Sentential and possibly subsentential modification: the ambiguity of Collins conjunctions[*]

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1.   Introduction

We consider the structure and meaning of conjunction structures such as those in (1). Such structures were first discussed in detail by Collins (1988); following Vicente (2013), we call these structures *Collins conjunctions* or CCs.

(1)   a.   A doctor, a surgeon, and {**possibly / John suspects**} a nurse are in the office.
       b.   John ate tiramisu and **I think** the best pizza in town.

In such constructions, the final conjunct is 'interrupted' by an attitude verb or an epistemic adverb (bolded above); again following Vicente (2013), we term these verbs and adverbs *interrupting categories* or ICs.

The key puzzle that such structures pose is that ICs are expressions that are generally taken to be syntactically clause-level modifiers, which semantically operate over propositions. However, ICs seem to occupy a structurally subclausal position in CCs. Collins (1988) notes that ICs are prosodically integrated with the clause that they appear in, so they are unlikely to be analyzable as parentheticals. One way to reconcile this conflict is to invoke clausal ellipsis – 'conjunction reduction' analyses.

(2)   John ate tiramisu and I think ~~John ate~~ the best pizza in town.

However, recent analyses (Schein 1992, Vicente 2013) have argued that CCs do not involve ellipsis of full clausal structure in the way suggested in (2).

In this paper, we argue that structures like (2) are indeed available for CCs, but we add that this is not the only syntactic parse available. We propose that CC strings are generally ambiguous between two structures: one involving ellipsis of a full clause, as in (2), and

another structure in which composition with IC mediated by reduced relative clause structure, building on work by Bogal-Allbritten (2013, 2014). We argue that recognition of this ambiguity allows us to defuse arguments against 'conjunction reduction' accounts of CCs.

The paper proceeds as follows. In section 2, we step through evidence showing that CCs contain covert clausal structure of some kind. Section 3 motivates the existence of two separate parses for CCs, which we term the 'subsentential' and 'sentential' parses. Section 4 provides our analysis of the 'subsentential' parse, while 5 provides our analysis of the 'sentential' parse. In section 6 we rebut some counterarguments against a 'conjunction reduction' parse for CCs. Section 7 concludes.

2.   Diagnostics of silent clausal structure in Collins conjunctions

Interrupting categories in CCs seem to be in a structurally 'subclausal' position. However, as already noted by Vicente (2013), there are a number of diagnostics of clausal structure in CCs. In addition, CCs with verbal ICs (e.g. *John ate tiramisu and I think pizza*) show similar syntactic behavior, in various ways, to fragment answers, which have frequently been proposed to arise via clausal ellipsis (see Merchant 2004, Temmerman 2013, Weir 2014 a.o. for justification for this position):

(3)   a.   What did John eat? Salad./I think salad.
       b.   ~~John ate~~ salad/I think ~~John ate~~ salad.

To the extent that CCs show similar syntactic behavior to fragment answers, these similarities can be taken as evidence that CCs also are derived by a process of clausal ellipsis. In this section, we review some of these diagnostics of clausal structure and clausal ellipsis.

The first piece of strong evidence that clausal structure is present in Collins conjunctions is that clause-embedding verbs, such as *think*, can be interrupting categories.[1] Syntactically and semantically, such verbs normally take clausal complements, and so the null hypothesis is that this is what they are doing also in CCs. Furthermore, in at least some languages, complementizers obligatorily appear in CC structures.

(4)   Ana y   creo   *(que) Blas han salido de   casa.
       Ana and think.1SG COMP Blas have left   from house
       'Ana and I think Blas have left home.'
       (Spanish, after examples in Vicente 2013)

(5)   Alicja, i   myślę,   *(że) też Beata jadły   czekoladę.
       Alicja and think.1SG COMP also Beata ate.3pl.fem chocolate
       'Alicja and I think Beata ate chocolate.'
       (Polish, data from Barbara Tomaszewicz p.c. after examples in Vicente 2013)

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[1]This argument is adapted from Vicente (2013).

Note (as Vicente (2013) does) that examples like (4) militate against an analysis in which the interrupting category is parenthetical, as complementizers do not appear in parentheticals in these languages:

(6)   Ana ha salido de   casa, creo   (*que).
             Ana has left   from house think.1SG COMP
             'Ana has left home, I think.'

Assuming that complementizers only co-occur with clausal structure, the appearance of complementizers in CCs is strongly diagnostic of (silent) clausal structure. In addition to this, Vicente (2013) notes that there is a a correlation between languages that require a complementizer in embedded fragment-answer constructions, and those that require it in CCs. Vicente notes, for example, that Spanish, Polish and Hungarian require complementizers in both fragments and CCs; we show examples from Spanish and Polish here.

(7)   ¿Quién salió? – Creo   *(que) Juan.
             who   left   – think.1SG COMP Juan
             'Who left? – I think Juan.'

(8)   Kto jadł czekoladę? – Myślę,   *(że) Beata.
             who ate chocolate – think.1SG COMP Beata
             'Who ate chocolate? – I think Beata.'

English, by contrast (as well as languages like German and Dutch, not shown here), bans complementizers in both constructions.

(9)   a.   Who left? – I think (*that) John.
          b.   Alice and I think (*that) Bob left.

A further correlation between fragments and Collins conjunctions concerns the verbs which can participate in these constructions. Fragments can only be embedded under a certain subset of verbs, roughly speaking, bridge verbs like *think* or *believe* – but not non-bridge verbs such as *know* or clause-taking adjectives like *surprised* (de Cuba & MacDonald 2013, Temmerman 2013, Weir 2014).

(10)   A: Who left?

         a.   B: I {think/believe/hope} John.
         b.   B: I {??found out/??happen to know/*was surprised} John.
             (cf. *I found out/happen to know/was surprised (that)* JOHN *left early*)

Various explanations have been suggested for this behavior (see e.g. de Cuba & MacDonald 2013, Weir 2014) but the crucial point – as Vicente (2013) points out – is that this behavior

is also true of Collins conjunctions. Only those verbs which can embed fragments, as in (10), can be the interrupting categories in CCs (11).

(11)   John and I {think/believe/hope/??found out/??know/*am surprised} Mary left early.

These correlations between fragments and CCs strike us as strong evidence both for the presence of an underlying clause in CCs, and for a link between CCs and fragment answers – that is, that they should both be derived from clausal ellipsis.[2]

3.   Motivating two parses for Collins conjunctions

If a clause is covertly present in Collins conjunctions, this suggests that a sentence like (12a) should derive from (12b) – a classic 'conjunction reduction' analysis.

(12)   a.   John ate tiramisu and I think the best pizza in town.
        b.   [$_{CP}$ John ate tiramisu] and [$_{CP}$ I think [$_{CP}$ ~~John ate~~ the best pizza in town]]

The structure in (12b) entails that there is one eating event which definitely (according to the speaker) took place, namely John's eating of tiramisu; and the speaker thinks that there may have been another eating event (John's eating the best pizza in town), but is not sure. This is indeed a possible reading of (12a). We will refer to this reading as one in which *I think* takes 'sentential scope'; that is, it takes scope over a second (unpronounced) instance of *John ate*.

However, Schein (1992) and Vicente (2013) present arguments that certain Collins conjunctions, e.g. (13), cannot be easily given a similar analysis.

(13)   Los judíos no   pueden llevar ropa   hecha de lana y   creo   que   lino.
        the Jews   NEG can   wear clothes made of wool and think.1SG COMP linen
        'Jews cannot wear clothes made of wool and I think linen.' (Vicente 2013)

Vicente (2013) observes that (13) can be judged true in a world like ours where Jewish law prohibits clothing combining wool and linen (but clothes made out of either one of these fabrics are permitted). The truth of (13) is mysterious if it is assigned a clausal conjunction structure like (14), where *I think* takes sentential scope.

(14)   [$_{CP}$ Jews cannot wear clothes made of wool] and [$_{CP}$ I think [$_{CP}$ Jews cannot wear clothes made of linen]]

The sentence in (14) asserts that woolen clothing is definitely banned, and linen clothing might be as well. While that is one possible reading that (13) can have, it is not the only reading; the most salient reading is one in which mixed clothing is banned. This appears

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[2]Vicente (2013) does not adopt an elliptical/conjunction-reduction analysis of CCs of the type being put forward here; he notes the correlation discussed above, but puts it aside.

to be a reading where *I think* takes scope 'only over *linen*', a reading that we shall call 'subsentential scope'.

   We note that an account of 'subsentential scope' for interrupting categories is independently needed to account for sentences like the below. In such examples, no special properties of conjunction can be at play, because there is no conjunction.

(15) a. John ate {I think / possibly} the best pizza in town.
      b. Jews can't wear clothes made of I think linen.

As in CCs, the ICs in (15) are not parentheticals; for example, they are prosodically integrated with the rest of the clause they are in (Ernst 1984). ICs in examples like (15) receive only a 'subsentential' reading. The truth conditions of sentences like (15a) contrast with those of (16). The context in (17) illustrates the contrast in truth conditions.

(16) Possibly / I think, John ate the best pizza in town.

(17) John went to Amherst yesterday. He planned to eat pizza at Antonio's, which indisputably makes the best pizza in town. He was busy, though, and may not have had time to eat, so it's possible he didn't eat anything at all.

      a. Possibly / I think [$_{CP}$ John ate the best pizza in town].
      b. #John ate possibly / I think [$_{DP}$ the best pizza in town].

In the context in (17), it is uncertain whether John ate anything at all. Crucially, (17b) is infelicitous in this context. It appears that there is an existence entailment in (17b) which is not present in (17a): in (17b), the speaker is committed to John's having eaten *something*. The speaker's uncertainty in (17b) is restricted to the *identity* of what was eaten; it may have been the best pizza in town, or it may have been something else. This seems to closely parallel what we have called the 'subsentential' parse of CCs in examples like (13). In an example like *Jews can't wear clothes made of wool and I think linen*, on its most salient reading, the speaker is committed to the existence of two fabrics which, when mixed, Jews cannot wear. The uncertainty is limited to the identity of the second fabric.

   Vicente argues that (13), and examples like it, show that a 'conjunction reduction' analysis for CCs (where *and* conjoins entire clauses, and *I think* takes scope over the second clause) is to be dispreferred. Such examples certainly pose a challenge to a univocal account in which CCs are derived by only one mechanism. However, we propose here that CCs are actually systematically ambiguous. Strings which look like CCs can either be given a clausal-conjunction-plus-ellipsis parse, as in (12b), or a parse in which interrupting categories (modals etc.) take scope over covert *free relative clause* structure; this latter parse derives the 'subsentential' reading. In the latter case, the conjunction is nominal, not clausal, as the structures in (18) show.

(18)　John ate tiramisu and possibly/I think the best pizza in town.

    a.　[$_{CP}$ John ate tiramisu] and [$_{CP}$ possibly/I think [$_{CP}$ ~~John ate~~ the best pizza in town]].

    b.　[$_{CP}$ John ate [[$_{DP}$ tiramisu] and [$_{DP}$ I think/possibly the best pizza in town]]]

In what follows, we systematically defend the claim that CCs are ambiguous in this way. We first motivate a syntax and semantics for the 'subsentential'/'adnominal' parse in (18b), building on work in Bogal-Allbritten (2013, 2014); we go on to show that the clausal coordination parse in (18a) must also be available.

4.　Analysis of the subsentential parse

We first consider the analysis of the subsentential reading for the interrupting category. As stated above, such subsentential readings are available even without conjunction.

(19)　John ate possibly the best pizza in town.

Structures such as (19) strongly recall Transparent Free Relative structures (TFRs), discussed by Grosu (2003, 2016) among many others. TFRs characteristically consist of a small clause whose subject is the *wh*-phrase *what*. The core meaning of the TFR is carried by a predicative 'nucleus' at the right edge of the TFR. TFRs necessarily contain an intensional operator that modifies the nucleus of the TFR. Example (20b) rephrases (19) as a TFR.

(20)　a.　He made [$_{TFR}$ what appears to be a new proposal].　　　(after Grosu 2003)

    b.　John ate [$_{TFR}$ what is possibly the best pizza in town].

Capitalizing on the similarity to TFR structures, Bogal-Allbritten (2013, 2014) proposes the following analysis of structures like (19). The IC *possibly* forms a syntactic constituent with the DP *the best pizza in town*.[3] The IC adjoins to a reduced relative clausal structure that contains a covert PRO and a covert copular expression, IDENTIFY.

(21)　*possibly the best pizza in town* ⤳

    λz [possibly [$_{SC}$ PRO$_z$ IDENTIFY the best pizza in town]]

The set of ICs includes attitude verbs and epistemic adverbs generally assumed to syntactically combine with clausal projections which denote propositions (type $\langle s,t \rangle$) (22). Thus, the direct composition of *possibly* and *the best pizza in town* would be both semantically and syntactically problematic.

(22)　$[\![possibly]\!] = \lambda p_{st} \lambda w [\exists w' \in$ EPI-MB(w)[p(w')]]　　　　　　　$\langle st,st \rangle$

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[3]See Bogal-Allbritten (2013, 2014) and Ernst (1984) for syntactic motivation for this constituency.

Reduced relative clausal structure intervenes between the IC and DP to resolve their syntactic and semantic mismatch. The reduced relative clausal struture given here is modeled on Bhatt's (2006) Direct Predication Analysis. A covert copular element — IDENTIFY (23a) — composes with the DP *the best pizza in town* (23b) to yield a property (23c).[4] Subsequent composition with PRO (23d) yields a proposition which is of an appropriate type to compose with *possibly* as defined in (23e). Finally, PRO is abstracted over to yield a new property (23f).

(23)   a. $[\![\text{IDENTIFY}]\!] = \lambda \mathscr{X}_{se} \lambda z_e \lambda \text{w'}[z = \mathscr{X}(\text{w'})]$
       b. $[\![\text{the best pizza in town}]\!] = \lambda \text{w'} \; \iota y[\textit{best pizza}(y,\text{w'})]$
       c. $[\![\text{IDENTIFY the best pizza in town}]\!] = \lambda z_e \lambda \text{w'}[z = \iota y[\textit{best pizza}(y,\text{w'})]]$
       d. $[\![\text{PRO IDENTIFY the best pizza in town}]\!] = \lambda \text{w'}[\text{PRO}_z = \iota y[\textit{best pizza}(y,\text{w'})]]$
       e. $[\![\text{possibly}]\!]([\![\text{PRO IDENTIFY the best pizza in town}]\!])$
            $= \lambda p_{st} \lambda \text{w}[\exists \text{w'} \in \text{EPI-MB}(\text{w})[p(\text{w'})]](\lambda \text{w'}[\text{PRO}_z = \iota y[\textit{best pizza}(y,\text{w'})]])$
            $= \lambda \text{w}[\exists \text{w'} \in \text{EPI-MB}(\text{w})[\text{PRO}_z = \iota y[\textit{best pizza}(y,\text{w'})]]]$
       f. $[\![\text{OP}_z [\text{possibly} [_{SC} \text{PRO}_z \text{ IDENTIFY the best pizza in town}]]]\!]$
            $= \lambda z \lambda \text{w}[\exists \text{w'} \in \text{EPI-MB}(\text{w})[z = \iota y[\textit{best pizza}(y,\text{w'})]]]$

Composition between the type $\langle e,st \rangle$ expression in (23f) and the rest of the clause can proceed in several ways. We illustrate one possible mode of composition here: a covert choice function applies to return a member of the set in (23). The choice function is existentially quantified over (as in (24); Reinhart 1997) or given by context (Kratzer 1998).[5]

(24) $[\![\text{John ate} [_{DP} \text{OP}_z \text{ possibly} [_{SC} \text{PRO}_z \text{ IDENTIFY the best pizza in town}]]]\!]$
       $= \exists f [\text{John ate } f(\lambda z \lambda \text{w}[\exists \text{w'} \in \text{EPI-MB}(\text{w})[z = \iota y[\textit{best pizza}(y,\text{w'})]]])]$

       ⇝   John ate something which is in the set of things which, for all the speaker knows, might be the best pizza in town.

This semantics delivers the correct result, that the speaker is committed to John's having eaten something, but is uncertain about the identity of that something. If this 'DP-modifying' parse for the interrupting category is independently available for structures without conjunction, it can unproblematically be transposed to structures with (nominal) conjunction, resulting in the 'subsentential' reading of apparently problematic Collins conjunctions such as (25).

(25)   Jews can't wear clothes made of wool and $[_{DP} \text{OP}_z \text{ I think} [_{SC} \text{PRO}_z \text{ IDENTIFY linen}]]$
       ⇝   Jews can't wear clothes made out of wool and something else, and the speaker thinks that other thing is linen.

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[4]As defined here, IDENTIFY is an intensional relative of Partee (1986)'s IDENT. Further precedent for IDENTIFY comes from analyses of Concealed Questions (e.g. *I know the capital of Italy*) by Frana (2006, 2010), Schwager (2008).

[5]See Bogal-Allbritten (2013, 2014) for exploration of a fuller array of options.

The truth conditions paraphrased above are the correct ones for such apparently problematic examples.

Note that, given the facts reviewed in section 2, this 'subsentential' parse of ICs must be analyzed as arising from reduced (but syntactically present) relative clause structure, rather than a purely semantic series of typeshifting operations (cf. Bogal-Allbritten 2013). Collins conjunctions – regardless of whether they receive the 'subsentential' interpretation or the 'sentential' interpretation – show syntactic diagnostics of clausal structure and of ellipsis; for example, they require the presence of a complementizer in certain languages.[6]

(26)   Los judíos no pueden llevar ropa hecha de lana y creo **que** lino. (Vicente 2013)

5.   Analysis of the sentential parse

Having analyzed the subsentential reading, we now turn to the sentential reading for the interrupting category, illustrated below.

(27)   John ate some tiramisu and possibly the best pizza in town.

⤳   John definitely ate some tiramisu. He may also have eaten the best pizza in town (but he might have just had tiramisu).

We argue that sentential scope of the IC arises from clausal conjunction plus ellipsis, a variant on classic 'conjunction reduction' analyses.

(28)   John ate some tiramisu and possibly ~~John ate~~ the best pizza in town.

The structure in (28) clearly derives the correct meaning, that is, one in which the modal IC appears to take scope over a second instance of the verb. However, such an elliptical analysis is rejected by Vicente (2013), and in general such 'conjunction reduction' analyses have not found recent favor; we will discuss some counterarguments in section 6. However, we hold that counterarguments against such conjunction reduction analyses only show that there exists *at least one* parse of sentences such as (28) which is not due to conjunction reduction. That parse, we hold, is the 'subsentential'/'transparent free relative' parse which we have just discussed. We believe that the counterarguments against conjunction reduction analyses are not positive arguments *against* the possibility of the structure in (28). Moreover, such an analysis is the most obvious way to capture the 'sentential' reading which such strings can receive.

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[6]We thank Maribel Romero for emphasizing to us the importance of the presence of the complementizer even in the 'subsentential' parse. There are questions remaining that we cannot take up here: in particular, we would like to know why complementizers can embed what we are analyzing as a small clause. We have no detailed answer to this at present, but believe that it would be useful to investigate parallels with 'amalgam' structures such as (i) (see e.g. Kluck 2011 and references therein).

(i)   John ate I think it was pizza.

With this in mind, we show how a clausal ellipsis analysis of CCs can be implemented. Concretely, we suppose a similar treatment to Merchant (2004)'s analysis of fragment answers: a 'remnant' moves to a left-peripheral position (labelled FocP below), followed by ellipsis of the rest of the clause (29a). Temmerman (2013) and Weir (2014) extend this logic to embedded fragment answers (29b).

(29)   What did John eat?

     a.   [$_{FocP}$ Salad$_1$ [$_{TP}$ ~~he ate t$_1$~~]]
     b.   I think [$_{CP}$ [$_{FocP}$ salad$_1$ [$_{TP}$ ~~he ate t$_1$~~]]]

We propose that a similar structure is at play in the sentential parse of Collins conjunctions. Utterance-final CCs with adverbs like *possibly* (30) are relatively simple to handle under such an analysis; these just involve ellipsis of a conjoined clause, with both the adverb and the 'remnant' pronounced left-peripherally (essentially identical to stripping).

(30)   a.   John gave Mary some flowers and possibly some chocolates.
     b.   [$_{CP}$ John gave Mary some flowers] and [$_{CP}$ possibly [$_{FocP}$ some chocolates [$_{TP}$ ~~John gave Mary t~~]]]

For verbal ICs, the syntax is the same, but movement takes place to the left periphery of the clause embedded by matrix verb, here *think* (cf. (29b)).

(31)   a.   John gave Mary some flowers and I think some chocolates.
     b.   [$_{CP}$ John gave Mary some flowers] and [$_{CP}$ I think [$_{CP}$ [$_{FocP}$ some chocolates [$_{TP}$ ~~John gave Mary t~~]]]]

However, a more complicated treatment is necessary to accommodate initial or medial examples of CCs, e.g. (32) (on the sentential scope readings).

(32)   a.   John gave <u>Mary and I think Sue</u> some flowers.
     b.   <u>Tom and I think Bill</u> gave Rachel some flowers.

We propose that such strings are arrived at from the clausal conjunctions in (33) via independently available mechanisms of Right Node Raising, plus movement and ellipsis.

(33)   a.   John gave Mary some flowers and I think John gave Sue some flowers.
     b.   Tom gave Rachel some flowers and I think Bill gave Rachel some flowers.

We propose that the string in (32a), for example, arises in the following way (where underlined gaps represent the original position of Right-Node-Raised material):

(34) a. **Underlying clausal conjunction**
      [$_{CP}$ John gave Mary <u>some flowers</u>] and
         [$_{CP}$ I think [$_{CP}$ John gave Sue <u>some flowers</u>]]

   b. **Rightmost material (underlined above) undergoes Right Node Raising**
      [$_{CP}$ John gave Mary ___] and
         [$_{CP}$ I think [$_{CP}$ John gave Sue ___]] some flowers

   c. **Movement of *Sue* and ellipsis in second conjunct**
      [$_{CP}$ John gave Mary ___] and
         [$_{CP}$ I think [$_{CP}$ [$_{FocP}$ Sue$_i$ ~~John gave t$_i$ ___~~]]]] some flowers

The string in (32b) is somewhat more vexing. It looks as if it should be derivable from (33b) by Right Node Raising alone, without any independent movement-plus-ellipsis, as below.

(35) a. Tom gave Rachel <u>some flowers</u> and I think Bill gave <u>Rachel some flowers</u>.
   b. Tom ___, and I think Bill ___, <u>gave Rachel some flowers</u>.

However, the data suggest that there is still an (obligatory) movement-plus-ellipsis step in the derivation. If the (obligatory) absence of a complementizer in English (36a), and the restriction to bridge verbs (36b), are diagnostic of clausal ellipsis (cf. section 2), then this suggests that (32b) involves clausal ellipsis, too, even though it should not be 'necessary'.

(36) a. Tom and I think (*that) Bill gave Rachel some flowers.
   b. Tom and I {think/suspect/*found out/*am surprised} Bill gave Rachel some flowers.

Somehow, then, the syntax of an example like (32b) must be forced to be as in (37).

(37) [$_{CP}$ Tom ___] and [$_{CP}$ I think [$_{CP}$ [$_{FocP}$ Bill$_i$ ~~[$_{TP}$ t$_i$ ___~~]]]] gave Rachel some flowers

The syntax in (37) is certainly available in principle, but we have no firm suggestion to make as to why it should be forced (that is, why the ungrammatical examples in (36) do not work). We hope that exploration of the (fairly mysterious) workings of Right Node Raising might offer a solution here, but detailed exploration of the puzzle posed by (32b) is left to future work here.[7]

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[7]One avenue to explore might be the proposal by Johnson (2013) that the feature implicated in licensing clausal ellipsis (Merchant (2001)'s [E]-feature) is in fact a feature that relaxes certain linearization requirements on its complement, rather than a feature that licenses ellipsis as such (ellipsis is one possible outcome, but so too are various 'non-standard' linearizations; see Johnson's work for details). We might speculate that something like the [E]-feature is also implicated in (at least one derivation of) Right Node Raising; combined with the proposal that the [E]-feature is only to be found in the complements of bridge verbs (Weir 2014), such a proposal may help to explain the present mystery, although clearly many details remain to be worked out.

6. Defusing arguments against conjunction reduction

As mentioned above, conjunction reduction analyses have been resisted in work on CCs. In this section, we defend our analysis against such counterarguments.[8]

One counterargument comes from binding possibilities. Vicente (2013) notes that binding from the first conjunct into the second of a CC is grammatical (38), and correctly points out that this is not expected if CCs are derived from conjunction reduction/clausal ellipsis: binding is impossible across clausal conjuncts (39a), but not in a conjunction of two DPs (39b).

(38) (after examples in Vicente 2013)
They have praised each professor$_i$ and perhaps his$_i$ best student.

(39) a. *[$_{CP}$ They have praised each professor$_i$] and [$_{CP}$ they have praised his$_i$ best student].
b. They have praised [$_{DP}$ [$_{DP}$ each professor]$_i$ and [$_{DP}$ his$_i$ best student]].

However, we note that the binding example in (38), while grammatical as such, only receives the subsentential reading of the interrupting category; one where there is uncertainty about the identity of the referent of the second conjunct (40a), but not uncertainty about the event having occurred (40b).

(40) They have praised each professor$_i$ and perhaps his$_i$ best student.

a. **Available reading:** For every professor x, they have praised both x and someone who might be x's best student.
b. **Unavailable reading:** For every professor x, they have praised x and it is possible that they have praised x's best student.

This is expected if the subsentential reading of CCs results from placing the IC internal to the DP (41a), while the sentential reading of CCs arises from clausal conjunction plus ellipsis (41b); binding can take place in the former, but not the latter, as (39) shows. (We abbreviate the details of the reduced relative clause structure in (41a).)

(41) a. They have praised [$_{DP}$ [$_{DP}$ each professor]$_i$ and
[$_{DP}$ perhaps their$_i$ best student]]
b. *[$_{CP}$ They have praised each professor$_i$] and
[$_{CP}$ perhaps [$_{FocP}$ his$_i$ best student ~~[$_{TP}$ they have praised t]~~]]

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[8] We are not defending the strongest conception of 'conjunction reduction' in which all conjunctions result from ellipsis of conjoined clauses; DP-level conjunction (*John ate* [[*cake*] *and* [*pie*]]) should still be available (indeed, the 'subsentential' parse discussed above requires such DP-level conjunction). We are only arguing that conjunction reduction is available as one *possible* parse.

Another reason why clausal conjunction analyses of CCs (and conjunction reduction generally) have previously been resisted in the literature is the fact that they are compatible with collective predicates such as *gather* or *be a mix of* (see e.g. discussion in Schein 1992):

(42)   a.   This stew is a mix of cabbage, sausage and possibly ham.
       b.   John, Bill, and possibly Mary gathered to discuss the matter.

Such examples are grammatical, and can be interpreted with 'sentential' scope for the IC: for example, in (42a) the stew might only consist of cabbage and sausage, and in (42b), John and Bill might have been the only participants. However, this is an apparent problem for a conjunction reduction/clausal ellipsis analysis, because the putative sentential sources for the above examples are not well formed:

(43)   a.   #This stew is a mix of cabbage and it's a mix of sausage and it's possibly a mix of ham.
       b.   #John gathered, Bill gathered and Mary gathered.

We observe, however, that more conventional cases of clausal ellipsis (e.g. sluicing or fragments) also seem to somehow 'circumvent' the requirement to have a plural argument with collective predicates.

(44)   a.   This stew is a mix of cabbage and sausage. Ham, too, if you have it.
       b.   This stew is a mix of cabbage and sausage. I don't know what else, though.

(45)   a.   John and Mary gathered. Possibly Bill, too.
       b.   John and Mary gathered, but I don't know who else.

These facts are understandable if we accept the idea that there is a certain degree of flexibility in what a clausal ellipsis site can contain. That is, an ellipsis site has to be semantically 'close enough' to the antecedent, but not necessarily a perfect match, syntactically or semantically. The idea that ellipsis sites can, in some circumstances, deviate from their antecedents finds support in the recent literature; for example, Merchant (2004)'s proposal that clausal ellipsis sites can contain 'simple' structures such as *it is* or *do it*, a proposal taken up by other work such as van Craenenbroeck 2010, Barros 2014 a.o. It is conceivable, then, that the underlying structure of sentences like (44b) is something like (46a) – and the structure of similar Collins conjunction examples (e.g. (42a)) can be analyzed in a fashion similar to (46b).

(46)   a.   This stew is a mix of cabbage and sausage. I don't know what else ~~is in the stew~~, though.
       b.   [CP This stew is a mix of cabbage and sausage] and [CP possibly ham ~~is in the stew~~]

Sentences like (42b) are somewhat harder to derive, but we note that sources like (47) are possible.[9]

(47)   John and Mary – and possibly Bill did this too – gathered to discuss the matter.

We remain agnostic on the precise syntax that should be given to (47), but its availability suggests that it is possible to derive (42b) elliptically:

(48)   John and Mary and possibly Bill ~~did this~~ gathered to discuss the matter.

We conclude, then, that collective predicates do not pose an insuperable challenge for a clausal-ellipsis account of (the sentential parse of) CCs.

7.   Conclusion

In this paper we have argued that Collins conjunctions always show evidence of elided clausal structure, but that the structure which is elided can either be a 'full' clause or a reduced relative clause structure, leading to a previously unrecognized ambiguity in CC strings. Many questions remain, in particular whether CCs can be profitably linked to 'amalgam' sentences (*John ate I think it was tiramisu*), which we hope to return to in future work.

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[9]Again, compare the parallel to 'amalgams' as discussed in footnotes 6 and 7.

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