

MULTIPLE COORDINATED RELATIVE CLAUSES

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1. INTRODUCTION

In the domain of multiple wh-questions → parametric differences across languages:

1. a. ***Who when** sang? *English – non-MWH language*
b. **Who** sang **when**?
2. a. **Tko kada** pjeva? *Croatian – MWH language*
 who when sings
b. **Tko** pjeva **kada**?

Although both kinds of languages allow for coordinated multiple wh-questions (**CWHs**)...

3. **What and when** does John sing? *English*
4. **Što i kada** Ivan pjeva? *Croatian*
 what and when Ivan sings

...they allow for them under different circumstances (to be discussed in Section 2).

Given the well-documented parallels between questions and relative clauses (**RCs**), we ask:

- i. whether analogous coordination of wh-elements is ever seen in the domain of RCs,
- ii. whether crosslinguistic variation in RCs with coordinated *wh* relative pronouns (_{WH}RP) patterns with the variation observed in CWHs.

We examine three types of relative constructions (the data come mainly from MWH languages, in order to avoid the confounding effects of possibly illegitimate multiple wh-movement):

- a. Free relative clauses (**FRs**),
- b. Externally headed relative clauses (**EHRCs**), and
- c. Irrealis free relatives (**IFRs**)

In previous work, we have shown that:

- i. CWHs are subject to different restrictions in different languages (Section 2) (Gračanin-Yuksek 2007; Citko and Gračanin-Yuksek, in press and the references therein),

- ii. Free relatives with coordinated wh-pronouns (**CFRs**) do not show the same cross-linguistic variation (Section 3) (Citko & Gračanin-Yuksek, 2012)
- iii. Uniform behavior of CFRs across languages is due to the presence of an external head, which forces Strong Crossover Effects (**SCO**) (Citko & Gračanin-Yuksek, 2012).

This predicts that headed structures will behave differently from CWHs, while headless structures will behave like CWHs.

We examine this prediction for Externally Headed Relative Clauses (Section 4) and Irrealis Free Relatives (Section 5), and we show that it is borne out.

2. COORDINATED WH-QUESTIONS (CWHs)

In multiple wh-movement languages → both a non-coordinated multiple wh-question (**MWH**) in (5a) and a coordinated multiple wh-question (**CWH**) in (5b) are fine:

- 5. a. **Kada što** Petar jede? ✓ *MWH in Croatian*
when what Petar eats
'When does Petar eat what?'
- b. **Kada i što** Petar jede? ✓ *CWH in Croatian*
when and what Petar eats
'When and what does Petar eat?'

In English, a MWH in (6a) is ill-formed, but a CWH in (6b) is well-formed.

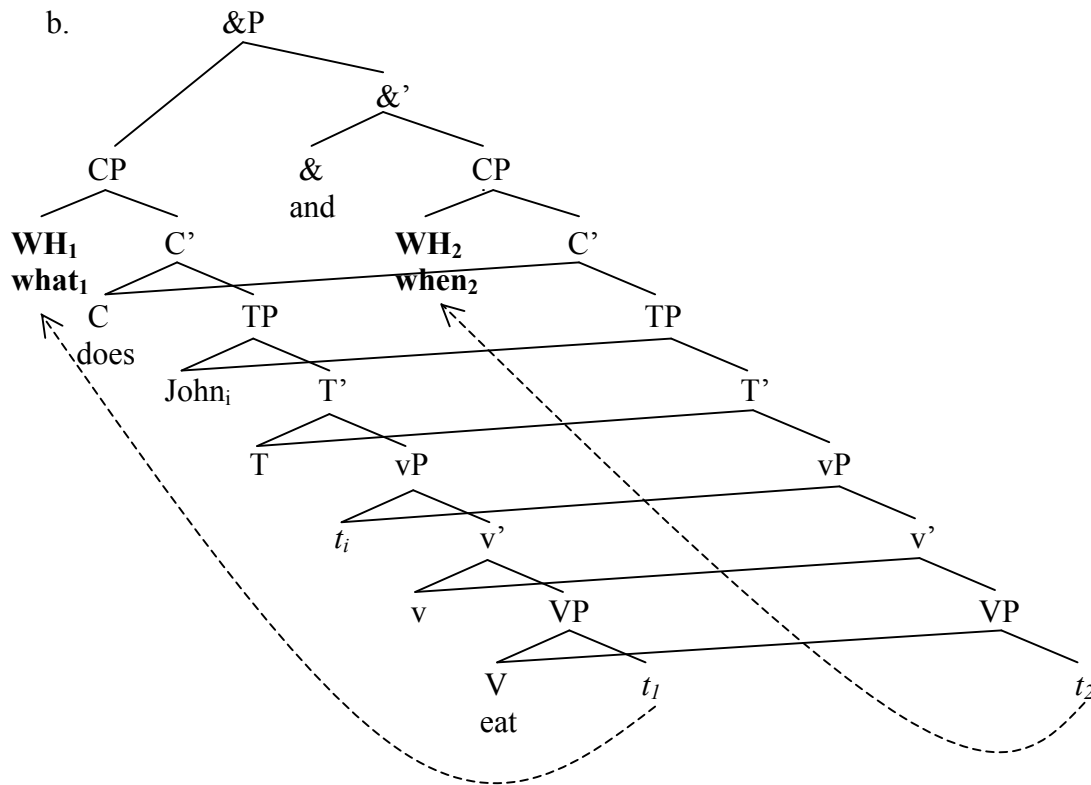
- 6. a. ***What when** does John eat? **MWH in English*
- b. **What and when** does John eat? ✓ *CWH in English*

The badness of (6a) can be attributed to the illegitimate multiple wh-movement, which English does not allow. The fact that (6b) is good suggests that this example does not feature multiple wh-movement.

∴ Coordination in (6b) opens up a possibility that the structure is bi-clausal (Gračanin-Yuksek 2007, Citko and Gračanin-Yuksek, in press), such that each wh-phrase comes from its own clause (see the diagram in [7b] for the CWH in [6b]).



7. a. What and when does John eat?

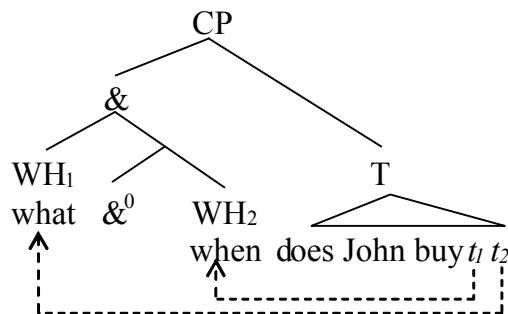


The structure in (7) is the only possible structure of CWHs in English → CWHs that require a mono-clausal analysis (an obligatorily transitive verb in a CWH that has a wh-object [8a] or coordination of two arguments [8b]) are ill-formed:

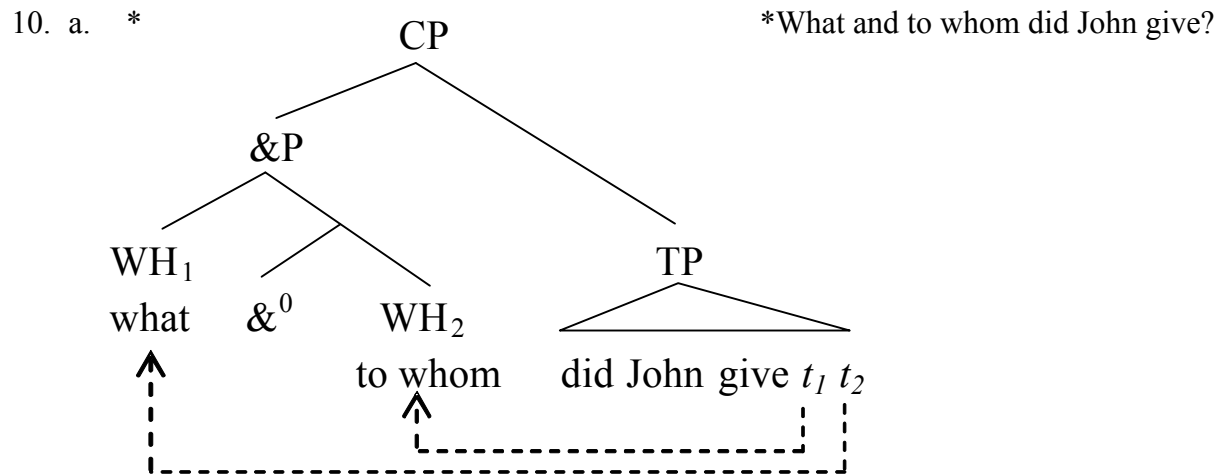
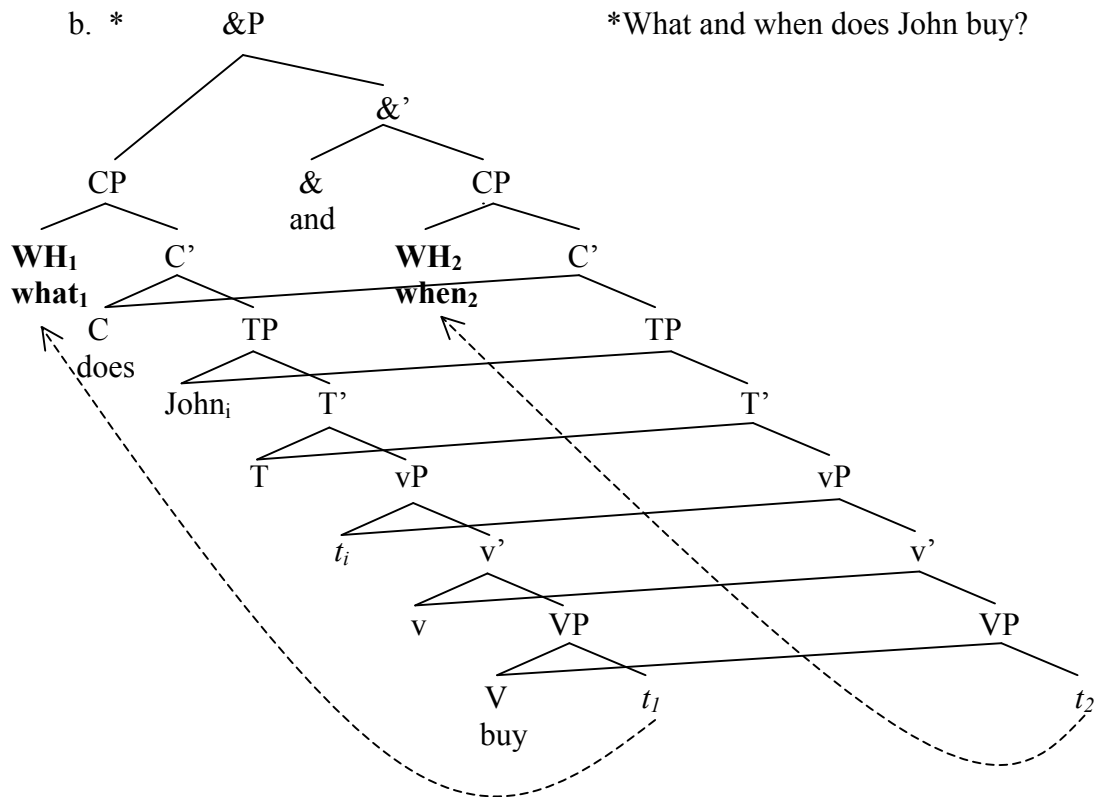
8. a. *What and when does John buy?

b. *What and to whom did John give?

9. a. *

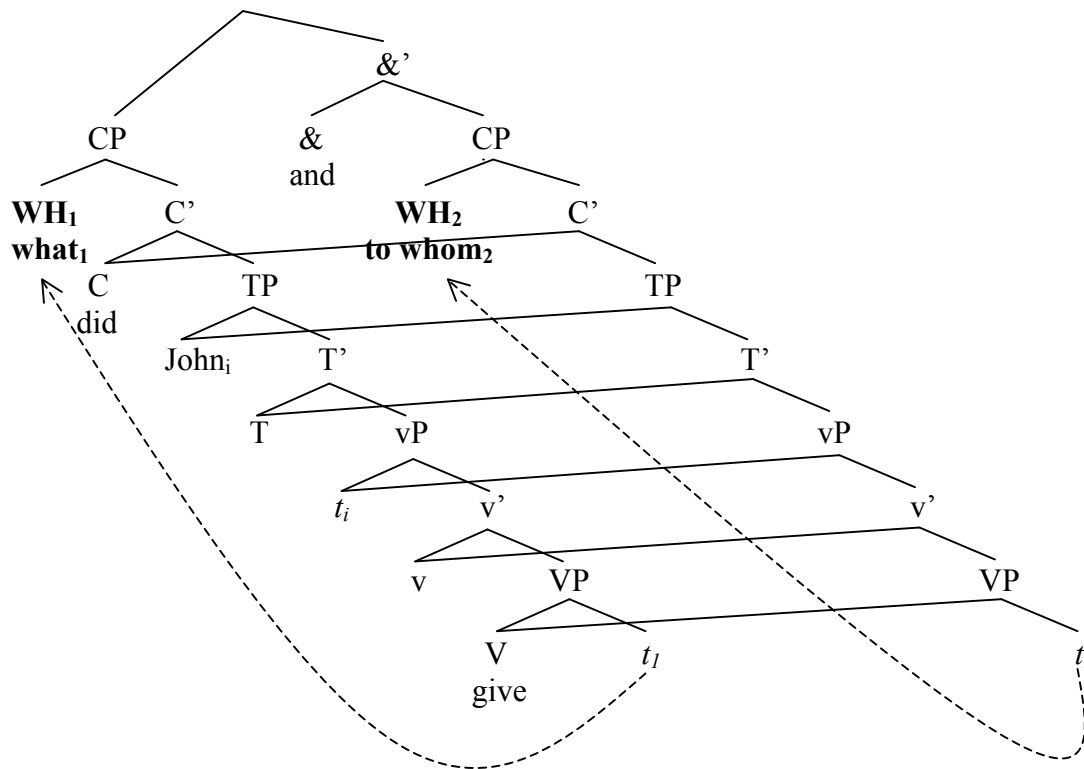


*What and when does John buy?



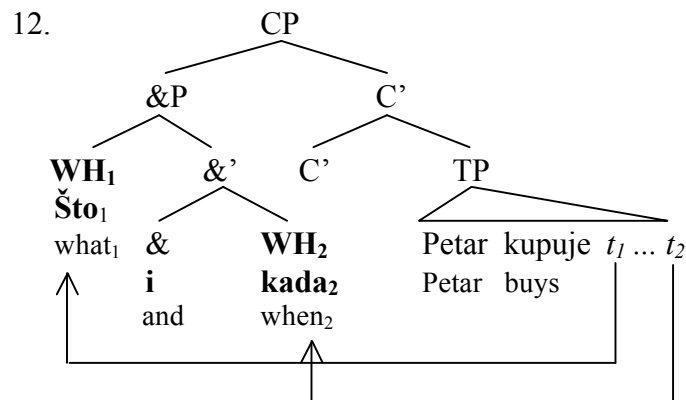


b. &P *What and to whom did John give?



In languages with multiple wh-movement (**MWH languages**), counterparts of (8a) and (8b) are good (11) → some kind of mono-clausal analysis (12) must be available:

11. a. **Što i kada** Petar kupuje? *Croatian*
 what and when Petar buys
 ‘What and when does Petar buy?’
- b. **Što i kome** Petar daje?
 what and to-whom Petar gives
 *‘What and to whom is Petar giving?’



∴ Coordination of wh-elements in CWHs may underlyingly be:

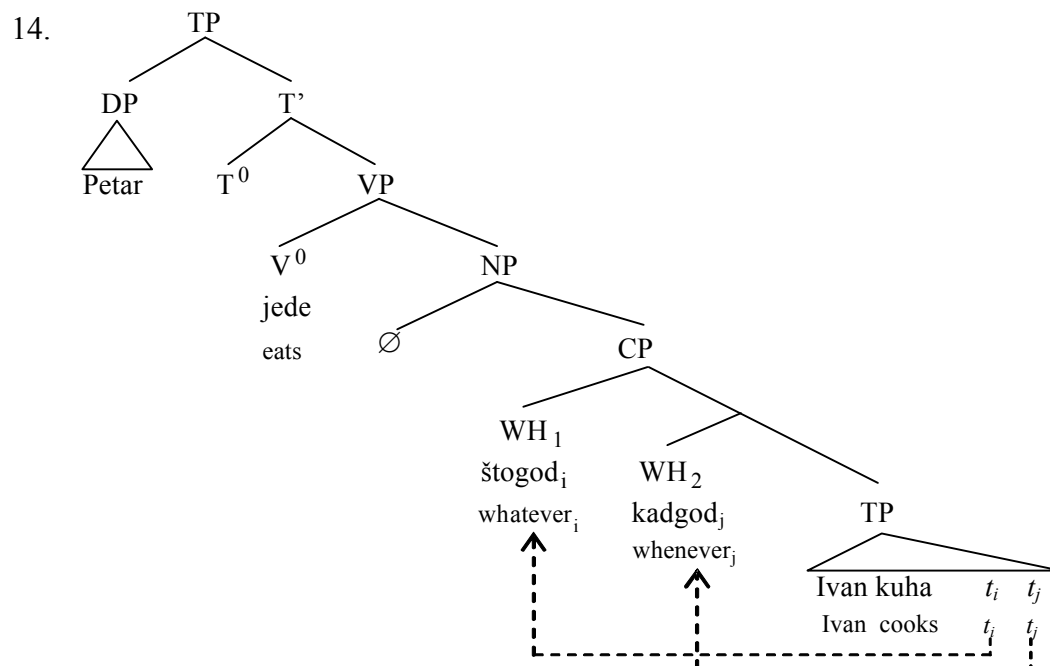
- Coordination of CPs (as in [7b]) → bi-clausal analysis → available in languages with and without multiple wh-movement;
- Wh-coordination proper (as in [12]) → mono-clausal analysis → available only in MWH languages.
- Cross-linguistic variation in the properties of CWHs follows from the setting of the parameter of multiple wh-movement.

3. WH-COORDINATION IN FRs

Multiple FRs (**MFRs**) are disallowed in both MWH languages and in non-MWH languages:

13. a. *Petar jede **štogod kadgod** Ivan kuha. *MFR in Croatian
 Petar eats whatever whenever Ivan cooks
 *‘Petar eats whatever whenever Ivan cooks.’
- b. *Jan je **co(kolwiek) kiedy(kolwiek)** Piotr gotuje. *MFR in Polish
 Jan eats whatever whenever Piotr cooks
- c. *John eats **whatever whenever** Bill cooks. *MFR in English

The badness of (13a-b) indicates that the problem in MFRs cannot be reduced to the (non)-availability of multiple wh-movement → the analysis in (14) must be excluded in both kinds of languages:

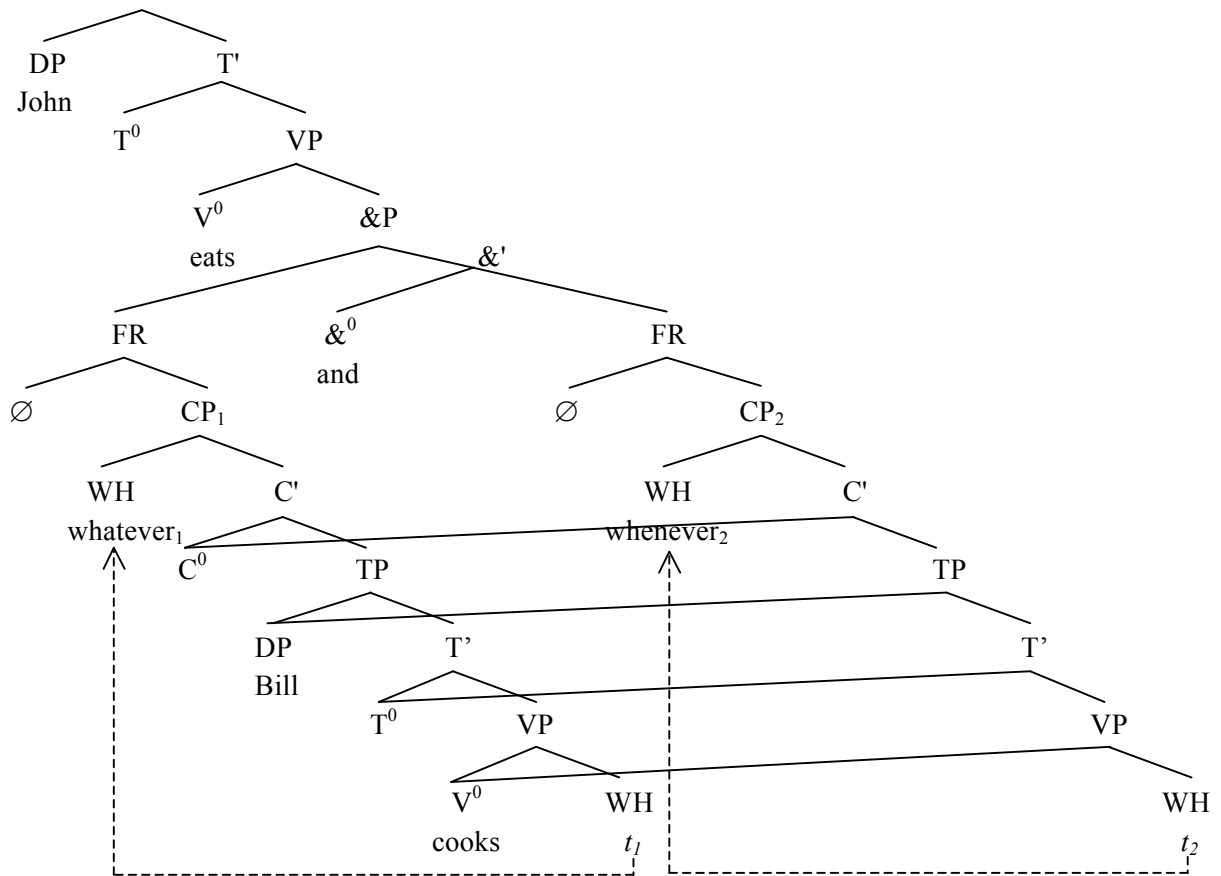


Interestingly, coordinated FRs (**CFRs**) are good in both kinds of languages, but if one of the wh-phrases is a direct object, both the matrix and the embedded verbs must be optionally transitive (15-19):

15. a. Petar jede **štogod i kadgod** Ivan kuha. ✓CFR in Croatian
 Petar eats whatever and whenever Ivan cooks
 ‘Petar eats whatever and whenever Ivan cooks.’
- b. Jan je **cokolwiek i kiedykolwiek** Peter gotuje. ✓CFR in Polish
 Jan eats whatever and whenever Peter cooks
 ‘Jan eats whatever and whenever Peter cooks.’
- c. John eats **whatever and whenever** Bill cooks. ✓CFR in English

Well-formed CFRs in all of these languages receive an analysis analogous to the analysis of CWHs in English:

16. TP John eats **whatever and whenever** Bill cooks.



CFRs in which either the matrix or the embedded verb is obligatorily transitive always result in an ill-formed FR:



17. Restrictions on CFRs in Croatian

- a. *Jan **ocjenjuje** što(god) i kad(god) Vid **kupi**. * $V_{main}[_{DP}] V_{emb}[_{DP}]$
Jan evaluates what(ever) and when(ever) Vid buys
*‘Jan evaluates what(ever) and when(ever) Vid buys.’
- b. *Jan **jede** što(god) i kad(god) Vid **kupi**. * $V_{main}[_{(DP)}] V_{emb}[_{DP}]$
Jan eats what(ever) and when(ever) Vid buys
*‘Jan eats what(ever) and when(ever) Vid buys.’
- c. *Jan **ocjenjuje** što(god) i kad(god) Vid **kuha**. * $V_{main}[_{DP}] V_{emb}[_{(DP)}]$
Jan evaluates what(ever) and when(ever) Vid cooks
*‘Jan evaluates what(ever) and when(ever) Vid cooks.’
- d. Petar jede **štogod i kadgod** Ivan kuha. $V_{main}[_{(DP)}] V_{emb}[_{(DP)}]$
Petar eats whatever and whenever Ivan cooks
‘Petar eats whatever and whenever Ivan cooks.’

18. Restrictions on CFRs in Polish

- a. *Jan **używa** cokolwiek i kiedykolwiek Piotr mu **poleca**. * $V_{main}[_{DP}] V_{emb}[_{DP}]$
Jan uses whatever and whenever Piotr him recommends
‘Jan uses whatever and whenever Piotr recommends to him.’
- b. *Jan **je** cokolwiek i kiedykolwiek Piotr mu **poleca**. * $V_{main}[_{(DP)}] V_{emb}[_{DP}]$
Jan eats whatever and whenever Piotr him recommends
‘Jan eats whatever and whenever Piotr recommends to him.’
- c. *Jan **ocenia** cokolwiek i kiedykolwiek Piotr **gotuje**. * $V_{main}[_{DP}] V_{emb}[_{(DP)}]$
Jan evaluates whatever and whenever Piotr cooks
‘Jan evaluates whatever and whenever Piotr cooks.’
- d. Jan je **cokolwiek i kiedykolwiek** Peter gotuje. $V_{main}[_{(DP)}] V_{emb}[_{(DP)}]$
Jan eats whatever and whenever Peter cooks
‘Jan eats whatever and whenever Peter cooks.’

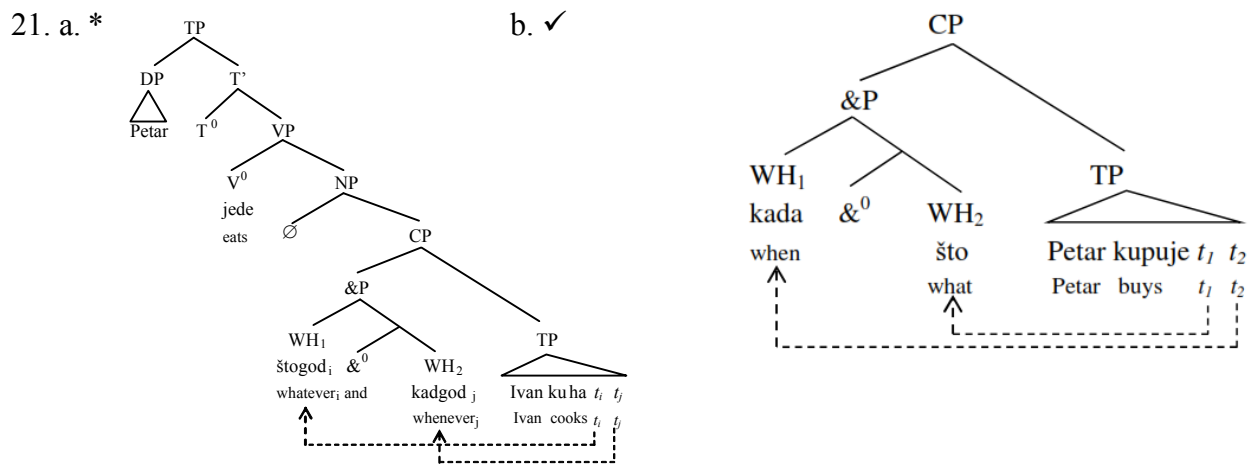
19. Restrictions on CFRs in English

- a. *John **eats** what(ever) and when(ever) Peter **prepares**. * $V_{main}[_{(DP)}] V_{emb}[_{DP}]$
- b. *John **devours** what(ever) and when(ever) Peter **prepares**. * $V_{main}[_{DP}] V_{emb}[_{DP}]$
- c. *John **devours** what(ever) and when(ever) Peter **cooks**. * $V_{main}[_{DP}] V_{emb}[_{(DP)}]$
- d. John eats **whatever and whenever** Bill cooks. $V_{main}[_{(DP)}] V_{emb}[_{(DP)}]$

Similarly, CFRs cross-linguistically disallow coordination of wh-arguments:

20. a. *Jan pokazał **co(kolwiek)** i **komu(kolwiek)** Maria wysłała. *Polish*
 Jan showed what(ever).ACC and whom(ever).DAT Maria sent
- b. *Petar šalje **što(god)** i **kome(god)** Marija pokaže. *Croatian*
 Petar sends what(ever).ACC and to-whom(ever).DAT Marija shows
- c. *Peter sends **whatever and to whomever** Mary shows. *English*

A mono-clausal analysis of coordinated examples, illustrated in (21a), must also be excluded (unlike the mono-clausal analysis of CWHs repeated in [21b] from [12]):



The analysis in (21b) is possible and the analysis in (21a) is impossible because wh-questions are headless, but FRs are headed.

In (21a), WH RP must be identified through the construal with a single head \rightarrow this, however, is impossible since one of the wh-phrases is an argument and the other an adjunct \rightarrow the structure is not interpretable.

22. *The Single Relative Pronoun Generalization:*

A single head cannot combine with multiple relative pronouns coming from the same clause (see also DeVries 2002, Grosu and Landman 1998, and the references within).

In the next section, we show that this generalization holds true in externally headed relative clauses \rightarrow a single head cannot combine with more than one WH RP from a single clause, even when the WH RP are coordinated and the language allows MWH.

4. COORDINATION OF WHRPs IN EXTERNALLY HEADED RELATIVE CLAUSES

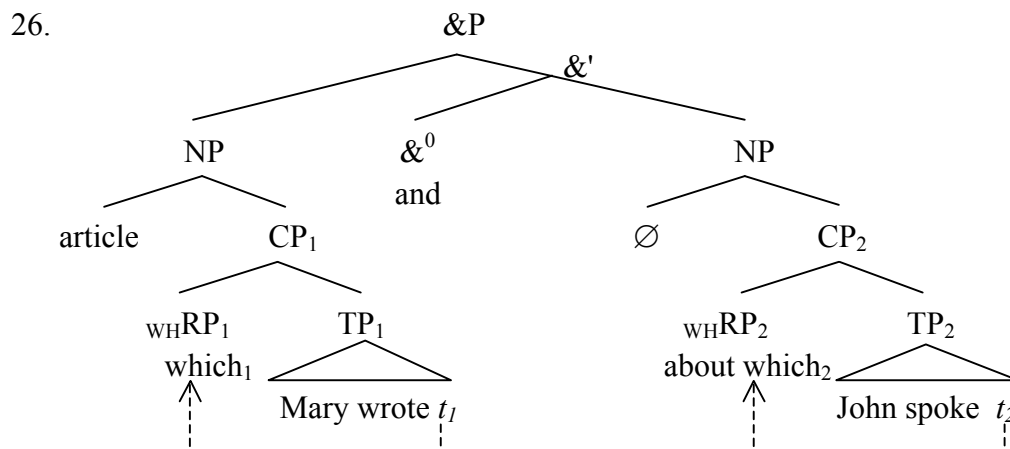
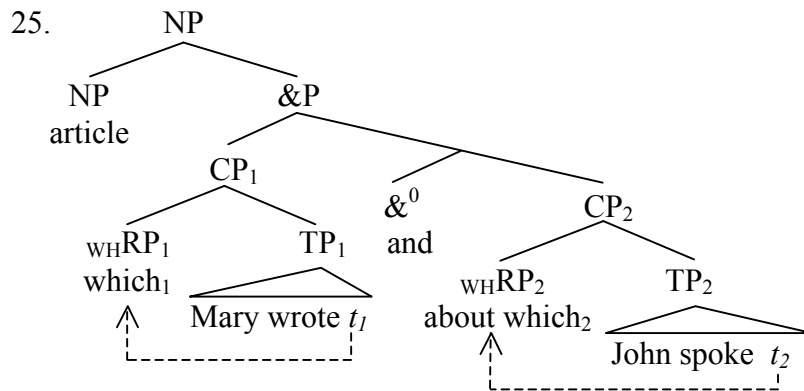
If the generalization in (22) is correct, then we predict that the coordinated externally headed RCs in A should be grammatical:

A. MULTIPLE COORDINATED NPs/RCS

23. [DP **HEAD**_{1/2} [&P [CP **wh**₁ [TP ... *t*₁...]] & [CP **wh**₂ [TP ... *t*₂...]]]]

24. a. **članak**_{1/2} **koji**₁ Marija piše *t*₁, a **kojem**₂ Ivan pridonosi *t*₂ *Croatian*
 article which₁ Marija writes *t*₁ and to-which₂ Ivan contributes *t*₂
- b. **artykul**_{1/2}, **który**₁ Maria napisała *t*₁ a **pod którym**₂ Jan się podpisał *t*₂ *Polish*
 article which₁ Maria wrote *t*₁ and under which₂ Jan REFL signed *t*₂
- c. **the article**_{1/2} **which**₁ Mary wrote *t*₁ and **about which**₂ John spoke *t*₂ *English*

Examples in (24) can be analyzed either as in (25) or as in (26):



Another prediction of (22) is that externally headed RCs with coordinated wh RPs in B should be ungrammatical:

B. MULTIPLE FRONTED COORDINATED wh RPs ORIGINATING IN THE SAME CLAUSE

27. * $[_{DP} \text{HEAD}_{1/2} [_{CP} \text{wh}_1 (\&) \text{wh}_2 [_{TP} \dots t_1 \dots t_2]]]$

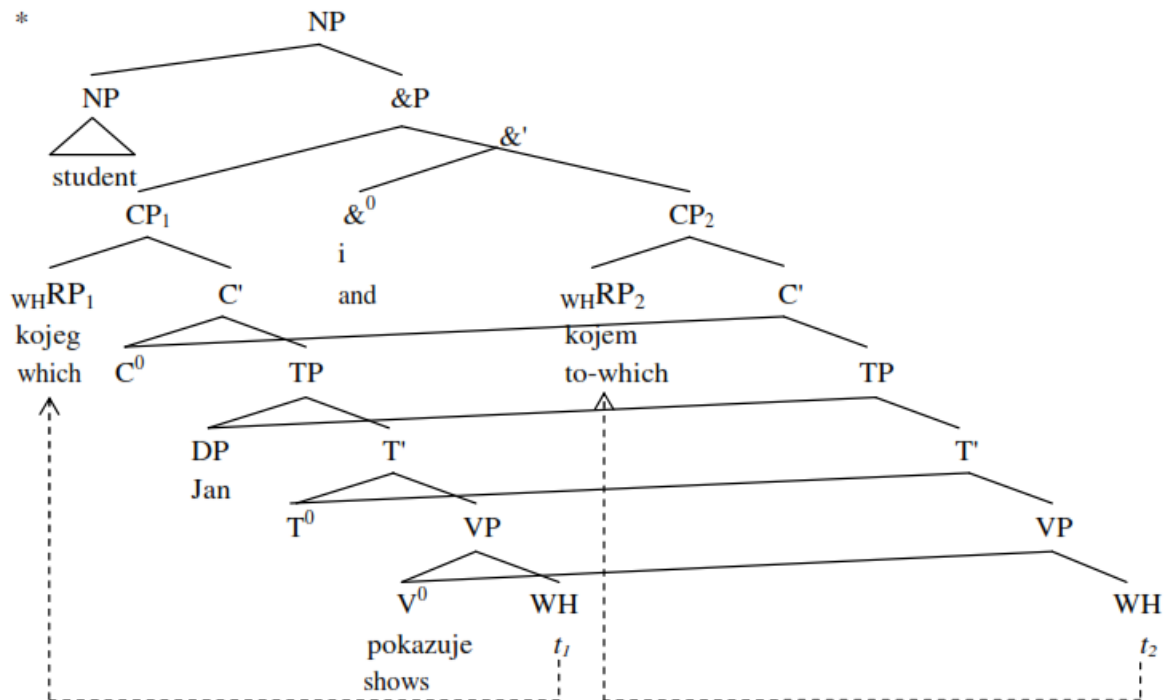
28. a. * $\text{student}_{(1/2)}$ kojeg_1 (i) kojem_2 Jan pokazuje t_1 t_2 Croatian
 student which (and) to-which Jan shows t_1 t_2

b. * $\text{student}_{(1/2)}$ którego_1 (i) któremu_2 Maria przedstawiła t_1 t_2 Polish
 student which (and) to-which Maria introduced t_1 t_2

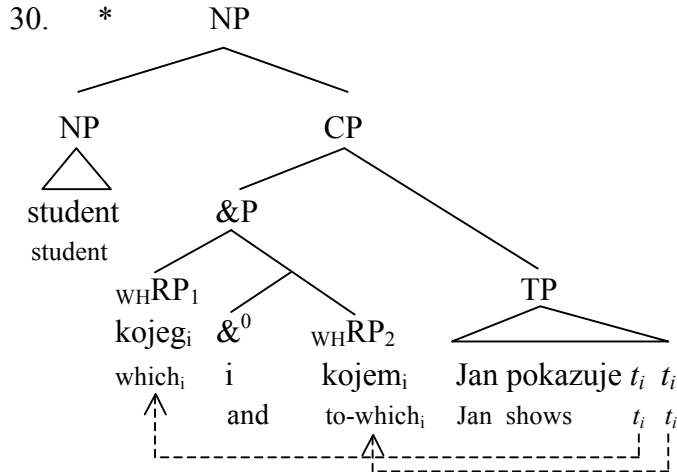
c. *the student $_{(1/2)}$ whom $_1$ (and) to whom $_2$ Mary introduced t_1 t_2 English

Examples in (28) involve two clause-mate wh -arguments \rightarrow a bi-clausal analysis along the lines of (9a)/(16) is excluded.

29.



The analysis that would derive the relevant word order in (28) is the mono-clausal analysis in (30), in which again, both wh RPs need to be construed with a single head, but this induces SCO effects.



What about cases of RCs with coordinated WHRPs in which each WHRP comes from a different clause? → (22) does not exclude these cases, but they are in fact bad, as examples in C show.

C. MULTIPLE FRONTED COORDINATED WHRPs ORIGINATING IN DIFFERENT CLAUSES

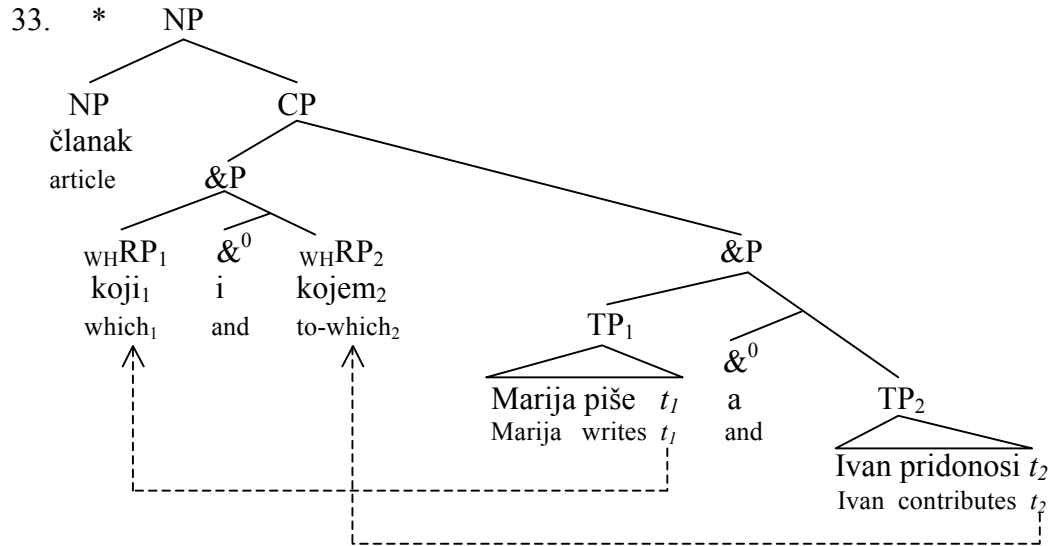
31. *_{[DP HEAD_{1/2} [CP [&P wh₁ (&) wh₂ [TP ... t₁...] & [TP ... t₂...]]]]}

32. a. *članak_{1/2} koji₁ (i) kojem₂ Marija piše *t₁*, a Ivan pridonosi *t₂* *Croatian*
article which₁ (and) to-which₂ Marija writes *t₁* and Ivan contributes *t₂*

b. *artykuł_{1/2} który₁ (i) pod którym₂ Maria napisała *t₁* a Jan się podpisał *t₂* *Polish*
article which₁ (and) under which₂ Maria wrote *t₁* and Jan REFL signed *t₂*

c. *the article_{1/2} which₁ (and) to which₂ Mary wrote *t₁* a John contributed *t₂* *English*

Examples (32) → a violation of the CSC: the copies of the two WHRPs inside the two TPs are distinct, so ATB movement is not an option.



D. OTHER UNATTENDED PATTERNS: MULTIPLE HEADS

The patterns in (34) and (36), illustrated in (35) and (37) respectively, are bad presumably because of interpretive considerations (no way to semantically compute the intended meaning).

34. *_{[DP HEAD₁ & HEAD₂ [CP wh₁ (&) wh₂ [TP ... t₁... t₂]]]}

35. a. *studentica₁ i profesor₂ koju₁ (i) kojem₂ Marija predstavlja t₁ t₂. *Croatian*
 student and professor which₁ (and) to-which₂ Marija introduces t₁ t₂
- b. *studentka₁ i profesor₂ która₁ (i) któremu₂ Maria przedstawiła t₁ t₂. *Polish*
 student and professor which₁ (and) to-which₂ Maria introduced t₁ t₂
- c. *the student₁ i the professor₂ whom₁ (and) to whom₂ Maria introduced t₁ t₂. *English*

36. [_{DP HEAD₁ & HEAD₂ [&P [CP wh₁ [TP ... t₁...] & [CP wh₂ [TP ... t₂...]]]]]}

37. a. *članak₁ i pjesma₂ koji₁ Marija revidira t₁ a koju₂ Ivan piše t₂ *Croatian*
 article.M and poem.F which.M₁ Marija reviews t₁ and which.F₂ Ivan writes t₂
- b. *artykuł₁ i książka₂ który₁ Jan napisał t₁ a która₂ Maria zrecenzowała t₂ *Pol.*
 article.M and book.F which.M₁ Jan wrote t₁ and which.F₂ Maria reviewed t₂
- c. *the article₁ and the book₂ which₁ John wrote t₁ and which₂ Mary reviewed t₂ *Eng.*

4.1. Interim Summary

The generalization in (22) prevents multiple relativization from the same clause → SCO effects that result from the presence of the head, which forces the coindexation of _{WH}RPs.

– **FREE RELATIVES:**

- The string *WH&WH* is well-formed only if each wh-phrase originates in a different FR → bi-clausal analysis.
- Such an analysis yields the string *WH&WH* because of the fact that FRs are headed by null heads (or the wh-phrases themselves are heads).

– **EXTERNALLY HEADED RCs:**

- The string *WH&WH* is never well-formed because, due to the overtness of the heads, it can only be derived through a mono-clausal analysis, which results in:
 - CSC violation (when _{WH}RPs come from different clauses)
 - SCO effects/non-interpretable structures (when _{WH}RPs come from the same clause)
- Coordination of bigger structures (NPs/CPs) in headed RCs is well-formed, but it does not yield the string *WH&WH*.

The generalization in (22) rules out multiple relativization out of a single clause. (22) is a consequence of the presence of a head in RCs.

Prediction: in structures that are interpreted like RCs, but do not have a head, multiple coordinated wh-phrases should be fine → a case in point: Irrealis Free Relatives.

5. **IRREALIS FREE RELATIVES**

(AKA INFINITIVAL FREE RELATIVES, EXISTENTIAL FREE RELATIVES, MODAL EXISTENTIAL WH CONSTRUCTIONS)

38. a. Est' s kem pogovorit'. Russian
is with whom talk.INF
'There is somebody with whom one could talk.'
- b. (Nie) mam co robić. Polish
not have.1SG what do.INF
'There {is something, isn't anything} I can do.'
- c. Toj ima s kogo da govori. Bulgarian
he has with whom SUBJ talk.3SG
'He has somebody he can talk to.'

- d. Nemam *ga kome dati.*
not-have.1SG it whom.DAT give.INF
'I don't have anybody I can give it to.'

Serbo-Croatian

(Caponigro 2003:88-89, citing Izvorski 2000, Grosu 2004, Rudin 1986)

IFRs differ from **FRs** in the following respects (cf. Caponigro 2003, Grosu 2004, Grosu and Landman 1998, Izvorski 2000, Pesetsky 1982, Šimik 2011, and the references therein), as illustrated by the following data from Polish:

i) Contra **FRs**, **IFRs** get indefinite interpretation:

39. a. Mam *co robić.*
I.have what.ACC do.INF
'I have something to do' (Not: I have the thing to do or I have everything to do)
- b. Mam *co Jan ma.*
I.have what.ACC Jan has
'I have the thing Jan has.' OR 'I have whatever Jan has.'

ii) Contra **FRs**, **IFRs** disallow *ever*:

40. a. *Mam *cokolwiek robić.*
I.have whatever.ACC do.INF
- b. Mam *cokolwiek Jan ma.*
I.have whatever.ACC Jan has
'I have whatever Jan has.'

iii) Contra **FRs**, **IFRs** allow multiple wh-pronouns:

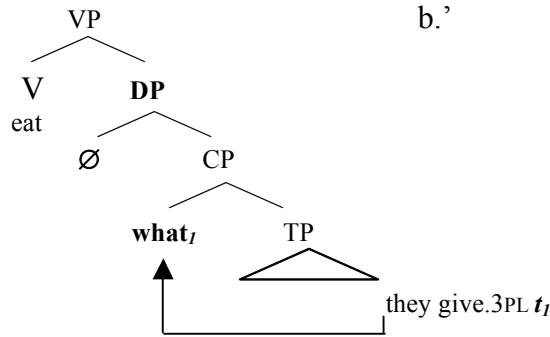
41. a. Mam *co komu dać.*
I.have what.ACC whom.DAT give.INF
'I have something to give to everyone.'
- b. *Mam *co komu Jan dał.*
I.have what.ACC whom.DAT Jan gave

This has led to the following structures for **FRs** and **IFRs**:

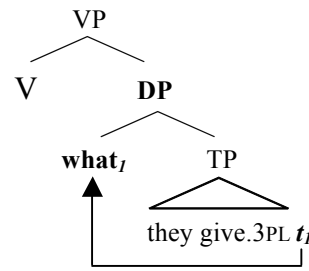
42. a. Jem *co dają.*
I.eat what.ACC give.3PL
'I eat what they give.'

FRs

b. ...



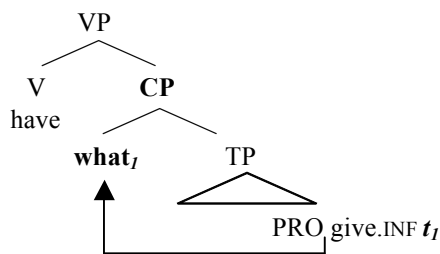
b.ʹ



43. a. Mam *co* *dać*.
I.have what.ACC give.INF
‘I have something to give.’

IFRs

b. ...



Given that IFRs are *not* headed, it is not surprising that they allow multiple wh-pronouns in multiple wh-fronting languages (as noted by Rudin 1986; see also Grosu and Landman 1998), and it is not surprising that they allow coordination of wh-pronouns (44):

44. a. Nie mam **co** **i komu** prezentować w sieci.
not have what.ACC and whom.DAT present.INF in network
b. Imam **koga** **i zašto** okriviti.
have.1SG whom.ACC and why blame.INF

Polish

It is also not surprising that coordinated wh-pronouns in **IFRs** are *not* subject to the same restrictions as coordinated _{WH}RPs in **CFRs**. We have seen above (Section 3) that **CFRs** *disallow* coordination of two arguments (as shown in (45) and (47)) and that they are only possible with optionally transitive verbs (as shown in (46 a-d) and (48a-d) if one of the wh-phrases is a direct object).

45. *Jan pokazał **co(kolwiek)** **i komu(kolwiek)** Maria wysłała.
Jan showed what(ever).ACC and whom(ever).DAT Maria sent

Polish

46. a. Jan **je** **cokolwiek** **i** **kiedykolwiek** Piotr **gotuje**.
Jan eats whatever and whenever Piotr cooks
‘Jan eats whatever and whenever Piotr cooks.’

$V_{\text{main}}[_ (\text{DP})] V_{\text{emb}} [_ (\text{DP})]$

b. *Jan **używa** *cokolwiek i kiedykolwiek* Piotr mu **poleca**. *V_{main}[__DP] V_{emb}[__DP]
Jan uses whatever and whenever Piotr him recommends
'Jan uses whatever and whenever Piotr recommends to him.'

c. *Jan **je** *cokolwiek i kiedykolwiek* Piotr mu **poleca**. *V_{main}[__(DP)] V_{emb}[__DP]
Jan eats whatever and whenever Piotr him recommends
'Jan eats whatever and whenever Piotr recommends to him.'

d. *Jan **ocenia** *cokolwiek i kiedykolwiek* Piotr **gotuje**. *V_{main}[__DP] V_{emb}[__(DP)]
Jan evaluates whatever and whenever Piotr cooks
'Jan evaluates whatever and whenever Piotr cooks.'

47. *Petar šalje **što(god) i kome(god)** Marija pokaže. *Croatian*
Petar sends what(ever).ACC and to-whom(ever).DAT Marija shows

48. a. Petar jede **štogod i kadgod** Ivan kuha. V_{main}[__(DP)] V_{emb}[__(DP)]
Petar eats whatever and whenever Ivan cooks
'Petar eats whatever and whenever Ivan cooks.'

b. *Petar **ocjenjuje** što(god) i kad(god) Vid kupi. *V_{main}[__DP] V_{emb}[__DP]
Petar evaluates what(ever) and when(ever) Vid buys
'*Petar evaluates what(ever) and when(ever) Vid buys.'

c. *Petar **jede** što(god) i kad(god) Vid kupi. *V_{main}[__(DP)] V_{emb}[__DP]
Petar eats what(ever) and when(ever) Vid buys
'*Petar eats what(ever) and when(ever) Vid buys.'

d. *Petar **ocjenjuje** što(god) i kad(god) Vid kuha. *V_{main}[__DP] V_{emb}[__(DP)]
Petar evaluates what(ever) and when(ever) Vid cooks
'*Petar evaluates what(ever) and when(ever) Vid cooks.'

By contrast, **IFRs** are possible with obligatorily transitive verbs (as shown in (49a) for Polish and in (49b) for Croatian), even when one of the wh-phrases is a direct object.

49. a. Mam **co i kiedy** **używać**. *Polish*
have.1SG what.ACC and why fix.INF

b. Imam **koga i zašto** **prijaviti**. *Croatian*
have.1SG whom.ACC and why report.INF

IFRs are also possible with two argument wh-phrases:

50. a. Mam **co i komu** pokazać. *Polish*
have.1SG what.ACC and whom.DAT show.INF

b. Nemam **što ni kome** reći. *Croatian*
not-have.1SG what nor to-whom say.INF

IFRs allow wh-coordination 'proper', as we predict. The absence of a head makes it possible for _{WH}RPs to bear different indices.

6. CONCLUSION

- With respect to wh-coordination, relative structures behave differently from wh-questions.
- Even in MWH languages, coordination of _{WH}RPs proper is disallowed because such coordination leads to ill-formedness motivated by independent principles of the grammar (SCO, CSC).
- These effects arise due to the presence of a head.
- Irrealis free relatives, by contrast, allow wh-coordination, which is expected due to the absence of the head.

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