

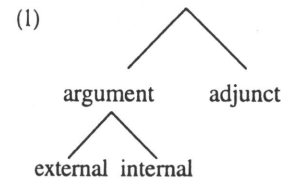
θ -Alignment and the *By*-Phrase

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1. Introduction

The idea of θ -alignment, i.e. that there are significant regularities in the mapping between θ -roles and syntactic positions, has taken on renewed importance in syntactic theory over the last several years (see, e.g., Baker (1988) and much subsequent work). θ -alignment is part of the more general problem of linking semantic relations with syntactic configurations. As many have pointed out (see Levin and Rappaport Hovav (1995) and Pesetsky (1995) for recent discussion), a solution to the linking problem would be an important step forward in understanding not only the syntax-semantics interface, but also the problem of acquisition of lexical items by children.

It is thus encouraging that for some major categories, linking appears to be straightforward. Consider, for instance, the categories in (1).



The distinction between an argument and an adjunct is reasonably clear in semantic terms, and it is sometimes claimed (e.g., by Levin and Rappaport Hovav (1995)) that the distinction between external and internal arguments is as well. On the syntactic side, these three categories are of course also clearly distinguishable. However one works out the details, no one doubts that subjects, objects, and adjuncts each have characteristic syntactic behavior, which stems (in some frameworks) from distinct syntactic positions. Thus first appearances suggest that the linking between the semantics and the syntax of the categories in (1) is trivial.

Upon further examination, however, many troublesome problems do arise. One of them is the passive construction, in which the external and internal arguments, in semantic terms, appear to be represented syntactically as an adjunct and a subject, respectively, contrary to the general pattern. The fact that the internal argument shows up as a subject can be very plausibly analyzed in terms of movement, as in (2), but the problem of the external argument cannot be disposed of so quickly.

(2) [the cake]_i was eaten t_i by the boy.

Notice that the external argument in passive sentences like (2) bears some of the obvious hallmarks of the syntactic behavior of adjuncts. To begin with, it is optional, as seen in (3).

(3) The cake was eaten (by the boy).

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This of course is typical of adjuncts, but is generally impossible with external arguments outside of passive clauses. In addition, it prefers to appear to the right of arguments, as in (4a), and may appear to the right of adjuncts, as in (4b).

- (4) a. The books were returned to the store by John.
 b. The books were returned to the store on Thursday by John.

This too is typical of the behavior of adjuncts.

It is tempting to try to propose here that the *by*-phrase is not truly interpreted as an external argument and for that reason is not syntactically represented as one, but as Marantz (1984) showed, this is very unlikely. The *by*-phrase always seems to be interpreted exactly as the subject of the corresponding active clause would be.

We thus seem forced to accept that in passive clauses, what has the semantic status of an external argument has the syntactic status of an adjunct. This situation would appear to make coming up with a satisfactory theory of linking extremely difficult.

There are three main classes of attempts to deal with this problem in the recent literature. One is to say that the external argument is suppressed in passives, with the result that it is not represented syntactically (Zubizarreta 1985, Grimshaw 1990). The *by*-phrase must then be a type of adjunct. A second is to say that the external argument is syntactically represented (in the form of the passive morpheme), but that its θ -role is transmitted to the adjunct *by*-phrase (Jaeggli 1986, Baker 1988). A third is to say that the *by*-phrase is generated in the canonical syntactic position of the external argument (Fukui and Speas 1986, Hasegawa 1988, Mahajan 1994, Hoekstra 1995).

The last of these proposals is clearly the most desirable conceptually, since it would allow us to return to a maximally simple theory of linking, but it also appears to fare the worst empirically, since it would seem to leave the facts in (3) and (4) unexplained.

In this paper I will argue that despite these initial appearances, the hypothesis that the *by*-phrase is represented syntactically as an external argument is in fact well-supported empirically.

2. A closer look at adjunct-like behavior of *by*-phrase

Before we look at evidence that the *by*-phrase is an argument, let us reexamine (3) and (4), which seemed to argue that it is an adjunct. In (3) we saw that the *by*-phrase is optional, which external arguments otherwise never are. However, if passive clauses may contain a null "implicit" argument, as has often been claimed, then perhaps the *by*-phrase is simply the overt counterpart of this null external argument. Rather than being optional, the external argument would be obligatory in passive clauses under this view, but with the possibility of being null.

The question now is whether there is convincing evidence that such null external arguments in passives exist. The most well-known type of evidence is probably as in (5).

- (5) The ship was sunk [PRO to collect the insurance]

This sentence seems to show that the matrix verb has a null external argument, since otherwise there would be no controller for PRO. This conclusion has been called into question by Lasnik (1988), Williams (1985), and Grimshaw (1990), who argue that (5) exemplifies event-control, not control by an argument. They

point to cases like (6) and (7), where the context makes an event-control reading impossible, as evidence that there is no argument-control here.

- (6) *The ship was sunk [PRO to become a hero] (Lasnik 1988)
 (7) *Linguistics should never be studied in order [PRO to become rich]
 (Grimshaw 1990)

However, there are other cases where event-control would seem to be possible but the sentence is ungrammatical, as in (8a), or where event-control is impossible but the sentence is grammatical, as in (8b).

- (8) a. *Marijuana was smoked [PRO to become illegal in the 1930s]
 (Clark 1990)
 b. Laxatives should never be used just [PRO to lose weight]

I won't pursue this apparent contrast between cases like (7) and (8) here, and I will take the results of using control to ascertain the existence of a null external argument in passives to be inconclusive for the time being.

Fortunately, other tests that have been used have yielded much firmer results. Roberts (1987), for instance, points out that (9) cannot mean that John committed suicide, even though such a meaning is pragmatically possible.

- (9) *John_i was killed EXT_i t_i (Roberts 1987)

This effect can be explained if we assume a null argument (indicated here as EXT), since then a kind of chain formation violation will result if EXT and *John* are coreferential. Further evidence for this null argument comes from (10).

- (10) a. Such privileges should be kept to oneself.
 b. Damaging testimony is always given about oneself in secret trials.
 (Rizzi, cited in Roberts 1987)

Here the antecedent for the anaphor *oneself* is understood as being the external argument, but this should only be possible if this external argument is structurally represented.

Although (9) and (10) seem to be solid evidence in favor of a null external argument in passives, the literature also provides interesting evidence against this idea. Grimshaw (1990) claims that with verbs such as *build* which have a complex event structure (activity + state), each sub-event has to be syntactically "identified". In an active clause, the subject and object of the verb serve this purpose, but in a passive clause, some other phrase (such as a *by*-phrase) is required, as seen in (11).

- (11) This house was built *(by skilled craftsmen). (Grimshaw 1990)

This indicates, according to Grimshaw, that there is no null external argument present in the passive, since if there were, it should be able to identify one of the sub-events on its own and no additional material would be needed.

This is an intriguing argument, but ultimately I believe that the additional material in (11) is required for essentially pragmatic reasons unrelated to the verb's complex event structure. A house is something which is built by definition, so (11)

without the *by*-phrase does nothing more than state the obvious. If this is the correct explanation, we then predict that the sentence will improve when placed in a context where houses are not necessarily built by definition. This seems to be true, as evidenced by (12a) or (b). In both cases, *this house was built* is fine. Likewise, if *built* is predicated of something which is not built by definition, as in (12c), no additional material is necessary.

- (12) a. A lot of these adobe houses look like they just grew out of the ground, but there's no doubt that **this house was built**.
 b. This house was built. (pointing to architectural plan)
 c. This mountain was built.

These facts in (12) are explained under an account in which (11) is odd for pragmatic reasons, but not under the complex event structure account, so (11) thus ceases to be evidence against a null external argument in passives.

Grimshaw also points to the fact that the adverb *widely* may be used in passive clauses but not in active ones, as shown in (13), as evidence that actives and passives differ in their argument structure.

- (13) a. Carl Yastrzemeski was widely admired by baseball fans.
 b. *Baseball fans widely admire Carl Yastrzemeski.

However, it is likely that an account for the contrast between (13a) and (b) can be given even under the assumption that an external argument is present in both, since there is a difference in the syntactic position of the external argument. In (13b) it has moved to a position where it has scope over *widely*, whereas in (13a) it does not. Given the quantificational nature of *widely*, it is plausible that this difference could be significant and could be the source of the contrast. Although I will not attempt a full-blown analysis here, I will assume for now that such an analysis is possible.

On the strength of (9) and (10), then, I conclude that passive clauses may contain a null external argument. This in turn allows us to claim that external arguments themselves are obligatory in passives, despite the superficial optionality of the *by*-phrase.

The other piece of adjunct-like behavior that we observed for *by*-phrases was the ordering seen in (4). *By*-phrases appear to the right of arguments and may appear to the right of adjuncts. (14) shows that caution is appropriate, however, since there is some flexibility in the ordering of PP arguments and adjuncts.

- (14) a. The books were returned **to the store on Thursday**.
 b. The books were returned **on Thursday to the store**.

The base order can still be ascertained, though, by means of extraction, assuming that rightward extraposition makes PP's an ineligible domain for extraction. This is seen in (15).

- (15) a. Which store were the books returned [to _] on Thursday?
 b. ?* Which store were the books returned on Thursday [to _]?

We can then use this test on sentences like (16), and we see that *by*-phrases are not base-generated to the right of adjuncts, as in (17).

- (16) a. The books were returned to the store **by John on Thursday**.
 b. The books were returned to the store **on Thursday by John**.
 (17) a. Who were the books returned to the store [by _] **on Thursday**?
 b. ?* Who were the books returned to the store **on Thursday** [by _]?

By-phrases do appear to be base-generated to the right of arguments, but this is in fact consistent with their being either arguments or adjuncts. What is important here is that the ordering evidence no longer argues against argument status for the *by*-phrase.

3. Evidence for argument status of *by*-phrase

We have now eliminated the two most obvious arguments that the *by*-phrase is an adjunct ((3) and (4)), and we can now turn to evidence for its argument status. Fortunately, there are a number of processes in English that reliably distinguish between arguments and adjuncts, so we can use these as diagnostics for the *by*-phrase.¹ The first of these is ellipsis (Akmajian, Steele and Wasow (1979), Culicover and Wilkins (1984)). Verbal projections may be ellipsed just as long as any arguments within the VP are included. Adjuncts, on the other hand, may be excluded from the ellipsis. This contrast is seen in (18), and again in (19) with a passive clause.

- (18) Did John return the books?
 a. Yes, he did _ on Thursday.
 b. * Yes, he did _ to the store.
 (19) Will the books be returned?
 a. Yes, they will be _ on Thursday.
 b. * Yes, they will be _ to the store.
 c. ?* Yes, they will be _ by John.

(19c) shows that the *by*-phrase must be included in the ellipsis, indicating that it is an argument.

VP-fronting provides very similar evidence. When a verb projection is fronted, arguments must be included, but adjuncts may be left behind. This is seen in (20).

- (20) John said he would return the books, and
 a. return them he did _ last Thursday.
 b. * return them he did _ to the store.

When this occurs in a passive clause, the *by*-phrase may not be left behind, as seen in (21c).

- (21) John said the books would be returned, and
 a. returned they were _ last Thursday.
 b. * returned they were _ to the store.
 c. ?* returned they were _ by Mary.

This again is evidence for its argument status.

A final diagnostic test for English comes from *so*-anaphora. As seen in (22), *so* must include the arguments when it refers back to a verb projection.

- (22) a. John returned some books on Wednesday,
and so did Mary on Thursday.
b. *John returned some books to the store,
and so did Mary to the warehouse.

Adjuncts do not need to be included. (23) shows that the same pattern occurs with adjective projections.

- (23) a. John was happy in his youth, and so was Mary in her old age.
b. *John is interested in Gothic art, and so is Mary in modern art.

Some speakers find *so* slightly marginal with passive clauses, but the contrast between adjuncts and arguments is still clear, as seen in (24a) and (b).

- (24) a. ?The books were returned on Wednesday,
and so were the magazines on Thursday.
b. *The books were returned to the store,
and so were the magazines to the warehouse.
c. *The books were returned by John,
and so were the magazines by Mary.

(24c) shows that the *by*-phrase behaves like an argument.

Baker (1988) shows that incorporation facts suggest this same conclusion. In languages with incorporation, arguments can generally incorporate into the verb, but adjuncts cannot. The equivalent of a *by*-phrase, interestingly, can incorporate.² This is seen in (25) and (26) for Southern Tiwa (data from Allen, Gardner, and Frantz (1984)).

- (25) a. Khwien-ide Ø-edeure-ban **kan-ide-ba**.
dog-SUF AGR-kick/PASS-PAST horse-SUF-INSTR
'The dog was kicked by the horse.'
b. Khwien-ide Ø-kan-edeure-ban.
dog-SUF AGR-horse-kick/PASS-PAST
'The dog was kicked by the horse.'
- (26) a. **Yede piru-de-ba** te-khoake-ban.
that snake-SUF-INSTR 1sS-bite/PASS-PAST
'I was bitten by that snake.'
b. **Yede-ba** te-piru-khoake-ban.
that-INSTR 1sS-snake-bite/PASS-PAST
'I was bitten by that snake.'

When an instrumentally marked NP is interpreted as a true instrument and not a *by*-phrase, however, incorporation ceases to be possible, as seen in (27).

- (27) a. Te-hwiete-ban **keuap-ba**.
1sS-hit/PASS-PAST shoe-INSTR
'I was hit with a shoe.'

- b. *Te-**keuap**-hwiete-ban
1sS-shoe-hit/PASS-PAST
'I was hit with a shoe.' (Southern Tiwa, Baker 1988)

Thus the available evidence, both from incorporation and from English ellipsis, VP-fronting, and *so*-anaphora, suggests that the *by*-phrase has the syntactic status of an argument.

4. Other issues

In this section, I will examine two additional issues which might seem to have some bearing on the syntactic status of the *by*-phrase. The first concerns extraction, which appears to distinguish between arguments and adjuncts, as has often been noted. Thus extracting an adjunct out of a *wh*-island, as in (28a), typically yields a full ECP violation, whereas the corresponding extraction of an argument, as in (28b), yields only a milder Subjacency violation. The *by*-phrase, under this view, seems to behave like an argument, as seen in (28c) (pointed out in Roberts (1987)).

- (28) a. *How do you wonder whether John killed Bill?
b. ?Who do you wonder whether John killed?
c. ?By whom do you wonder whether Bill was killed?

These extraction facts would therefore seem to provide additional evidence for the position that I have advocated here. However, Cinque (1990) and Rizzi (1990) have shown that the contrast between (a) and (b) has to do with the referentiality of the extracted element, not its argument or adjunct status. The fact that (c) is relatively acceptable is then due to the clearly referential nature of the *by*-phrase and not to its status as an argument.

Another fact which might potentially relate to the syntactic status of the *by*-phrase is that the null external argument in passive clauses may not be coreferential with a possessor in the subject NP, as seen in (29) (EXT = null external argument).

- (29) *His_i house was EXT_j painted.

This is clearly reminiscent of weak crossover, and it is tempting to give a similar type of analysis, as discussed by Roberts (1987). This is possible if we say that EXT is an existential quantifier which must raise at LF. If an analysis along these lines is correct, however, we must then posit EXT even when a *by*-phrase is present, since the same weak crossover effect obtains in this case, as seen in (30).

- (30) *His_i house was EXT_j painted by John_i.

If EXT is present in (30), though, it presumably occupies the external argument position, so the *by*-phrase must then be an adjunct.

This weak crossover analysis of (29) and (30) is unlikely to be correct, however. One significant property of quantifiers is their ability to bind pronouns, and the null external argument in passives is unable to do this. In (31), for instance, the quantifiers *everyone* and *one* are clearly able to bind the pronoun *his* in (a) and (b), but the null external argument in (c) does not even marginally allow this possibility.

- (31) a. Everyone_i decided that his_j mother should win the prize.

- b. One_i always decides that his_i mother should win the prize.
 c. * It is always decided that his_i mother should win the prize.

If the EXT-as-quantifier analysis of (29) is not right, then we no longer need to assume the existence of EXT in (30), and (30) ceases to be evidence for the *by*-phrase as an adjunct.

Zubizarreta (1985) suggests another way in which (30) might argue that the *by*-phrase is an adjunct. Noting examples like (32), in which a pronoun within an argument is referentially dependent on an adjunct (*with John*), Zubizarreta proposes the principle in (33).

- (32) *Mary went to his_i farm with John_i. (Zubizarreta 1985)
 (33) If X is an argument of Z and Y is an adjunct of Z, then X cannot be referentially dependent on Y. (Zubizarreta 1985)

This principle can then be invoked to explain the impossibility of coreference in (30), repeated here as (34), if we make the crucial assumption that the *by*-phrase is an adjunct.

- (34) *His_i house was painted by John_i.

However, the effect seen in (34) only occurs when the pronoun is within the subject and not when it is within an object, as shown in (35).

- (35) a. This house was willed to his_i children by John_i.
 b. It was pointed out to his_i father by John_i that ...
 c. The children were taken to his_i house by John_i.

These examples, which are more parallel to (32) than (34) is, would in fact seem to argue that the *by*-phrase is an argument if (33) is accepted.

Thus the apparent argument for adjunct status of the *by*-phrase that (34) presents is not as clear as first appeared. I will not attempt to explain the contrast between (34) and (35) here, but I will note, as first pointed out by Roberts (1987), that the ungrammaticality of (34) disappears when either the pronoun or the NP upon which it is referentially dependent is further embedded, as in (36), or when these two elements are arguments/adjuncts of different predicates, as in (37).

- (36) a. The south side of his_i house was painted by John_i.
 b. His_i house was painted by John_i's cousin.
 c. His_i house was painted by the company that John_i recommended to me.
 (37) His_i house is considered by John_i to be his most valuable asset.

What is important for present purposes is that (34) no longer provides firm evidence for the adjunct status of the *by*-phrase.

5. Structural position of the *by*-phrase

The evidence we have examined so far suggests that the *by*-phrase has the syntactic status of an argument. If correct, this raises the additional question of whether it is represented as an external or internal argument. Under standard assumptions, an external argument c-commands all internal arguments, and there is some indication

that the *by*-phrase has this property, as may be seen in (38) (see also Pesetsky (1995)).³

- (38) a. The magazines were sent to herself by Mary.
 b. * The magazines were sent to Mary by herself.

The behavior of the reflexive here should only be possible if the *by*-phrase c-commands the other argument.

Despite its c-commanding position, we would still expect an external argument to be generated within the VP, and the *by*-phrase conforms to this expectation as well. This may be seen by the fact that it may be included in VP-fronting, as in (39).

- (39) John said the book would be reviewed by a major newspaper,
 and reviewed by a major newspaper it was _ .

The conclusion that the *by*-phrase is in the highest VP-internal position suggests that it is in the structural position of the external argument, although the possibility that it is the highest internal argument is not entirely eliminated.⁴

6. Conclusion

As discussed at the outset, the *by*-phrase in passive clauses is clearly interpreted as an external argument, so if we take the maximally simple theory of θ-alignment and linking, it should be represented syntactically as an external argument also. I have argued here that despite initial appearances, this prediction seems to be correct.

This conclusion raises a number of further important questions, three of which I will briefly discuss here in closing. First, I have said that the *by*-phrase c-commands other arguments within the VP, but in terms of linear order, it seems to follow them. This may be seen in (40), where the order in (40a) is preferred, and in the extraction facts in (41), which suggest that the *by*-phrase, and not the *to*-phrase, is base-generated in the rightmost position.

- (40) a. The books were returned to the store by John.
 b. The books were returned by John to the store.
 (41) a. Who were the books returned to the store [by _]?
 b. * Which store were the books returned by John [to _]?

This conclusion about linear order conflicts with the earlier conclusion about c-command under some theories of phrase structure, most notably that of Kayne (1994). It is an open question at this point whether this conflict can be resolved.

Another question which arises concerns the structural position of the *by*-phrase with respect to adjuncts. We saw earlier that *by*-phrases are base-generated to the left of adjuncts, and it appears also that *by*-phrases are within a verbal projection excluding adjuncts, as seen in (42).

- (42) John said the book would be reviewed by a major newspaper,
 and reviewed by a major newspaper it was _ on Thursday.

This is not the expected result under the traditional X'-theory in which the external argument is in the SPEC position and other arguments and adjuncts are within V'. (42) suggests that all arguments are generated within a single projection, perhaps

leaving adjuncts as arguments of higher heads. I will not discuss this topic further here, although clearly it merits additional exploration.

Finally, the main idea that I have advanced here, that the *by*-phrase is represented syntactically as an external argument, raises the question of why external arguments do not show up as *by*-phrases everywhere, not just in passive clauses. In current work (Goodall (1997)), I have proposed an answer to this question, based on the idea that the *by*-phrase has some but not all of the features of the higher head responsible for agreement and nominative case (T, within the framework of Chomsky (1995)). In active clauses, the *by*-phrase will thus always be attracted to the SPEC of that head, but not all of the head's features will be checked off and the derivation will crash. In passive clauses, on the other hand, an intervening participial head will allow the *by*-phrase to avoid being attracted to this SPEC position and a convergent derivation will be possible. The special morphology that we observe in the passive construction may thus be seen to follow from the external argument status of the *by*-phrase.⁵

Notes

Preliminary research for this paper was done while I was a Fulbright Fellow at the Université de Genève. Portions have also been presented at the 20th GLOW Colloquium at the Université Mohammed V in Morocco and at the 7^o Colóquio de Gramática Generativa at the Universidad de Oviedo in Spain. I am grateful to the audiences at all of these places, and at CLS, for their many helpful comments. All errors remain my own.

¹ In current work I am scrutinizing these tests in more detail than I am able to do here, but they appear to yield a good first approximation of the configurational distinction between arguments and adjuncts, as many have pointed out.

² Baker argues that the ECP generally prevents subjects from incorporating, so this might suggest that the *by*-phrase in Southern Tiwa is not an external argument syntactically. However, if the ECP is taken to prevent incorporation from the SPEC/IP position, then incorporation of the *by*-phrase, which is VP-internal, should be possible. This view commits us to saying that all illicit subject incorporation is from SPEC/IP (not SPEC/VP). The plausibility of this claim should be investigated, although doing so here would take us beyond the scope of this paper.

³ (38) appears to be representative of the evidence for c-command relations obtainable from Principles A and C, but perhaps not of that obtainable from negative polarity items, weak crossover, and some other phenomena. Space considerations prevent a full discussion here, although I plan to return to this in future work.

⁴ Determining whether the *by*-phrase occupies the external argument position or the highest internal argument position involves a number of theoretical assumptions which space prevents me from exploring further here. I will assume in what follows that it occupies the external argument position. See Williams (1981) for an analysis in which the *by*-phrase becomes an internal argument.

⁵ We thus expect *by*-phrases to be possible whenever the attracting effect of T can be avoided, participial morphology being just one means of doing so. Causative constructions in some languages may provide another example.

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