Against ellipsis: Arguments for the direct licensing of 'non-canonical' coordinations

Among various issues related to coordination, two stand out as being especially problematic for virtually all major theories of syntax: nonconstituent coordination (NCC) and unlike category coordination (UCC), exemplified by (1) and (2), respectively:

(1) I gave Robin a book on Thursday and a journal subscription on Friday.

(2) Pat is either stupid or a liar.

These phenomena have been taken to pose serious challenges to a simplistic (but initially attractive) view that coordination involves conjoining syntactic constituents of the same category. Among formal theories of syntax, categorial grammar (CG) is notable in that it provides solutions for these problems that fully maintain this apparently simplistic view on coordination (cf. Steedman 1985, Dowyt 1988 for NCC and Morrill 1994, Bayer 1996 for UCC). At the heart of this simple and uniform analysis of NCC and UCC is the fundamental theoretical assumption of CG which views syntactic categories as logical formulas and derivations of sentences as proofs.

A major contender to the CG analysis of coordination has been developed in the recent literature of HPSG (see, e.g., Beavers & Sag 2004, Chaves 2006, 2007, 2008, Yatabe 2007, Sag & Chaves 2008 and Hoffmeister 2010), exploiting the so-called linearization-based architecture which decouples combinatoric structure and morpho-syntactic constituency in a way partly resembling the flexibility at the syntax-semantics interface entertained in CG. This alternative approach, instead of viewing coordination to involve syntactic constituents of the same category, essentially views both NCC and UCC to be generated by a surface-oriented ellipsis process. If successfully defended, this linearization-based approach will solve the long-standing problems of NCC and UCC within the HPSG setup without any radical reformulation of its basic theoretical architecture.

In this paper, we argue that the success of this linearization-based account of coordination is illusory, and that it does not scale up to the empirical coverage and theoretical elegance of the CG analyses of coordination. Specifically, we will point out that once we extend the dataset from the most basic cases to a domain in which NCC and UCC interact with other phenomena (such as quantifier scope and extraction), the linearization-based ellipsis approach systematically fails to make correct predictions whereas everything falls out straightforwardly in the CG approach.

Our first evidence that the ellipsis-based analysis goes wrong comes from interactions between NCC and quantifier scope. In the linearization-based account of NCC, sentences like (1) are derived from a non-elided source like (3) via deletion of the italicized material.

(3) I gave Robin a book on Thursday and *(I) gave* a journal subscription on Friday.

However, NCC sentences are not always semantically equivalent to their alleged non-elided sources:

(4) a. Terry said nothing to Robin on Thursday or to Leslie on Friday.

b. Terry said nothing to Robin on Thursday or (Terry) said nothing to Leslie on Friday.

In (4a), negation obligatorily outscopes the disjunction, yielding the reading schematically represented as $\neg(\zeta \vee \varrho)$, which is equivalent to $\neg\zeta \wedge \neg\varrho$. In the non-elided source (4b), by contrast, disjunction outscopes negation, yielding a weaker reading $\neg\zeta \vee \neg\varrho$. In view of data like this, one might attempt to salvage the linearization-based approach by making recourse to some elaborate mechanism in which semantic interpretation is not totally isomorphic to tectogrammatical structure but is computed in a way that is partly sensitive to phenogrammatical information (by, e.g., extending Yatabe's 2001, 2007 approach). However, such an approach will likely lead to significant complication of the theory, especially because, even if the '$\neg > \vee$' reading could somehow be derived for examples like (4a), there still remains the problem of ruling out the '$\vee > \neg$' reading which the ellipsis-based analysis (incorrectly) predicts is the default reading for (4a).

Second, the ellipsis-based approach to UCC advocated by authors such as Chaves (2006) and Sag & Chaves (2008) are also problematic in view of a wider set of data. In this approach, sentences like (2) are derived from non-elided sources like (5):

(5) Pat [$_{\text{VP}}$ is either stupid] or [$_{\text{VP}}$ *is* a liar].

But this analysis does not extend to more complex cases in which the unlike coordination appears in syntactically displaced positions in topicalization and pseudo-cleft, as in (6) and (7).

(6) [Both poor and a Republican], no one can possibly be __.

(7) What you cannot be(come) __ is [highly intelligent and yet a raving fundamentalist].

The problem is that, for sentences like (6) and (7), there is simply no underlying non-elliptical source that is a grammatical sentence:

(8) a. *[Both poor and *be* a Republican], no one can possibly be __.
b. *Both poor *no one can possibly be* and a Republican no one can possibly be __.

(9) a. *What you cannot be(come) __ is [highly intelligent and yet *be(come)* a raving fundamentalist].
b. *What you cannot be(come) __ is highly intelligent and yet *what you cannot be(come) is* a raving fundamentalist.

One might then attempt to make recourse to a coercion coercion solution Chaves (2006) proposes for absolutives. In Chaves's analysis, apparent UCC in absolutives in sentences like *Wealthy and a republican, Fred quickly rose in the political areana*, is analyzed as ordinary coordination involving a phonologically empty copula syntactically and semantically equivalent to an overt copula (in the gerund form) *being*, as in $[_{VP}\ \phi$ *wealthy]* and $[_{VP}\ \phi$ *a republican]*. For absolutives, this analysis might be a plausible since an overt copula can indeed appear in place of the covert copula: $[_{VP}$ *being wealthy] and* $[_{VP}$ *being a republican]*. But this solution is unavailable for the topicalization and pseudo-cleft cases, since in these cases the counterparts with overt copulas are ungrammatical:

(10) *[Both being poor and being a Republican], no one can possibly be __.

(11) *What you cannot be(come) __ is [being highly intelligent and yet being a raving fundamentalist].

Unlike the ellipsis-based analyses in linearization-based HPSG sketched above, analyses of NCC and UCC in CG do not suffer from either of the above problems. For the scope interaction between quantifier and disjunction, in the standard analysis of NCC in CG due to Steedman (1985) and Dowty (1988), expressions like *to Robin on Thursday or to Leslie on Friday* are analyzed as constituents in which like categories are coordinated. The scoping relation between such expressions and the negative quantifier *nothing* is consistent with what is found in other cases in which a conjoined expression falls under the surface syntactic scope of a negative quantifier, like (†) *Nothing bothers Robin or annoys Leslie*, which, just like (4a), lacks the '$\vee > \neg$' reading. Thus, an independently motivated principle governing the scoping relation between quantifiers and conjoined expressions will automatically explain the possible scoping relations in both NCC cases like (4a) and non-NCC cases like (†). Cases involving UCC and syntactic displacement phenomena are equally straightforward in the CG approach. In Morrill's (1994) and Bayer's (1996) analysis of UCC, the string *either stupid or a liar* is analyzed as coordination of the complex syntactic category NP$\vee$AP (the underlying intuition being that anything that is an NP (or an AP) is a NP$\vee$AP ('NP *or* AP')). This analysis straightforwardly interacts with the standard analysis of extraction via hypothetical reasoning (or function composition) in CG (cf., e.g., Ades & Steedman 1982, Morrill 1994) so that (6) is derived with the NP$\vee$AP filler combined with a gapped sentence S/(NP$\vee$AP), where the gap and the filler match in syntactic category. Note crucially that the analysis is straightforward precisely because no ellipsis from a non-existent underlying source is involved.

To summarize, the plausibility of the ellipsis-based account of NCC and UCC advocated in the recent, linearization-based HPSG literature collapses quickly in view of a hitherto overlooked wider range of data we have presented above. By contrast, the relevant patterns all fall out in the CG approach in an almost trivial manner. We thus conclude that NCC and UCC are not amenable to ellipsis-based analyses and that an empirically more successful analysis—perhaps somewhat surprisingly—necessitates, rather than counterexemplifies (as might initially appear), the view that NCC and UCC are both cases of coordination of likes, a perspective that is uniquely available in the CG setup.

Selected References Beavers, J. & I. Sag. 2004. Coordinate ellipsis and apparent non-constituent coordination. In *Proc. HPSG2004*. **Bayer, S.** 1996. The coordination of unlike categories. *Lg.* 72:579–616. **Chaves, R.** 2006. Coordination of unlikes without unlike categories. In *Proc. HPSG2006*. **Chaves, R.** 2007. *Coordinate Structures*. Ph.D. diss, Univ. of Lisbon. **Dowty, D.** 1988. Type Raising, Functional Composition, and Non-Constituent Coordination. In R. Oehrle et. al. (eds.) *Categorial Grammars and Natural Language Structures*, 153–198. **Morrill, G.** 1994. *Type Logical Grammar*. Kluwer. **Sag, I. & R. Chaves.** 2008. Left- and Right-Periphery Ellipsis in Coordinate and Non-Coordinate Structures. MS. **Steedman, M.** 1985. Dependency and Coordination in the Grammar of Dutch and English. *Lg.* 61:523–568.