

The correlative nature of free relatives: Issues and prospects

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Goal of the talk

- Present the unconditional-based analysis of ever free relatives (Hirsch 2016; Šimík 2018) and some supporting empirical evidence.
- Discuss a potential generalization of this analysis—a **correlative-based analysis of free relatives**—and its implications.

1 Ever free relatives as unconditionals + free relatives

There are very clear similarities between ever free relatives (eFRs) and unconditionals (uCs) (see esp. Rawlins 2008, 2013 for extensive up-to-date discussion of unconditionals).

- (1) a. Sue ate whatever Dave cooked.
b. Whatever Dave cooked, Sue ate it.

Hirsch (2016) proposed the following LF for eFRs:

- (2) **Proposed LF**
[OP [uC whatever Dave cooked]] Sue ate [FR what(ever) Dave cooked]

The semantics is based on Rawlins (2013), but follows the spirit of previous literature on eFRs (see e.g. Baker 1995) which treats them as conditionals.

- (3) The sentences in (1) are true iff all the following propositions are true:
 - a. If Dave cooked x, Sue ate x.
 - b. If Dave cooked y, Sue ate y.
 - c. If Dave cooked z, Sue ate z.
 - d. etc.

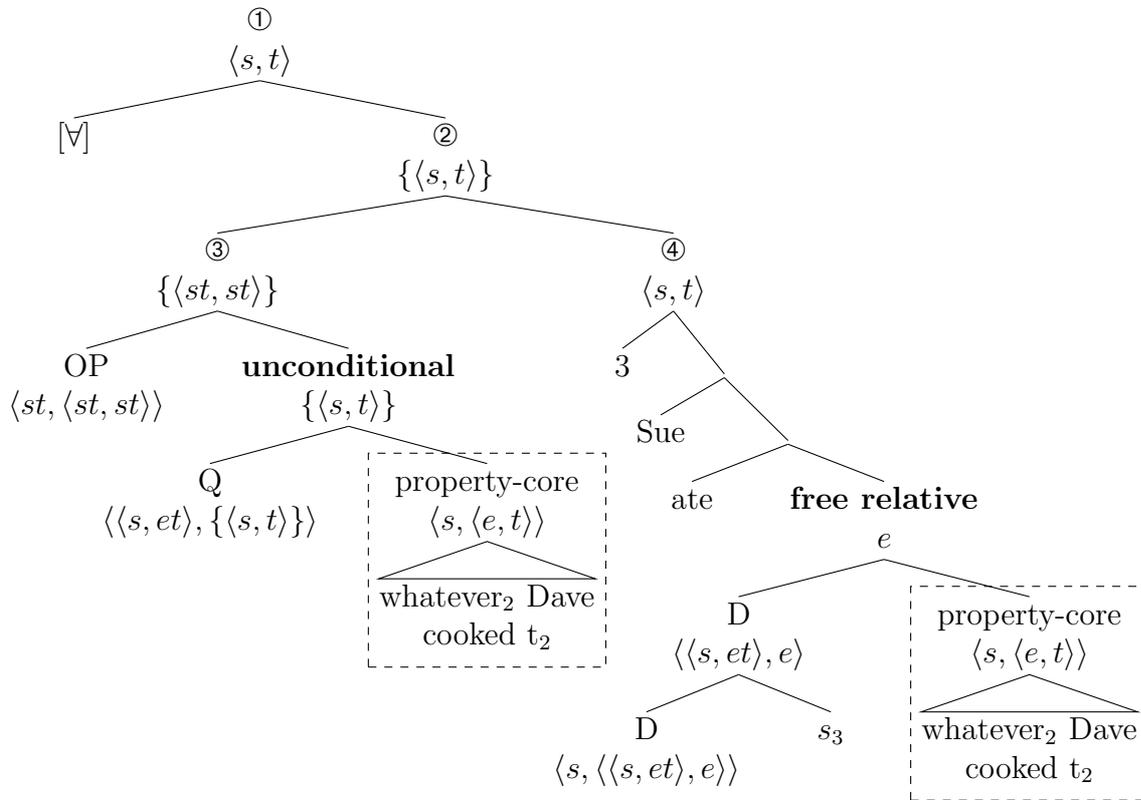
1.1 Compositional treatment of ignorance eFRs

See Šimík (2018:385) (closely following Hirsch 2016)

- The semantic basis for both the free relative and the unconditional is what I call here the **property core**; this follows the standard analysis of wh-clauses (e.g. Jacobson 1995), despite the problems with it (see Chierchia & Caponigro 2013; Liu 2018; Xiang 2018). I have my own tentative solution to these problems, but that's for a different talk.

- The **unconditional**, after being shifted to a set of propositions by Q, restricts an operator OP (below a doxastic speaker-oriented operator), following Kratzer's (1979; 2012) analysis of conditionals.
- The **free relative** functions as a definite description donkey-anaphoric to the referent(s) introduced by the wh-words in the unconditional. For explicitness, I follow Schwarz's (2012) analysis of DPs.
- The fact that the unconditional restricts a **doxastic operator** introduces variation into speaker's belief state: the speaker has no settled belief as to the identity of what Dave cooked. This, together with the universal quantification over the resulting propositions, derives the so called **ignorance reading** of the eFR (or its corresponding unconditional); see Dayal (1997); von Stechow (2000); a.o.

(4) Sue ate whatever Dave cooked.



- (5)
- $\llbracket \text{property-core} \rrbracket^g = \lambda s \lambda x [\text{COOKED}(s)(x)(\text{DAVE}) \wedge \text{THING}(s)(x)]$
 - $\llbracket \text{free relative} \rrbracket^g = \sigma x \text{COOKED}(g(3))(x)(\text{DAVE}) \wedge \text{THING}(g(3))(x)$
 - $\llbracket \text{④} \rrbracket^g = \lambda s [\text{ATE}(s)(\sigma x \text{COOKED}(s)(x)(\text{DAVE}) \wedge \text{THING}(s)(x))(\text{SUE})]$
 - $\llbracket \text{OP} \rrbracket^g = \lambda p \lambda q \lambda s \forall w [w \in \text{DOX}(s)(\text{SP}) \wedge p(w) \rightarrow q(w)]$
 - $\llbracket \text{unconditional} \rrbracket^g = \{ \lambda s [\text{COOKED}(s)(x)(\text{DAVE}) \wedge \text{THING}(s)(x)] \mid x \in D_c \}$
 - $\llbracket \text{③} \rrbracket^g = \{ \lambda q \lambda s \forall w [w \in \text{DOX}(s)(\text{SP}) \wedge \text{COOKED}(w)(x)(\text{DAVE}) \wedge \text{THING}(w)(x) \rightarrow q(w)] \mid x \in D_c \}$
 - $\llbracket \text{②} \rrbracket^g = \{ \lambda s \forall w [w \in \text{DOX}(s)(\text{SP}) \wedge \text{COOKED}(w)(x)(\text{DAVE}) \wedge \text{THING}(w)(x) \rightarrow \text{ATE}(w)(\sigma y \text{COOKED}(w)(y)(\text{DAVE}) \wedge \text{THING}(w)(y))(\text{SUE})] \mid x \in D_c \}$
 - $\llbracket [V] \rrbracket^g = \lambda \mathcal{P} \lambda s \forall p [p \in \mathcal{P} \rightarrow p(s) = 1]$
 - $\llbracket \text{①} \rrbracket^g = \lambda s \forall p [p \in \llbracket \text{②} \rrbracket^g \rightarrow p(s) = 1]$

- (6) For $D_c = \{\mathbf{DISH}_1, \mathbf{DISH}_2\}$ and some situation s_0 , $[[\textcircled{1}]]^g(s_0) = 1$ iff
- a. $\forall w[w \in \text{DOX}(s_0)(\text{SP}) \wedge \text{COOKED}(w)(\mathbf{DISH}_1)(\text{DAVE})$
 $\rightarrow \text{ATE}(w)(\sigma x \text{COOKED}(w)(x)(\text{DAVE}))(\text{SUE})]$ &
 - b. $\forall w[w \in \text{DOX}(s_0)(\text{SP}) \wedge \text{COOKED}(w)(\mathbf{DISH}_2)(\text{DAVE})$
 $\rightarrow \text{ATE}(w)(\sigma x \text{COOKED}(w)(x)(\text{DAVE}))(\text{SUE})]$

1.2 Extending the analysis to other semantic types of eFRs

Different readings of eFRs:¹

- (7) Sue ate whatever Dave cooked.
- a. \rightsquigarrow I don't know what Dave cooked. **ignorance**
 - b. \rightsquigarrow It's irrelevant (for the conversation) what Dave cooked. **irrelevance**
 - c. \rightsquigarrow Sue didn't care what Dave cooked. **indifference**
 - d. \rightsquigarrow Sue always ate what Dave cooked. **non-modal (iterative)**

These readings can be made salient by contextual means:

- (8) a. I have no idea what Dave was planning for dinner, but I'm sure that **Sue ate whatever (it was that) he cooked.**
- b. OK, I think that Dave cooked a soup, you think that he cooked pasta. We won't agree on that, but what we can agree on is that **Sue ate whatever he cooked.**
- c. Sue was so hungry that **she just ate whatever Dave cooked**, although it was beef and she's normally vegetarian.
- d. During last week's retreat, there was no restaurant around, so **Sue ate whatever Dave cooked** (on Monday, it was X, on Tuesday Y, etc.).

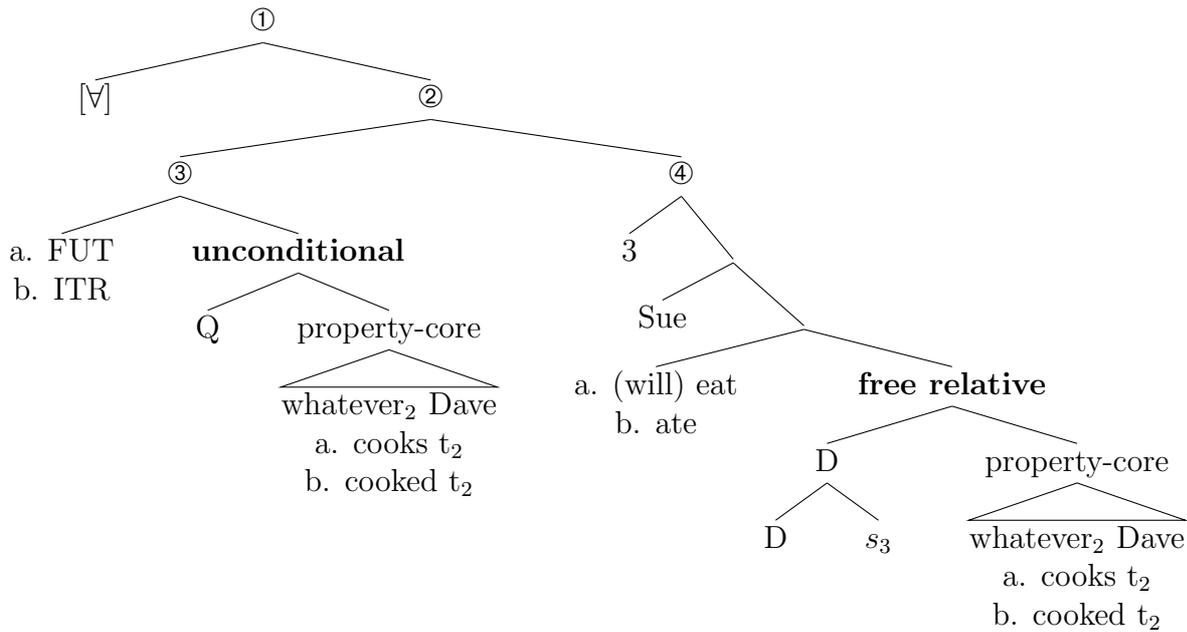
These different interpretations can be derived by changing the semantics of the OP that introduces the (un)conditional:

- (9) a. **ignorance** \approx doxastic operator (relativized to speaker or attitude holder)
- b. **irrelevance** \approx doxastic operator (relativized to multiple attitude holders)
- c. **indifference** \approx counterfactual operator
- d. **non-modal** \approx aspectual (iterative), habitual, or root modal operator

Despite the claims that unconditionals always express ignorance (Rawlins 2013; Hirsch 2016) Under (10), I illustrate the syntax–semantics of two non-modal eFRs—one “licensed” by the **future operator** and another one by an implicit **iterative operator**:

¹The literature is quite rich on proposals, often differing in details; see Dayal (1997); von Stechow (2000); Tredinnick (2005); Lauer (2009); Condoravdi (2015); for further references and a survey of the semantics of FRs, see Šimík (to appear).

- (10) a. (Tonight) Sue will eat whatever Dave cooks.
 b. (Last week) Sue ate whatever Dave cooked.



- (11) a. $[[\text{FUT}]]^g = \lambda p \lambda q \lambda s \forall s_1 [s_1 \in \text{META}(s) \wedge p(s_1) \rightarrow q(s_1)]$
 b. $[[\text{ITR}]]^g = \lambda p \lambda q \lambda s \forall s_1 [s_1 \leq s \wedge p(s_1) \rightarrow \exists s_2 [s_2 \geq s_1 \wedge q(s_2)]]$

(12) **Future-related reading**

For $D_c = \{\mathbf{DISH}_1, \mathbf{DISH}_2\}$ and some situation s_0 , $[[\textcircled{1}]]^g(s_0) = 1$ iff

- a. $\forall s_1 [s_1 \in \text{META}(s_0) \wedge \text{COOKS}(s_1)(\mathbf{DISH}_1)(\text{DAVE})$
 $\rightarrow \text{EAT}(s_1)(\sigma x \text{COOKED}(s_1)(x)(\text{DAVE}))(\text{SUE})]$ &
 b. $\forall s_1 [s_1 \in \text{META}(s_0) \wedge \text{COOKS}(s_1)(\mathbf{DISH}_2)(\text{DAVE})$
 $\rightarrow \text{EAT}(s_1)(\sigma x \text{COOKED}(s_1)(x)(\text{DAVE}))(\text{SUE})]$

(13) **Iterative reading**²

For $D_c = \{\mathbf{DISH}_1, \mathbf{DISH}_2\}$ and some situation s_0 , $[[\textcircled{1}]]^g(s_0) = 1$ iff

- a. $\forall s_1 [s_1 \leq s_0 \wedge \text{COOKS}(s_1)(\mathbf{DISH}_1)(\text{DAVE})$
 $\rightarrow \exists s_2 [s_2 \geq s_1 \wedge \text{EAT}(s_2)(\sigma x \text{COOKED}(s_2)(x)(\text{DAVE}))(\text{SUE})]$ &
 b. $\forall s_1 [s_1 \leq s_0 \wedge \text{COOKS}(s_1)(\mathbf{DISH}_2)(\text{DAVE})$
 $\rightarrow \exists s_2 [s_2 \geq s_1 \wedge \text{EAT}(s_2)(\sigma x \text{COOKED}(s_2)(x)(\text{DAVE}))(\text{SUE})]$

(where s_1 and s_2 are **minimal** situations; cf. Kratzer 2014; Elbourne 2013)

1.3 Immediate advantages of the unconditional-based analysis

The **variation requirement** (Dayal 1997) results from the conspiracy of a number of factors:

- The unconditional denotes a set of propositions (it is, in essence, a question).
- General principles guarantee that the set is not empty or singleton. Either pragmatic ones (relevance) or semantic ones (ban against vacuous quantification; anti-singleton presupposition of universal quantifiers; Sauerland 2008).

²For these past-oriented cases, Schlenker's (2004) referential (rather than quantificational) analysis of conditionals might be more appropriate.

- Multiple propositions are therefore being considered and thereby also multiple values for the variable introduced by the *wh*-word.

The **definite semantics** of eFRs (Jacobson 1995, among many others) follows from the donkey-anaphoric nature of the free relative.

- The best alternative up to now: Dayal's (2004) proposal that *iota*-shift takes precedence over existential shift (adopted also by Caponigro 2003).
- Caveat: The explanation only applies to eFRs, not to plain free relatives (unless one assumes a correlative-based analysis of free relatives; see below).

Different readings of eFRs are reduced to a **single parameter**—the operator that gets restricted by the unconditional.

2 Evidence

2.1 Question/(Un)Conditional-like properties of eFRs

The following kinds of evidence can be used to support the unconditional-based analysis of eFRs:

- eFRs behave as (un)conditionals in relevant respects;
- eFRs (and (u)Cs) behave questions in relevant respects;
- in those respects, eFRs differ from plain free relatives or headed relatives.

Semantic parallelism between uCs and eFRs

Not just eFRs, but also uCs exhibit a whole range of possible meanings/uses (perhaps with the exception of indifference?):

- | | | | |
|------|----|---|-----------------------------------|
| (14) | a. | Whatever (it was) Dave cooked, Sue ate it. | ignorance/irrelevance |
| | b. | Whatever Dave cooks tonight, Sue will eat it. | non-modal (future-related) |
| | c. | Whatever Dave cooked, Sue always ate it. | non-modal (iterative) |

Ordinary conditionals come in similar types (see e.g. Declerck & Reed 2001).

Particles

As noted by Hirsch (2016), eFRs allow (or require) the use of a number of particles, which are impossible in relative clauses:

- | | | |
|------|------------------------|---|
| (15) | <i>Ever</i> | (Hirsch 2016: ex. (6)) |
| | a. | What(ever) did John eat? |
| | b. | John ate the food which(*ever) Mary cooked. |
| | c. | John ate whate ver Mary cooked. |
| (16) | <i>The hell</i> | (Hirsch 2016: ex. (7)/(10c)) |
| | a. | What (the hell) did John eat? |
| | b. | John ate the food which (*the hell) Mary cooked. |
| | c. | John ate whatever (the hell) Mary cooked. |
| | d. | Whatever (the hell) John did, Mary will forgive him. |

- (17) *Else* (Hirsch 2016: ex. (8)/(10d))
- a. What (**else**) did John eat?
 - b. John ate the food which (***else**) Mary cooked.
 - c. John ate whatever (**else**) Mary cooked.
 - d. Whatever (**else**) John did, Mary will forgive him.

The ban on the use of ‘ever’ also holds of **light-headed relative clauses**, which are otherwise very closely related—syntactically as well as semantically—to free relatives:

- (18) *Polish* (adapted from Citko 2004:105)
- Jan śpiewa to, { **co** / ***cokolwiek** } Maria śpiewa.
 J. sings DEM what what.EVER M. sings
 (Intended:) ‘John sings what(ever) Mary sings.’

Wh-phrases with NP sortals

Plain free relatives are famously allergic to wh-phrases with NP sortals (see Bresnan & Grimshaw 1978 for English, Groos & van Riemsdijk 1981 for Dutch, Meinunger 1998 for German, Citko 2010 for Polish and Croatian, Caponigro 2003 for Italian, or Karlík 2013 for Czech, a.o.). However, this restriction does not hold for eFRs, in which way they are akin to questions and uCs.

- (19) I’ll take **which*(ever) book** you give me. (adapted from Bresnan & Grimshaw 1978:335)
- (20)
- a. **Which book** did you give him?
 - b. **Whichever book** he gave him, he lost it.
 - c. I’ll take **whichever book** you give me.

Epistemic modals

Wh-questions, as well as conditional antecedents, are incompatible with epistemic modals (McDowell 1987; Progovac 1988; Drubig 2001). As observed by Tredinnick (1995), this restriction also holds of eFRs (unlike plain FRs).

- (21)
- a. John **must/may** leave early tonight. **deontic / epistemic**
 - b. Who **must/may** leave early tonight? **deontic / *epistemic**
- (McDowell 1987, cited via Drubig 2001)
- (22) If John **must/may** leave early tonight, ... **deontic / *epistemic**
 (Progovac 1988, cited via Drubig 2001)
- (23) He does **what(*ever) must** be a difficult job.
 (Tredinnick 1995; cited via Iatridou & Varlokosta 1998:16)

I haven’t found data for unconditionals, but it seems that at least in some languages, epistemic modals (esp. ‘may’) in unconditionals may “agree” with the speaker-oriented epistemic modal base, which gets restricted by the unconditional (e.g. Romanian, Alex Grosu, p.c.).

- (24) Whoever **must/may** leave early tonight, ... **judgment?**

Contrastive topics

Plain FRs are capable of accommodating a contrastive topic–focus structure. eFRs cannot do so. (Matrix) questions and conditionals also cannot accommodate contrastive topics.

(25) *Czech*

- a. Na dovolené jsem vařila, **co** Karlovi_{CT} chutnalo_F (ale Marii_{CT} bohužel ne_F).
on vacation AUX cooked what Karel:DAT tasted but Marie:DAT unfort. not
'On vacation I cooked what Karel_{CT} liked_F (but Marie_{CT} unfortunately did not_F).
- b. Na dovolené jsem vařila, **cokoliv** Karlovi_(*CT) chutnalo_(*F) (*ale Marii
on vacation AUX cooked what:EVER Karel:DAT tasted but Marie:DAT
bohužel ne).
unfort. not
'On vacation I cooked what Karel_{CT} liked_F (but Marie_{CT} unfortunately did not_F).

(26) *Czech*

- a. Karel_{CT} dal Marii knihu_F (a Pavel_{CT} parfém_F).
Karel.NOM gave Marie.DAT book.ACC and Pavel.NOM perfume.ACC
'Karel_{CT} gave Marie a book_F (and Pavel_{CT} gave her a perfume_F).
- b. *Co dal Karel_{CT} Marii_F?
what.ACC gave Karel.NOM Marie.DAT
Intended: '(I'm asking) What did Karel give to Marie? (I'm not asking: What did Pavel give to Marie)'
- c. *Pokud Karel_{CT} dal Marii knihu_F, ...
if Karel.NOM gave Marie.DAT book.ACC
Intended: 'If Karel gave Marie a book, ... (not If Pavel gave Marie a perfume, ...).'

2.2 Plain FR-like properties of eFRs

Despite the above properties that eFRs share with questions/(un)conditionals, they also share some with plain FRs.

Matching effects

eFRs, just like plain FRs, and unlike uCs, exhibit case-matching effects.

(27) *Czech* (adapted from Karlík 2013)

- a. Pozdravím, **koho** potkám / ***kdo** půjde kolem.
greet.1SG who.ACC meet.1SG who.NOM walk.3SG around
'I'll greet who I'll meet.' / Intended: 'I'll greet the people who will be walking around.'
- b. Pozdravím, **kohokoliv** potkám / ***kdokoliv** půjde kolem.
greet.1SG who.ACC.EVER meet.1SG who.NOM.EVER walk.3SG around
'I'll greet whoever I'll meet.' / Intended: 'I'll greet anybody who will be walking around.'
- c. **Koho** (-**koliv**) potkám / **Kdo** (-**koliv**) půjde kolem, toho
who.ACC -EVER meet.1SG who.NOM -EVER walk.3SG around that.ACC
pozdravím.
greet.1SG
'Whoever I'll meet / Whoever is walking around, I'll greet him.'

Locality

While uCs are transparent for A-bar extraction (in Czech), just like wh-questions, eFRs are not (just like plain FRs).

(28) *Czech* (Biskup & Šimík 2018)

- a. To je ten člověk, **kterému**₁ [cokoliv dáš t₁], to ztratí.
 it is the person which.DAT what.ACC.EVER give.2SG it lose.3SG
 ‘It is the person such that whatever you give him, he will lose it.’
- b. *To je ten člověk, **kterému**₁ ztratí [cokoliv dáš t₁].
 it is the person which.DAT lose.3SG what.ACC.EVER give.2SG
 ‘It is the person such that whatever you give him, he will lose it.’

2.3 Summary

The unconditional nature of eFRs has many empirical consequences: it affords the occurrence of some phenomena in eFRs (otherwise not allowed in plain FRs) and at the same time, it prohibits the occurrence of others (otherwise allowed in plain FRs). Yet a different set of phenomena are shared between eFRs and plain FRs (and not by questions/unconditionals).

	Qs/uCs	EVER FRs	PLAIN FRs	DATA FROM
<i>Ever, else, the hell</i>	yes	yes	no	English
Ignorance etc.	yes	yes	no	English
Epistemic modals	no	no	yes	English
Contrastive topics	no	no	yes	Czech
Matching effects	no	yes	yes	Czech
Strong island	no	yes	yes	Czech
Semantics of overt copy	question	entity	entity	

Table 1: Question-like and free relative-like properties of ever free relatives

2.4 Towards a syntactic analysis

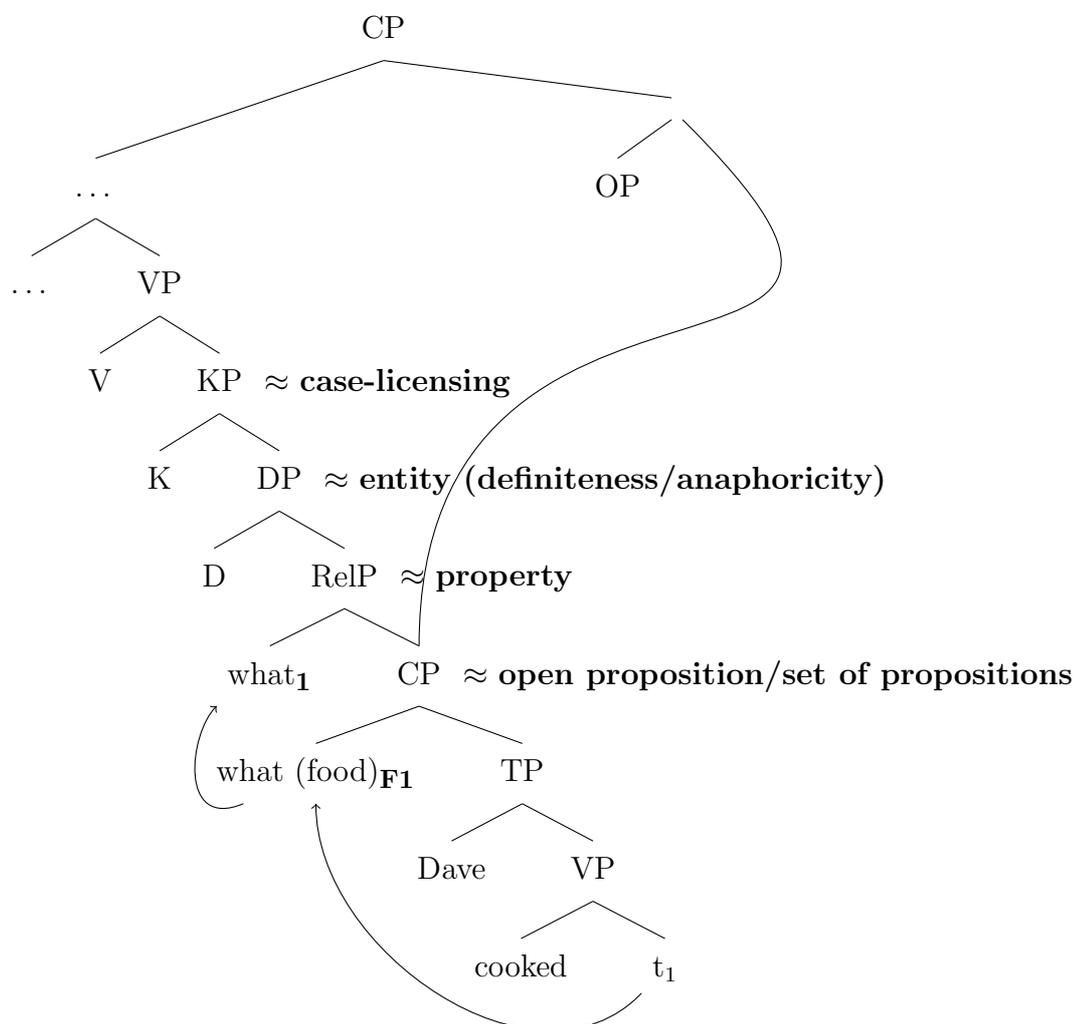
Generalization:

- The **unconditional** part determines the licensing of eFR-internal material.
- The **free relative** part determines the behavior of eFRs as a whole.

Attempt at a **syntactic explanation** (different in details from Hirsch 2016 and from what I presented above):

- The eFR gets generated in its DP position, along with canonical relative-clause-related and DP-related projections:
 - RelP: A high CP that hosts relative operators (creating a property). Relative operators have no NP sortals.
 - DP: A projection that turns the property into an entity.
 - KP: A projection (or projections; cf. Caha 2009) hosting case.

- The OP that “generates” the (un)conditional takes a low CP as its sister, giving rise to a multidominance structure (as also assumed by Hirsch 2016). In this sister, the wh-word maps to a variable, which in turn lends itself to a focus interpretation (à la Kratzer 1991; Beck 2006; Truckenbrodt 2012; a.o.). As a result, the CP in the unconditional position denotes a set of propositions (a question).



3 Generalizing the analysis and prospects for multiple wh free relatives

(29) **Hypothesis to explore**

Unconditionals \sim Ever free relatives \rightsquigarrow Correlatives \sim Plain free relatives

(30) *Czech*

a. Hanka snědla (to) [co Mirek navařil].

Hanka ate that what Mirek cooked

‘Hanka ate what Mirek cooked.’

b. [Co Mirek navařil], (to) Hanka snědla.

what Mirek cooked that Hanka ate

‘Hanka ate what Mirek cooked.’ (lit. ‘What Mirek cooked, Hanka ate (it).’)

(31) **Proposed LF**

[OP [CoR what Mirek cooked]] Hanka ate [FR what Mirek cooked]

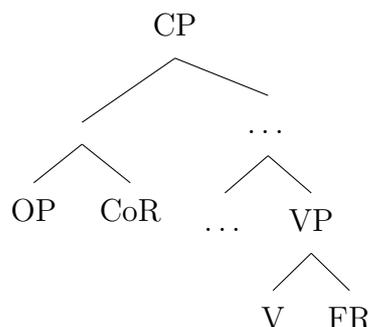
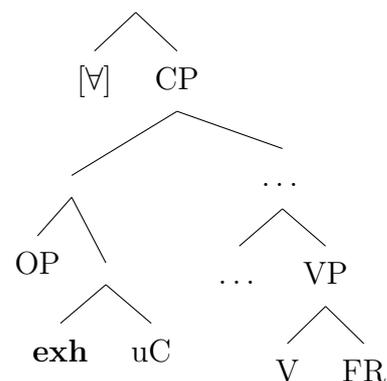
Compositional treatment (in spirit similar of “conditional” analysis, cf. Bittner 2001 or Brasoveanu 2008):

- (32) a. $[[[FR \text{ what Mirek cooked (in } s_1)]]]^g$
 $= \sigma x \text{ COOKED}(g(1))(x)(\text{MIREK})$
- b. $[[\text{Hanka ate FR}]]$
 $= \lambda s [\text{ATE}(s)(\sigma x \text{ COOKED}(s)(x)(\text{MIREK}))(\text{HANKA})]$
- c. $[[[CoR \text{ what Mirek cooked}]]]$
 $= \lambda s \exists x [\text{COOKED}(s)(x)(\text{MIREK})]$
- d. $[[[OP \text{ CoR}]]]$
 $= \lambda p \lambda s_0 \forall s [s \in \text{DOX}(s_0)(\text{SP}) \wedge \exists x [\text{COOKED}(s)(x)(\text{MIREK})] \rightarrow p(s)]$
- e. $[[[OP \text{ CoR} \text{ Hanka ate FR}]]]$
 $= \lambda s_0 \forall s [s \in \text{DOX}(s_0)(\text{SP}) \wedge \exists x [\text{COOKED}(s)(x)(\text{MIREK})] \rightarrow \text{ATE}(s)(\sigma x \text{ COOKED}(s)(x)(\text{MIREK}))(\text{HANKA})]$

Differences between plain and ever FRs

- Ever free relatives are **question-like** and hence denote **multiple propositions** in their unconditional part \rightarrow **variation requirement**.
- Plain free relatives are not question-like denote a **single proposition** in their correlative part \rightarrow **no variation requirement**.
- A possible analysis of the ever-morpheme: it forces the presence of an **exhaustive + Hamblin universal operator** (as proposed for FRs by Aloni 2007; cf. Condoravdi’s 2015 related analysis).³ For arguments that unconditionals involve exhaustivity, see Rawlins (2013).

³The relation between the operators and ever is possibly just one of a syntactic agreement; cf. Zeijlstra (2004) among others.

(33) **LF of plain FRs**(34) **LF of ever FRs****Immediate advantages**

- Obligatory **definiteness** of FRs (due to their donkey-anaphoric nature).
- Obligatory **finiteness** of FRs (possibly “inherited” from correlatives).

Problem

- **Wh with NP sortals** are allowed in correlatives, unconditionals, and ever free relatives, but not plain free relatives → **why?**

Comment on languages without free relatives

- There are quite a few languages that have correlatives but no free relatives (Hindi, Chinese). Why?
- It turns out that these are wh-in-situ languages: Wh-movement is a necessary prerequisite for the formation of free relatives.
- Overt wh-movement is the only way to derive a property, which is supported by the fact that there are no wh-in-situ relative clauses.

Prospects for the analysis of multiple wh in free relatives

- Multiple wh-phrases in correlatives are generally allowed.
- Multiple wh free relatives could thus be subspecies of multiple wh correlatives.
- If my conjecture is right that **multiple wh FRs presuppose multiple wh movement** (as is the case with MECs), then it seems that **lambda-abstraction is necessary for all wh-phrases** in multiple wh FRs. Implications for an analysis?
- An argument in favor of this analysis would be if we find out that the reading of multiple wh correlatives gets preserved in the corresponding multiple wh free relatives. Caponigro & Fălăuș (2018) show that Romanian multiple wh only receive pair-list (functional) readings—is that the case for multiple wh correlatives in Romanian, too?
- How about multiple wh ever FRs? They should be possible to the extent that multiple wh unconditionals are possible.

→ All these are issues for future research, I still have to learn a lot about (multiple wh) correlatives! (Sorry ☹)

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