Is the Passive *by*-Phrase an Adjunct?
Chris Collins, NYU
May 2018

Abstract: A common position taken in recent literature on the passive is that *by*-phrases are adjuncts (Bruening 2013, Legate 2014). This paper shows that passive *by*-phrases differ from adjuncts in terms of binding phenomena. From these facts, I conclude that *by*-phrases are not adjuncts. I show that the theory of the passive in Collins 2005 accounts for the data without stipulation, unlike other recent theories of the passive.

Keywords: *by*-phrase, passive, adjuncts

1.   Introduction
Some recent works on the passive have claimed that the *by*-phrase is an adjunct. A few quotes illustrate this claim. Consider first the following quote by Legate (2014: 2):

(1)   "The 'by'-phrase in the passive is an adjunct in which 'by' assigns an initiator T-role to its DP complement, and this initiator is tied semantically to the initiator T-role introduced by Voice."

Although most of Legate's book is about Acehnese, it is clear that she maintains an adjunct analysis for English *by*-phrases as well (see page 82).
Breuning (2013: 24) maintains a similar position:

(2)   "As detailed earlier, *by* phrases, instrumentals, and comitatives all require the category Voice. I take this to mean that, although they are adjuncts, they strictly select the syntactic category of the phrase they adjoin to."

These conclusions are familiar from the Principles and Parameters literature that also classified the *by*-phrase in the passive as an adjunct. The novelty of the positions in (1) and (2) is that they are tied to an explicit treatment of the semantics of the preposition *by* (see Bruening 2013: 25, and see Legate 2014: 41 for a related proposal):

(3)   a. $[\![by]\!]$ = $\lambda x \lambda f_{<e,st>} \lambda e.f(e,x)$
         b. $[\![by\ the\ lobbyist]\!]$ = $\lambda f_{<e,st>} \lambda e.f(e,the\ lobbyist)$

For example, the phrase *by the lobbyist* denotes a function which takes the denotation of a Voice-phrase as an argument (so *by the lobbyist* denotes a function of functions).

2.   Adjuncts versus *by*-Phrases and the Binding Theory
Collins 2005: 111 gave the following examples of a reflexive being bound by the external argument in a passive (see Legate 2014: 71 for similar data from Indonesian):

(4)   a.   The magazines were sent by Mary to herself.
         b.   Testimony was given by the suspect about himself.

Based on this data, consider the following contrasts between *by*-phrases and adjuncts with respect to the binding of reciprocals. In the following sentences, the relevant interpretation is where *each other* takes *the children* as an antecedent.

(5)   a.   The packages were sent by the children to each other.
        b.   *The packages were sent for the children to each other.
        c.   *The packages were sent on behalf of the children to each other.
        d.   *The packages were sent because of the children to each other.

(6)   a.   The pictures were painted by the children for each other.
        b.   *The pictures were painted with the children for each other.
        c.   *The pictures were painted near the children for each other.
        d.   *The pictures were painted in spite of the children for each other.

Reflexives give rise to a similar paradigm:

(7)   a.   The packages were sent by the children to themselves.
        b.   *The packages were sent for the children to themselves.
        c.   *The packages were sent on behalf of the children to themselves.
        d.   *The packages were sent because of the children to themselves

(8)   a.   The pictures were painted by the children for themselves.
        b.   *The pictures were painted with the children for themselves.
        c.   *The pictures were painted near the children for themselves.
        d.   *The pictures were painted in spite of the children for themselves.

The generalization is the following:

(9)   a.   The DP of the *by*-phrase in a passive can bind a following clause-mate anaphor.
        b.   The DP of an adjunct PP in a passive cannot bind a following clause-mate anaphor.

The generalization (9a) already appears in Collins (2005: 111). The generalization in (9) may be part of a larger generalization formulated by Postal (2010: 274) that "If A is a reflexive arc, then A has a Term neighbor that arc-antecedes A." This can be translated roughly into lingua franca as follows (thanks to Paul Postal for the translation): "If X is a reflexive form, then there is Y which is a clause mate of X and which is either a subject, direct object or indirect object." For the purposes of this exposition, we will focus on the generalization in (9).

The data in (5-8) clearly distinguishes adjuncts (from which binding is never allowed) and *by*-phrases (from which binding of anaphors is allowed). Such a distinction argues against the claims in section 1 that *by*-phrases are adjuncts. Since if *by*-phrases were adjuncts, they should behave like adjuncts with respect to the binding data.

The following data are controls, showing that the problem with the examples above is the binding of a reflexive or a reciprocal. A pronominal possessor does not give rise to the same contrasts.

(10)   a.   The packages were sent by the children to their mothers.

      b.   The packages were sent for the children to to their mothers.
      c.   The packages were sent on behalf of the children to their mothers.
      d.   The packages were sent because of the children to their mothers.

(11)   a.   The pictures were painted by the children for their mothers.
       b.   The pictures were painted with the children for their mothers.
       c.   The pictures were painted near the children for their mothers.
       d.   The pictures were painted in spite of the children for their mothers.

3.   Accounting for the Data

How can such data be explained in terms of the Binding Theory? Consider the following standard formulation of the Principle A of the Binding Theory (Sportiche, Koopman and Stabler 2014: 168):
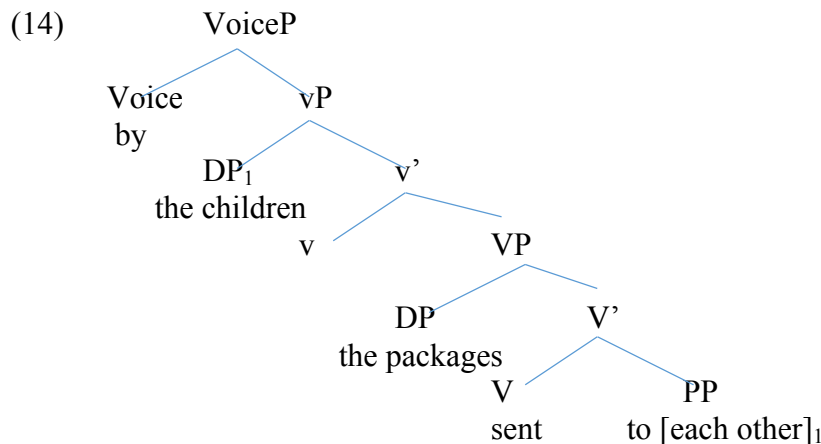
(12)   Principle A: An anaphor must be bound in its domain.

Now consider example (6c), with the structure sketched in (13):

(13)   *The pictures were painted [PP near [DP the children]₁] for [each other]₁.

Clearly, the DP *the children* does not c-command the reciprocal (since it is dominated by the PP *near the children*). Therefore, the reciprocal does not satisfy Principle A.

What about the (a) sentences of (5-8)? In the theory of Collins 2005, *by the children* is not even a constituent. The underlying structure of (5a) is as follows (irrelevant details omitted):

(14)

```
            VoiceP
           /      \
       Voice       vP
        by        /  \
             DP₁       v'
         the children  / \
                      v    VP
                          /   \
                        DP      V'
                    the packages / \
                               V     PP
                             sent   to [each other]₁
```

To derive the structure for (5a), the DP *the packages* must move to the subject position, Spec TP, and the participial VP must move to Spec VoiceP. But it is clear from this structure that the DP *the children* c-commands (and binds) the reciprocal *each other*. Hence, given the structure in (14), there is no violation of Principle A.

A problem with this account is that it predicts that if the reflexives in the (b-d) sentences in (5-8) are replaced by pronouns, they should be acceptable:

(15)   a.   The packages were sent by the children to them.   (predicted *)
   b.   The packages were sent for the children to them.   (predicted OK)

c.	The packages were sent on behalf of the children to them.	(predicted OK)
d.	The packages were sent because of the children to them.	(predicated OK)

(16) a.   The pictures were painted by the children for them.   (predicted *)
      b.   The pictures were painted with the children for them.   (predicted OK)
      c.   The pictures were painted near the children for them.   (predicted OK)
      d.   The pictures were painted in spite of the children for them. (predicted OK)

Even though (15a) and (16a) are unacceptable, the other sentences in (15) and (16) do not seem completely acceptable, contrary to what the standard binding theory would predict. I do not have any insights into this for the moment.

4.   An Alternative to Collins 2005
Legate 2014: 79-81 criticizes Collins' 2005 claim that *by* heads a VoiceP, and therefore does not form a PP with the following DP (see also Alexiadou et. al. 2018: 412 and Bowers 2010: 52-52 for related criticisms). Given these criticisms it is worth seeing how much of the approach in Collins 2005 can be maintained if one assumes there is a passive *by*-phrase PP.
Suppose, contra Collins 2005, we assume that *by the children* is a constituent, but it is generated in Spec vP in the passive, as in the following partial diagram of (4a).

(17)
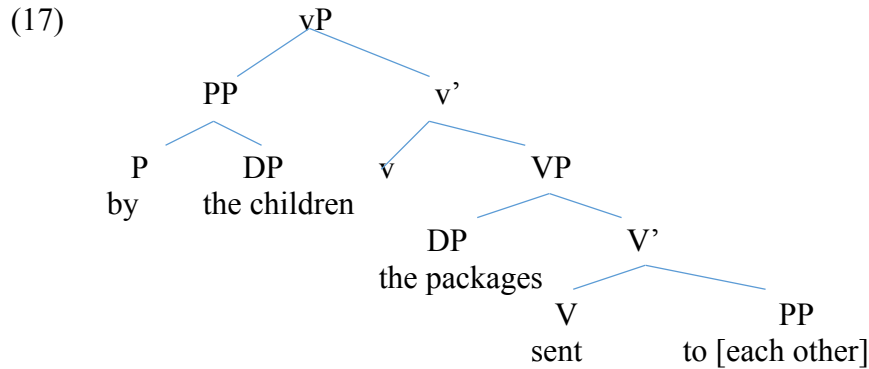
In other words, in (17) the *by*-phrase is an argument PP (since it occupies Spec vP, an A-position), as opposed to an adjunct PP. See Bowers (2010: 41) for a related approach involving an argument *by*-phrase.
Clearly, the DP *the children* does not c-command the reciprocal in this sentence. And so on this structure (5a) should be as bad as (5b-e). I propose that the preposition *by* is special (along with the dative *to* and the nominal *of*) in that the *by*-phrase itself can bind the reciprocal:

(18)   The packages were sent [by the children]$_1$ to [each other]$_1$.

In this structure, the PP *by the children* is co-indexed with the reciprocal *each other*.
If we assume that the preposition *by* is semantically vacuous (denoting an identity function), then the denotation of the PP *by the children* would be identical to that of DP *the children*:

(19)   a.   ⟦by the children⟧   =   ⟦the children⟧
       b.   ⟦by⟧   = $\lambda x_e.x$

4

A problem for this approach is pronominal agreement. Consider the examples in (7a) and (8a). The examples clearly show that the reflexive agrees syntactically with its antecedent. For example, in (7a) the reflexive *themselves* agrees in phi-features with its antecedent DP *the children*. But a *by*-phrase presumably has no phi-features (since it is a PP) and so it could not agree with a reflexive that takes it as an antecedent.

I suggest that this problem can be overcome in the framework for pronominal agreement in Collins and Postal 2012. In that theory, pronominal agreement originates in one of a small set of sources (which include antecedents).

(20)   Collins and Postal 2012: 92
        If P is a nonexpletive pronoun, then P agrees with some source in
        those phi-features for which P is not inherently valued.

In (18), even though the antecedent of *each other* is a PP, the source for the pronominal agreement is the DP complement of the PP.

To give the reader a flavor for how pronominal agreement works in the framework of Collins and Postal 2012, consider the following example:

(21)   I am a person who$_1$ takes care of myself$_1$/himself$_1$.

In (21), the reflexive pronoun is bound by copy/trace of *who* in the embedded subject position. But *who* is third person singular, as shown by the subject verb agreement. So in this case, when the reflexive is *myself* it does not agree with the DP that binds it, rather it agrees with some other DP (the subject of the matrix clause). Collins and Postal 2012 call the DPs that potentially supply phi-features for pronominal agreement sources. In (21), the two sources are the DPs *I* and *who*.

So in order to account for pronominal agreement under the theory (18), I propose the following source (see Collins and Postal 2012: 156 for other examples of sources):

(22)   Suppose X = [$_{PP}$ P DP] where P is a functional preposition (*by, of, to*).
        If X is the antecedent of some pronoun Y, then the DP complement of X is a source of
        phi-features for Y.

If (18) is the right way to look at *by*-phrases, then it would be possible to maintain the central insights of Collins 2005, without having to claim that *by* heads VoiceP. Rather, *by*-phrases are PPs, as traditionally claimed. However, *by*-phrases would not be adjunct PPs, but PPs occupying argument positions (Spec vP).

A similar analysis would not rescue examples like (13). I propose that a PP can bind an anaphor only in the special cases *to, by* and *of* (semantically vacuous functional prepositions). Other prepositions such as *for, on behalf of, because of, via, with, near* and *amongst* would not qualify, and so PPs headed by them could not function as antecedents.

On the analysis sketched in (17), the correct word order would be derived by movement of VP (actually PartP in Collins 2005) to Spec VoiceP. Unlike in Breuning 2013 and Legate 2014, VoiceP does not play a role in projecting the external argument. Rather, VoiceP is a

projection that appears with passives to account for word order and the licensing of the participial morphology. See Collins 2005 for details.

5.   Bruening 2013

Now consider a theory like that of Bruening 2013 (similar remarks hold for Legate 2014) with respect to the generalization in (9). On Bruening's theory the *by*-phrase is an adjunct, and the preposition *by* has a complex denotation (denoting a function of functions). Like other adjuncts, the DP inside the PP adjunct should be incapable of binding an anaphor.

Furthermore, on Bruening's theory it would not be possible for the *by*-phrase itself to act as an antecedent. First, *by*-phrase is not in an A-position (it is an adjunct), and the binding theory is usually limited to relations between A-positions. Second, the *by*-phrase does not satisfy equation (19a) on Bruening's theory (rather, it denotes a function of functions). And so it would make no sense to say that the *by*-phrase itself is the antecedent of a pronoun.

On Bruening's theory, the passive and active are semantically equivalent: "Actives and passives with *by* phrases are truth-conditionally equivalent." (pg. 25) Therefore, it might be possible to save Bruening's theory by stating the Binding Theory as a semantic condition of some kind. In other words, it may be possible to save Bruening's theory by giving up the assumption that the Binding Theory is syntactic in nature. I do not pursue this alternative here.

6.   Consequences for Implicit Arguments

I have argued above that the *by*-phrase in the passive is not an adjunct (contra Bruening 2013 and Legate 2014). Suppose rather that the *by*-phrase is a PP externally merged into Spec vP in the passive, as outlined in section 4. Then the passive and the active are parallel, both involve an argument in Spec vP. The immediate consequence of this proposal is that even in the short passive (where there is no *by*-phrase), Spec vP must be filled.

Consider the following example:

(23)   The book was read (by John)

And consider the following argument:

(24)   a.   When [PP by John] is present, it is in Spec vP.
        b.   The properties of v determine whether its specifier position is filled or not.
        c.   The long and short passive have the same v. That is, there are not two different kinds of v, one for long passives and one for short passives.
        d.   Therefore, in the short passive, Spec vP is also syntactically filled.

The only potentially controversial statement is (24c). But it seems like the null hypothesis, until one finds evidence from some language that the two kinds of little v (for short and long passives) are morphologically, syntactically or semantically distinguished.

In other words, our conclusions about the syntax of *by*-phrases in the passive entails that there is a syntactically realized implicit argument in the short passive. Not surprisingly, both Breuning (2013: 22) and Legate (2014: 41) reject this conclusion.

It is beyond the scope of this article to provide empirical arguments for the syntactic presence of the implicit argument in the short passive. The purpose of this section is simply to make it clear what the connection is between two theoretical claims: If the *by*-phrase is analyzed

as an argument (appearing in an A-position), then there is a syntactically present external argument in the short passive.

7.   Conclusion

In this paper I have shown that *by*-phrases in passives do not behave like adjuncts with respect to the Binding Theory. I have shown that this difference follows without any further stipulations from the theory of *by*-phrases presented in Collins 2005, but remains a complete mystery in such theories as Bruening 2013 and Legate 2014.

I have proposed a modification to the theory in Collins 2005, where the preposition *by* is not the head of VoiceP, but rather heads an argument PP. I have shown that the proposed modification also accounts for the difference between *by*-phrases and adjuncts with respect to the binding theory.

The two theories can be summarized as follows:

(25)   Breuning 2013/Legate 2014
    a.   Syntactic status of *by*-phrase: adjunct PP
    b.   Semantic value of *by*:
              $[\![by]\!] = \lambda x \lambda f_{<e,st>} \lambda e.f(e,x)$ (Breuning 2013)
              $[\![by]\!] = \lambda y \lambda f_{<e,st>} \lambda x.\lambda e.f(e,x)$ & Initiator(e,y) & x=y (Legate 2014)

(26)   This paper:
    a.   Syntactic status of *by*-phrase: argument PP
    b.   Semantic value of *by*: $[\![by]\!] = \lambda x_e.x$

In (25), the complex semantics of the preposition *by* is needed to glue the external argument semantically to the rest of the structure (a VoiceP). In this way, Breuning 2013 and Legate 2014 inherit the problems inherent in the Principles and Parameters view of the passive. As Collins (2005: 83) notes: "The main problem with Jaeggli's analysis is that the external argument in the passive is assigned a theta-role (via theta-role absorption and transmission) in a way that is totally different from how the external argument is assigned a theta-role in the active (in Spec,IP in the principles and parameters framework)." In (26), the semantics of *by* trivial, because the *by*-phrase is an argument.

An interesting future project would be to try to replicate the data in (5-8) in different languages with passive constructions and reflexives of various kinds to show that the *by*-phrase vs. adjunct asymmetry is not just a quirk of English, but is a universal.

References
Alexiadou, Artemis, Elena Anagnostopoulou and Florian Schäfer. 2018. Passive. In Norbert Hornstein, Howard Lasnik, Pritty Patel-Grosz and Charles Yang (eds.), *Syntactic Structures after 60 Years: The Impact of the Chomskyan Revolution in Linguistics*. De Gruyter Mouton.

Bowers, John. 2010. *Arguments as Relations*. MIT Press, Cambridge.

Bruening, Benjamin. 2013. *By* Phrases in Passives and Nominals. *Syntax* 16, 1-41.

Collins, Chris. 2005. A Smuggling Approach to the Passive in English. *Syntax* 8, 81-120.

Collins, Chris and Paul Postal. 2012. *Imposters*. MIT Press, Cambridge.

Legate, Julie. 2014. *Voice and v: Lessons from Achenese*. MIT Press, Cambridge.

Postal, Paul. 2010. *Edge-Based Clausal Syntax*. MIT Press, Cambridge.

Sportiche, Dominique, Hilda Koopman and Edward Stabler. 2014. *An Introduction to Syntactic Analayis and Theory*. Wiley Blackwell.