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Questions on questions and free relatives

I. MAIN THESIS

(1) The FRs as shifted Qs Hypothesis

i. Free Relatives (FRs) are compositionally derived from Questions (Qs)

ii. The derivation takes place in two steps:
- A TP ('Topical Property') operator that extracts properties from questions
  TP(what John cooked?) = λx . John cooked x (roughly)
- A D_{REL} (determiner like) operator that shifts properties into DPs

iii. TP may also be involved in generating the so called 'short answers' to Qs

Example:
a. John ate what was on his plate
b. John ate D_{REL}(TP(what was on his plate?))
c. John ate the things that constitute the short answer to the question what was on his plate.

(2) Main arguments for the thesis in (1)

a. Caponigro's generalization on wh-words [cf. (3) below]

b. Distribution of definite/universal vs. existential FRs
i. [During his visit to France]
John went where Pierre had recommended him to go
= John went to the place/all the places which Pierre recommended
ii. John went where he could get help
= John went to some place(s) where he could get help
≠ John went to (all) the place(s) where he could get help
iii. La mattina c'e' chi mi prepara il caffe' [L. Battisti, *Anna*]
In the morning there is who makes me coffee [substandard in E]
In the morning there is someone/people who make me coffee

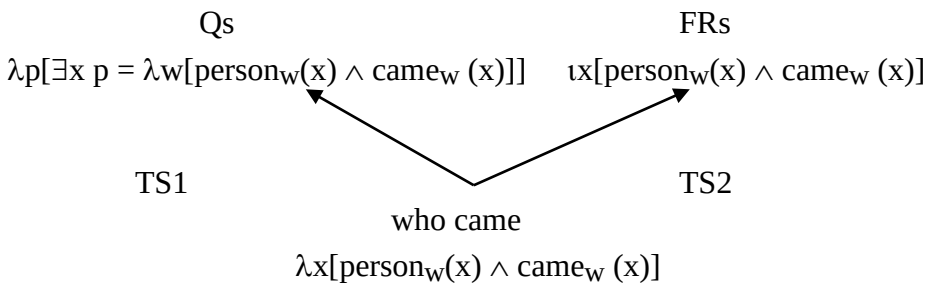
c. Distribution of Free Choice Free Relatives
- All 'simple' FRs have a Free Choice (FC) *ever*-variant:
  i. John ate whatever was on his plate
- 'Complex' FRs do not exist; complex *ever*-variants do exist
  ii. * John ate which dish Mary cooked
  iii. John ate whichever dish Mary cooked

(3) Caponigro's Generalization [CG -- Caponigro 2003,2004]
If a language uses the wh-strategy to form both Qs and FRs, the wh-words found in FRs are always a subset of those found in Qs. Never the other way around. Never some other arbitrary relation between the two sets of wh words.
Exemplification from English, Italian and Mixtec:

TABLE 1.
Use of wh-words in wh-questions (wh-Qs) and free relatives (FRs) in three languages

English	*who*	*what*	*where*	*when*	*how*	*how much*	*why*	*what*+NP *which*+NP	*how much* +Adj/Adv
wh-Qs	√	√	√	√	√	√	√	√	√
FRs	√/*	√	√	√	√	*	*	*	*
Italian	*chi*	*cosa*	*dove*	*quando*	*come*	*quanto*	*perché*	*che*+NP *quale*+NP	*quanto* + Adj/Adv
wh-Qs	√	√	√	√	√	√	√	√	√
FRs	√	% G:* I: √	√	√	√	% G: √ I: ??	*	*	*
Nieves Mixtec	*yo*	*ndyakua*	*ndyaa*	*ndyanama*	*ndyxi*	*najaa*	*nava'a*	*ndya*	*najaa*
wh-Qs	√	√	√	√	√	n/a	√	√	√
FRs	√	√	√	√	√	n/a	*	*	√

(4) A traditional approach
Wh-clauses denote λ–abstracts, i.e. properties/sets (Groendijk and Stokhof 1983, Jacobson 1995, among many others). Then there are two distinct type shifting devices TS1 and TS2 that derive Qs and FRs respectively.



(5) Problems with the traditional G/S/J approach

a. It makes wrong predictions with respect to CG

b. The existence and distribution of existential FRs is a mystery.

Re (a):

c. Suppose that TS1 and TS2 are structure preserving (i.e. they affect only meaning).

If they are *partial* functions (i.e., for whatever reasons, undefined for some of their inputs), then there could be any relation between wh-words in questions and wh-words in FRs. For example, in some language TS1 could be defined for a *subset* of the cases for which TS2 is defined (and hence the wh-words in questions would be a subset of those in FRs—the opposite of CG). In some other language, they could be defined over disjoint sets of abstracts.

Re (b):

d.i. Usually, the fact that a maximality ι–operator is used to construct FRs is justified on grounds of naturalness/meaning preservation or the like. From this point of view, existential FRs should not exist.

ii. Suppose that FRs are introduced via some variant of TS2 that creates genuine existential terms. If this is so, there is no reason to expect any correlation between FRs and the inner structure of the wh-abstract. Yet, there seems to be. The presence of a modal of possibility within the wh-abstracts systematically makes the existential construal available. Cf. the contrast between (2c.iv), which is a maximal FR and (2c.v), which is existential.

II. THE CORE PROPOSAL

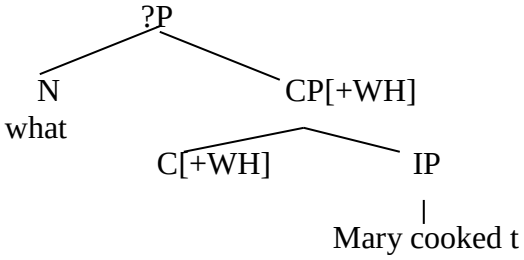
(6) Syntax

While not wedded to it, we adopt a (slight variant) of Cecchetto and Donati (2013)

a. John ate what Mary cooked

b. i. what Mary cooked

ii.



c. Copy merge applies blindly. The result is labeled through a general algorithm.

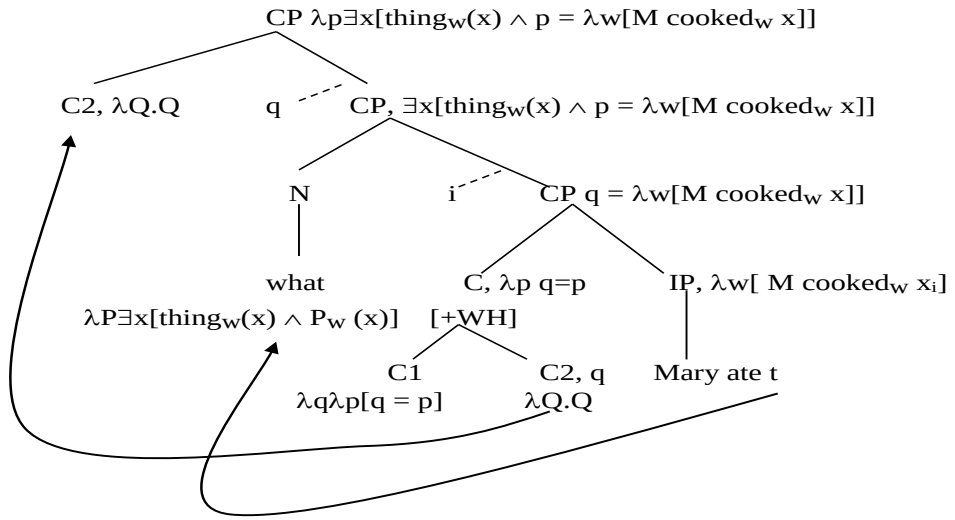
i. An 'attractor' (CP in this case) projects

ii. A lexical item (N in this case) projects

iii. In case of conflict, both outcomes are legit.

iv. If C projects, we get a Q

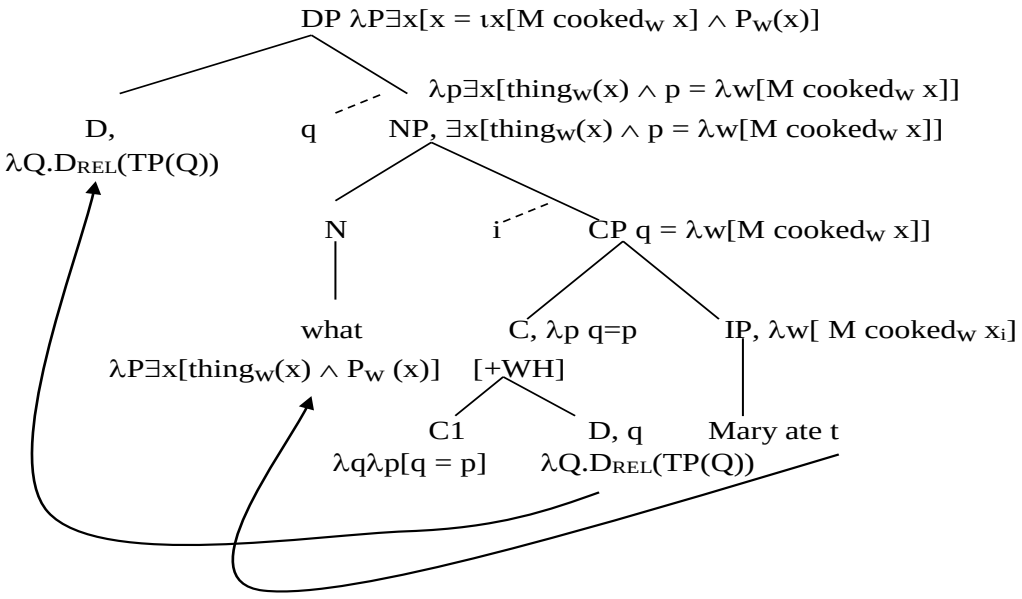
d. **Wh-Interrogatives**



(i) Movement is driven by type mismatches; moving an element leaves a variable of the appropriate type behind; the index on the moved item is interpreted as a lambda abstractor (Heim and Kratzer)

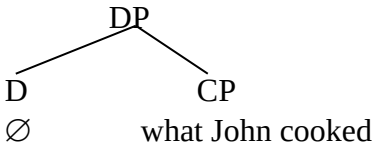
(ii) Interrogative Comps are made up of two operators (corresponding to two interrogative heads). C1 creates a protoquestion (Karttunen , as modified by von Stechow; cf. also Dayal). C2 is the abstractor that forms the actual question meaning. C2 cannot be interpreted in situ and so it must be copy merged to the top CP.
[We are following the theory of head movement by Junri Shimada].

e. **Free relatives**



Assumption: selection of the second operator (C2 vs. D) is a matter of agreement [D and NP must agree]

f. Other possibilities include:



(7) How to go from Qs to a nominal meaning

The problem:

- How do we get from a set of propositions to a (possibly plural) individual (or to a Generalized quantifier GQ_e over individuals)?
- How do we form short questions from Karttunen type Qs?

a. Main ingredient: A Dayal-style answerhood operator [to be slightly modified below]:

$Ans_w(Q) = \iota p \in Q[p_w \wedge \forall q \in Q\ [q_w \rightarrow p \subset q]]$

b. Topical properties of Qs

$\lambda P \forall w \forall x[\ P_w(x) \leftrightarrow \lambda w' P_{w'}(x) = Ans_w(Q)]$ P a variable of type <s,<e,t>>

For any w, x, P holds of x in w iff the proposition that x is P is the true answer in w to Q.

(8) An example

a. i. what Mary cooked

ii. H/K-denotation =

{M cooked a∪b∪c
M cooked a∪b, M cooked b∪c, Mary cooked a∪b
M cooked a, M cooked b, M cooked c}

Assumptions:

- a fixed domain with three individuals
- plural predication is interpreted distributively at the level of the (lowest) trace:

$P(a \cup b) = P(a) \wedge P(b)$

b. A topical property for (a):

$TP(a) = \lambda w \lambda x[M\ cooked_w\ x \wedge \forall y[\ M\ cooked_w\ y \rightarrow y \leq x]$

(undefined for worlds in which it has an empty extension)

or equivalently

$= \lambda w \lambda x[x = \iota x[M\ cooked_w\ x]]$

c. $TP(a)_w\ (a \cup b)$ iff Ans_w(what M cooked) = $\lambda w' P_{w'}(a \cup b)$.

(9) Topical Properties are unique (up to logical equivalence)

Sketch of a proof:

Suppose there are two distinct P, P' that satisfy (7b). Since they are distinct, there would have to be some w*, y such that $P_{w}*(y) \neq P'_{w}*(y)$. But then one of the following would have to be false:

i. $\lambda w' P_{w}'(y) = Ans_{w*}(Q)$

ii. $\lambda w' P'_{w}'(y) = Ans_{w*}(Q)$

If so, (7b) would not hold of both P and P', contrary to hypothesis.

(10) Defining Ans^{S} (short answer) and D_{REL} out of TP

a. $Ans^{S}_{w}(Q) = \iota x[[TP(Q)]_{w}(x)]$ type e

[very rough first approximation: reconstruction and pied piping need to be taken into account]

b. $D_{REL}(Q) = \lambda P \exists x[[TP(Q)]_{w}(x) \wedge P_{w}(x)]$ type GQ_{e}

where $TP(Q) = \iota P \forall w \forall x[P_{w}(x) \leftrightarrow \lambda w' P_{w}'(x) = Ans_{w}(Q)]$

- TP(Q) is well defined because Topical Properties (typically) exist, and when they do they are unique
- TP(Q) is a singleton property. Whenever TP(Q) is defined (i.e. in all and only the worlds in which Q has a true answer) it holds of exactly one (maximal) individual. This is inherited from Ans.
- [For a related, but different take on short answers, consistent with G&S question denotations, cf. Gronendijk and Stokhof (1989)]
- Ans is total (all questions have short answers); D is partial (not all questions yield FRs), for reasons to be determined.

(11) Example

a. John ate [$_{DP}$ what [$_{CP}$ Mary cooked t]]

b. John ate D_{REL}(TP(what M cooked t)) = $\exists x[x = \iota x$ M $cooked_{w}$ x $\wedge$ J ate_{w} x]

III. EXPLAINING THE PROPERTIES OF FRS

(12) Explaining Caponigro's Generalization
("FRs are always introduced by a subset of the wh-words introducing wh-Qs")

a. Our proposal:

TP + D_{REL}

b. Two immediate consequences:
i. The wh-words in FRs cannot be a superset of those in Qs
ii. If REL is partial (for whatever ever reasons), the wh-words in questions will be a subset of those found in Qs.

c. REL *is* typically partial; why?
i. * I saw which girl you saw
ii. * I did it why you did it
iii. % Ho mangiato cosa ha cucinato Maria [GC: *; IC: √]
(I) ate what Mary cooked

d. Problem (c) is common to the present proposal and the G/S/J approach. But that approach is also readily compatible with the existence of languages that violate CG, while the present approach is not.

(13) Sources of partiality

a. Cecchetto and Donati: Phrases that are not attractors do not project
(cf. also Chomsky 2013)

b. Consequence: no 'complex' FRs:
i. * I saw which boy you saw
[this is an advantage of Cecchetto and Donati's analysis over its competitors]

c. A consequence of (a): (ii) cannot be a FR.
ii. I saw whichever boy you saw
(ii) must be a normal headed relative; *whichever* must be a regular (free choice) D; its analysis could be pretty close to that of Italian *qualunque*, which has the very same morphological make up (for an analysis of *qualunque* see, e.g., Chierchia 2013).

d. Evidence in favor in (c):
iii. You may read whichever of those books
iv. John would go out with whichever woman
v. John would read whichever book <u>that</u> he happened to put his hands on
(cf. * John would read whatever <u>that</u> he happened to put his hands on)

(14) **Further possible sources of partiality**

a. Semantic (sortal) restrictions
Perhaps the existential quantifier in D_{REL} cannot range over propositions
i. * I did it why you did it
This could be also morphological blocking (by *because*); however, why FR are typologically non existing or extremely rare.

b. Featural/agreement restrictions

ii. Ho mangiato cosa ha cucinato Maria IC: √; GC: *

IC: $D_{REL[-\ ANIMATE]}$ GC: * $D_{REL[-\ ANIMATE]}$

(15) A further prediction

a. If there is something wrong with a Q (suppose, e.g., that a Q is 'unanswerable'), then there should be something wrong with the corresponding FR.

b. Negative islands.

i. ? Where did nobody go?

ii. ? What don't you know?

iii. ?*How did nobody fix the car?

c. Captain Kirk went where nobody had gone before

Normally, FR are maximal. However, (c) doesn't seem maximal

i. Captain Kirk went to some (special) place or places where nobody had been

ii. * Captain Kirk went to all the places where nobody had been

d. Negative islands become good if the wh-phrase is anchored to a specific domain D. Under those circumstances, the corresponding FR will be acceptable.

e. $\exists x \in D[\ x = \iota y \in D[\text{nobody had gone to } y\ \wedge \text{K went to } x]$

The existential 'feel' comes from uncertainty as to the exact identity of D

f. Evidence of definiteness

* There is where nobody went. (cf. She liked [where nobody had gone before])

If *where nobody went* is a plain existential in (c) what would prevent it from occurring in there-sentences?

(16) Existential constructions.

a. Non c'era chi volesse cucinare

There wasn't who wanted to cook

'There wasn't anybody who wanted to cook'

c. Non ha trovato chi le tenesse i bambini

(he) did not find who would keep the children

'He didn't find anybody who would take care of the children'

d. Ieri c'e' stato chi ha protestato

Yesterday there-has been who has protested

'Yesterday there were <u>people</u> who protested.'

But:

e. Il governo ha messo in prigione chi ha protestato

The government has put in prison who has protested

'The government has imprisoned <u>the people</u> who protested'

What is the difference between Italian and English?

Why is *chi ha protestato* 'who protested' maximal in (e) but existential sounding in (d)?

(17) Barwise and Cooper (1981) on there-sentences

a. There is NP = NP exists
b. *There is NP* is deviant if *NP exists* is tautologous or contradictory (i.e. if NP is pos or neg strong).

(18) The existential presupposition of wh-Qs

Wh-Qs have an existential presupposition:
a. *I am not sure that someone stole the cookies. But I want to know who did
But such presupposition is rather weak:
b. A: Who stole the cookies? B: Nobody
- strong existential presupposition: must hold for both speaker and hearer
- weak existential presupposition: must hold only for speaker
c. TP(Q) is presuppositional: defined only in worlds where Ans is defined.
This suffices to account for English:
- D_{RELw}(TP(Q)) comes out as pos strong. For
every world w in which Ans_w(Q) is defined, D_{RELw}(TP(Q))(exists) is true.

(19) The Italian case

a. Background: Every partial function f (of a conjoinable type) has a natural completion ^{C}P, where for every x if P(x) is defined, then ^{C}P (x) = P(x) and if P(x) is undefined, ^{C}P(x) = 0

b. Italian existential predicates:
If D_{RELw}(TP(Q))(exists) is undefined and D_{RELw}(TP(Q)) is weakly presuppositional, then use $^{C}D_{RELw}$(TP(Q))(exists)

c. Examples
i. * C'é ogni soluzione a questo problema
ii. *every solution to this problem*(*exist*): undefined, because *every solution to this problem* is strongly presuppositional
iii. C'e chi ha protestato
iv. $^{C}D_{REL}$(TP(who protested))(exist): defined, because D_{REL}(TP(who protested)) is weakly presuupositional (an inheritance from Qs) and therefore completions in existentials are allowed.
v. Il governo non ha arrestato chi ha protestato.
The government didn't arrest who protested.
Completion with ordinary predicates is disallowed; hence (v) only gets a presuppositional interpretation
Note:
- this makes it crucial that things like *where nobody went* (as we predict) is never purely existential/presuppositionless
- treating FRs as maximal presuppositional generalized quantifiers makes all of this rather smooth.

(20) Balance on existential constructions

Some of the basic maneuvers proposed here have a counterpart on the G/S/J line. Some, however, do not .

(E.g. the inheritance of the presuppositional properties of FRs from Qs; why would wh-abstracts have any presupposition at all?).

(21) 'Mention Some'-questions

a. Where did John get the beer?

i. At Trader Joe's ii. At trader Joes and at College Liquors

b. Where can John get beer?

i. At TJ's ii. At TJ's or at CLs iii. At TJ's and at CLs and…

c. Main properties of MS-questions:

- The answer can but doesn't have to be (and typically it is not) construed exhaustively
- Disjunctive answers are natural and do not indicate lack of info
- Lists are possible
- 'Complete answers' can be conjunctive or disjunctive

c. Who can serve on this committee?

i. one or two assistant professors and three full professors

ii. Who among Bill, Mary and Sue can serve on this committee?

Either only Bill or only Mary or both Bill and Mary

Note that (ii) has to be interpreted 'conjunctively', i.e. in a 'Free Choice' manner: John can serve by himself, and Mary can serve by herself, and also John and Mary can serve together (and no other possibility is allowed).

(22) Against a pragmatic account

In context, virtually any question seems to admit a MS answer:

a. (Uttered to a class by a teacher): Who has a pen? John

Some pragmatic account of this phenomenon seems unavoidable. But:

Modals of possibility systematically allow MS readings, with little or no context.

Modals of necessity do not (although they admit of disjunctive answers that feel 'complete').

b. What must you read for this class? [Benjamin Spector]

i. Syntactic Structure and Aspects

ii. Syntactic Structure or Aspects

Morover, singular which-phrases with modals of possibility systematically disallow MS readings:

c. i. where can John get gas?

ii. at which station can John get gas?

Facts strongly suggest that MS questions are not a purely pragmatic phenomenon.

(23) Standard notions of answerhood do not give the right results for MS questions.
[Skippable by those who are willing to believe it]
a. who can serve on this committee?
Standard H/K-Q (for domains with plurals):
{ ◊ serve(a), ◊ serve(b), ◊serve(c)
◊serve(a∪b), ◊serve (b∪c), ◊ serve(a∪c)
◊ serve(a∪b∪c) }
where ◊ serve(a∪b) = ◊[serve(a) ∧ serve(b)], etc.
b. In a world where a can serve, and b can serve, but a and b cannot serve together, Ans (as defined in (7a)) would (wrongly) be undefined.

c. Spector's approach to modalized Qs: close H/K-Q under meet (conjunction) and join (disjunction).
i. S-Q = {∪S: S ⊆ H/K-Q} ∪{ ∩S: S ⊆ H/K-Q} S-Q = Spector Qs
ii. { ◊ serve(a), ◊ serve(b), ◊ serve(a) ∧ ◊ serve(b), ◊ serve(a) ∨ ◊ serve(b), ◊[serve(a) ∧ serve(b)],… }
Ans extended to S-Qs could yield something adequate to contexts like (b), namely:
iii. Ans(S-Q) = ◊ serve(a) ∧ ◊ serve(b)
But it does not explain why
- where MS answers come from
- why they are easy to get with modals of possibility but not with modals of necessity
- why the 'better sounding' answers have a disjunctive form
d. Balance:
Questions with modals require a substantive elaboration of the standard theory. The few known elaborations (e.g. Spector's) do not readily extend to explaining the MS phenomenon.

(24) A reasonable (?) strategy
a. Stick to basic H/K-Questions (at least as one available option)
b. Modalized H/K-Questions are unanswerable.
c. When questions are unanswerable, there is a rescue strategy that involves existential quantification over answerable subquestions.
d. There also are/may well be extensions of H/K-questions (a la Spector). But they deliver complete, modalized disjunctive/conjunctive answers, as they case may be.
[Antecedents/inspirations Fox (2013), Nicolae (2013); more remotely G&S on quantifying into questions]

(25) A quasi implementation [warning: several variants are possible/conceivable]

a. Step 1: modify slightly Ans_w

$Ans_w(Q) = \iota p \in Q[p = \cap Q_w]$, where $Q_w = \{p \in Q: p(w) = 1\}$

b. Step 2: An economy condition

If $Ans_w(Q)$ and $Ans_w(Q')$ are both defined and Q is singular (formed out of which-phrases) and Q' is not, Q has to be used

c. Step 3: whenever $Ans_w(Q)$ is totally undefined (i.e. undefined in every w), shift Q to an (existential) generalized quantifier over questions GQ_Q:

$\lambda P \exists Q'[Q' \subseteq Q \wedge P_w(Q')]$

[caveat: the notion of subquestion may need elaboration
cf. Beck and Sharvit xx]

(26) How it works.

a. Singular wh-phrases: which professor can serve on this committee?

H/K-Q = { ◊ serve(a), ◊ serve(b), ◊serve(c)} [via Dayal]

$Ans_w(Q)$ is only defined in worlds where just one person can serve.
Prediction: singular wh-questions presuppose singular answers
[The good consequences of Dayal's Ans are still there]

b. Number neutral wh-phrases: who can serve on this committee?

H/K-Q = (21a)

$Ans_w(Q)$ would be defined only in worlds in which just one person can serve. But in such a case a singular question has to be used, by the economy condition in (23b). Hence, $Ans_w(Q)$ is never defined for number neutral modalized Qs (but it is defined for unmodalized ones]

c. John knows/wonders who can serve on this committee

$\exists Q'[Q' \subseteq [\lambda p \exists x[p = \lambda w \Diamond serve_w a]] \wedge know/wonders_w (j, Q')]$

= There is some subquestion Q' of *who can serve on this committee?* and John knows/wonders Q'

(27) Generalizing REL from simple Qs to GQ_Q

a. Step 1: via Partee's BE we 'reconstruct' the question

i. $BE(Q) = \lambda q\, Q(\lambda p\, [p = q])$

ii. $BE(\lambda P \exists Q[Q \subseteq \lambda p\, \exists x[\, p = \lambda w \Diamond serve_w a] \wedge P(Q)]) = \lambda p\, \exists x[\, p = \lambda w \Diamond serve_w a]$

b. Step 2: Extract the TP from Generalized Quantifiers over Qs

[Note: we cannot proceed as in the basic cases not only for type theoretic reasons, but because Ans is undefined over modalized questions]

i. $TP(\Pi) = \iota P \forall w \forall x[\, P_w(x) \leftrightarrow \exists p \in BE(\Pi)[\, p(w) = 1 \wedge \lambda w' P_{w'}(x) = p]$

Example:

ii. $TP(\lambda P \exists Q [\, Q \subseteq \lambda p\, \exists x[\, p = \lambda w \Diamond serve_w a] \wedge P(Q)]) = \lambda w \lambda x \Diamond serve_w x$

c. Step 3: make D_{REL} type ambiguous for basic Qs and Generalized Quantifiers

over Qs

i. D_{REL} (Δ) = $\lambda P \exists x[\ [TP(\Delta)]_w(x) \wedge P(x)]$,
where Δ ranges over Qs or generalized quantifiers over Qs

Examples:

ii. D_{REL}(TP(who served on that comm.)) = $\lambda P \exists x[x = \iota y[y\ served_w$ on c $\wedge$ P(x)]]
PLAIN Q [maximal/presuppositional]

iii. D_{REL} (TP(who can serve on comm.)) = $\lambda P \exists x [\ \Diamond\ serve_w\ x \wedge P(x)]$
GQ_Q [non maximal/presuppositional]

(28) The general picture

Questions	DPs	
Q →	GQ_e [Maximal/presuppositional]	what helped
↓		
GQ_Q →	GQ_e [Non Maximal]	what can help
Parametric switch		
GQ_e	[Maximal/presuppositional]	??There was who protested
↓		
$^{C}GQ_e$	[Maximal/non presuppositional]	C'e' stato chi ha protestato

(29) Main morals so far

i. There is as systematic dependency between the inner form of a wh-clause and its interpretation as a question or as a relative clause: a modal triggers a MS interpretation of questions and an existential interpretation of FRs

ii. We claim that this ultimately depends on the fact on that maximal answers are harder to define for modalized questions.

iii. But this means that an answerhood operator must be involved in deriving both Qs and FRs, which makes sense only if FRs are derived from Qs

IV. SECOND ORDER FREEDOM: FREE CHOICE FREE RELATIVES

(30) Background on FC

a. John may have ice cream or cake

b. i. $\Diamond [p \vee q]$ ii. $\Diamond p \wedge \Diamond q$ $[\wedge \neg\Diamond(p \wedge q)]$

c. i. you may have a cake ii. you may have any cake

(31) FC effects as implicatures

a. i. items are associated by grammar to a set of alternatives

ii. grammatically determined alternatives may pruned by the contex

iii. unpruned alternatives are factored into meaning through a process of exhaustification

b. i. Bill met Sue or Mark

ii. S-ALTs = {B met S $\vee$ B met M, B met S $\wedge$ B met M}

iii. $O_{S\text{-}ALT}$(i) = B met S $\vee$ B met M $\wedge \neg$ (B met S $\wedge$ B met M)

iv. $O_{ALT}(p) = p \wedge \forall q \in ALT[q \rightarrow p \subseteq q]$

c. Fox (2007) on FC

Step 1: disjuncts are among the alternatives (subdomain alternatives)

Step 2: subdomain alternatives may be construed exhaustively

i. You may have ice cream or cake

ii. D-ALTs = { you may have just ice cream, you may have just cake }

$O\Diamond$ you have ice cream, $O \Diamond$ you may cake

iii. You may ice cream or cake and it is not the case that you can have just ic nor is it the case that you can have just cake.

iv. other indefinites work the same way

d. Chierchia (2013) on Polarity Sensitive Items

i. PSIs have the same meaning and the same (grammatically set) alternatives (scalar and subdomains). But the alternatives of PSI cannot be pruned.

ii. * J had any cake

iii. O_{ALT}(J had a cake) = contradiction

iv. J may have any cake = $O_{ALT}(\Diamond$J have a cake) = $\Diamond$ J have c1 $\wedge \Diamond$ J have c2…

e. Some PSIs go with a null modal

i. Irgendein Student hat angerufen

ii. O [$\Box_s$ a student called] = $\Box_s$ a student called $\wedge \Diamond_s$ s1 called $\wedge \Diamond_s$ s2 called…

(32) FC FRs

a. i. John ate what was Mary cooked

ii. $\exists y \in D$[TP(what M cooked)(y) $\wedge$ J ate y]

iii. TP(what Mary cooked) = λx[x = ιy[M cooked y]]]

b. *Ever* does what FC morphology typically does: it signals that (D- and S-) alternatives cannot be pruned.

- In an episodic context, exhaustification leads to a contradiction

- The insertion of a (possibly null) modal rescues the structure and yields the FC effects with respect to the contextually salient modal base
- If the modal base is a speaker centered epistemic one, then we get the 'ignorance reading' (cf. Dayal xx, von Fintel xx, Condoravdi xx, among others).

Hence, the existence and behavior of FC FRs is to be expected (assuming that both the present take on FC and Chierchia (2013) are on the right track)

(33) An example

LF of (31a), assuming a domain D with two individuals closed under plural

a. $O_{ALT}\ \Box\ \exists x \in \{a, b, a \cup b\}[[TP(Q)]_w(x) \wedge P(x)]$

where TP(Q) = (31a.ii), P = λx John ate x and ALT is the union of Exh-D-ALT and S-ALT, as defined below:

b. D-ALT = $\{\ \Box\ \exists x \in D\ [[TP(Q)]_w(x) \wedge P(x)]: D \subseteq \{a, b, a \cup b\}\}$

c. Exh D-ALT = $\{\ O_{D\text{-}ALT}\ \Box\ \exists x \in D\ [[TP(Q)]_w(x) \wedge P(x)]: D \subseteq \{a, b, a \cup b\}\}$

d. S-ALT = $\{\ \Box\ \forall x \in \{a, b, a \cup b\}[[TP(Q)]_w(x) \wedge P(x)]\}$

e. $\Box\ \exists x \in \{a, b, a \cup b\}[[TP(Q)]_w(x) \wedge P(x)] \wedge \Diamond\ [[TP(Q)]_w(a) \wedge P(a)]$
$\wedge \Diamond\ [[TP(Q)]_w(b) \wedge P(b)] \wedge \Diamond\ [[TP(Q)]_w(a \cup b) \wedge P(a \cup b)]$

(34) Summary and conclusions

a. FRs are DPs with the same denotation as short answers to Qs
[REL is based on Ans and derives short answers for H/K- questions]

What we get:

b. An account for CG

c. The expectation that properties of Qs should have a direct reflex on FRs, such us:

i. Since Qs have an existence presupposition, so should FR

ii. The existence presupposition of Qs is weak (only speaker bound). This allows some language to weaken it in special environments, which would allow FR to occur in existential constructions

iii. When and only when Qs must be construed existentially (as in MS cases), so must FRs

d. Under the hypothesis that FRs are (maximal/presuppositional) existential terms, the existence and behavior of FC FRs arguably falls into place