‘By’

A Refutation of the Anscombe Thesis

Abstract: The paper has two main objectives: first, it presents a new argument against the so-called Anscombe Thesis (if x □-s by ψ -ing, then x ’s □-ing = x ’s ψ -ing). Second, it develops a proposal about the syntax and semantics of the ‘by’-locution.

1. Introduction

a. The Thesis

This paper is a discussion of what Bennett dubbed the *Anscombe Thesis*.¹ The thesis can be introduced via Anscombe’s famous example:²

A man was pumping water into the cistern that supplied the drinking water of a house. The water was poisoned, and the inhabitants of the house died after drinking it. Thus, by replenishing the water-supply the man was poisoning the inhabitants of the house.

Concerning this situation we may ask ourselves: how many actions (understood as concrete, datable entities) did the man perform? The obvious answer, Anscombe held, is ‘only one.’ There was one action, which was both a replenishing of the water supply and a poisoning of the inhabitants.

Many philosophers agreed with this judgement and furthermore regarded it as but one example of a more general principle: the Anscombe Thesis.³ It says that the following schema is valid (i.e. that it has only true instances):

AT If x □-s by ψ -ing, then x ’s □-ing = x ’s ψ -ing.

(Instances for ‘□’ and ‘ ψ ’ are usually restricted to verbs of actions and/or events; whether actions *are* events can be left open here.⁴)

Two notes in passing: first, Anscombe herself only provided the example but—as far as I know—never formulated the thesis in this generality.⁵ However, she apparently defends it in a later paper by defending one of its instances;⁶ since the instance is chosen arbitrarily, she would presumably generalise her defence. Second, this is a standard way of putting the thesis, but because of some peculiarities of nominalizations, there might be a better way of putting it; I will hark back to this issue before long.

b. The Status Quo

For quite a while, much discussion of the Anscombe Thesis was going on. During the last ten years or so, interest in the thesis has somewhat faded away. Whatever the reason for this development may have been, it is not that a widespread consensus on whether the thesis is true or not had been reached. Rather, it seems that the discussion was stuck. Bennett's verdict from 1994 may be representative for what many philosophers think:⁷ it seemed likely to him that the thesis is false, however, he admitted that he lacked any conclusive reason.

One factor responsible for the situation seems to be that the typical arguments for or against the thesis are either fallacious, or they depend on a number of substantial philosophical claims about action, leaving too much room for their opponents to react. Now I think there is a simple argument against the thesis that is free of theoretical ballast and I will present it in what follows. First, however, I will discuss two arguments from the literature. Although those arguments are inconclusive, the discussion will help clarifying some aspects of the thesis itself.⁸

2. Two Unsuccessful Arguments

a. Simple Substitution Failures

One objection to the Anscombe Thesis goes like this: take a statement of the form 'x □-s by ψ-ing'. In many contexts, the corresponding nominalizations 'x's □-ing' and 'x's ψ-ing' cannot be substituted *salva veritate*. Therefore, they are not coreferential, although the Anscombe Thesis would (by semantic ascent) imply that they are. Thus, the thesis is wrong.

To evaluate the argument, let us take a look at a concrete example. Assume that

- (1) Pete poisoned the inhabitants by replenishing the water-supply.

Then, by the Anscombe Thesis we get

- (2) Pete's replenishing the water-supply was his poisoning the inhabitants.

But even if (1) is true, I may have expected Pete to replenish the water-supply, while not expecting that he would do it with poisoned water. So, (1) is compatible with

- (3) Pete's poisoning the inhabitants surprised me, and
(4) Pete's replenishing the water-supply didn't surprise me.

From (3) and (4), together with *Leibniz's Law*, we can infer the negation of (2):

(¬2) ¬ Pete's replenishing the water-supply was his poisoning the inhabitants.

But although the argument draws attention to an important point, it eventually misses its target. The Anscombe Thesis is meant to give specific conditions for action and/or-event identities (albeit not wholly general such conditions—that would require a thesis of a different form). But while events can be referred to by gerundive phrases (of the form 'x's □-ing'), Zeno Vendler prominently argued that such phrases are systematically ambiguous and can also refer to propositional entities (i.e. facts or propositions).⁹ And this is just the case in:

(3) His poisoning the inhabitants surprised me.

While 'his poisoning the inhabitants' may in some contexts be used to denote an event, it is not thus used in (3): the context generated by 'surprised' rather evokes a reading in which the term denotes a propositional entity. And the fact that Pete poisoned the inhabitants is indeed different from the fact that Pete replenished the water-supply, which is why (¬2) has a reading in which it follows from (3) and (4). But this does not affect the Anscombe Thesis, which is intended to be a claim about events not facts. A genuine counterexample to it would have to have to be a statement in which the nominalized expressions clearly refer to acts and/or events.

So, the argument only reveals an ambiguity in the above formulation of the Anscombe Thesis, because of which one might want to find a better way to put it. Bennett (1988: 188f.) attempted to do so using the notion of a *perfect nominal*,¹⁰ by which he means expressions such as 'John's fall' or 'Jean's attack' (rather than gerundive forms):¹¹

AT* If x □-s by ψ -ing, then the perfect nominal derived from ' x □-s' refers to the same thing as the perfect nominal derived from ' x ψ -s'.

It is not clear, however, whether Bennett's formulation really is on the safe side. Even if perfect nominals *tend* to invoke an event/act-reading, there are contexts in which they can denote facts. Vendler drew attention to examples such as the following:¹²

(5) Ingmar Bergman's death is a sad fact.

(6) The decline of the roman empire is an undeniable fact.

Both (5) and (6) make use of a perfect nominal to refer to a fact, not an action or event. So, it might be best to incorporate the reference to actions/events explicitly into the thesis:

AT** If x □-s by ψ -ing, then the nominalizations of ' x □-s' and ' x ψ -s', where they are used to denote acts/events, refer to the same thing.

Before closing the discussion, let me briefly mention another possible response to the argument: the idea is that *Leibniz's Law* must not be applied if an opaque context is involved, while 'surprise' in (3) and (4) generates such a context.

But the latter assumption is not unproblematic: while 'y is surprised that p' is opaque with respect to 'p' (just like other locutions that ascribe propositional attitudes), it is less clear whether 'x surprised y' is opaque with respect to 'x'. Substitution of coreferential terms in that position seems truth-preserving where 'x' is replaced by a proper name or an ordinary definite description: if Jane surprised me, and Jane is the mayor of the town, then the mayor of the town surprised me—even if I do not know that she is the mayor, and even if the surprise has nothing to do with her being the mayor. If 'x' is replaced by a definite description, it seems that we can also safely substitute coreferential parts of the description: if the mayor of Warsaw surprised me and Warsaw is the birth-place of Tarski, then the mayor of the birth-place of Tarski surprised me—whether or not I know about that fact.

However, once we replace 'x' in 'x surprises y' with a gerundive, substitutivity of coreferential parts seems to fail. Even if the king is the tallest spy, the truth-values of the following two sentences can come apart:

(7) The beheading of the tallest spy surprised me.

(8) The beheading of the king surprised me.

So, somewhat surprisingly, whether the position of 'x' in 'x surprises y' is opaque may now appear to depend on what kind of term is substituted for 'x'.

The explanation of this situation is related to the ambiguity of nominalizations stressed by Vendler. As was pointed out before, 'x surprised y' invokes a propositional reading of nominalizations which are substituted for 'x'. In such a reading, a nominalization *itself* generates an opaque context in which substitutivity of coextensional components fails (the same holds for the components of 'that'-clauses); the reason is that non-extensional semantic aspects of such components help in determining the referent of the whole phrase. This explains phenomena such as (7) and (8).

Strictly speaking, we can nevertheless say that the position of 'x' in 'x surprises y' is not opaque itself, because coreferential terms *in that position* can be substituted *salva veritate*. But we must be aware that nominalizations in that position receive a propositional referent, which is why we can only safely substitute nominalizations that refer to the same *fact*. Compare for illustration any prototypical example of a non-opaque context, e.g. the context generated by 'x = y', and consider a trivial instance in which both variables are substituted by the same nominalized expression, as in the following examples:

(9) Being an animal with a heart = being an animal with a heart.

(10) The fact that the king was beheaded = the fact that the king was beheaded.

Sentence (9) makes a true (and trivial) identity statement about a property. But now, it may—as a matter of a purely contingent accident—happen that the general terms 'animal with a heart' and 'animal with kidneys' are coextensional, because all animals with a heart are animals with kidneys and *vice versa*. Then, although (9) is true and ' $x = y$ ' does not generate an opaque context, substituting the first occurrence of 'animal with a heart' with the mentioned coextensional term results in a falsity:

(11) Being an animal with a heart = being an animal with kidneys.

So, there is an opaque context involved here. But the source of the opacity is not the identity predicate, but rather the gerundive nominalization itself. Equally, we cannot substitute 'the tallest spy' for one of the occurrences of 'the king' in (10), even if the tallest spy is the king. Again, the opacity involved is not due to the identity predicate, but due to the nominalized expression. The same goes for instances of ' x surprises y ' in which ' x ' is replaced by a nominalization; the only interesting difference is that here 'surprise' triggers the opaque reading of the nominalization.¹³

b. Goldman on the Asymmetry of 'by'

Goldman argued against the Anscombe Thesis on the basis of an observation about the word 'by':¹⁴ in its relevant usage, 'by' can be called *asymmetrical*, because a true instance of ' x □-s by ψ -ing' seems to imply to corresponding instance of ' $\neg (x \psi$ -s by □-ing)'. Starting from this observation, he argued basically as follows:

P.1 'by' is asymmetrical.

P.2 'by' expresses a relation R such that:

A sentence S of the form ' x □-s by ψ -ing' is true $\leftrightarrow R$ holds between the act/event of x 's □-ing and the act/event of x 's ψ -ing.

P.3 If P.1 and P.2 are true, then 'by' expresses an asymmetrical relation.

P.4 If the Anscombe Thesis is true, 'by' cannot express an asymmetrical relation.

C So, the Anscombe Thesis is false.

I will grant Goldman the asymmetry of 'by' and thus the first premise of the argument. Moreover, the third premise is unproblematic, and the fourth premise can be justified as follows: if the Anscombe Thesis is true, and if S is a true sentence of the form ' x □-s by ψ -ing', then x 's □-ing is identical to x 's ψ -ing. But if an entity y is identical to an entity z ,

no asymmetrical relation can hold between y and z . So, if the Anscombe Thesis is true, then 'by' –as used in ' x $\square$ -s by ψ -ing'– cannot express an asymmetrical relation holding between the act/event of x 's $\square$ -ing and the act/event of x 's ψ -ing.

The remaining premise P.2 has to carry the burden of the argument then. Unfortunately, the premise is highly disputable. It is both questionable (i) why 'by' should express *any* relation that can be used to state the truth-conditions of a 'by'-statement, and (ii) why *if* it expresses a relation, it should be a relation holding between events.¹⁵

Re (i): Relations are signified by relational predicates, which are terms that combine n singular terms to yield a sentence; but 'by' is no such thing. What it does may rather be described as combining a sentence ('He poisons the inhabitants') and a subjectless gerundive phrase ('replenishing the water-supply') to a sentence, or perhaps a verb-phrase ('poison the inhabitants') and a gerundive phrase ('replenishing the water-supply') to a more complex verb-phrase (I shall come back to these alternatives later). And while a gerundive phrase can at least sometimes be used as a singular term (though never as a singular term for an individual act/event), neither sentences nor verb phrases have such uses. It is therefore unclear why any connective of the syntactical category that 'by' instantiates should express a relation; nor does anything immediately show that 'by' in particular should function like that. Its semantic function might well consist in something else than expressing any relation (just as the semantic function of sentential connectives such as 'and' or 'not' apparently does not consist in expressing a relation).

Re (ii): But even if 'by' expresses a relation, it is not clear why that relation should relate *events*. There are a number of alternative possibilities to be explored: instead of a binary relation holding between events, 'by' might, for instance, introduce a 4-nary relation holding between events and descriptions or conceptions of them, or it might express a relation holding between propositions or facts.

And there is at least some *prima facie* evidence against the idea that if 'by' expresses a relation, it is one between events: 'by' accepts arguments that do not report acts or events, as for example stative expressions and negations of act/event-introducing expressions, as the following sentences illustrate:

(12) She stood out by being the only unmarried mother.

(13) He upset him by not coming to dinner.

In such cases, it is hardly tempting to spell out the truth-conditions of the 'by'-statement in terms of a relation holding between events, since no such event is available.¹⁶ This makes it likely that *if* 'by' introduces a relation, it will not be one holding among

events, but rather one holding between propositions or facts (which will always be available).

A defender of premise P.2 has some room for manoeuvre here; on the one hand, he could claim that ‘by’ is ambiguous, having one sense when attached to an event-introducing sentence and a different one when attached to a sentence of some other sort. But this seems an ad hoc move not supported by any linguistic data. On the other hand, the defender could declare to employ a very lenient sense of ‘event’, in which non-happenings and entities corresponding to negated claims may count as events. This would require an ontology of such “events” rich enough to cover all arguments that ‘by’ accepts.¹⁷

Anyway, the upshot is that Goldman’s argument only shows what semantic function ‘by’ must not have (the one articulated in premise P.2) if the Anscombe Thesis is correct. What semantic function ‘by’ actually has is left undecided. On the other hand, it is not clear that the correct account of how ‘by’ works will help us decide whether the Anscombe Thesis is true or false; it may be neutral with respect to it.

What I will now do is present an argument against the Anscombe Thesis based on less controversial assumptions and then argue for a different understanding of ‘by’. However, the argument will be presented first because it does *not* presuppose the later defended account.

3. A Simple Refutation

My argument against the Anscombe Thesis is pretty straightforward. All that is needed is the right sort of example. Let me quote from the *The Scientific Monthly* **86** (1915):

The writer has, therefore, taken the directories of the four American cities, which were the subjects of study in the original article, and has estimated the number of persons of a certain name living in each city by first counting the number of names printed in a whole column of the directory and then multiplying this figure by the number of columns occupied by that name.

The quotation contains a ‘by’-statement which we may paraphrase somewhat shorter:

- (1) NN estimated the number of persons (bearing a certain name) by first counting the number of names in a column, and then multiplying the number of names in a column by the number of columns (occupied by that name).

(For sake of brevity only, I will henceforth omit the parenthesised parts.)

But what seems equally true to say with respect to the described situation is that

- (2) NN estimated the number of persons by multiplying the number of names in a column by the number of columns.

Applying the Anscombe Thesis to both (1) and (2), we get:

- (3) NN's estimation of the number of persons = NN's consecutive counting of the numbers of names in a column and multiplying of the numbers of names in a column by the number of columns.
- (4) NN's estimation of the number of persons = NN's multiplying of the numbers of names in a column by the number of columns.

Sentences (3) and (4) are of the forms 'A=B' and 'A=C', so, by the symmetry and transitivity of identity, this yields:

- (5) NN's multiplying of the numbers of names in a column by the number of columns = NN's consecutive counting of the numbers of names in a column and multiplying of the numbers of names in a column by the number of columns.

But (5) is obviously false; the two acts mentioned are not identical, because one of them (the subsequent counting and multiplying) involves the other (the multiplying) as a proper part, and parthood is irreflexive. Since couples of statements such as (1) and (2) can be true and would imply falsities if the Anscombe Thesis were correct, we should reject that thesis. To do this, we need not enter into any discussions about event or act-individuation at all. That (5) comes out false can count as a constraint upon any plausible account of event and/or act individuation.

Could someone reasonably deny the crucial premise of the argument, i.e. deny that sentences such as (1) and (2) can simultaneously be true? An objector might perhaps say that—despite initial appearances—(2) is not a true description of what was going on; that it is an inaccurate description, because (1) is *the* accurate description. Something is lost in (2), and this loss makes the sentence rejectable.

However, the objection violates the rules that govern our practise of evaluating 'by'-statements. Sentence (2) indeed *is* a correct description of what was going on; it is just a *less informative* description than (1). But it gives us some information about the situation, and it does not misinform us any way; hence, it should be accepted as true. Moreover, the opponent moves on a slippery slope. For if he rejects (2) because it misses something that is reported by (1), then he should reject the more informative claim (1) as well. After all, the following claim is still *more* informative than both (2) and (1):

- (6) NN estimated the number of persons by first counting the names in a column, *then* counting the columns, and *then* multiplying the numbers by each other.

And presumably there will be a whole number of yet more informative descriptions of what was going on. If the objection were correct, we would have to reject countless 'by'-statements that seem impeccable on any ordinary standards.

4. The Explanatory Function of 'by'

As the argument of the foregoing section has shown, the Anscombe Thesis is a failure. To understand why examples like the one used in the argument can be found, a reflection on what function 'by' has (in the relevant statements) will be helpful. Although a number of philosophers discussed the function of 'by', the available accounts of it are not satisfactory. In what follows, I will offer a better explication of how this word works and show that it smoothly accounts for the counterexamples to the Anscombe Thesis.

a. Preliminaries and Syntactic Issues

A true 'by'-statement informs you about how something is achieved or *done* in the broadest possible sense of 'do', such that *any* full verb specifies a doing in this broad sense, no matter how unintentional, inanimate, or passive the object to which the verb applies may be. It has already been mentioned—see sentences (12) and (13) in section 2—that events or particular actions are not introduced in every 'by'-statements.¹⁸ As Wilde once wrote, a beautiful thing helps us by *being what it is*.

How should we describe the syntactical role of 'by'? Having in mind simple sentences with 'by'-phrases, i.e. those of the form '*x* □-s by *ψ*-ing', one may be tempted to hold that:¹⁹

SENT 'by' is a sentence-forming operator, taking a sentence and a gerundive phrase as arguments.

However, there is an alternative account available:²⁰

VERB 'by' is a predicate-forming operator, taking a verbal phrase and a gerundive phrase as arguments.

(On a more detailed level, a proponent of VERB could say that the combination of 'by' and a gerundive yields an adverbial phrase, which in turn combines with a verbal phrase to yield a verbal phrase. For present purposes, the more coarse-grained description suffices.)

Common substitution tests for determining the constituent phrases in sentences qualify the combination of a verb and a 'by'-locution as a verb phrase: the phrase 'won by

cheating' in 'Fred won by cheating' allows for substitution with 'do so' (as illustrated by 'Fred won by cheating and Jeff did so to'), which is the characteristic sign of a verb phrase.

This simple observation already speaks in favour of VERB; but reflection on the behaviour of 'by'-phrases in complex sentences provide more reasons to accept VERB rather than SENT: if 'by' operates on sentences, then we should expect syntactic ambiguities from its combination with complex sentences that contain sentential operators. But are sentences of the form

- (1) He fortunately / often / possibly $\square$ -s by ψ -ing.

structurally ambiguous? Let us look at a concrete example:

- (2) He fortunately / often / possibly goes home by cycling.

Ordinary speakers will understand (2) as stating that what is fortunately / often / possibly the case is that he goes home by cycling. However, (2) contains two sentences that 'by' could operate on: 'he goes home' and 'he fortunately / often / possibly goes home'. So, if 'by' operated on sentences, (2) should at least be perceived as ambiguous.²¹ But this is not the case; attaching a 'by'-locution to complex sentences such as 'he often goes home' hardly makes sense.

A proponent of SENT might perhaps reply that we only disambiguate (2) immediately because we grasp its *semantic* content: cycling just isn't a way of not / often / possibly going home. Hence, the case against SENT calls for additional linguistic data. Here are some: sentences of the form

- (3) He gave away his chance to $\square$ by ψ -ing.²²

are ambiguous. Take the following instance of (3):

- (4) He gave away his chance to win by cheating.

This allows for two readings: either what he gave away was his chance to win by cheating (which he did, perhaps, because he was an honest man), or what he did by cheating was give away his chance to win (since, perhaps, he was caught and disqualified). Given that 'by' builds a verb phrase from a verb phrase and a gerundive phrase, the observed syntactic ambiguity is to be expected. Using 'VP' to mark verb phrases, and 'AP' to mark adverbial phrases, the ambiguity of (3) can then be resolved by the following representations (to avoid unnecessary distraction, they involve only the information that is required to account for the syntactic ambiguity of (3)):

- (3†) He [_{VP} [_{VP} gave away his chance to $\square$] [_{AP} by ψ -ing]]

(3‡) He [_{VP} gave away his chance [_{VP} to □ [_{AP} by ψ-ing]]]

But if 'by' operates on a *sentence* and a gerundive phrase, the second possible reading of (3) would be a surprise and it would be hard to account for it at all, because there are not two distinct sentences for 'by' to operate on (while, as the above resolution shows, there are two distinct verb phrases that it could operate on).

Some more linguistic forms that are relevant for understanding the syntactical role of 'by' are the following:

(5) It is not easy to □ by ψ-ing.

(6) □-ing by ψ-ing is a terrible thing to do.

That such constructions are possible is to be expected if VERB is correct. The verbal phrase formed by 'by' is a syntactical unit that allows for the constructions that other verbal phrases allow for: it can act as an argument for operators requiring a verbal phrase as input ('it is easy to'), and it can be nominalized yielding a singular term for a kind of activity. It is far from clear how SENT could account for such constructions.

Admittedly, I have only drawn attention to data that cannot *easily* be accounted for by proponents of SENT, while I have not shown that there is *no* possibility for such proponents to do so. However, to make at least a strong case for VERB, it should suffice to point out that this latter position can straightforwardly explain the linguistic data, while the opposing position at least needs some more complicated theory to deal with them. For unless there are either additional data that would call for such complications anyway, or independent arguments in favour of SENT, VERB then seems preferable over SENT on account of its simplicity. So, for now I take VERB to be the much more promising account.

b. Bennett on the Semantics of 'by'

Some accounts of the semantics of 'by' that can be found in the literature have the drawback of being applicable only to 'by'-statements which introduce events. Following Bennett, I take this to be a good reason to eschew those proposals; 'by' seems to play the same semantic role in any construction of the form 'x □-s by ψ-ing', regardless of whether '□' and/or 'ψ' introduce events or not.²³

Bennett's own account of 'by' is meant to be applicable to all relevant cases.²⁴ It is based on the assumption that

FORM The antecedent clause of any true sentence of the form 'x □-s by ψ-ing' means something of the form 'some fact about x's behaviour has a relational property *RP*'.

The relational property that is relevant in a particular case is to be supplied by the meaning of the verb '□'. E.g. 'x breaks a promise' is supposed to mean as much as 'some fact about x's behaviour *conflicts with a promise x made*'. The italicised part signifies the relevant relational property.

Bennett then proposes the following account of 'by':

By-Bennett $x \square\text{-s by } \psi\text{-ing} \leftrightarrow$ Some fact about x 's behaviour has a relational property RP , namely the fact that $x \psi\text{-s}$.

According to Bennett, 'John breaks a promise by leaving' thus means the same as 'Some fact about John's behaviour conflicts with a promise he made, namely the fact that he is leaving'. We can extract from the analysis the meaning that Bennett would attribute to the 'by'-locution: basically, 'by' is a 'namely' in disguise (it only differs from 'namely' in generating a designator of a fact out of the subjectless gerundive clause).

Bennett's account seems to fit a number of cases; but there are reasons to reject it. A first noteworthy point is that, as it stands, the account misconstrues the syntactic role of 'by'. Since 'by' is a predicate-forming operator, a semantic clause for 'by' should not state truth-conditions for statements in which 'by' features, but rather satisfaction-conditions for predicates that are formed with the use of it. While it may well be possible to modify Bennett's proposal accordingly I will not try this here, because there are other reasons to reject it.

In being based on FORM, the proposal hinges on a very strong hypothesis about the meaning of *every* verb that can occur in the antecedent of a true 'by'-statement. For if a verb does not mean anything of the required existential form, then there is nothing for a 'namely'-rider to attach to. This dependency seriously threatens the proposal: (i) Admittedly, there are verbs for which the scheme does not look too farfetched; e.g., 'make something true', 'break a promise', and in general causative verbs such as 'kill' or 'spill'. But even in such cases, a closer inspection may reveal problems. Does 'x kills y' mean as much as 'some fact about x's behaviour is a cause of the death of y'? While you cannot kill somebody without causing him to die, you apparently can cause somebody to die without killing him. If the causal chain that leads from my behaviour to the death of someone is long enough, it will not be correct to say that I killed him. (ii) That reasoning presents just one of many well-known *prima facie* problems for a popular kind of account of such verbs, on which, e.g., 'x kills y' is analysed along the lines of 'x is the agent of some event which causes the death of y'. Most problems for accounts of that kind give rise to structurally analogous problems for FORM. Perhaps, those problems can be overcome.²⁵ Even then, it is important to notice that FORM entails an analysis of causative verbs which is *similar* to the said popular kind of analysis of such verbs, yet nevertheless strictly speaking *incompatible* with it. For according to FORM the main

quantifier in the analysans for a causative verb ranges over facts, not over events. Someone who adopts an analysis of causatives in terms of event causation can therefore not accept FORM. (iii) More importantly, there are verbs which can combine with 'by'-phrases but for which FORM is not initially attractive. You can win by cheating, and you can become famous by appearing on the cover of *FACE*. So, if FORM were correct, sentences of the forms '*x* wins', and '*x* becomes famous' would have to be synonymous to sentences of the form 'some fact about *x*'s behaviour has a relational property of kind *R*'. But it is not easy to find plausible candidates that would be worthwhile to consider. To understand how wide-reaching FORM in fact is, one should notice that even verbs of basal bodily movements, such as 'nod', can occur in the antecedent of a true 'by'-statement. Although under normal conditions one does not nod by doing anything else, and moving one's head by some artificial means would under normal conditions not count as nodding, there are cases of severe bodily dysfunction which make such 'by'-statements appropriate. Bennett himself mentions the case of a woman who lost her proprioceptive body image and who can only nod by rapidly trying out numerous micro-movements while observing herself in the mirror and correcting the results she notices.²⁶ (iv) Whether or not there *actually* are any verbs whose satisfaction by an object can come about *in different ways*, but which do not mean anything of the relevant form, there certainly *could* be such verbs. Why should they not be capable of featuring in the antecedent clause of a true 'by'-statement then?

Perhaps, one might think it unfair to construe FORM in such a strong way, i.e., as a thesis about the *meaning* of the relevant verbs. Any sentence with a verb whose satisfaction by an object can come about in different ways will at least (either logically or non-logically) *imply* a statement of the relevant form, and one might suspect this would suffice for Bennett's purposes. But it would not, as Bennett (1994: 37) himself noted; if his proposal was based on the weaker claim, it would yield the wrong truth-values for certain 'by'-statements. Here is an example:

(7) Ben annoyed his wife Ann.

implies that Ann is Ben's wife, and that in turn implies the truth of 'Some fact about Ben's behaviour *contributed to his being married to Ann*', an existential statement of the relevant form. A namely-rider for that statement would for instance be 'the fact that he accepted her proposal'. But even if (7) is true, the following 'by'-statement

(7*) Ben annoyed his wife Ann by accepting her proposal.

may obviously still be false. So, a thesis weaker than FORM would not do for Bennett.

A final problem of Bennett's proposal is that it cannot account for an important aspect of the function of 'by': in its relevant use, this particle is used to give an *explanation*.²⁷

More precisely, an explanation of *how someone did something*. This is a central function of 'by' and any semantic analysis of 'by' should take this feature of the word into account.

c. The Semantics of 'by'

I propose to go even further: the said observation can directly ground an analysis of the meaning of 'by'. The basic semantics for 'by' are provided by the following schema (where $\cap$ stands for the concatenation function):

BY $\Box x (x \text{ satisfies } \langle \Box \rangle \cap \langle \text{'by'} \rangle \cap \langle \psi\text{-ing} \rangle \leftrightarrow \text{that } x \psi\text{-s explains how } x \Box\text{-s}).$

The proposal has the required generality to cover all uses of 'by', whether they introduce events and acts, or not, and whether they point towards some causal or to some non-causal phenomenon. It is moreover not dependent on FORM or on any similarly contentious thesis about the meaning of a countless number of English expressions.

Although I cannot enter into an extensive discussion of explanation in general here, I will make a few remarks on relevant points: while the literature on explanation primarily focuses on 'because'-statements, i.e. explanations of why something is the case, it did not go unnoticed that there are other important forms of explanation, and in particular, that there are 'how'-explanations, i.e. explanations of how something is *possible* and of how something is *done*.²⁸ And one of the best ways of giving an explanation of the latter kind is by using a 'by'-statement.

A comprehensive theory of explanatory expressions will have to cover a lot of pragmatic grounds. But this is not to say that explanation is itself a pragmatic or non-objective phenomenon.²⁹ Just as there is at least one sense of 'because'-statements (i.e. explanations of why something happened) in which they are *objectively* true or false,³⁰ the correctness of explanations of how something was done is not relative to the epistemic backgrounds of certain speakers (while its usefulness and/or its informativeness in a given communicatory situation is indeed thus dependent).

Let me return to the proposal about 'by'. Part of its idea is that in order to understand the import of 'by'-statements, one should focus on the sort of question that they can be used to answer.³¹ Any correct 'by'-sentence must provide an answer to a putative question of the form 'How does he/she/it do it?'³²

It is noteworthy, however, that *specifying how* someone did something does not always amount to giving an *explanation* of *how* he did it. Imagine that a friend of yours plays the sax and has a gig; unfortunately, you couldn't come. Afterwards you meet some friends who were able to attend, and you ask them how your friend performed. If they answer 'By playing the sax,' they either misunderstand your question or (what is more

likely) they make a cheap joke. What you were asking for was not an explanation of how your friend performed; you knew that she plays the sax. Rather, you wanted to know something about the *quality* or the *manner* of her performance. Appropriate answers would have been 'astonishingly good', 'bad', 'better as usual', etc.³³

Evaluative answers to 'how'-questions which do not provide an explanation of how something was done, but which only describe the quality of what was done, do not yield corresponding 'by'-statements.³⁴ Take for instance

Q: How did she play?

A: Better than usual.

While

(8) # She played by *better than usual*.

is not even well-formed,

(9) She played by *playing better than usual*.

is well-formed but incorrect. That only an *explanatory* how-she-did-it yields a correct 'by'-statement provides additional support for the proposed account of 'by' in terms of explanation: a 'by'-statement is not only an answer to a putative 'How did she do it?'-question, but a response to a putative request of the form 'Explain how she did it.'

Let me now briefly address two objections to BY, discussion of which will clarify some aspects of the proposal.

Objection 1: Consider the following example:

(10) John worked slowly by being constantly distracted.

The sentence is clearly not acceptable. But there may well be an explanatory link between John's working slowly and his being distracted, and in such a case, it may seem that BY wrongly predicts the acceptability of (10).

Reply: The objection rests on a confusion between two sorts of explanation, i.e. explanations of *why* something was done and explanations of *how* it was done. That John was constantly distracted cannot explain *how* (in which way or manner) he worked slowly. If you are told 'John worked slowly' and you request 'Explain how he did that', the demand would not be met by the reply 'He was distracted.' The latter response would, however, be satisfactory if an explanation of *why* John worked slowly was requested: of course, someone's being distracted may explain *why* (how it came about that) he works slowly. So, the distinction between 'how'-explanations and 'why'-explanations is crucial

for an appreciation of BY; once the distinction is made, BY can account for the unacceptability of (10).³⁵

Objection 2: Sometimes, a question of the form ‘How did x $\square$?’ asks for an explanation of how it was *possible* for x to $\square$ (rather than for an account of the means or method by which x did it). Accordingly, statements of the form ‘ x $\square$ -s by ψ -ing’ sometimes provide an explanation of how something *could* be done rather than an explanation of how something *is* done.

Reply: The proposal could be modified in order to accommodate the cases described. However, on closer inspection it is not clear that such a modification would be desirable. What is true is that in uttering a ‘How did she do it?’-question we sometimes long to know what made it possible for her to do it. Assume you are asked

(11) How did you notice her in such a commotion?

Certainly, you are not expected to answer ‘By looking for her,’ because this will already be presupposed by the questioner. What was desired was an account of how it was possible to spot her, since the commotion appears to prevent that feat. But even if the answer may clearly be unsatisfactory in that context, it nevertheless is *true*. Moreover, it is indeed a direct answer to the question literally expressed by the sentence. While the use of (11) in a given context may be comprehensible and capable of conveying the intended question, it does not semantically express it. This is only done by the following sentence:

(12) How *could* you notice her in such a commotion?

And this phenomenon, i.e. that it seems natural enough to use (11) in place of (12), should not be explained by a *semantic* account of ‘how’ or ‘by’ but rather calls for a *pragmatic* explanation. Similarly, a statement of the form ‘ x $\square$ -s by ψ -ing’ may perhaps sometimes be used in order to convey that x ’s ψ -ing made x ’s $\square$ -ing possible (rather than that to ψ was the way x $\square$ -d), but such uses seem deviant to me and their occurrence should be explained as a pragmatic phenomenon.

d. Two Consequences of the Given Account

The proposal offered can shed some further light on the argument against the Anscombe Thesis proposed in section 3. An explanation with an explanans E and an explanandum E^* may be correct (true) by ordinary standards and yet be *partial*, such that there is a more complete explanation of the same explanandum with an explanans that is not identical to E , but merely involves E .³⁶ This is what distinguishes the two claims

- (1) NN estimated the number of persons by first counting the number of names in a column, and then multiplying the number of names in a column by the number of columns, and
- (2) NN estimated the number of persons by multiplying the number of names in a column by the number of columns,

in the example from section 3. Both of them give an explanation of how NN did what he did, but one of them is more complete than the other (though still incomplete itself). It is the admissibility of partial explanations that renders the Anscombe Thesis false: in explaining how someone did something, we may cite more or less complex acts one of which may contain another as a proper part. But in such a case, no identity between the acts can be rationally defended.

That 'by'-statements give *explanations* is also related to the asymmetry of 'by' that was noted in section 2.b., because asymmetry seems to be general feature of explanation (it need not be decided here whether asymmetry is a strictly universal feature of all explanations, or whether it is a norm with some exceptions).³⁷ There exists, then, some connection between the failure of the Anscombe Thesis and the asymmetry of 'by' after all. However, it is not that the latter is responsible for the former (as Goldman thought). The connection is rather that both of those facts can be accounted for by a further, third fact, namely the fact that 'by' is used to give explanations.

e. 'By' and 'Why'

In claiming that 'how'-explanations should be accepted as genuine explanations, I remain neutral on the question whether they are explanations in their own right, or whether they are somehow reducible to prototypical 'because'-explanations. A possible and prima facie plausible linkage between 'how' and 'because'-explanations would be that whenever a statement of the form

HOW That $x \psi$ -s explains how $x \square$ -s,

is true, so is the corresponding statement of the form

BEC It is true that $x \square$ -s, because it is true that $x \psi$ -s.

In other words, if $x \square$ -s by ψ -ing, then the fact that x is ψ -ing makes it true that x is $\square$ -ing.³⁸ This linkage between 'how' and 'because'-explanations (if it is accepted) does not suffice, however, for a reduction or analysis of 'how'-explanations in terms of 'why'-explanations, which would not only require the described implication of (instances of) BEC by (the corresponding instances of) HOW, but also the reversed implication. This, however, does not hold, since causal 'because'-explanations do not generally imply the

corresponding 'how'-explanations. Imagine that Fred hits himself on the toe, which causes him to cry. Why does he cry? Because he hit himself on the toe. But he does not cry by hitting himself on the toe.

So, statements of the form BEC do not always entail the corresponding ones of form HOW. While this fact does not show that 'how'-explanations are irreducible, it provides a task for those who want to defend the reducibility: they would have to demarcate a subclass of BEC-explanations that entail HOW-explanations. A simple but not obviously wrong suggestion is this: some instances of BEC give causal explanations, such that x 's $\square$ -ing is a cause of x 's ψ -ing, while others do not; it is the latter cases that imply the corresponding instances of HOW.

But assume Herby surprises us by telling a joke. Then the following instance of BEC is true:

(13) It is true that Herby surprises us, because it is true that Herby tells us a joke.

While (13) here certainly relates to an instance of causality, it also seems to imply a true instance of HOW: Herby surprised us by joking. So, the example may seem to prove the above suggestion concerning the connection between BEC and HOW wrong.

However, even though there is some causal component to (13), the statement is not itself a causal explanation in the sense outlined above. If Herby surprises us by telling a joke then *our surprise* is caused by his telling a joke. But it is a different issue whether *Herby's surprising us* was caused by his telling. And contrary to the relation between the telling and our *surprise*, the relation between the telling and the *surprising* does not seem to be causal but rather a kind of non-causal constitution. (In general, while many statements of the form ' x $\square$ -s by ψ -ing' involve a causal component, it is not that x 's ψ -ing is a cause of x 's $\square$ -ing,³⁹ but rather that x 's ψ -ing is a cause of an immediate *result* of x 's $\square$ -ing.⁴⁰) So, (13) is not a causal explanation in the above sense, since its 'because'-part does not cite a cause of what the nominalization of its antecedent picks out. Accordingly, the suggestion about how WHY relates to HOW correctly predicts that the 'by'-statement corresponding to (13) is true in the situation described.

But to settle whether the proposal adequately captures the relation between 'how'- and 'why'-explanations requires closer investigation within a more general theory of explanation. Since developing such a theory goes beyond the scope of this article, a final answer to the question of reducibility has to be deferred to another occasion. In any event, 'why'-explanations certainly seem to be the more general phenomenon, because they have their use in discourses that are not about how certain things *behave* or about what certain things *do*, and in which there is accordingly no use for 'how'-explanations.

5. Conclusion

It is time to take stock: after reviewing two unsuccessful arguments against the Anscombe Thesis, I presented a simple argument against it that does not rest on philosophically contentious premises. I then turned to the more general question about the meaning of the word ‘by’ (in the use relevant for the discussion): I presented an account in terms of *explanation* and showed how it is related to the argument against the Anscombe Thesis.

To conclude, let me briefly put my proposal about ‘by’ in a wider perspective. Due to a number of influences, highly intensional concepts—to which explanatory concepts belong—have often been regarded with a general scepticism and shunned in semantic proposals. But explanation plays a central role in our cognitive life and in the way we classify worldly phenomena. So, it should not be surprising if explanatory concepts prominently figure in semantic analyses of a number of English phrases; most notably, phrases such as ‘in virtue of’, ‘due to’, ‘to make something such-and-such’, and (of course) ‘because’ and its kindred arguably all involve the idea of explanation.⁴¹ As it has been argued in this article, ‘by’ takes its place among such phrases and thereby helps illustrating the philosophical importance of a general theory of explanation.*

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- ¹ Cp. Bennett (1988: 188).
2. Cp. Anscombe (1963: §23).
- ³ Prominent proponents of the thesis include Davidson (though he never explicitly stated the thesis, he came close to it; see e.g. 1971: 58f.) and Hornsby (1980: 6–7). More recently, Francken & Lombard (1992) and Steward (1997: 33, footnote 24) apparently concur. Smith (1978: 239f.) defends a restricted version of the Anscombe Thesis.
- ⁴ For an alternative to the standard view that actions are events, see Bach (1980), Stoecker (1993: 276–86), and Alvarez & Hyman (1998: 221–36).
- ⁵ According to Annas (1976: 253), Anscombe indeed only held a weaker principle.
- ⁶ See Anscombe (1979: 223–27). By the way, that passage casts doubt on Annas's reading of *Intentions* (see the prior footnote).
- ⁷ See Bennett (1994: 30).

- ⁸ Another prominent worry about the Anscombe Thesis is that it misconstrues the dates of events; see Thomson (1971) as a classic contribution and Bennett (1988: 194–99) for an overview. Since that worry is less instructive than the ones discussed below, it will not be addressed here. Nor will an argument against **AT** offered by Alvarez & Hyman (1998: 234–36), because it is based on the contentious assumption that actions are not events. Instead, it will be argued that a good reason to reject the Anscombe Thesis can be found on more neutral grounds.
- ⁹ For the following see Vendler (1967). To keep the presentation in the main text simple, I ignore the distinction between verbal and nominal gerundives which grammatically coincide in simple cases but diverge in more complicated constructions (cp. Parsons 1990: 132ff.). Since verbal gerundives always receive a propositional reading, the distinction is not unrelated to the above response to the argument against the Anscombe Thesis; but the idea of the argument is independent of those details.
- ¹⁰ On the notion of a perfect nominal see Vendler (1967) and Bennett (1988: 4f.).
- ¹¹ Bennett (1994: 29) offers yet another formulation of the Anscombe Thesis.
- ¹² Cp. also Parsons (1990: 133f.). Incidentally, Bennett (1988: 7) himself notes that perfect nominals sometimes refer to facts.
- ¹³ I am grateful for a comment of a referee which forced me to come clearer about the relation between *Leibniz’s Law* and the argument against the Anscombe Thesis.
- ¹⁴ On the following cp. Goldman (1970: 5), (1971: 762).
- ¹⁵ The following criticisms are akin to Anscombe’s (1979: §7), and Hornsby’s (1980: 7f.).
- ¹⁶ On the point of negated event-statements, cp. Mellor’s (1995: 131–35) and Steward’s (1997: 156f.) related criticisms of Davidson’s account of the logical form of action sentences.
- ¹⁷ Kim’s (1976) conception of events could presumably provide sufficiently many events, but his conception is somewhat idiosyncratic and it has been argued that Kim’s “events” are rather facts in disguise; see Bennett (1988: ch. 5), and Steward (1997: 21–27). Alternatively, certain trope ontologies might be helpful here; see Moltmann’s (2003: 456) generous existence conditions for tropes and cp. Kriegel (2005).

- ¹⁸ This was forcefully emphasized by Bennett (1994: 31 & 1995: 33–35).
- ¹⁹ SENT is suggested by some remarks of Bennett's remarks (1994: 31f. & 1995: 34), and it is mirrored in the form of his proposal about the semantics of 'by' (see below).
- ²⁰ VERB was proposed by Hornsby (1980: 7).
- ²¹ A referee suggested that a proponent of SENT might perhaps reply that 'by' is a scopeless operator (on that notion see Zimmermann 1993). However, the reply apparently does not square well with the existence of sentences in which scope distinctions are applicable to 'by' and make a semantic difference (see below for some examples).
- ²² Bennett (1994: 38n.) gives an example exhibiting a similar ambiguity: 'He tried to escape by masquerading as the prison chaplain.' The sentence allows for two readings that can easily be accounted for by VERB, but not by SENT (incidentally, although Bennett's sentence *is* ambiguous, it seems that in both readings it is true in the same circumstances; hence, I used a clearer example in the main text).
- ²³ See Bennett (1994: 46–50) for a criticism of Thomson's (1977) and Francken's & Lombard's (1992) accounts, and Bennett (1988: ch. 13) for a criticism of Goldman's (1970: ch. 2) account.
- ²⁴ For the following, cp. Bennett (1988: 214–18 & 1994: 36–38 & 1995: 27–29).
- ²⁵ See Parsons (1990: ch. 6) for a refined account of this kind, and for a discussion of some standard objections.
- ²⁶ See Bennett (1994: 43; 1995: 37); the case is described in Sacks (1983).
- ²⁷ The explanatory role of 'by' is also stressed by Goldman (1970: 5) and Stoecker (2005: 339f.), but they do not make it the base of a semantic account of 'by'.
- ²⁸ See, e.g., Dray (1957: 158ff.), Schurz (1999: 110), and most importantly Cross (1991).
- ²⁹ Cp. Lewis (1986). For the general idea of an objective account of explanation cp. Kim (1988).
- ³⁰ 'because' *also* has a non-objective, purely *evidential* use, as exemplified by 'He must be there, because his lights are on'; cp. Morreal (1979).

- ³¹ Cp. van Fraassen (1980: ch. 5, especially p. 134), where it is argued that 'because'-explanations should be understood via their role as answers to 'why'-questions.
- ³² Cross (1991) and Jaworski (forthcoming) develop accounts of the logic of 'how'-questions that can fruitfully supplement the current discussion.
- ³³ That 'how'-questions may either ask for the manner or the means/method of some doing was also pointed out by Cross (1991: 246ff.). Moreover, he notes that 'how' does not only combine with verb phrases to form questions, but also with quantifying phrases ('How many *F*s are there?') or adjectival phrases ('How tall is she?'). Such sorts of 'how'-questions can be ignored for present purposes because they differ both syntactically and semantically from those corresponding to 'by'-statements.
- ³⁴ Cp. Stoecker (2005: 340).
- ³⁵ The objection was due to an anonymous referee who also offered the following alternative account of why (10) is odd: the instance of '□' in any acceptable sentence of the form '*x* □-s by *ψ*-ing' must introduce an action or at least an intended state. But while this would explain the unacceptability of (10), there are other acceptable sentences that violate the assumption of the referee. Just recall an example already given, i.e. 'She stood out by being the only unmarried mother.'
- ³⁶ For a survey of some phenomena of incomplete explanation, see Hempel (1965: 415f.).
- ³⁷ Theories of explanation are often measured by their capacity to account for the asymmetry of explanations; see, e.g. Bromberger's (1966: 92f.) and Kitcher's (1981: 522ff.) criticism of the Hempel-Oppenheim model of explanation, and Barnes (1992), who criticizes Kitcher's own model on the same grounds.
- ³⁸ For the idea that talk about truth-makers is at bottom talk about *explanations* of truth, see McFetridge (1977), Künne (2003: 148–75), Hornsby (2005), and Schnieder (2006.b).
- ³⁹ As Danto (1963) once suggested.
- ⁴⁰ On these issues, cp. Hornsby (1980: ch. V).
- ⁴¹ Recently, it has also been argued that explanatory notions are central to an analysis of (i) the concept of rendering something true/false (see Schnieder 2004), (ii) concepts of existential dependence (see Correia 2005, and

Schnieder 2006.a), (iii) the concept of knowledge (see Jenkins 2006), and (iv) the concept of a truth-maker (see the previous footnote for references).

* I am indebted to Miguel Hoeltje, Mirja Holst, Moritz Schulz, Alex Steinberg, and two anonymous referees of this journal for comments and discussion.