

EXTERNAL ARGUMENT ADJUNCT PHRASES IN ENGLISH

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1. The Issue

The binding principles proposed by Reinhart and Reuland (1993), which use the argument structure of a predicate as the basis on which to predict the distribution of pronouns and reflexives, makes the prediction that the standardly-assumed complementary distribution of pronouns and reflexives is restricted to argument positions:

- (1) a. Jack_i saw *him_i/himself_i.
- b. Eliza_i expected *her_i/herself_i to succeed.
- c. Daniel_i saw a snake beside him_i/himself_i.

As shown in (1a) and (1b), only reflexives may appear in argument positions where there is a co-referential argument. In (1c), either a pronoun or a reflexive can be used in the adjunct prepositional phrase. This lack of complementarity is expected, as the position in question in (1c) is a locative adjunct. In the generative binding theory, the line of work stemming from the Conditions A, B, and C of Chomsky (1981), this would be explained away as an exempt anaphor, again by virtue of its being in an adjunct position.

However, it is not the case that all non-argument positions allow this free variation between pronouns and reflexives. Specifically, the adjunct which indicates that an action was carried out alone must contain a reflexive, not a pronoun:

- (2) Roger_i baked the cake by *him_i/himself_i.

This restriction is not predicted by the principles proposed by Reinhart and Reuland, where complementary distribution is strictly a property of arguments. The situation is little better for the standard binding theory, as the question is reduced to determining why some adjuncts are exempt from binding theory, but not others. Another more recent investigation of reflexives in non-argument positions (Xue and Popowich 2002) describes a binding condition which states that reflexives not bound to a co-argument must be bound by the minimal c-commanding subject. This accurately describes the licensing of the reflexive in (2), but still does not account for the fact the reflexive is in fact obligatory.

In looking at the adjunct PP in (2), this adjunct bears a striking similarity to another common adjunct PP in English, shown in (3):

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- (3) The cake was baked by Roger.

This, of course, is a classic passive *by* phrase, where the complement of the preposition is a DP referring to the unspoken agent in the described event of cake-baking. Similarly, the DP complement in the adjunct from (2) refers to the agent, though redundantly. In this paper, I will propose that the adjunct phrases in (2) and (3) are in fact different manifestations of the same structure: an adjunct PP whose purpose is to (re)-state the agent of a particular predicate. In section 2, I begin with corpus evidence showing the use of anaphors in *by* phrases in naturally occurring text, followed by the description of a psycholinguistic experiment which was conducted to confirm the observed patterns from the corpus research. Section 3 examines more closely the passive *by* phrase, leading to a new combined analysis of the *by* phrase for both passive and active in Section 4. Section 5 presents a brief conclusion and summarises outstanding issues.

2. Previous Research on Reflexives

The issue of the *by* phrase containing an anaphor came to light as part of a larger project studying the distribution of reflexives in English, the full details of which are reported in Storoshenko (2008a). This project involved the analysis of two million words of English text from the Treebank-3 (Marcus *et al* 1999) corpus (one million words of written text from the Wall Street Journal written corpus, and one million from a portion of the Switchboard spoken corpus), looking for reflexives, and describing the environments in which they are used. In all, 10 distinct uses of reflexives were categorized; not surprisingly, the majority of the instances of reflexives were canonical uses in argument positions as exemplified in (1a) and (1b). The third most frequent use of reflexives in English, representing 11% of the total combined written and spoken corpora, was in *by* phrases as in (2). While in both cases, written and spoken, this was the third most frequent use, there were four times as many instances in the spoken corpus as the written. As a comparison, reflexives in so-called picture noun phrases, which are widely discussed in the literature, represented less than 0.5% of the total instances of reflexives in the corpus. Given the relative frequency of reflexives in *by* phrases, along with the fact that they seem to challenge the binding theory in that their use is uncharacteristically restricted for an adjunct position, examples such as (2) warrant further discussion.

In the corpus, the vast majority of cases where this *by* phrase occurred were with agentive predicates, both transitive and intransitive. Out of a total 117 instances, 35 were attached to the verb *do*, and 8 to the verb *go*, the top two predicates associated with this adjunct. There were no instances of possessive *have*, or psych predicates such as *believe*. Overall, the distribution suggests that there is a correlation between the use of this adjunct, and agentive predicates.

To further test this correlation, an experiment using a magnitude estimation task was conducted, as described in Storoshenko (2008b). In this experiment, stimuli based on sentences drawn from the original corpus were presented to native English speakers. Participants had to rate the acceptability of the novel sentences against a modulus sentence of marginal acceptability. Two

of the experimental stimuli are presented in (3); one presents the *by* phrase in a sentence where the subject is clearly an agent, and the other clearly not an agent:

- (3) a. Jim painted the house by himself. (agentive)
 b. Will is a subscriber by himself. (non-agentive)

As expected, sentences such as (3a) were judged to be significantly more acceptable than sentences like (3b), confirming the intuition that this *by* phrase is associated with the presence of an agent.

3. Examining the Passive *by* Phrase

Again, the investigation of the passive *by* phrase begins with a look at the corpus. Here, the same one million words of spoken English were examined as were included in the corpus study from Storoshenko (2008a). There was no analysis of the written corpus, because there were substantially fewer instances of the *by* phrase with the reflexive in the written corpus; the spoken corpus was decided to be the better place to look for similarities or differences in the patterns of use between the passive *by* phrase, and the active *by* phrase with the reflexive.

Looking at the corpus, the passive *by* phrase tended to occur, not surprisingly, with ordinary transitive predicates. The most frequent passive verb taking the *by* phrase was *hit*, but this was only 7 out of 142; there was no stand-out case as with *do* for the active *by* phrase. Similar to the results found in the previous examination of the corpus, there were no cases of the passive *by* phrase on possessive *have* or verbs of mental states.

One distinction was that the passive *by* phrase occurred on more predicates where the internal object was an experiencer, rather than a theme:

- (4) a. I was absolutely enthralled by it.
 b. We have been really frustrated by our gardening attempts here.

While there were no cases in the corpus of these verbs occurring with a reflexive *by* phrase in the active, such sentences are not impossible:

- (5) a. You_i enthralled me by *you_i/yourself_i.
 b. John_i frustrated me by *him_i/himself_i.

These sentences, while possibly sounding marginal to some speakers, could certainly be used in the right context. For example, (5a) could be directed to an actor in a production with a large ensemble cast, who has been modestly declaring that any enthralment on the part of the audience is due to the performance of the cast as a whole. A particularly devoted fan of this one actor could utter (5a), only with the reflexive, meaning that the one actor was enthralling without the support of the rest of the cast. A similar context could be constructed for (5b), again with the intended meaning only coming through with the reflexive, not a pronoun.

In determining that the passive and active *by* phrases have similar distributions, there is one potentially troubling question, exemplified by the common expression in (6):

- (6) A good time was had by all.

Here, the *by* phrase appears with the passive *have*, which did not occur in the corpus for the active instances of *have*. This does not necessarily challenge the claim that the distributions of the *by* phrases are similar for actives and passives. Firstly, one can argue that the instance of *have* in (6) is not simply one of straightforward possession; “having a good time” is more of a durative event than a simple declaration of ownership. Secondly, this could be a fixed expression in the language, representing an unproductive use. While it is not difficult to find instances where this phrasing is used with different adjectives (a *wonderful* time, a *bad* time, a *terrible* time, etc...) these all seem to still require the *by* phrase with some sort of quantificational element (*all*, *some*, *few*, etc...), suggesting that these are stylistic derivatives of the form in (6), rather than a genuinely productive use.

In further establishing this similarity between the active and passive *by* phrases, the behaviour of pronouns and reflexives in the passive should also be examined. If the passive *by* phrase is somehow an argument, only reflexives should be preferred over pronouns where there is a co-referential subject, as in (1a) and (1b). If this is not an argument (or even argument-like) position, then a free variation should be expected as in (1c). As shown below in (7), neither of these predictions holds true:

- (7) a. *Bob_i was hit by himself_i.
 b. *Bob_i was hit by him_i.
 c. ?Bob_i was hit by Bob_i.

The judgements here are clear: neither a reflexive nor a pronoun may appear in a passive *by* phrase where the sentential subject binds the complement of the PP. Of all three sentences in (7), the best is actually (7c), which is an apparent Condition C violation. However, the acceptability of this case is most likely a result of interaction with contrastive focus phenomena, clarifying an earlier claim that some other person may have hit Bob.

Unaccusatives, which are generally considered to be syntactically similar to passives, but lacking an external argument, show a different pattern again:

- (8) a. The ship_i sank by *it_i/itself_i.
 b. The witch_i melted by *her_i/herself_i.

In (8), *by* phrases attached to unaccusatives are accepted only with reflexives, which would be expected of active *by* phrases at this point, though it indicates that there is some crucial difference between the passive and the unaccusative which accounts for the distinction between (7) and (8).

In the existing literature, most of the discussion of passives is centred on the movement of the internal argument, and case assignment. The foundation of the standard generative account of passives can be found in Jaeggli (1986),

where it is argued that the passive morphology absorbs the external theta role of the predicate, and is assigned accusative case. In Jaeggli's analysis, the external theta role is subsequently assigned by the passive morpheme to the *by* phrase, though because the *by* phrase is not part of the lexical entry of the passive morpheme, this assignment is optional. Under this analysis, there is then some grounds for claiming that the passive *by* phrase has some argument-like status, in that it is ultimately assigned the external theta role. However, Jaeggli notes that this need not be an agent, merely the external argument of the equivalent active predicate. Finally, Jaeggli makes the claim that *by* phrases in active sentences can only be instrumental or locative, with no discussion of examples such as (2).

Baker *et al* (1989) makes further modifications to this analysis, in which the passive morpheme itself is considered to be an argument of the predicate, being assigned the external theta role. This is at odds with Jaeggli's analysis of the *by* phrase, as the external theta role would not be transmitted onward: the passive *by* phrase under this analysis would not have any argument-like status, a discrepancy which is left unresolved.

More recently, passives have been discussed in terms of information structure. Blevins (2003), for example, remarks that the primary function of the passive is to background the canonical subject, essentially relegating it to an optional adjunct phrase, and that the consequent advancement of the canonical object is merely "opportunistic". While there is no explicit analysis of the *by* phrase here, there is equivalently no explicit claim that the external theta role has been absorbed or re-assigned to some other constituent. Alfari (2006) describes the passive as containing an "implicit agent role" but there is no identification of this agent with any specific structure. This could then account for the distinction between (7) and (8): somehow the presence of an implicit argument which is present in passives but not unaccusatives is responsible for the different binding facts for the *by* phrases.

To sum up the findings so far, there are adjunct *by* phrases to active predicates in English which obligatorily require reflexives, and these *by* phrases appear to be tied to agentive predicates. These adjuncts have a similar distribution to passive *by* phrases, though different binding behaviour. Finally, the binding behaviour of the passive *by* phrases may somehow be connected to the presence of an implicit external argument. Lacking any conclusive analysis of the passive *by* phrase from existing literature, the next section outlines a new proposal which unites the active and passive *by* phrases, as well as the unaccusatives, under a single analysis.

4. Proposed New Analysis

In light of the distributional similarities, it is reasonable to conclude that the *by* phrases in the active and passive are one and the same thing. Specifically, the *by* phrases are optional adjuncts to *vP*, a PP headed by *by*. This adjunct comes with the additional caveat that its complement DP must be co-referential with the external argument of the predicate to which it attaches. For discursive ease, this *by* phrase will be referred to as the External Argument Adjunct (EAA).

The binding facts for the EAA can be captured under the standard binding theory, with the following considerations. Firstly, adopting the analysis of

Canac-Marquis (2005), binding domains can be re-defined in terms of derivational phases: phase boundaries demarcate binding domains. Secondly, following on recent work by Chomsky (2005), vP in an active clause is a phase boundary, whereas vP in a passive clause is not. To keep matters in line with a Reinhart and Reuland style approach, it would be necessary to extend this obligatory co-reference of the complement to full argument status. As noted above, this is somewhat tenable under a Jaeggli-style analysis of the passive where the external theta role is assigned to the EAA, but it will be harder to maintain that the EAA in the active is also an argument of the predicate, there being no additional theta role. For the purposes of this paper, this issue is set aside for further research.

Looking first at cases with the EAA in an active clause, there is an overt external argument at [Spec, vP]. Though this is later moved (or copied, depending upon the choice of derivational model assumed) to [Spec, TP] the trace (copy) at [Spec, vP] is crucial. Also, because active vP is a phase boundary, the vP is a binding domain. The EAA, which is by definition co-referential with the agent at [Spec, vP], is c-commanded by that agent within its binding domain. Thus, the only form of DP which will be acceptable here under Condition A is a reflexive, as Conditions B and C would rule out pronouns and co-referential R-Expressions:

- (9) a. Roger_i [vP t_i baked the cake by himself_i].
 b. * Roger_i [vP t_i baked the cake by him_i].
 c. * Roger_i [vP t_i baked the cake by Roger_i].

In this case, the EAA does not introduce a new referent; in a sense it is redundant information, which conveys the additional meaning that the action was carried out by the agent alone. This can be seen in the observation that the EAA does not allow for any instances of partial co-reference:

- (10) a. *Sophie built the house by themselves.
 b. *We built the house by myself.

The straightforward locative *by* phrase does allow for such number mismatches:

- (11) a. I shovelled the sidewalk by us.
 b. We saw the snake by me.

However, these number mismatches do seem somewhat degraded with reflexives, particularly when there is a singular subject and a plural reflexive; the converse case with a plural subject and singular reflexive is not problematic at all:

- (12) a. ?Daniel saw the snake by themselves.
 b. Amy and I saw the snake by myself.

While the exact constraints on the locative *by* phrase are not clearly established in these examples, it is evident from the data in (10)-(12) that locative *by*

phrases are not subject to the same strict one-to-one relation between their complement and the external argument as the EAA.

Further evidence that the active EAA is distinct from the locative *by* phrase can be found in *wh*-extraction diagnostics. Because the EAA is obligatorily co-referential with the external argument, it is bound in active cases, where the external argument c-commands the EAA position. As such, *wh*-extraction from this position should be impossible, as the resulting *wh*-question would result in a crossover violation. This is indeed borne out:

- (13) a. *Whom did Roger bake the cake by?
 b. *By whom did Roger bake the cake?

The sentences in (13) could be acceptable as locative readings, asking in whose vicinity Roger baked the cake, but they cannot be interpreted as asking a question answerable by (2), stating that Roger baked the cake without outside assistance. Conversely, a question based on a locative such as (11b) is somewhat better:

- (14) a. ?Whom did you see a snake by?
 b. ?By whom did you see a snake?

Setting aside stylistic questions in the choice of the accusative pronoun, and whether or not to pied-pipe the preposition, these sound more acceptable than the examples in (13), indicating that *wh*-extraction from the EAA (13) is more clearly ungrammatical than the adjunct island violations of (14). Again, though there is more work to be done in refining the exact distinction, it is enough to note the existence of this distinction to make the claim that the active EAA is distinct from a locative *by* phrase.

Turning now to the passive, there is no overt external argument at [Spec, *v*P], making the EAA new information. Being a passive, *v*P is not a phase, therefore not a binding domain: the whole clause becomes the binding domain. Because of this extension of the binding domain, the promoted internal argument at [Spec, TP] c-commands the EAA within its binding domain; Condition A would once again require a reflexive. However, as was seen in (7), repeated below as (15), this is not the case:

- (15) a. *Bob_i was hit by himself_i.
 b. *Bob_i was hit by him_i.
 c. ?Bob_i was hit by Bob_i.

As was already observed, a reflexive may not appear in a passive EAA. This is borne out by the examples of passive EAA from the spoken corpus, where there was only one instance of a passive EAA containing a reflexive:

- (16) Do they drive in? Are they driven by themselves?

This example may be regarded as an exceptional case, where the EAA appears in a passive follow-up question to a prior active question where the agent of the

first question is the antecedent for the reflexive in the follow-up. An arguably more natural alternative to (16) would be (17):

(17) Do they drive in? Do they drive themselves?

Here, both questions are active, and the same meaning is retained. In this, a potential solution to the problem of (15) is presented. Meaning-wise, there is no difference between the sentences in (18), though the active is grammatical while the passive is not:

(18) a. Bob_i hit himself_i.
b. *Bob_i was hit by himself_i.

(18b) is not a binding theory violation, so there must be something else constraining this structure. According to the Blocking Principle of Williams (1997), distinct linguistic forms with identical meanings are not permitted; one form will supersede the other. In this case, the active sentence with the reflexive in an argument position blocks the passive with the reflexive in the EAA. This accounts for the facts in (15). While Binding Theory is satisfied, the availability of an equivalent active form blocks (15a) and (15b), while the additional contrastive focus element preserves (15c).

In considering the passive EAA and *wh*-extraction, the role of the implicit external argument becomes crucial. First of all, the Blocking Principle does not seem to apply, as questioning the EAA complement in the passive does not sound as ungrammatical as in the active, even despite the existence of a synonymous active question:

(19) a. ?By whom was this cake baked?
b. Who_i baked this cake?

More surprising about (19a) is that it appears to be at worst marginal, if not completely grammatical. If the examples in (13) are so strongly ungrammatical due to a crossover violation, then (19a) would indicate that this crossover violation is not present when extracting from the passive EAA. Recall that in the passive EAA, the complement is co-referential with the implicit external argument; while this argument is present in the discourse, the apparent lack of a crossover violation indicates that this implicit argument is not present in the syntax, covertly binding the EAA position.

Finally, returning briefly to the unaccusatives, the binding facts are as expected given what has come thus far. Like the passive, the whole sentence functions as a binding domain, but there is no Blocking Effect, there being no equivalent active, which correctly predicts that a reflexive should surface, as seen in (8), repeated below as (20):

(20) a. The ship_i sank by *it_i/itself_i.
b. The witch_i melted by *her_i/herself_i.

Perhaps the explanation here is that the EAA is obligatorily co-referential with the internal argument when there is no other argument available. This would

explain the fact that like the active cases, *wh*-extraction from the EAA with unaccusatives is unacceptable:

- (21) a. *By what did the ship sink?
 b. *By whom did the witch melt?

If the EAA is co-referential with the internal argument which has raised to [Spec, TP], then the questions in (21) would again create a crossover violation, yielding ungrammaticality.

5. Conclusion and Outstanding Issues

This paper has argued that there is a unique adjunct to *vP*, the External Argument Adjunct or EAA, headed by *by*, whose complement is obligatorily co-referential with the external argument of the predicate to which it is attached. In active clauses (transitive and unaccusative), Condition A dictates that this complement emerge as a reflexive, predicting the lack of free variation between reflexives and pronouns noted in (2). In the active, this is redundant co-reference, yielding an interpretation of the action being completed alone. In the passive, Condition A would again predict that a reflexive should emerge, but the Blocking Principle comes into play, preferring an active sentence with a reflexive object over a passive sentence with a reflexive EAA. Because the EAA is co-referential with an implicit syntax-external argument in the passive, *wh*-questions can be formed with the passive EAA which are blocked in the active, as the required *wh*-extraction creates a crossover violation. In demonstrating the differences between the EAA and locative *by* phrases, different patterns of behaviour for locative *by* phrases were noted in cases of partial co-reference and *wh*-extraction, but these are held over for future work. More troublesome is the observation that there is one clear distinction in the use of EAA between the active and passive which has not been explained here: in the active, it is possible to drop the *by* head from the EAA, in the passive it is not:

- (22) a. Roger_i baked the cake ~~by~~ himself.
 b. *The cake was baked ~~by~~ Roger.

While examples such as (22a) are discussed in Storoshenko (2008a) and (2008b), this discussion is limited to distinguishing such examples from appositive uses of the reflexive, particularly when this appositive can be post-posed to the sentence-final position:

- (23) a. I myself am a member.
 b. I am a member myself.

While agency can draw a clear distinction between (22a) and (23b), the question of why the *by* can be elided in the passive EAA remains one for future work.

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