John and possibly Mary: a reduced free relative analysis

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The issue

(1) Sue gave Ted and {possibly / unfortunately / I think / I suspect / #slowly / #carefully / *I'm surprised } Bill some flowers.

(2) John, Mary and {possibly / unfortunately / I think / I suspect / #slowly / #carefully / *I'm surprised } Bill met in the park.

'Collins conjunctions' (Collins 1988; also Schein 1992, Vicente 2013, Bogal-Allbritten & Weir 2017, Condoravdi et al. 2019 a.m.o.)

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'Collins conjunctions' (Collins 1988; also Schein 1992, Vicente 2013, Bogal-Allbritten & Weir 2017, Condoravdi et al. 2019 a.m.o.)

- Syntactically mysterious: adverbs modifying DPs, verbs (apparently) taking 'unusual' DPs as complement.
- Semantically mysterious: propositional adverbs and verbs, but (apparently) non-propositional/non-intentional modificands.

Further mysteries

- Only some adverbs/verbs (semantically): epistemic or evaluative (*possibly, I think, unfortunately* but #*slowly, carefully*)
- Only some verbs: *I think, I suspect*, **I'm surprised* (but OK: *John and surprisingly enough Mary*)

Following Vicente 2013 I term the adverbs/verbs which appear in this construction 'Interrupting Categories' or ICs.

Spoiler alert

(3) Sue gave Ted and possibly Bill some flowers.

(4) Sue gave $[_{\mathrm{FR}}$ Op_1 $[_{\mathrm{CP}}$ $[\mathrm{t}_1 \geq$ Ted] $\mathrm{and}_{\mathsf{clausal}}$ [possibly $\mathrm{t}_1 \geq$ Bill]]] some flowers.

(5) 'Sue gave some entity, which has Ted as a part and which possibly has Bill as a part, some flowers.'

(cf. Križ & Schmitt 2012, Haslinger et al. 2022 on the importance of *parthood* in these sentences; also cf. suggestions in Hirsch 2017:§9.4.)

Roadmap

- The various readings of CCs, and previous analyses
- ICs as modifiers inside free relatives (modifying covert clausal structure)
- CCs as across-the-board free relatives
- Relationship to fragment answers ++

Two readings

(Bogal-Allbritten 2013, Condoravdi et al. 2019, Haslinger et al. 2022)

Non-existentially-entailing/'weak'/'$\mathbf{E^-}$' reading

(6) John, Bill and possibly Mary danced in the quad.
= John and Bill danced in the quad, or John, Bill and Mary danced in the quad.
(No need for a third dancer for the sentence to be true.)

Two readings

Existentially-entailing/'strong'/'E$^+$' reading

(7) a. John and possibly Mary met in the quad.
= John and someone else, who might have been Mary, met in the quad.

b. L. jourdaniana is thought to have been a cross breed between a Lophophora and possibly Turbinicarpus. (Condoravdi et al. 2019)
= a cross breed between a Lophophora and something else, which may have been a Turbinicarpus.

c. Jews can't wear clothes made of wool and I think linen. (Vicente 2013)
= made of wool and something else, which I think is linen.

Collective predicates (*meet*, *be a cross breed between* etc.) with two conjuncts bring out the E$^+$ reading (cf. Schein 1992, Bogal-Allbritten 2013, Vicente 2013)

Two families of approach: (1) semantic

Semantic/non-clausal approach: thematic roles/argument structure are introduced DP-internally, and it's this that the adverbs etc. are modifying (e.g. Schein 1992, Condoravdi et al. 2019)

(8) $[\![[_{\mathrm{DP}}\ \text{AG Mary}]]\!] = \lambda w.\lambda e.\text{agent}(e)(\text{Mary})(w)$

(9) $[\![[_{\mathrm{DP}}\ \text{possibly}\ [_{\mathrm{DP}}\ \text{AG Mary}]]]\!]$
$= \lambda w.\lambda e.\exists w' R w.\text{agent}(e)(\text{Mary})(w')$
(description of an event e of which Mary is possibly the agent)

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- Requires non-standard assumptions about syntax of adverbs, where thematic roles/structure are introduced, and semantic composition ('delaying' saturation of the event argument)...
- ...none of which we might be too bothered about (maybe independent reasons to believe all of these things; maybe CCs are evidence for these things)

Two families of approach: (2) syntactic

. . . but there is a lot of evidence for true clausal structure in CCs!
Primarily from Vicente 2013:

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. . . but there is a lot of evidence for true clausal structure in CCs! Primarily from Vicente 2013:

- Clause-embedding verbs (*I think* etc.). . .
- . . . in some languages, with complementizers (Spanish, Polish, Hungarian, a.o.)

(10) Ana y creo *(**que**) Blas han salido de casa.
Ana and I.think **that** Blas have left from house
'Ana and I think Blas have left home.'

(NB that this distinguishes ICs from parentheticals, which lack complementizers.)

Two families of approach: (2) syntactic

- Island-sensitivity, too (Vicente 2013) – that is, no island boundary allowed within the IC:

(11) ?Sue gave Ted and Mary thinks Bill some flowers.

(12) *Sue gave Ted and I know a guy who thinks Bill some flowers.

Two families of approach: (2) syntactic

- Verbal ICs are the same predicates as can embed fragment answers:

(13) Who left? – I think/I suspect/*I'm surprised John.

- Suggests true clausal conjunction and ellipsis, à la Bogal-Allbritten & Weir 2017:

(14) Sue gave Ted and I think Bill some flowers.

(15) [$_{S1}$ Sue gave Ted some flowers] and [$_{S2}$ I think Sue gave Bill some flowers].

(16) [$_{S1}$ Sue gave Ted $\_\__1$] and [$_{S2}$ I think [Bill_2 [~~Sue gave~~ t_2 $\_\__1$]]] some flowers_1

Two families of approach: (2) syntactic

But clausal coordination + ellipsis fares poorly with collective or cumulative predicates (Condoravdi et al. 2019, Haslinger et al. 2022):

(17) a. John, Bill and possibly Mary met.
b. #John met, Bill met and possibly Mary met.

(18) (Haslinger et al. 2022)
a. John, Bill and possibly Mary ate five pizzas (between them).
b. $\Rightarrow$ John and Bill ate five pizzas between them or John, Bill and Mary ate five pizzas between them.
c. $\not\Rightarrow$ John ate five pizzas and Bill ate five pizzas and possibly Mary ate five pizzas (#between them).

Also doesn't obviously derive island-sensitivity. Some other approach needed to 'find the hidden clause'.

Side note on ellipsis

It's still very possible that clausal conjunction + ellipsis might derive some CC strings (à la Hirsch 2017)

- Difficult to rule that out given the availability of stripping:

(19) John gave Bill some flowers. Possibly some chocolate, too.

(20) John gave Bill some flowers, and possibly some chocolate (too).

But that can't be the derivation of all CCs, e.g. in subject position of collective/cumulative predicates.

Starting point: ICs without conjunction

Bogal-Allbritten 2013:

(21) a. Bill just ate possibly the best pizza in Amherst.
b. Andrew has possibly a dumb question.
c. The suffix was borrowed from maybe Arabic.

- Very natural with DPs denoting individual concepts (21a), maybe '?' (but attested) otherwise

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a. Bill just ate possibly the best pizza in Amherst.
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- Very natural with DPs denoting individual concepts (21a), maybe '?' (but attested) otherwise
- Only the E^+/'low scope' reading, not synonymous with (22).

(22)
a. Bill possibly just ate the best pizza in Amherst (but maybe he got run over on the way to the restaurant).
b. Andrew possibly has a dumb question (but he might just be waving his hand about).
c. Maybe the suffix was borrowed from Arabic (or maybe it's native).

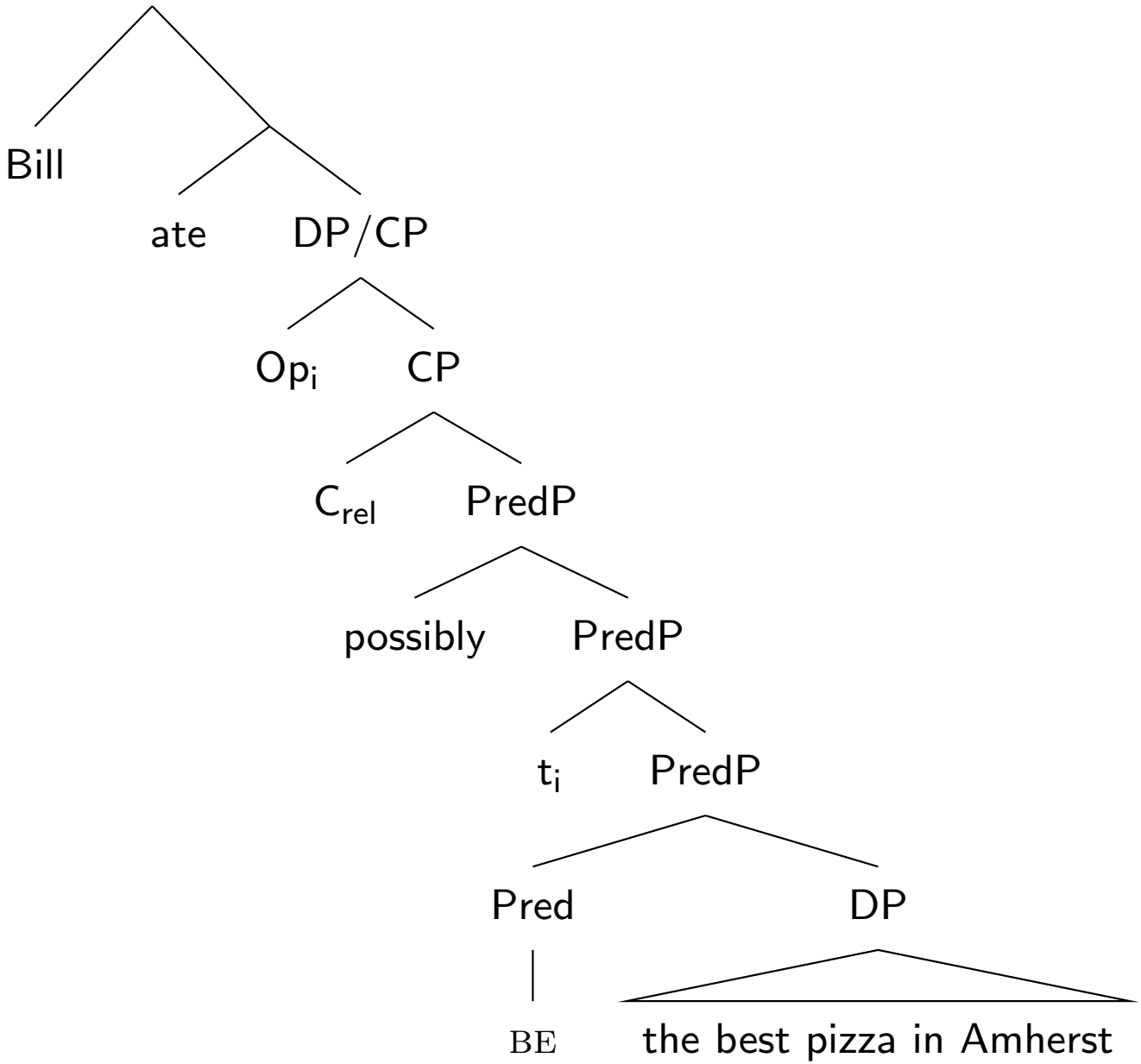
Starting point: ICs without conjunction

Bogal-Allbritten 2013: these are underlyingly something like transparent free relatives (Grosu 2003) with interpretations like (23).

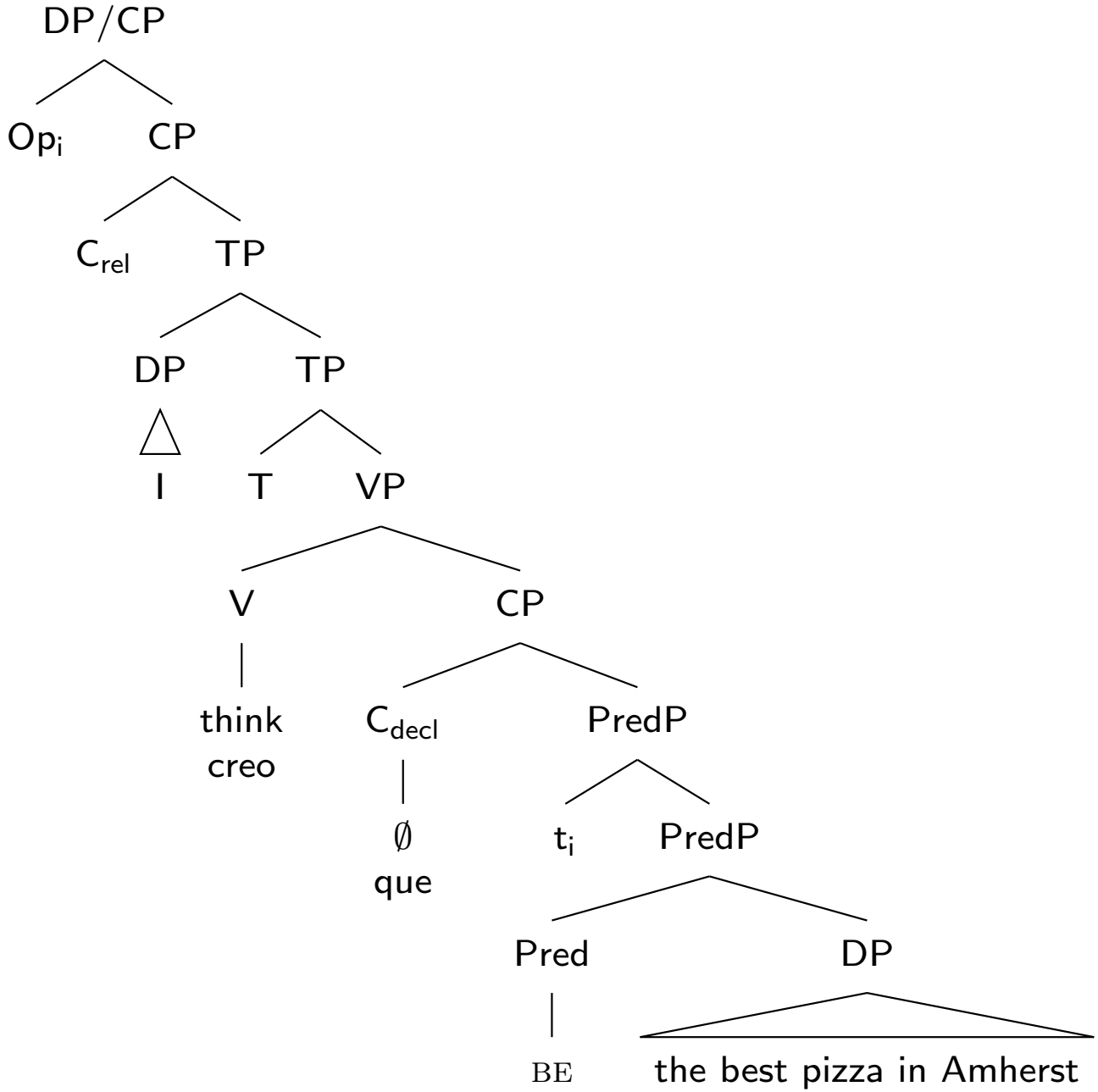
(23) Bill just ate something which is possibly the best pizza in Amherst.

- Bogal-Allbritten entertains various possibilities for the semantic and syntactic derivation of these structures.
- Because we are on the hunt for a hidden clause, I take the view that there really is underlying clausal free relative structure here.
  - Some precedent in den Dikken 2006's treatment of equative copular sentences: (*Cicero is Tully* $\approx$ [~~what~~ Cicero ~~is~~] is Tully)

Bill ate [possibly the best pizza in Amherst]



Bill ate [I think the best pizza in Amherst]



ICs without conjunction: structure

Bill ate. . .

(24) [$_{\text{DP/CP}}$ Op$_i$ [$_{\text{TP}}$ I think [$_{\text{CP}}$ [$_{\text{PredP}}$ t$_i$ $_{\text{BE}}$ the best pizza]]]]

(25) [$_{\text{DP/CP}}$ Op$_i$ [$_{\text{TP}}$ I know a guy [$_{\text{CP}}$ who thinks [$_{\text{CP}}$ [$_{\text{PredP}}$ t$_i$ $_{\text{BE}}$ the best pizza]]]]]

Movement of the FR operator = island-sensitivity. Compare:

(26) a. I ate what$_i$ I think t$_i$ is the best pizza in Amherst.
b. *I ate what$_i$ I know a guy who thinks t$_i$ is the best pizza in Amherst.

ICs without conjunction

This analysis:

- captures island-sensitivity and the other diagnostics of clausal structure;
- captures (on the assumption that the FR must refer, in the world of evaluation) the existential import of ICs outside of conjunctions (only strong reading)

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But what of ICs in conjunctions – which can have the weak/E^- reading?

(27) A nurse and possibly a doctor will be present.
$\not\Rightarrow$ A nurse and someone who is possibly a doctor will be present.
$\Rightarrow$ A nurse will be present and possibly a doctor will be present.

ICs with conjunction

Essential intuition (cf. Haslinger et al. 2022) parthood is important – an alternative paraphrase could be (29):

(28) A nurse and possibly a doctor will be present.

(29) An entity of which a nurse is a part, and a doctor is possibly a part, will be present.

ICs with conjunction

Essential intuition (cf. Haslinger et al. 2022) parthood is important – an alternative paraphrase could be (29):

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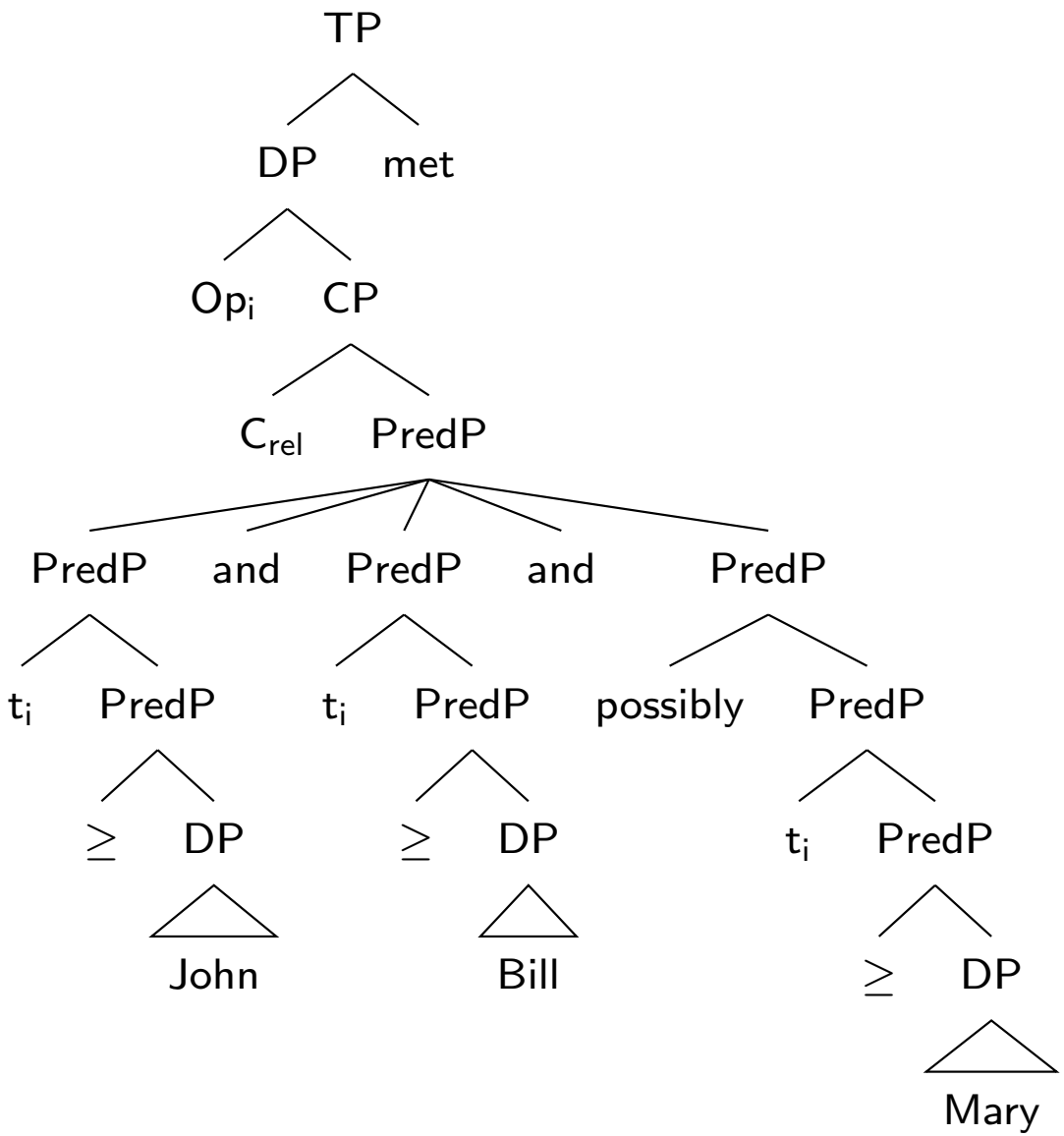
Proposal:

- there is an additional kind of copula, '$\textsc{contains}/\geq$', available in these 'small clause FRs'
- the operator in these FRs can move across the board, out of many clauses (parallel to (29))
- the conjunction is of the propositional cores of these FRs (i.e. Boolean/truth-functional)

‘John, Bill and possibly Mary met’



Semantic derivation

(30) $[\![\geq]\!] = \lambda x.\lambda y.\lambda w.y \geq x$ ('y contains x', 'x is a part of y')

(31) $[\![t_i \geq \text{John}]\!] = \lambda w.g(i) \geq \text{John}$

(32) $[\![\text{possibly } t_i \geq \text{Mary}]\!] = \lambda w.\exists w' R w.g(i) \geq \text{Mary}$

(NB (over?)simplifying assumption in (31): g picks out counterparts of the same index across possible worlds (cf. also Haslinger et al. 2022). Possibly traces really need to be of individual concept type, cf. Grosu & Krifka 2007. Whatever will eventually handle *something that was possibly the best pizza* will handle this.)

Semantic derivation

(33) $[\![t_i \geq \text{John and } t_i \geq \text{Bill and possibly } t_i \geq \text{Mary}]\!]$
$= \lambda w.g(i) \geq \text{John} \;\&\; g(i) \geq \text{Bill} \;\&\; \exists w' R w.g(i) \geq \text{Mary}$

(NB: truth-functional *and*)

Semantic derivation

(33) $[\![t_i \geq \text{John and } t_i \geq \text{Bill and possibly } t_i \geq \text{Mary}]\!]$
$= \lambda w.g(i) \geq \text{John} \;\&\; g(i) \geq \text{Bill} \;\&\; \exists w' Rw.g(i) \geq \text{Mary}$

(NB: truth-functional *and*)

(34) $[\![Op_i\ [t_i \geq \text{John and } t_i \geq \text{Bill and possibly } t_i \geq \text{Mary}]]\!]$
$= \lambda x.\lambda w.x \geq \text{John} \;\&\; x \geq \text{Bill} \;\&\; \exists w' Rw.x \geq \text{Mary}$
'A property of entities x s.t. John is a part of x, Bill is a part of x, and in some accessible world, Mary is a part of (that world's counterpart of) x.'

The above can be existentially closed to derive a (plural) entity which satisfies the property.

Concerned about overgeneration outside of conjunction? Ask in question period and/or see appendix.

Collective and cumulative predicates

(35) John, Bill and possibly Mary met. (weak or strong reading)

'A group of which John is a part, Bill is a part, and Mary is possibly a part met'.

(36) John and possibly Mary met. (strong reading only)

'A group of which John is a part and Mary is posssibly a part met.'
Strong reading enforced by the plurality requirement on the subject of *meet*.

(37) John, Bill and possibly Mary ate five pizzas (between them). (weak or strong reading)

'A group of which John is a part, Bill is a part, and Mary is possibly a part, ate five pizzas (between them).'

Some nice consequences

(38) a. John and probably Mary ran.
b. John and unfortunately Mary ran.
c. #John and slowly Mary ran.

- Not obviously predicted on the clausal ellipsis or thematic-role analyses...

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(38) a. John and probably Mary ran.
b. John and unfortunately Mary ran.
c. #John and slowly Mary ran.

- Not obviously predicted on the clausal ellipsis or thematic-role analyses...
- ...but predicted on this analysis
- because *probably* and *unfortunately* are sensible modifiers of $\textsc{contains}/\geq$, but *slowly* is not.

(39) A group of which John is a part and Mary is (probably/unfortunately/#slowly) a part, ran.

Some nice consequences

- Because the current analysis allows all DPs in conjuncts to have underlying clausal (free-relative) derivations, any sentential conjunction is predicted to be able to link (free relatives underlying) DPs, as long as they can also coordinate relative clauses.
- That seems right:

(40)
a. John or Mary (= an entity of which John is a part or Mary is a part)
b. John but not Mary (= an entity of which John is a part but Mary is not a part)

- . . . and that is surely worth exploring further, especially given the difficulties that e.g. *or* otherwise poses for interpretation when it (apparently) conjoins DPs.

Fragment answers

A general correspondence between CCs and embedded fragment answers (Vicente 2013):

(41) **Possible embedding predicates**
Who left? – I think/I suspect/*I'm surprised John.

(42) **Presence/absence of complementizer**
Who left?

a. I think (*that) John. (English, Dutch a.o.)

b. Creo *(que) John.
I.think that John
(Spanish, Polish, Hungarian – and also in CCs)

Part of the motivation for Bogal-Allbritten & Weir 2017's clausal-ellipsis analysis.

Fragment answers

Maybe embedded fragment answers are actually (declarative versions of) the small clauses we've already seen.

(43) Who left? $\rightsquigarrow \lambda w.\iota x.x$ left in w

(44) I think John.

(45) I think $[_{\mathrm{CP}}\ [_{\mathrm{PredP}}$ John $\mathrm{BE}\ \Delta]]$
where $\Delta = \lambda w.\iota x.x$ left in w

But many issues to work out here concerning syntactic connectivity effects in fragment answers (e.g. Case matching). Possibly a kind of specificational pseudocleft with an independently available ellipsis process? ($\approx$ den Dikken et al. 2000)

(46) I think $[_{\mathrm{CP}}\ [_{\mathrm{PredP}}$ [~~who left~~] = [John ~~left~~]]]

Selectional restrictions

- Any (semantically appropriate) adverb is OK in both a CC and a fragment answer, but only some verbs can be ICs.
- The selectional restrictions seem syntactic, somewhat stipulative, cross-linguistically variable (Weir 2014), not easily reducible to semantics (pace Weir 2014); compare:

(47) Who left?

a. Surprisingly enough Mary.
b. *I was surprised Mary.

(48) a. John and surprisingly enough Mary left.
b. *John and I'm surprised Mary left.

Selectional restrictions

This can be encoded in a brute-force way: only certain predicates can select for the kind of small clause headed by these null copulas ($\textsc{be}$ and $\geq$)

(49) John and I think/*I'm surprised [$_{\textsc{cp}}$ [$_{\textsc{predp}}$ Op$_i$ $\geq$ Mary]]

We in any case need to restrict which verbs can embed which kinds of (small) clauses:

(50) a. ??I believe Mary clever.
b. I believe Mary to be clever.
c. I believe that Mary is clever.

Remaining (considerable) questions

How do we get a restrictive theory...

- ...of silent free relative Op? (doesn't appear elsewhere in English? cf. **I'll eat *(what) you cook*)
- ...of the distribution (and inventory) of silent copulas?
- ...of CP layers atop 'small' predications?

Conclusion

(51) Sue gave Ted and possibly Bill some flowers.

(52) Sue gave $[_{\mathrm{FR}}$ Op_1 $[[\mathrm{t}_1 \geq \mathrm{Ted}]$ $\mathrm{and}_{\mathrm{clausal}}$ [possibly $\mathrm{t}_1 \geq \mathrm{Bill}]]]$ some flowers.

(53) 'Sue gave some entity, which has Ted as a part and which possibly has Bill as a part, some flowers.'

Appendix 1: minimization of groups

Apparent overgeneration: #*John met* can't mean 'some plural entity of which John is a part met', but that's predicted to be a possible reading.

Thanks to a reviewer.

Possible idea: the FR contains a minimizing component:

(54) $[\![\text{Op } t_i \geq \text{John}]\!] = \lambda P.\exists x.x \geq \text{John} \ \& \ (\neg\exists y.y < x \ \& \ y \geq \text{John}) \ \& \ P(x)$

'there is a group x, of which John is a part
there is no group smaller than x of which John is a part
and (the scope/main clause is true of x)'

Such a minimal group would be the group consisting of John and no-one else, so not a felicitous argument of collective *meet*.

Appendix 1: minimization of groups

Could *-ever* free relatives be the universal version of this (cf. Tredinnick 2005 for *whatever*-FRs as universal quantifiers)?

(55) $[\![\text{whatever John cooked}]\!] = \lambda P.\forall x.(\text{cooked}(x)(\text{John}) \;\&\; (\neg\exists y.y < x \;\&\; \text{cooked}(y)(\text{John}))) \rightarrow P(x)$

'for all x, if John cooked x and there's nothing smaller than x that John cooked, then (the scope is true of x)'

(56) I ate whatever John cooked
= I ate all the individual, tinyest things that John cooked.

Wh-ever does seem to distribute down to atoms, modulo ignorance readings:

(57) Whoever came to the party lifted the piano.
(collective reading possible on 'ignorance' reading, only distributive ('everyone had a go') without ignorance reading)

But lots to reckon with here concerning the (potential) modal (ignorance or indifference) contribution of *ever* (Jacobson 1995, Dayal 1997, Šimík 2018 a.m.o.).

Appendix 2: ICs without conjunction: semantic treatment

(Bogal-Allbritten 2013)

(58) $[\![\text{the best pizza}]\!] = \lambda w.$ the best pizza in w

(59) $[\![\textsc{identify}]\!] = \lambda \mathcal{X}_{\langle s,e \rangle}.\lambda y_e.\lambda w.\mathcal{X}(w) \equiv y$ (Frana 2010)

(60) $[\![t_i \textsc{ identify} \text{ the best pizza}]\!]^g =$
$\lambda w.g(i) \equiv$ the best pizza in w

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(62) $[\![Op_i \text{ possibly } t_i \textsc{ identify} \text{ the best pizza}]\!] =$
$\lambda x.\lambda w.\exists w' R w.$ the counterpart of x in $w' \equiv$ the best pizza in w'

Can existentially close the above, e.g. with a choice function, to derive an individual which satisfies the property.

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