

ON THE LOGICAL FORM OF SOME COMMONPLACE

ACTION EXPRESSIONS*

Douglas N. WALTON - University of Winnipeg

In a fascinating exposition, Dazeley and Gombocz (1979) study the logical analysis of the verb *facere* given by St. Anselm of Canterbury in *Lambeth Manuscript 59*.¹ According to St. Anselm, someone slaying a man with a sword is said to *facere* that the man is dead. Other cases elaborated by St. Anselm include *facere non esse*, *non facere esse*, and *non facere non esse*. From these cases, St. Anselm shows how a surprisingly quite general grammar of many interesting forms of *facere* can be generated.

What makes this account particularly fascinating to contemporary readers is that it is very suggestive of modern modal logic as a syntax of some commonplace verbal expressions. As Dazeley and Gombocz point out, *facere* has no single precise counterpart in English. Yet one cannot help thinking that one way of representing at least one sense of *facere* is suggested by saying that when someone slays a man with a sword, the proposition 'The second man is dead' is something made true by the first man. Syntactically, *facere* may be thought of as a modal operator on a proposition.

It is tempting indeed to explore these parallels further, but clearly there is a great risk of anachronism. For as Dazeley and Gombocz remind us, St. Anselm never used words like 'made it true that' or other terms familiar to present-day action theorists and other speakers

* I would like to acknowledge support through a research grant from the Social Sciences and Humanities Research Council of Canada, and thank Max Cresswell and George Hughes for many helpful comments and suggestions on previous drafts of this paper.

1. See R. W. Southern and F. S. Schmitt, *Memorials of St. Anselm*. London, Oxford University Press, 1969. A useful translation and commentary is to be found in D. P. Henry, *The Logic of St. Anselm*, Oxford, Oxford University Press, 1967.

of "logical English" (or "logical German", for that matter). Yet with appropriate caution and reservations, we will pursue the question of how this modern version of one important sense of what St. Anselm might have meant by *facere* could be extended to deal with some problems about the logical form of action expressions discussed by Dazeley and Gombocz (1979) and by myself in a previous article (1976).

I

As we have said, it would be quite interesting if the grammar of the expression 'p is made true by some agent' were that of a modal operator in some classical modal logic. Yet even if it were so, it would be harder than you might expect to see how some commonplace action sentences could be made to conform to modal form. We might try to parse "The doctor removed the patient's appendix" as "The doctor made it true that the patient has no appendix." But as Davidson (1966) pointed out, the former could be false and the latter true if the doctor ran the patient down with his Lincoln Continental, or handed him over to another doctor.

Try "Smith coughed". We might try to parse this sentence as "Smith made it true that there was a cough" except that the parsing, unlike the original, could be true just because Smith caused someone else to cough. We could try "Smith made it true that Smith coughed," except that if someone else caused him to cough, he could have coughed without having himself made it true that he coughed.²

Obviously part of the problem here has to do with interpersonal distinctions - "Smith made it true that Jones coughed" is very different from "Jones made it true that Smith coughed" or "Smith made it true that Smith coughed." For example, perhaps the latter, unlike either of the former pair, implies or is implied by "Smith made it true that Smith made it true that Smith coughed."³ But interpersonal questions apart, even if we postulate for the moment that Smith is alone in nature, his inadvertent cough even in such splendid isolation would hardly assure us that he made it true that he coughed.

2. For other possible paraphrases see Dazeley and Gombocz (1979) and Walton (1976).

3. See Pörn (1977)

hed. For to say that he made it true strongly suggests that he did not do it inadvertently, but deliberately. The proposed equivalence is, if not demonstrably wrong, at least questionable.

Similar difficulties can be found with attempts to parse "Cass walked to the station." "Cass made it true that Cass is at the station" overlooks the walking, but "Cass made it true that Cass walked to the station" suggests, for example, that she might have parked her car elsewhere in order to eliminate the temptation to skip the exercise of walking.

A solution I want to bring forward for consideration is that we restrict the class of action-sentences for initial parsing to those that express overtones of deliberate agency, and call these, let's say, the pure action propositions. We define this class as follows: *p* is a *pure action proposition* if, and only if: necessarily (*p* if, and only if, *p* is made true by some agent). Thus we say that "Smith coughed" is a pure action proposition if, and only if, Smith coughed if, and only if, Smith made it true that Smith coughed. The test of whether a specific instance of "Smith coughed" is a pure action proposition is whether or not it is true to say that he coughed just in case he made it true that he coughed.

Since we may presume that it is possible that Cass has two legs even though she has in no way made it true that she has two legs, it is fair to conclude that "Cass has two legs" is not a pure action proposition. Whereas if Cass deliberately walked to the station so that it is correct to say that she made it true that she did it, then it is fair to conclude that "Cass walked to the station" is a pure action proposition.

While the definition of a pure action proposition has entailments of the form '*p* is made true by some agent $\equiv p$ ', that does not mean '*p* is made true by some agent' collapses into vacuity. The equation does not hold for all *p*, but only for the pure action propositions. Similarly, in S4, $Lp \equiv p$ holds for some *p*, e.g. Lp and $p \supset p$. But the necessity operator is not redundant in S4.

It is not the case that '*p* is made true by some agent' is equally appropriate to describe both (i) deliberate omissions and (ii) mere not-doings that are not correctly described as omissions. For that parsing is equally correct whether Smith really omitted to answer the phone, or whether he did not answer it merely in the sense that it was a phone call that came through for Margaret Thatcher in Whitehall while Smith, without the remotest connection to affairs of state in

the United Kingdom, was asleep on his farm in Portage la Prairie.⁴ But the notion of a pure action proposition can help us to effect the required distinction between omitting and merely not-doing. For in the case of the phone call to Margaret Thatcher, we may presume that it is false that Smith did not answer the phone if and only if he made it true that he did not answer the phone. In fact he did not answer the phone, but he did not make it true that he didn't. The example presumes that he had no choice at all in the latter regard. Thus pure actions are useful in analysing negative actions.

Yet the notion of a pure action proposition does not exhaust, analyse, or explain the complete logic of action sentences. Davidson (1966) is quite right to insist that this sort of manoeuvre by itself is not adequate as an analysis. Whether this approach is useful ultimately depends on whether the notion 'p is made true by some agent' can be embedded in a logically well-written language. Let us see how it might be done.

II

Pörn (1977) defines a semantical notion of bringing about, E_{ap} , read as 'p is made true by agent a ' by considering all those possible situations u' in which the agent does at least as much as he does in a given situation u . Then it is said that p is made true by a if, and only if, (i) p is true in every situation u' and (ii) the opposite of everything that a does in u is true in at least one situation u' . Thus E comes out to be a modal operator based on a classical propositional calculus. This is not the place to ask what E means or to evaluate Pörn's project for a general analysis of the logical form of action sentences, however.⁵ Suffice it to note that the general project has been systematically attempted.

Our interest in the project here is that a definition rather like that of a pure action proposition plays a leading role. According to Pörn (1977, p. 11), p, an n-place relation is an *act relation* if, and only if, $(\forall x_1 \forall x_2 \dots \forall x_n) (p \equiv E_{x_i}p) \wedge M(\exists x_1 \exists x_2 \dots \exists x_n)(E_{x_i}p)$ is true for some i from 1 to n . Thus 'x kicks the table' is an act-relation

4. For an extended analysis of omissions, see my forthcoming article, 'Omitting, Refraining and Letting Happen,' *American Philosophical Quarterly*, to appear.

5. But see 'Critical Study of Some Recent Action Theory,' by the present author, *Philosophia*, 8, 1979, 719-740.

because (i) $(\forall x) ((x \text{ kicks the table}) \equiv (\exists x) (x \text{ kicks the table}))$ is true, and (ii) it is possible that some agent kicks the table. By contrast, 'x is growing old' is not an act relation because $(\forall x) ((x \text{ is growing old}) \equiv (\exists x) (x \text{ is growing old}))$ may be presumed to be false. Can this definition facilitate our task of parsing the action-sentences of the first part as well as the definition of a pure action proposition?

The answer would seem to be 'No', for any property that happens to be false of any agent you choose, but could apply to that agent, turns out to be an act-property. Take the example of having one's appendix removed by Sir Alfred Ayer. We may presume that nobody is having his appendix removed by Sir Alfred, and moreover that it could be true of some individual, as unlikely as it seems, that his appendix is being removed by Sir Alfred. It follows, by Pörn's definition, that the property of having one's appendix removed by Sir Alfred is an act relation. Yet on the contrary, having my appendix removed by Sir Alfred is something I undergo--it is by no means an action of mine at all.⁶ This untoward consequence is therefore not in the spirit of the required definition at all.

At least in this one regard, the definition of a pure action proposition is superior. By approaching the characterization problem for actions by way of specific instances rather than generalized properties, I believe it is also more advantageous, but perhaps this point should be argued out more fully than we can do here.

Whether Pörn's or my definition represents the best refinement, the general notion of a pure action proposition (act relation) does represent a useful way of extending a logical analysis of verbs like that undertaken by St. Anselm to verbal expressions that could only otherwise be accommodated with great difficulty. For as Dazeley and Gombocz (1979, p. 75) point out, ad hoc analyses of "Smith coughed" represented by circumlocutions like "Smith made it true that the statement 'A cough took place' would have been true if it had been expressed" should surely be regarded as torturous and syntactically suspect. But utilizing the notion of a pure action proposition, we can assimilate many verbal expressions intact, with no need for the introduction of such fractured equivalents along with their attendant difficulties.

6. This criticism is put forward in somewhat more detail in the author's critical review of Pörn (1977) to appear in *Synthese*.

Much further logical analysis of 'p is made true by some agent' needs to be done, if pure action propositions are to be better understood. What can be said here about the general project?

III

The use of the *per se* and *per aliud* distinction in the *De Grammatico* is carried over by St. Anselm to the Lambeth Fragments where he distinguishes between *per se facere esse* and *per aliud facere esse*.⁷ A number of cases that St. Anselm uses to illustrate this distinction are studied in Walton (1976) with an eye to asking what sort of conditionals could be appropriate to reflecting the logic of these cases.

Clearly the usual truth-functional propositional logic does not offer a conditional that is much help, for what seems to be at issue is not merely the truth-values of the component propositions. For example, we would not want to say that if Socrates makes it true that he is not sitting, it must follow that if Socrates makes it true that he is sitting then he makes it true that the earth collides with the sun. Reason: the proposition 'Socrates is sitting' is neither *per se* nor *per aliud* related to the proposition 'The earth collides with the sun' in any way that can be presumed to be established without further argument. Unrelated propositions cannot form true conditionals that express implicative relationships between verbal expressions simply in virtue of the individual truth or falsity of the component expressions. Rather we need to think of the binary relation that may obtain or fail to obtain between the component expressions.

Clearly many different kinds of relations could be at issue in different kinds of conditionals. One kind of relation is that where the subject-matter of p overlaps with the subject-matter of q. We start with a set of topics, T, and then assign subsets of T to each proposition, p, q, r in an argument. The relation of subject-matter overlap between pairs of propositions is reflexive and symmetrical, but not transitive. If we are thinking of propositions that express actions, we can think of the appropriate relation as that of spatio-temporal approximate coincidence in a sequence of actions. One can make it true that p *per se* by bringing about q where p and q are directly related, e.g. the killer who killed his victim with a sword. But then by transitive closure, we say that p is made true indirectly by making it true that q if

7. See Dazeley and Gombocz (1979), p. 80.

there is some sequence of propositions, r_0, r_1, \dots, r_i , each related directly to its neighbour, such that p is related to r_0 and r_i is related to q . Accordingly, the killer might see to it that his victim is dead by plotting an inevitably fatal sequence of developments, but without actually wielding the sword himself. These notions are more fully developed in Walton (1979).

The interest of the above ideas is heightened by the development of relatedness logics by Epstein (1979). The primitive notions are classical negation, \neg , and relatedness implication \rightarrow . The basic assumptions are these. First, p is always related to $\neg p$. But p is related to $q \rightarrow r$ if, and only if, p is related to q or p is related to r . Then $\neg p$ is defined as usual: $\neg p$ has the opposite value of p .⁹ But $p \rightarrow q$ is defined as follows: $p \rightarrow q$ is true if, and only if, (i) it is not the case that p is true and q is false, and (ii) p is related to q . The logics that result from these assumptions, shown sound and complete in Epstein (1979), do not have exportation or addition; nor do they have "paradoxical" theorems like $\neg p \rightarrow (p \rightarrow q)$ and $p \rightarrow (q \rightarrow p)$. But they do have *modus ponens*, disjunctive syllogism, and many other characteristic inferences of propositional calculus. And in fact, classical PC is shown to be an extension of relatedness logic.

On the basis of the above developments I would like to suggest that we look to relatedness logics rather than logics based on classical propositional calculus if we want to understand the logic of verbal expressions. Indeed, in my view the principal difficulty with Pörn's way of defining an act relation is that by basing his logic on classical PC, he must be committed to inappropriate theorems like $\neg p \supset (p \supset q)$. The unfortunate consequences of this assumption can however be nicely obviated by studying the logical relationships between p and q instead of concentrating simply on the individual truth-values of p and q .

It is clear that many types of relationships could be involved just as St. Anselm apparently had various kinds of relations in mind when making the *per se/per aliud* distinction. But now we are in a position to see how such relations can function in conditionals, we can better see how a logic of verbal expressions along lines envisioned by St. Anselm is a feasible project.

8. See Epstein (1979) for more details.

9. p is related to $\neg q$ if, and only if, p is related to q .

We conclude that the notion of a pure action proposition does have explanatory power when embedded in a well-written logic of 'p is made true by some agent'. Thus a systematic and reassuring reply can be made to Davidson's misgivings that attempts to construct grammars of verbal expressions based on the sentential operator 'p is made true by some agent' must in principle be constrained to lack adequate resources to explain the logical form of commonplace action expressions with transitive or intransitive verbs. Whether you prefer the classical approach of Pörn, or the relatedness approach recommended by the present author, the notion of a pure action proposition does have both enough theoretical backup and practical bite to make it a valuable tool in extending the applicability of logics of 'p is made true by some agent' to commonplace verbal expressions. Thus I hope St. Anselm's approach is to some extent both vindicated and enhanced, and that further studies along the same lines may be encouraged.

References

- Donald Davidson, 'Logical Form of Action Sentences,' in: N. Rescher (ed.), *The Logic of Decision and Action*, Pittsburgh, University of Pittsburgh Press, 1966, 81-95.
- Howard L. Dazeley and Wolfgang L. Gombocz, 'Interpreting Anselm as Logician,' *Synthese*, 40, 1979, 71-96.
- Richard L. Epstein, 'Relatedness and Implication,' *Philosophical Studies*, 36, 1979, 137-173.
- Ingmar Pörn, *Action Theory and Social Science: Some Formal Models*, Dordrecht, Reidel, 1977.
- Douglas Walton, 'Logical Form and Agency,' *Philosophical Studies*, 29, 1976, 75-89.
- Douglas Walton, 'Relatedness in Intensional Action Chains,' *Philosophical Studies*, 36, 1979, 175-223.