as shown in (20). This option, though, is not available for *why*-FR, as shown in (21), although the corresponding DP would be fully acceptable, as shown in (22).

(19) {Îmi place}/ {Detest} [FR **unde/ când/ cum** muncești.]
me like.3SG hate.1SG where/ when/ how work.2SG
'I like/hate where/when/how you work.'

(20) {Îmi place}/ {Detest} [DP **locul/ momentul/ felul** în care muncești.]
me like.3SG hate.1SG place-the/ moment-the/ way-the in which work.2SG
'I like/hate the place/the time/ the way you work.'

(21) * {Îmi place}/ {Detest} [FR **de ce** a plecat Ana.]
me like.3SG hate.1SG why has left Ana
('I like/hate the reason Ana left.')

(22) {Îmi place}/ {Detest [DP **motivul** pentru care a plecat Ana.]
me like.3SG hate.1SG reason-the for which has left Ana
'I like/hate the reason Ana left.'

The analysis for *why*-FRs we propose in the next section can account for the contrast in (19)–(22) as well.

2. An analysis of 'why' free relative clauses

We propose a compositional semantic analysis for *why*-FRs in four steps. First, we introduce the core semantic intuitions about *why*-FRs we want our analysis to capture (§2.1). In doing so, we highlight how the semantic properties of *why*-FRs are related to two other constructions, which we discuss and analyze first: simple reason-PPs with just the nominal *reason* (§2.2) and complex reason-PP with the nominal *reason* modified by a relative clause (§2.3). Finally, we apply the insights from those simple and complex PPs to develop a syntactic and semantic analysis of *why*-FRs and discuss related issues (§2.4).

2.1 Core semantic intuitions

The core intuition we want to capture and formalize is that a sentence with a *why*-FR in Romanian like (23) (a simplified version of the sentence in (3) above) is interpreted as the corresponding English sentence in (24), in which a bracketed complex reason-PP replaces the *why*-FR. The complex reason-PP is headed by the preposition *for* in its reason use/variant with the nominal *reason* as its complement. We label it "complex" because its nominal complement in (24) is modified by the underlined headed relative clause.

(23) Ana a plecat [FR **de ce** a plecat Maria].
Ana has left why has left Maria
'Ana left for the reason(s) Maria left.'

(24) Ana left [PP for the reason(s) Maria left].

Intuitively, the sentences in (23) and (24) are true if the fact ('proposition') that Ana left and the fact ('proposition') that Maria left share the same reason or reasons.

Sentences like (25)–(28) highlight a second, related core intuition we aim to capture, namely the fact that we can speak about reasons. In particular, we can refer to reasons, as in (25) and (26), we can quantify over them, as in (27) and (28), we can attribute properties like 'being plausible' to them, as in (28), and we can conceptualize them as singular vs. plural objects, as in (25) vs. (26). In all these cases, reasons are linguistically introduced by DPs that occur as either arguments (complements) of PP adjuncts, as in (25) and (27), or arguments of the verbal predicate, as in (26) and (28). We call PPs like those in (25) and (27) "simple reason-PPs" since they contain no headed relative clause modifying the nominal, unlike the PP in (24) above.

(25) Ana left [PP for this reason].

(26) [DP Maria's reasons] made a lot of sense to Ana.

(27) Ana left [PP for no reason].

(28) [DP A plausible reason] was suggested.

We take these data as evidence for including reasons as entities in our ontology (or in the domain of our model), an assumption that will play a crucial role in our analysis of *why*-FRs.

Notice that Romanian has very close morpho-syntactic and semantic equivalents to the constructions in (24) and (25).[4] Here and in the following discussion, we make use of the English examples rather than the Romanian ones only for ease of presentation.

[4] The Romanian sentence corresponding to (24) has already been given in (7) above. The Romanian equivalent for (25) is given in (i):

(i) Ana a plecat [PP din acest motiv].
Ana has left from this reason
'Ana left for this reason.'

We present our proposal in three steps. First, we provide an analysis of the simpler sentence in (25) in order to introduce a series of issues that are crucial for our analysis of *why*-FRs but aren't yet part of the common semantic toolbox and assumptions: reasons as entities, their linguistic expressions, the semantic contribution of the preposition *for*, and the syntactic behavior of the reason-PP that *for* is the head of (§2.2). Second, we provide an analysis for the sentence in (24), which shares the same truth-condition as the *why*-FR in (23), but via a more familiar and explicit syntax/semantics mapping involving headed relative clauses (§2.3). Finally, building on these insights, we provide a fully compositional analysis of the *why*-FR in (23) that exemplifies our proposal about the analysis of *why*-FRs in general (§2.4).

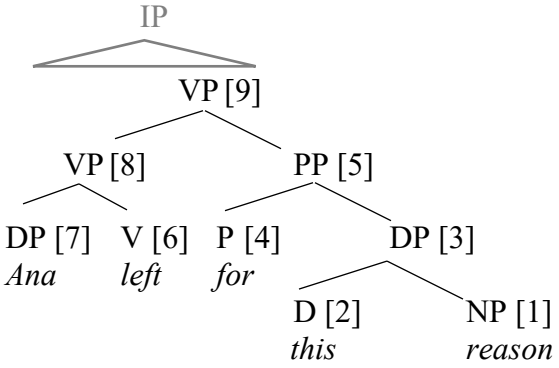
2.2 The syntax and semantic of simple reason-PPs

We start by sketching a syntactic and semantic analysis for the sentence in (25) with the simple reason-PP *for this reason*. The structure in (29) provides the Logical Form (LF) of (25), i.e., the syntactic structure at which the interpretation (or logical translation) applies.

We assume that constituents like the DP subject *Ana* and the V *left* are interpreted in their base-generated position, although they do move to IP for syntactic reasons before spell-out, at least in languages like English and Romanian. We leave it open whether the structure in (29) is the actual LF of (25) that holds at some point of the syntactic derivation (before movement or as the result of reconstruction). Our analysis could also be formulated assuming that the LF of (25) included the movement of the subject DP to the Spec of IP and the movement of V to I. It would just be unnecessarily more complex and its formulation more cumbersome and harder to read, because of the extra movement. Since this issue is orthogonal to our analysis, we choose to work with the simpler LF in (29). For similar reasons, we are ignoring the contribution of tense and assume *left* to be analyzed as a unit. Last, we assume that the reason-PP *for this reason* combines as an adjunct to the VP. This is to capture the core semantic intuition in §2.1 that reasons apply to propositional content, together with the optionality of reason-PPs and the scope interaction with negation that we described in (12)–(16) and to which we return below in (44).

The logical translation of (25) based on the LF in (29) is given in (30), step by step, from the bottom of the tree in (29) up. Below we only comment on the assumptions that are novel or not standard.

(29) *LF of (25):*



(30) *Logical translation of (25) according to the LF in (29):*

[1]	[NP *reason*]	~ > $\lambda x_e[RN_{et}(x)]$[5]
[2]	[D *this*]	~> $\lambda P_{et}\, \iota x[P(x) \wedge PTs_{et}(x)]$
[3]	[DP *this reason*]	~> $\lambda P \iota x[P(x) \wedge PTs\,(x)](\lambda x[RN(x)])$ $= \iota x[RN(x) \wedge PTs(x)]$
[4]	[P *for*]	~> $\lambda y_e \lambda p_{st} FOR_{<<e>,<st,t>>}(p,y)$
[5]	[PP *for this reason*]	~> $\lambda y \lambda p FOR(p,y)\ (\iota x[RN(x) \wedge PTs(x)])$ $= \lambda p FOR(p, \iota x[RN(x) \wedge PTs(x)])$
[6]	[V *left*]	~> $\lambda y_e[\hat{}LT_{et}(y)]$
[7]	[DP *Ana*]	~> a_e
[8]	[VP *Ana left*]	~> $\lambda y[\hat{}LT(y)](a)$ $= \hat{}LT(a)$
[9]	[VP *Ana left for this reason*]	~> $\lambda p FOR(p,\iota x[RN(x) \wedge PTs(x)])\ (\hat{}L(a))$ $= FOR(\hat{}L(a),\iota x[RN(x) \wedge PTs(x)])$

In (30), step [2] assumes that the demonstrative *this* receives the same logical translation as a definite determiner, but with an extra deictic requirement: it denotes a function from a set of individuals P (the one denoted by the NP complement of *this*) to the only individual in P that is pointed at by the speaker (PT_S). The specific details are not crucial for our analysis; what is crucial is that the demonstrative DP ends up denoting a reason entity, as in [3].

Step [4] translates the preposition *for*, which connects a reason-denoting DP to the rest of the clause. It denotes a two-place relation FOR ('be the reason of') between entities (reasons) and propositions that returns true iff the condition in (31) holds, i.e., if the reason argument of FOR is the reason of its proposition argument in the world of evaluation.

(31) $[\![FOR(p,y)]\!]^{w,g} = 1$ iff $[\![y]\!]^{w,g}$ is a reason in w and is the reason of $[\![p]\!]^{w,g}$ in w

2.3 The syntax and semantic of complex reason-PPs

With these assumptions in place, let us now move to the construction that exhibits the same truth conditions as *why*-FRs, but it does so by means of a more familiar and "transparent" morpho-syntax—the complex reason-PP, i.e., a PP whose NP complement is headed by *reason* (or a similar noun) and modified by a relative clause. An example is given in (32), together with its logical translation.

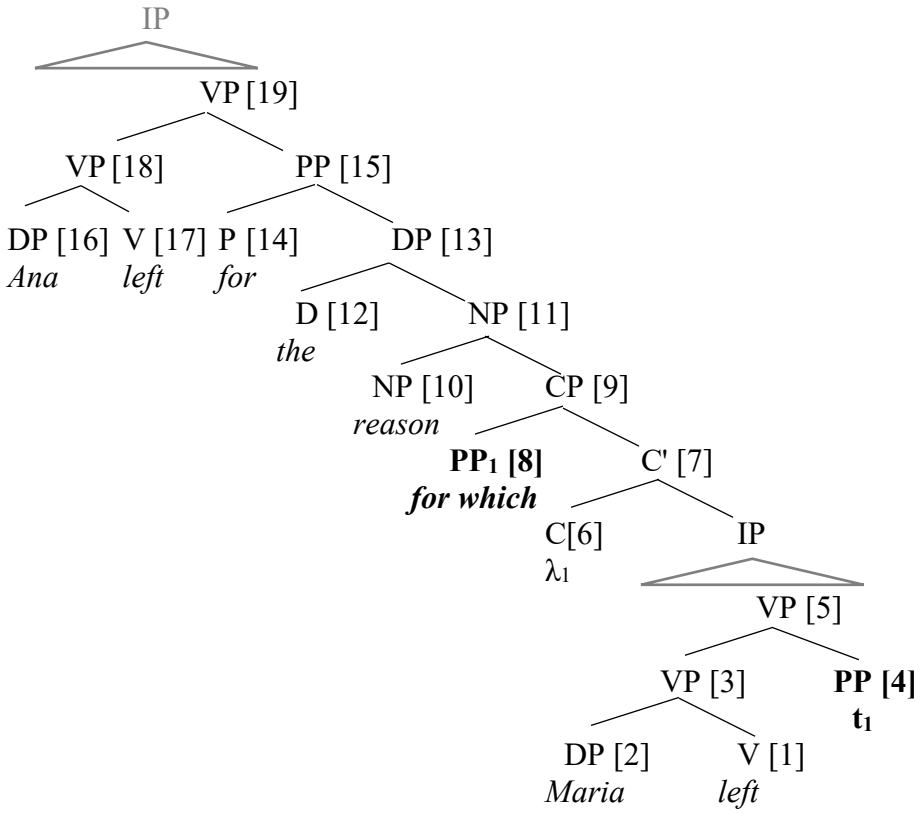
[5] In this and the following semantic derivations/translations, we add the semantic type as a subscript to each variable or constant when occurring for the first time. Semantic types of complex expressions are provided only when uncommon or particularly complex.

(32) *Ana left for the reason Maria left* ~> FOR(^LT(a),σx[RN(x) & FOR(^LT(m),x)])

According to (32), the sentence is true iff the two-place relation FOR ('be the reason of') holds between the reason of the proposition that Maria left on the one hand and the proposition that Ana left on the other. Equivalently, the sentence in (32) is true iff the proposition that Ana left and the proposition that Maria left share the same reason. How can these truth-conditions be derived compositionally? These compositional steps will matter for our analysis of *why*-FRs, given the many morpho-syntactic similarities between the two constructions.

The LF of (32) we are assuming is provided in (33), with the same assumptions (and simplifications) as in (29). The logical translation of all the tree nodes from the bottom up follows in (34).

(33) *Logical Form of (32):*



(34) *Logical translation of (32) according to the LF in (33):*

[1]	[V *left*]	~>	λx[^LT(x)]
[2]	[DP *Maria*]	~>	m
[3]	[VP *Maria left*]	~>	λx[LT(x)](m) = ^LT(m)

[4] $[_{PP}\ t_1]$ ~> $X_{<st,t>}$

[5] $[_{VP}$ *Maria left* $t_1]$ ~> X(^LT(m))

[6] $[_{C}\ \lambda_1]$ ~ > $\lambda v_t\, \lambda X_{<st,t>}[v]$ <t,<<st,t>,t>>

[7] $[_{C'}\ \lambda_1$ *Maria left* $t_1]$ ~> $\lambda v \lambda X[v](X(^L(m)]))$
$= \lambda X[X(^LT(m))]$ <<st,t>,t>

[8] $[_{PP}$ *for which*$]_1$ ~> $\lambda F_{<<st,t>,t>} \lambda x[F(\lambda pFOR(p,x))]$ <<st,t>,t>,<e,t>>

[9] $[_{CP}\ [_{PP}$ *for which*$]_1$ C'] ~> $\lambda F \lambda x[F(\lambda pFOR(p,x))]\ (\lambda X[X(^LT(m))])$
$= \lambda x[\lambda X[X(LT(m))]\ (\lambda pFOR(p,x))]$
$= \lambda x[\lambda p[FOR(p,x)](^LT(m))]$
$= \lambda x[FOR(^LT(m),x)]$

[10] $[_{NP}$ *reason*] ~> $\lambda x[RN(x)]$

[11] $[_{NP}$ *reason* CP] ~> $\lambda x[RN(x) \wedge FOR(^LT(m),x)]$
by Predicate Modification

[12] $[_{D}$ *the*] ~> $\lambda P \sigma x[P(x)]$

[13] $[_{DP}$ *the reason* CP] ~> $\lambda P \sigma x[P(x)]\ (\lambda x[RN(x) \wedge FOR(^LT(m),x)])$
$= \sigma x[RN(x) \wedge FOR(^LT(m),x)]$

[14] $[_{P}$ *for*] ~> $\lambda y \lambda pFOR(p,y)$

[15] $[_{PP}$ *for the reason* CP] ~> $\lambda y \lambda pFOR(p,y)\ (\sigma x[RN(x) \wedge FOR(^LT(m),x)])$
$= \lambda pFOR(p, \sigma x[RN(x) \wedge FOR(^LT(m),x)])$

[16] $[_{V}$ *left*] ~> $\lambda x[^LT(x)]$

[17] $[_{DP}$ *Ana*] ~> a

[18] $[_{VP}$ *Ana left*] ~> $\lambda x[^LT(x)](a)$
$= ^LT(a)$

[19] $[_{VP}$ *Ana left for the reason* CP] ~> $\lambda pFOR(p,\sigma x[RN(x) \wedge FOR(^LT(m),x)])\ (^LT(a))$
$= FOR(^LT(a), \sigma x[RN(x) \wedge FOR(^LT(m),x)])$

In (33), we are assuming that the headed relative clause contains the silent *wh*-PP *for which* in bold as a relative pronoun/operator. The *wh*-PP is based-generated in the same position as the simple reason-PP we discussed in (29), i.e., adjoined to VP. It then moves to the Specifier of its CP. Notice that *Ana left for the reason for which Maria left* sounds stilted and formal in American English, but not unacceptable. Also, this is the only option in Romanian for this kind of relative clause. As previously shown in (8)–(9), the relative pronoun must be overt and must occur in clause initial position in Romanian, with its preposition pied-piped (preposition stranding is banned in Romanian). This configuration is also directly relevant for *why*-FRs, which are introduced by the complex *wh*-expression *de ce* in Romanian, literally 'of what'. We return to *for which* below when we discuss its semantic contribution.

Let's now comment on some of the steps of the semantic derivation in (34). Step [4] shows that the trace of the *wh*-PP translates into a higher-type variable ranging over properties of propositions

(type <st,t>), which is exactly what a simple reason-PP in that position would denote.[6] For convenience, we assume that the complementizer C is the locus of the lambda-abstractor triggering the abstraction over this higher-type order variable (step [6]) that needs to take place right before the *wh*-PP participates to the semantic composition (step [7]).

Step [8] is the key step of the semantic analysis. The PP *for which*, acting as the relative pronoun, translates into a complex function: it applies to a set of properties of propositions *p* (type <<st,t>,t>) to return the set of all and only the reason entities that make the relation FOR ('be the reason/cause of') true together with the propositions *p*. Intuitively, *for which* applies to the proposition that is denoted by the remainder of its clause (i.e., its sister C') to return the set of all the reasons (entities) that may apply to that proposition. The need to go through the less direct step of sets of properties of propositions (i.e., sets of sets of propositions) as in step [8] is due to the fact that *for which* moves and leaves a trace where it was base-generated. The type of this trace is the expected type for a VP modifier or a property of propositions: <st,t>. When lambda-abstraction applies, it results in a set of functions of this type (<<st,t>,t>). Therefore, *for which* has to be a function taking this set as its argument. If *for which* were directly base-generated where it surfaces, then its logical translation would be simpler, as in (35). On the other hand, we lack evidence to argue that the standard assumption that relative pronouns *wh*-movement doesn't apply to *for which*. Therefore, we maintain the assumption behind the analysis in (33) and (34) that *for which* *wh*-moves leaving a trace in its base-generated position.

(35) $[_{PP}$ *for which*$]$ ~> $\lambda p_{st} \lambda x_e FOR(p,x)$ <st,<e,t>>

Also, step [8] assumes for simplicity that *for which* is one lexical item without internal composition. It is possible to analyze it as made of the reason preposition *for* and the relative pronoun *which*, with a logical translation for *for* that would be identical to the one we assumed in (30), step [4] and a logical translation for *which* that would output the desired meaning once combined with *for*. This is shown in detail in (36).

(36) A fully compositional analysis of *for which*:

[1] $[_{P}$ *for*$]$ ~> $\lambda y_e \lambda p_{st} FOR(p,y)$ <e,<st,t>>

[2] $[_{N}$ *which*$]$ ~> $\lambda X_{<e,<st,t>>} \lambda Y_{<<st,t>,t>} \lambda x_e [Y(X(x))]$ <<e,<st,t>>,<<st,t>,t>,et>

[3] $[_{PP}$ *for which*$]_1$ ~> $\lambda X\, \lambda Y\, \lambda x[Y(X(x))]\, (\lambda y \lambda p FOR(p,y))$
$= \lambda Y \lambda x[Y(\lambda y \lambda p FOR(p,y)\, (x))]$
$= \lambda Y \lambda x[Y(\lambda p FOR(p,x))]$ <<st,t>,t>,<e,t>>

[6] Here and in what follows, we loosely use the term "property" as equivalent to "set" for perspicuity.

In contrast, there is evidence that *de ce* 'why' in Romanian is treated as a unit, at least synchronically.[7] The preposition *de* doesn't introduce cause/reason modification in its use without *ce*. Similarly, *ce* doesn't select for 'reasons' or 'causes' in any other use. (Recall from footnote 2 that the sequence *de ce* 'of what' can be used in a compositional way, but it has a very different meaning, which does not involve reasons). Given the unanalyzed status of the element *de ce*, the analysis of *for which* presented in (34), step [8] provides a closer (although not identical) analogue to the analysis we are about to propose for *de ce* in *why*-FRs.

Step [12] provides the semantics for the (singular and plural) definite determiner in Link (1983): a function from a set of entities to the unique maximal sum of all those entities. In (34), *reason* is singular and therefore the set denoted by the complex NP with *reason* modified by the relative clause will be a singleton (step [11]), whose only member will be the denotation of the whole complex definite DP (step [13]).

The last step, step [19], returns a logical translation that is identical to the one in (32), which achieves our main goal.

2.4 The syntax and semantics of *why*-FRs

We now have all the necessary ingredients to present our analysis of *why*-FRs. Let's consider the Romanian sentence in (37)a with a *why*-FR in brackets. In what follows, we provide its semantic derivation by making use of its English/Romanian rendering in (37)b for ease of presentation.

(37) a. Ana a plecat [FR **de ce** a plecat Maria].
Ana has left why has left Maria
'Ana left for the reason Maria left.'

b. Ana left [**de ce** Maria left].

The main semantic intuition that we want to account for is the identity in truth conditions between a sentence with a *why*-FR, like (37), and the corresponding sentence with a complex reason-PP in place of the *why*-FR, like the sentence in (32) we just discussed. In other words, we want our semantic analysis to end up assigning the sentence in (37) the logical translation in (38), which is the same as the logical translation we assigned to (32).

(38) *Ana left* [*de ce Maria left*]. ~> FOR(^LT(a),σx[RN(x) & FOR(^LT(m),x)])

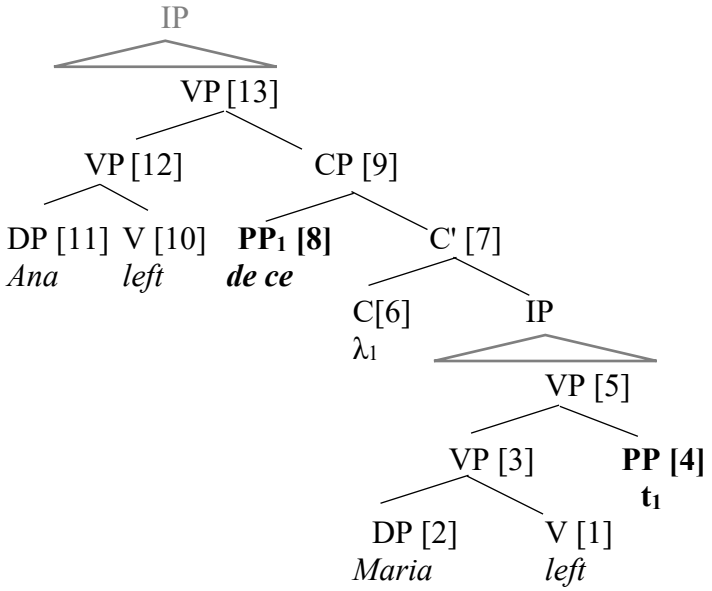
This identity in meaning between *why*-FRs and complex reason-PPs contrasts with their morpho-syntactic differences. *Why*-FRs are clauses (*wh*-CPs) rather than PPs. Complex reason-PPs are made of a P (*for*) with a DP complement containing a definite determiner (*the*) and a nominal (*reason*), on top of their relative clause component (a *wh*-CP). *Why*-FRs, instead, lack all those

[7] Old Romanian had a richer inventory of cause and purpose prepositional *wh*-phrases semantically equivalent to *why,* based on the *wh*-words *ce* 'what' and *care* 'which', but in Modern Romanian only *de ce* has lexicalized and is productively used (Pană Dindelegan 2016: 582).

extra components and structure.[8] Still, they manage to deliver the same meaning as complex reason-PPs.

The key element responsible for the semantic behavior of *why*-FRs is the *wh*-phrase that introduces all of them: *de ce*. For reasons previously discussed (§2.2), we assume that *de ce* is a *wh*-PP. In analogy with our analysis of *for which*, we also assume that *de ce* is base-generated as a VP adjunct of the *why*-FR and then moves to the Spec of CP.[9] We therefore assign the sentence in (37) the LF in (39); its step-by-step logical translation is provided in (40).

(39) *LF of (37):*



(40) *Logical translation of (37) according to the LF in (39):*

[1]–[6] same as [1]–[6] in (34)

[7] $[_{C'}\ \lambda_1$ *Maria left* $t_1]$ ~> $\lambda X[X(\hat{}LT(m))]$ (same as [7] in (34))

[8] $[_{PP}$ *de ce*$]_1$ ~> $\lambda F_{<<st,t>,t>}\lambda p_{st}[FOR(p,\sigma x[RN(x) \wedge F(\lambda q_{st}[FOR(q,x)])])$ $_{<<<st,t>,t>,<st,t>>}$

[8] The syntactic status of FRs in general is an open issue. We refer the interested reader to the recent overview in van Riemsdijk (2017). The precise syntactic status of a *why*-FR is not crucial for our analysis, as long as syntactically it behaves like an adjunct to the matrix VP.

[9] The syntactic status of *de ce* in interrogative clauses has received little attention in the literature on Romanian *wh*-phrases. The only relevant exceptions we are aware of are Shlonsky & Soare (2011) and, to a lesser extent, Giurgea & Grosu (2019), but insofar as we can tell there are no conclusive arguments favoring an analysis of *de ce* involving *wh*-movement to Spec,CP vs. one in which it is base-generated in Spec,CP. We leave for future work a more thorough investigation of the syntactic behavior of *de ce*.

[9] [CP [PP *de ce*]1 C'] ~> λFλp[FOR(p,σx[RN(x) ∧ F(λq[FOR(q,x)])])(λX[X(^LT(m))])
= λp[FOR(p,σx[RN(x) ∧ λX[X(^LT(m))](λqFOR(q,x))])]
= λp[FOR(p,σx[RN(x) ∧ λq[FOR(q,x)](^LT(m))])]
= λp[FOR(p,σx[RN(x) ∧ FOR(^LT(m),x)])]

[10] [V *left*] ~> λx[^LT(x)]

[11] [DP *Ana*] ~> a

[12] [VP *Ana left*] ~> λx[^LT(x)](a)
= ^LT(a)

[13] [VP *Ana left* CP] ~> λpFOR(p, σx[RN(x) ∧ FOR(^LT(m),x)]) (^LT(a))
= FOR(^LT(a),σx[RN(x) ∧ FOR(^LT(m),x)])

The semantic contribution of *de ce* is the characterizing feature of the semantics of the whole *why*-FR. As shown in (40) step [8], we are assuming that *de ce* denotes a 2-place relation between *F*, a set of properties of propositions *q*, and a proposition *p*. This relation returns the truth iff the "maximal" reason of *p* is the same as the reason of each proposition *q* that has one of the properties in *F*.

When *de ce* combines with the remainder of the *why*-FR, the whole *why*-FR ends up denoting the same property of propositions as the corresponding complex reason-PP, as evident by comparing the logical translation of the *why*-FR in (40) step [9] with the one of the reason-PP in (34) step [15].

The last four steps ([10]–[13]) of the logical translation of the sentence with the *why*-FR in (40) are the same as the last four steps ([16]–[19]) of the sentence with the complex reason-PP in (34). Also, the final step ([13]) in (40) delivers the same logical translation (i.e., truth conditions) as the initial core semantic intuition we formalized in (38), which is the desired result.

Comparing our analysis of *why*-FRs to what we previously proposed for complex reason-PPs, not only does *de ce* emerge as the characterizing element of *why*-FRs, but it also becomes apparent that *de ce* alone partially or fully incorporates the semantic contributions of four different components of a complex reason-PP: (i) the reason preposition *for*, which heads the whole PP, (ii) the definite determiner *the*, which heads the DP complement of *for*, (iii) the noun *reason*, which acts as the complement of *the* and the head of the following relative clause, and (iv) the *wh*-PP and relative pronoun *for which*. Most of these facts should not be surprising: *de ce* is, indeed, a *wh*-expression, which morphologically consists of the preposition *de* and the *wh*-word *ce*,[10] and semantically behaves like the lexicalized counterpart of the fully compositional *wh*-PP *din ce motiv* 'for what reason', which can introduce an FR as well in Romanian, as shown in (41).[11]

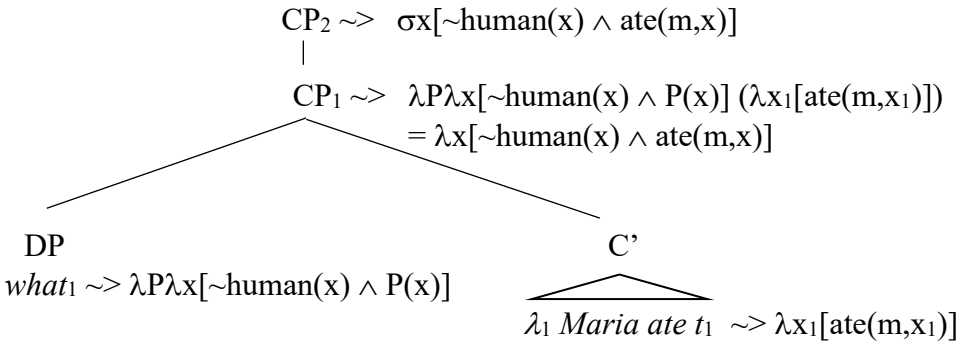
[10] This morphological composition for *why*-expressions is attested in other languages, e.g., French *pourquoi* or Italian *perché.* As mentioned in fn. 2, there are reasons to believe that *de ce* on its 'why' interpretation is no longer analyzed as compositionally complex but has been lexicalized as a unit.

[11] See Caponigro & Fălăuș (2021) for a discussion of FRs introduced by *ce* + NP in Romanian.

(41) Ana a plecat [FR **din ce motiv** a plecat Maria].
Ana has left for what reason has left Maria
'Ana left for the reason Maria left.'

The fact that *de ce* triggers the same maximality as *the* is more peculiar, instead, although notice that (41) exhibit the same effect. Maximality in FRs is a well-known fact, although its analysis has been mainly limited to more frequently attested cases of FRs that are introduced by *wh*-expressions like *who* and *what*, and their equivalents across languages.[12] One idea is that *who*-FRs and *what*-FRs compositionally end up denoting a set of individuals and all their sums, i.e., a join-semilattice (Caponigro 2003, 2004). This is shown in (42), with CP_1 denoting the join-semilattice of all the non-human (*~human*) individuals that Maria ate. By definition, a join-semilattice always has one and only one join, the member resulting from the sum of all the others. An information-preserving type-shifting rule applies that switches the denotation of CP_1, a join-semilattice (type <e,t>) to the denotation of CP_2, the join of the semilattice (type e). In this way, the FR in (42) ends up denoting the maximal individual that is non-human and was eaten by Maria. The trigger of this type-shift is the type-mismatch between the denotation of CP_1 and the matrix clause requirements. For instance, in *Ana cooked what Maria ate*, *cooked* selects for an individual-denoting object rather than a set-denoting one.

(42)



Notice that the denotation of *what* in (42) is just the denotation of set restrictor without any lexically-encoded maximality. The maximality operator σ is introduced by the type-shifting rule. Caponigro (2003, 2004) discusses at length why this strategy is preferable both within a language and across languages, given the various uses of *who* and *what* in constructions that do not trigger any maximality. In (43), we repeat the logical translations of *de ce* and *what* to facilitate the comparison and highlight the significant amount of extra semantic work that *de ce* performs.

(43) a. [PP *de ce*] ~>λFλp[FOR(p,σx[RN(x) ∧ F(λq[FOR(q,x)])])

b. [DP *what*] ~> λPλx[~human(x) ∧ P(x)]

Having provided the details of the semantic composition of *why*-FRs, we can now see how to capture other semantic properties of *why*-FRs, involving scopal interactions or differences with other adjunct FRs. We start by explaining how we account for the ambiguity of sentences with

[12] See Jacobson (1994) and Dayal (1996) for seminal work on the semantics of free relative clauses, Caponigro (2003, 2004) for further developments, and Šimík (2020) for a recent and thorough review.

clausal negation in the matrix clause and *why*-FRs we introduced in §1, ex. (12). For convenience, we repeat (12) as (44) below.

(44) Ana **nu** a plecat [**de ce** a plecat Maria].
Ana not has left why has left Maria
'Ana did not leave for the reason Maria left.'

The two readings, which the English translation exhibits as well, are made explicit in (45) and (46) together with the corresponding logical translation.

(45) a. *Reading 1:* It is not the case Ana left for the same reason Maria left (i.e., Ana left for a reason that is different from the reason Maria left).

b. *Logical translation:* ~FOR(^LT(a),σx[RN(x) ∧ FOR(^LT(m),x)])

(46) a. *Reading 2:* Ana's reason for not leaving is the same as Maria's reason for leaving (e.g., there were a lot of smokers at the party and Ana likes social smoking, while Maria can stand smoking at all; so, Ana didn't leave and the reason was that people were smoking, while Maria left and the reason was that people were smoking).

b. *Logical translation:* FOR(^~LT(a),σx[RN(x) ∧ FOR(^LT(m),x)])

The ambiguity is then reduced to the scope relation between negation (~) and the highest reason relation (*FOR*). Therefore, the LF associated to Reading 1 and its logical translation in (45) must have NegP dominating the CP of the *why*-FR, while the reverse hierarchy must hold between the two phrases in the LF associated to Reading 2 and its logical translation in (46), with the CP of *why*-FR dominating NegP. Since it is usually assumed that NegP doesn't move (for Romanian, see e.g., Pană Dindelegan 2013: Ch.13) nor do we have evidence that the *why*-FR moves, we are left with two main options: either (i) *why*-FRs can adjoin both below negation as VP adjuncts and above negation as NegP adjuncts or (ii) NegP can occupy two different positions in Romanian, one below VP adjuncts (or at least below *why*-FRs) and another one above. Since we lack any strong evidence in favor of either option, we leave the issue open. Whichever option is correct, it would also extend to all the other cases of ambiguity in sentences in which *why*-FRs are replaced with reason-PPs of various kinds, like those we exemplified in (13)–(16) above.

Last, our analysis offers a possible explanation for the contrast in (47), which we had mentioned in §1, ex. (17)–(21). FRs introduced by the *wh*-words for 'where', 'when', and 'how' in Romanian can exhibit the distribution and interpretation of PPs, as in (47)a or DPs, as in (47)b, while *why*-FRs only pattern like PPs, as shown by the contrast in (47)a vs. (47)b.

(47) a. Muncesc [FR **unde**/ **când**/ **cum**/ **de ce** muncești și tu].
work.1SG where when how why work.2SG also you
'I work where/when/how/{for the reason} you work.'

b. Îmi place/ Detest [FR **unde**/ **când**/ **cum**/ ***de ce** muncești].
me like.3SG/ detest.1SG where when how why work.2SG
'I like/hate where/when/how/why you work.'

Caponigro & Pearl (2008, 2009) argue that the *wh*-words *where*, *when*, and *how* in English are syntactically DPs that are always base-generated as complements of often silent prepositions. When they move, they move as DPs leaving their silent prepositions stranded. The whole FR they introduce ends up denoting a place, a time, or a manner. It follows that the sentences in (47)b are predicted to be acceptable, for the same reason why the sentence *I like/hate* [*what you made the cake with*] with a *what*-FR is acceptable: the *wh*-word *what* is base-generated as the DP complement of the preposition *with* and then moves to Spec,CP as a DP, leaving its preposition stranded. The whole FR ends up denoting an individual: the thing(s) you made the cake with. On the other hand, we have argued that *de ce* is syntactically a lexicalized PP (without further internal structure), rather than a DP, and a *why*-FR denotes a property of propositions, rather than an individual. These properties are incompatible with the selectional requirements of matrix predicates like 'like'/'hate' and, therefore, the *why*-FR in (47)b is judged unacceptable.

3. Other *wh*-clauses introduced by 'why'

In this section, we briefly touch on *wh*-clauses that are introduced by *de ce* in Romanian that are not *why*-FRs in order to highlight their semantic differences with respect to *why*-FRs and discuss whether the semantic analysis of *de ce* in *why*-FRs we have proposed applies to these constructions as well. In particular, we look at interrogative clauses, Modal Existential Constructions, and correlative clauses. Whenever possible, we use the embedded *wh*-clause in (48) for the constructions under consideration.

(48) [IP …. [CP **de ce** a plecat Maria]]
why has left Maria

To facilitate the comparison, in (49) we repeat our semantic analysis of the *why*-FR in (48). The logical translation of the *why*-FR is given in (49)a, while (49)b provides its denotation in a world *w*, i.e., the set of all the propositions whose reason is the same as the reason of the proposition 'Maria left' in *w*. The logical translation of *de ce* in a *why*-FR is repeated in (50).

(49) a. [FR **de ce** Maria left] ~> λp[FOR(p,σx[RN(x) ∧ FOR(^LT(m),x)])]

b. $[\![\lambda p[FOR(p,\sigma x[RN(x) \wedge FOR(\hat{}LT(m),x)])]\!]^w =$
{Ana left, Lia stayed, Donka protested, …}

(50) [**de ce**]FR ~> λFλp[FOR(p,σx[RN(x) ∧ F(λq[FOR(q,x)])])

Interrogative clauses. Embedded interrogative *wh*-clauses introduced by *why* look identical to *why*-FR in Romanian, as shown in (51).

(51) Ana se întreabă [**de ce** a plecat Maria].
Ana REFL asks why has left Maria
'Ana wonders why Maria left.'

These interrogative clauses haven't received much attention in the semantic literature, and we are not aware of any compositional semantic analysis for them or their *wh*-expression. We sketch a possible proposal in (52) and (53). The logical translation in (52)a is a direct extension of a Hamblin/Karttunen-style analysis of interrogative clauses enriched by insights and assumptions from our analysis of *why*-FRs. (52)b, instead, provide the denotation/extension of (52)a in *w*, i.e., the set of propositions of the kind 'Maria left because of x' with x being a different reason for the proposition 'Maria left'. (53) provides the possible semantic contribution of *why* in interrogative clauses if it combines with the remainder of its clause by function application, the same mode of composition we assumed for *why*-FRs and their *wh*-expression.

(52) a. [INTERR **de ce** Maria left] ~> $\lambda p \exists x[RN(x) \wedge p=\hat{}FOR(\hat{}LT(m),x)]$

b. $[\![\lambda p \exists x[RN(x) \wedge p=\hat{}FOR(\hat{}LT(m),x)]]\!]^w$ =
{Maria left because of the crisis, Maria left because of the police investigation, Maria left because of the war, …}

(53) [**de ce**]INTERR ~> $\lambda F \lambda p \exists x[RN(x) \wedge p=\hat{}F(\lambda q[FOR(q,x)])]$

Although morpho-syntactically identical (at least on the surface), *why*-FRs and interrogative clauses introduced by *de ce* exhibit significant semantic differences. Both constructions denote a set of propositions, but the nature of those propositions is very different, as shown by the different logical translations in (49)a vs. (52)a and the different denotations in (49)b vs. (52)b. The meaning of *de ce* in the two constructions is different as well, which doesn't come as a surprise given the characterizing role that *de ce* plays in building the meaning of either clause. Based on these differences between *de ce* in the two constructions, we do not currently see any simple and/or principled way to derive the meaning of one from the other.

Before concluding these brief remarks, we would like to mention an intriguing fact about interrogative *wh*-clauses introduced by *why* that we think deserves attention and further investigation. A question about reason that is conveyed by a *why* interrogative clause admits other kinds of propositions as its possible answers, besides those exemplified in (52)b. For instance, the question conveyed by *Why did Maria leave?* admits answers like the proposition conveyed by the sentence *Maria left because there was a crisis* ("*because*-CP" option) or the proposition conveyed by the sentence *Maria left because of the fact that there was a crisis* ("*because-of*+NP+CP" option), on top of *Maria left because of a crisis*' ("*because-of*+NP" option), which is the only option we have considered so far. Although semantically (almost) identical, these options look significantly different morpho-syntactically. An account of their morpho-syntax/semantics mapping may be worth pursuing.

Modal Existential Constructions. *Modal Existential Constructions* (*MECs*) are *wh*-clauses embedded under a limited class of matrix predicates cross-linguistically, namely counterparts of the existential 'be' and/or 'have'.[13] They are not attested in English, but are extremely productive in Romanian, occurring as complements of the existential predicate *a avea* 'to have'. They can be introduced by any *wh*-phrase (except the complex *wh*-phrase *care* 'which' + NP, see Caponigro & Fălăuș 2021), including *de ce*, as illustrated in (54)a–c.

(54) a. Maria nu are [MEC **de ce** pleca/ să plece].
Maria not has why leave.INF SUBJ leave.3SG
'There isn't any reason why Maria should leave.'

b. Avem [MEC **de ce** protesta/ să protestăm].
have.1PL why protest.INF SUBJ protest.1PL
'We have reasons to protest.'

c. Nu are [MEC **de ce** să se strice iar mașina], tocmai a fost reparată.
not has why SUBJ REFL break.3SG again car-the just has been repaired
'There aren't any reasons for the car to break down again, it has just been repaired.'

Besides the different distribution, MECs introduced by *de ce* exhibit morpho-syntactic differences with *why*-FRs in Romanian, including mood restrictions: MECs have to be in the subjunctive or infinitive, as illustrated in (54)a–c. MECs also exhibit different semantic properties from *why*-FRs. In particular, MECs have been argued to semantically resemble narrow scope indefinites. As a result, *why*-MECs are paraphrased with an indefinite DP (or NP), as shown by the bracketed bare nominal modified by a relative clause in (55), which paraphrases (54)a.

(55) Maria nu are [**motiv(e)** să plece] .
Maria not has reason(s) SUBJ leave.3SG
'Maria doesn't have any reason(s) to leave.'

Setting details aside (they are discussed in the aforementioned literature), a simple way to capture the core semantic property of MECs is to assume that they denote a set of individuals that is existentially closed by the matrix predicate. Therefore, the MEC in (54)a above would translate as in (56)a and denote a set of reasons in *w*, as in (56)b. As a result, the semantic contribution of *de ce* in MECs would be as in (57).

(56) a. [MEC **de ce** Maria to leave] ~> λx[FOR(^LT(m),x)]

b. ⟦ [MEC **de ce** Maria to leave] ⟧^{w} = {crisis, police investigation, war …}

(57) [**de ce**]MEC ~> λFλx[F(λpFOR(p,x))]

[13] See Grosu (2004, 2013) and Šimík (2011, 2013, 2017) for detailed discussion. Caponigro (2003, 2004), instead, argues that they are another kind of free relative clauses and calls them *Existential Free Relatives*. Here we follow Grosu's and Šimík's terminology and call them "MECs", since Grosu has specifically investigated them in Romanian. Nothing crucial in what we are presenting hinges on this terminological distinction and what's behind it.

It's obvious the meanings of MECs and their *de ce* expression are very different from those of *why*-FRs and their *de ce* expression. On the other hand, the logical translations of the MEC in (56)a and *de ce* in (57) are the same as the logical translations of the headed relative clause introduced by *for which* in (34) step [9] and the relative pronoun *for which* in (34) step [8], respectively. Still, it matters to notice that *de ce* can never act as a relative pronoun in a headed relative clause in Romanian (see further discussion in §4). Therefore, relative pronouns cannot be a possible trivial source of *de ce* in MECs, if one wants to reduce the inventory of different *de ce* expressions in Romanian.

Correlative clauses. *De ce* can also be productively used to introduce correlative clauses such as those in (58). Correlative clauses in Romanian are *wh*-clauses that are left-dislocated. Their *wh*-constituent licenses an obligatory anaphoric pronoun (here a demonstrative) in the matrix clause.[14]

(58) a. [**De ce** a plecat Maria], *de aia* a plecat și Ana.
why has left Maria of that has left also Ana
'Ana left for the same reason(s)/whatever reason Maria did.'

b. [**De ce** ai venit], *de aia* să rămâi.
why have.2SG come of that SUBJ stay.2SG
'You should stay for the (same) reason(s)/whatever reason you came.'

There are also semantic differences between correlative clauses and FRs (as well the other *wh*-clauses we have considered so far). In particular, neither a definite nor an indefinite DP could replace the bracketed *wh*-clause *and* license the demonstrative pronoun in the matrix clause in the sentences in (58). This is because, unlike FRs, correlative clauses have been shown to be quantificational in nature, with a semantic contribution akin to that of a free choice element (see Brașoveanu 2012 and references therein). As a result, a possible Romanian equivalent of (58)a that would also preserve the demonstrative in the matrix would have to resort to a free choice element like *oricare* 'whichever' in the clause corresponding to the correlative, as shown in (59).[15]

(59) [*Oricare* ar fi motivul pentru care a plecat Maria], *acela* e
FC-which COND.3SG be reason-the for which has left Maria that-one is
motivul pentru care a plecat și Ana.
reason-the for which has left also Ana
'Whatever may be the reason for which Maria left, that is also the reason why Ana left.'

Given the syntactic and semantic differences between the correlative clauses in (58) and *why*-FRs (differences which are not specific to *why*-clauses, as this behavior characterizes correlatives introduced by any other *wh*-phrase), it is clear that the internal semantic composition of the bracketed *wh*-clause in (58) and the way it combines with the matrix clause is different from what we proposed for *why*-FRs in §2. The possible connection between correlative clauses and FRs is a

[14] See Brașoveanu (2008, 2012) for further details on correlative clauses in Romanian.
[15] Free choice elements in Romanian are formed by prefixing the disjunctive particle *ori* to *wh*-words (much like *-ever* is used to form complex *wh-ever* forms in English). The morphologically complex *de ce* is the only *wh*-expression that does not have a free choice form, i.e., there is no such thing as **oride* ce 'whyever'. For detailed discussion on free choice elements in Romanian, see e.g., Farkas (2013), Caponigro & Fălăuș (2018), Fălăuș & Nicolae (2020).

complex issue, which to our knowledge has not been settled in the literature and which we must leave for future investigation.

4. Concluding remarks

We have offered the first description and semantic analysis for a previously unexplored *wh*-clause, namely FRs introduced by *de ce* 'why' in Romanian. We have argued that the semantic contribution of *de ce* is identical to that of complex reason-PPs (*for the reason* …) and provided the corresponding compositional semantics. The proposed semantic analysis builds on an analogy with more compositional/transparent *wh*-phrases that explicitly use nouns denoting reasons. We have not distinguished between the purpose and the cause/reason usage, although there have been claims that the meanings associate with different positions in interrogative clauses (e.g., Shlonsky & Soare 2011, Jędrzejowski 2014). More cross-linguistic investigation is necessary to establish whether such distinctions are warranted for *why*-phrases in non-interrogative clauses.

The pattern we have described and analyzed furthers our understanding of the cross-linguistic variation among *wh*-words and their use across *wh*-clauses. It has been long noticed in the syntactic literature that *why*-interrogatives across languages display syntactic properties that set them apart from interrogatives introduced by other *wh*-phrases, with special word order or intervention effects (for recent discussion and cross-linguistic evidence, see e.g., Irurtzun 2021). Our paper adds a different dimension to the puzzles surrounding *why* and its cross-linguistic equivalents by showing that this element can also introduce FRs (as well as various other non-interrogative *wh*-clauses). It is an open question at this point whether the observed syntactic and/or semantic peculiarities of elements like *de ce* relate in any way to the morphological complexity of the *wh*-phrases in which they often originate (see remarks in footnotes 7 and 10).

Table 1 provides the full inventory of *wh*-expressions across *wh*-clauses in Romanian, allowing a direct comparison between the distribution of *de ce* and that of other elements in the rich and productive system of *wh*-expressions in the language.

Table 1 shows that the only *wh*-clause where *de ce* cannot be used is in headed relative clauses, a restriction illustrated by the unacceptability of the sentence in (60)a. In other words, *de ce* cannot act as a relative pronoun. Romanian makes use of a different *wh*-expression as a relative pronoun modifying the head *motivul* 'the reason', as shown in (60)b.

(60) a. * Motivul **de ce** a plecat Maria rămâne necunoscut.
reason-the why has left Maria remains unknown
('The reason why Maria left remains unknown.')

b. Motivul **pentru care** Maria a plecat rămâne necunoscut.
reason-the for which Maria has left remains unknown
'The reason why Maria left remains unknown.'

This distributional property sets *de ce* apart from other adjunct *wh*-words, such as 'where', 'when' or 'how', which can all introduce headed relative clauses. Recall from §2.4 ex. (47) that the semantic behavior of *de ce* in FRs also differs from that of 'where', 'when', or 'how', further showing that the properties of *why*-expressions need to be investigated separately (and if anything, should be examined in parallel with the properties of complex reason-PPs).

Table 1. Inventory of *wh*-expressions across *wh*-clauses in Romanian

***Wh*-expression**	**FR**	**Interrogative**	**MEC**	**Correlative**	**Headed relative clause**
de ce 'why'	√	√	√	√	*
cine 'who'	√	√	√	√	*
ce 'what'	√	√	√	√	√
când 'when'	√	√	√	√	√
unde 'where'	√	√	√	√	√
cum 'how'	√	√	√	√	√
ce + NP 'what NP'	√	√	√	√	*
care + NP 'which NP'	*	√	*	√	*
cât 'how much'	√	√	√	√	*
cât/ă/i/e + NP/AdjP/AdvP 'how much/many'	√	√	√	√	*

The systematic use of *de ce* in all the other *wh*-clauses listed in the table above raises questions for future investigation. An important issue is how the various uses relate to one another—is one meaning more basic than the others? Our brief survey of *de ce* across *wh*-clauses suggests that its semantic contribution is different in each construction. Accordingly, at this stage there does not seem to be any principled way to derive one version of *de ce* from another, but more detailed cross-construction and cross-linguistic comparisons are needed to substantiate our findings for Romanian and reach more firm conclusions.

A related issue is the fact that FRs introduced by *why* appear to be rarer than those introduced by other *wh*-phrases across languages, although further cross-linguistic studies are needed to corroborate this tentative generalization.[16] We would like to tentatively speculate on why this may be the case, if confirmed, by suggesting two non-mutually exclusive lines of explanation.

Let's start by repeating the lexical entry for *de ce* we argued for in *why*-FRs in Romanian in (61).

(61) $[\textit{de ce}]_{FR} \sim> \lambda F \lambda p[FOR(p,\sigma x[RN(x) \wedge F(\lambda q[FOR(q,x)])])$

[16] See Caponigro (2021) for supporting data concerning fifteen languages, mainly Mesoamerican.

If the meaning of *de ce* in *why*-FRs in (61) cannot be straightforwardly derived from the meaning of *de ce* in any other kinds of *wh*-clauses and if, as we believe, our analysis of Romanian *why*-FRs exemplifies the general pattern of *why*-FRs across languages, then a language with a *why*-FR has to develop a lexical entry for 'why' that is as semantically rich as (61). On the other hand, as we discussed extensively, complex reason-PPs allow to convey the same rich meaning by avoiding lexicalization and by relying on a more compositional syntax/semantic mapping, thanks to their more articulated morpho-syntax. Therefore, while *why*-FRs may be allowed by the grammar in principle, they may be disfavored by the factors responsible for turning options in the general grammatical inventory of human language into actual lexical items and constructions in a given language.

Another "non-grammatical" reason disfavoring *why*-FRs may have to do with informativeness. FRs are excellent devices to refer to individuals by providing articulated descriptions of the identifying properties of individuals. For instance, the bracketed FR in (62)a introduced by *what* identifies the specific food (not just the kind) Ana ate by describing it as the one that Maria prepared for a special occasion in a certain way. Specific instantiations of food don't have their own proper names: we can still precisely refer to them using FRs like (62)a, or related devices like complex definite DPs with a headed relative clause inside. Similarly, the bracketed FR introduced by *where* in (62)b identifies a location by an articulated formulation of its characterizing property.

(62) a. Ana ate [FR **what** Maria prepared for Easter with passion and creativity].

b. Ana walked [FR **where** Maria spent hours reading when she was young].

c.*Ana left [**why** Maria left].

d. Ana left [**because of** her job].

e. Ana left [**because** she accepted a job abroad].

On the other hand, if the *why*-FR in (62)c were possible in English as it is possible in Romanian, it would mean the same as the acceptable Romanian counterpart: the reason Ana left is the same as the reason Maria left. This would not be the most informative way to identify the relevant reason in many circumstances or discourses. In fact, after hearing (62)c in Romanian, Romanian speakers are still left wondering what the reason for Ana's and Maria's departure was. In contrast, a simple reason-PP is a much effective devise to refer to a specific reason, as we discussed in §2.2. For instance, (62)d identifies Ana's job as the reason for her departure. Notice that there's an even more expressive device to refer to or name a reason: a *because* clause, as in (62)e. The underlined component of the bracketed *because* clause in (62)e, *she accepted a job abroad*, can be taken as the "proper name" of the reason the speaker is referring to, i.e., the proposition 'Ana accepted a job' or its nominalized/entity version 'the fact that Ana accepted a job'. The relationship between reasons as entities (which is what we have assumed so far) and reasons as propositions deserves its own investigation, which we leave to future research. We are mentioning it here just to make the final observation that Romanian, English, and any other language that has FRs in its grammatical inventory can use FRs as effective devices to refer to people, objects, locations, etc., while *why*-FRs may not as effective in precisely identifying reasons as other available constructions. Given this informational asymmetry, there may be less pressure on a language to lexicalize a meaning like the complex one in (61), by using 'why' or any other lexical item.

We hope that our findings in Romanian will stimulate future investigation of *why*-expressions in FRs and other non-interrogative constructions and will contribute to a better understanding of its syntactic and semantic behavior across constructions and languages.

References

Brașoveanu, Adrian. 2008. Uniqueness effects in correlatives. In Proceedings of *Sinn und Bedeutung 12*, ed. by Alte Grønn, 47–65. https://doi.org/10.18148/sub/2008.v12i0.575

Brașoveanu, Adrian. 2012. Correlatives, *Language and Linguistics Compass* 6: 1–20. https://doi.org/10.1002/lnc3.318

Caponigro, Ivano. 2003. *Free not to ask: On the semantics of Free Relatives and wh-words cross-linguistically*. Ph.D. dissertation. University of California Los Angeles.

Caponigro, Ivano. 2004. The semantic contribution of wh-words and type shifts: Evidence from Free Relatives cross-linguistically. In *Proceedings of Semantics and Linguistic Theory (SALT) XIV*, ed. by Robert B. Young, 38–55. CLC Publications.

Caponigro, Ivano. 2021. Introducing headless relative clauses and the findings from Mesoamerican languages. In *Headless relative clauses in Mesoamerican languages*, ed. by Ivano Caponigro, Harold Torrence, and Roberto Zavala Maldonado, 1–57. New York: Oxford University Press.

Caponigro, Ivano and Anamaria Fălăuș. 2018. Free choice free relatives in Italian and Romanian. *Natural Language and Linguistic Theory* 36(2): 323-363. https://doi.org/10.1007/s11049-017-9375-y

Caponigro, Ivano and Anamaria Fălăuș. 2020. Unveiling Multiple *wh-* Free Relative Clauses and their functional *wh-*words. *Semantics & Pragmatics* 13. http://dx.doi.org/10.3765/sp.13.2

Caponigro, Ivano and Anamaria Fălăuș. 2021. 'What' clauses can and 'which' cannot: a Romanian puzzle. Ms. University of California San Diego and CNRS, Nantes.

Caponigro, Ivano and Lisa Pearl. 2009. The nominal nature of *Where*, *When*, and *How*: Evidence from Free Relatives." *Linguistic Inquiry* 40(1): 155–164. https://www.mitpressjournals.org/doi/pdf/10.1162/ling.2009.40.1.155

Caponigro, Ivano and Lisa Pearl. 2008. Silent prepositions: Evidence from free relatives. In *The Syntax and Semantics of Spatial P*, ed. by Anna Asbury, Jakub Dotlačil, Berit Gehrke, and Rick Nouwen, 365–385. Amsterdam: John Benjamins.

Caponigro, Ivano, Harold Torrence, and Roberto Zavala Maldonado (eds). 2021. *Headless Relative Clauses in Mesoamerican languages*. New York: Oxford University Press.

Comorovski, Ileana. 1996. *Interrogative Phrases and the Syntax–Semantics Interface*. Dordrecht: Kluwer. https://doi.org/10.1007/978-94-015-8688-7

Dayal, Veneeta. 1996. *Locality in WH quantification: questions and relative clauses in Hindi.* Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-4808-5

Farkas, Donka. 2013. The semantics of determiners. In *A Reference Grammar of Romanian,* ed. by Carmen Dobrovie-Sorin and Ion Giurgea, 175–230. Amsterdam: John Benjamins.

Fălăuș, Anamaria and Andreea Nicolae. 2020. Additive free choice items. Ms. Leibniz-ZAS and CNRS, Nantes. https://ling.auf.net/lingbuzz/005631

Flores-Nájera, Lucero. 2021. Headless relative clauses in Tlaxcala Náhuatl. In *Headless Relative Clauses in Mesoamerican languages*, ed. by Caponigro, Ivano, Harold Torrence, and Roberto Zavala Maldonado, 79–110. New York: Oxford University Press.

Giurgea, Ion. 2013. The syntax of determiners and other functional categories. In *A Reference Grammar of Romanian,* ed. by Carmen Dobrovie-Sorin and Ion Giurgea, 97–174. Amsterdam: John Benjamins.

Giurgea, Ion and Alexander Grosu. 2019. Interrogatives and *Wh*-Movement. Ms. University of Bucharest and Tel Aviv University.

Grosu, Alexander. 2004. The syntax-semantics of modal existential wh constructions. In *Balkan syntax and semantics*, ed. by Olga Tomić, 405–438. Amsterdam: John Benjamins. https://doi.org/10.1075/la.67.21gro

Grosu, Alexander. 2013. Relative Clause Constructions and unbounded dependencies. In *A Reference Grammar of Romanian,* ed. by Carmen Dobrovie-Sorin and Ion Giurgea, 597–662. Amsterdam: John Benjamins.

Irurtzun, Aritz. 2021. Why Questions Break the Residual V2 Restriction (in Basque and Beyond). https://ling.auf.net/lingbuzz/005844

Jedrzejowski, Łukasz. 2014. Again on *why*. But why?. In *Formal Approaches to Slavic Linguistics* 22, ed. by Cassandra Chapman, Olena Kit and Ivona Kucerová, 151–169. Michigan Slavic Publications

Jacobson, Pauline. 1994. Binding Connectivity in Copular Sentences. In *Proceedings of SALT IV*, ed. by Mandy Harvey and Lynn Santelmann, Cornell University, Ithaca, 161–178. http://dx.doi.org/10.3765/salt.v4i0.2456

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Meaning, Use and the Interpretation of Language,* ed. by Rainer Bauerle, Christoph Schwarze and Arnim von Stechow, 303–323. Berlin: de Gruyter. https://doi.org/10.1515/9783110852820.302

Mantenuto, Iara and Ivano Caponigro. Forthcoming. Free relative clauses in Teramano**.** *Quaderni di lavoro ASIt/ASIt Working Papers*.

Mateo Toledo, Eladio. 2021. Headless relative clauses in Q'anjob'al. In *Headless Relative Clauses in Mesoamerican languages*, ed. by Caponigro, Ivano, Harold Torrence, and Roberto Zavala Maldonado, 290–326. New York: Oxford University Press.

Pană Dindelegan, Gabriela (ed.). 2013. *The Grammar of Romanian.* Oxford University Press.

Pană Dindelegan, Gabriela (ed.). 2016. *The Syntax of Old Romanian.* Oxford University Press.

van Riemsdijk, Henk. 2017. Free Relatives. In *The Wiley Blackwell Companion to Syntax*, Second Edition Vol. 2, ed. by Martin Everaert and Henk van Riemsdijk. Wiley-Blackwell. https://doi.org/10.1002/9781118358733.wbsyncom116

Rizzi, Luigi. 2001. On the position "int(errogative)" in the left periphery of the clause. In *Current Studies in Italian Syntax: Essays Offered to Lorenzo Renzi*, ed. by Guglielmo Cinque and Giampaolo Salvi, 267–296. Amsterdam: Elsevier.

Shlonsky, Ur and Gabriela Soare. 2011. Where's 'why'? *Linguistic Inquiry* 42(4): 651–669.

Šimík, Radek. 2011. *Modal existential wh-constructions*, Ph.D. dissertation. University of Groningen.

Šimík, Radek. 2013. Modal existential *wh*-constructions as affordance descriptions. In *Proceedings of Sinn und Bedeutung 17,* ed. by Emmanuel Chemla, Vincent Homer, and Grégoire Winterstein, 563–580. http://semanticsarchive.net/Archive/Dk3NGEwY/Simik.pdf

Šimík, Radek. 2017. Existential *Wh*-Constructions. *Oxford Bibliographies Online Datasets*. Oxford: Oxford University Press. https://doi.org/10.1093/obo/9780199772810-0162

Šimík, Radek. 2020. Free relatives. In *Semantics Companion*, ed. by Daniel Gutzmann, Lisa Matthewson, Cécile Meier, Hotze Rullmann, and Thomas Ede Zimmermann, 1–38. Wiley-Blackwell. https://doi.org/10.1002/9781118788516.sem093

Tsai, Wei-Tien Dylan. 2008. Left periphery and *how-why* alternations. *Journal of East Asian Linguistics* 17(2): 83–115.