FODOR ON WHERE THE ACTION IS

This paper is concerned with Jerry A. Fodor's critique[1] of the logical structures proposed in Donald Davidson's "The Logical Form of Action Sentences." [2] I will have nothing to say below about the parts of Fodor's paper which deal with the proposals of Davidson's "Truth and Meaning." [3] I am inclined to agree with Fodor's conclusion that (contra Davidson), a truth definition for a natural language need not reveal the logical structure of the sentences of the language, though my reasons are quite different from those which Fodor gives. Fodor mentions only the fact that trivial truth definitions are possible; however, even disregarding trivial definitions, I would maintain that a wide range of putative 'logical forms' can be consistent with the same assignment of truth values and that the choice among alternative systems of 'logical form' must be made on the basis of whether they allow rules of inference and rules of grammar to be stated in full generality.[4]

Davidson proposed that the logical structure of every action clause involves reference to an action, e.g. that the logical structure of (1) is along the lines of (2):

(1) Amundsen flew to the North Pole in 1926.
(2) $(\exists x)$ [Fly(Amundsen, the North Pole, x) & In(x, 1926)],

where 'Fly' is conceived of as a three-place predicate, with the third place being the action. In this and several other examples, Davidson treated an adverb as conjoined with what it 'modifies' (with a

1. Jerry A. Fodor, "Troubles About Actions," in *Semantics of Natural Language,* ed. by Donald Davidson and Gilbert Harman (Dordrecht, Holland: D. Reidel Publishing Co., 1972), pp. 48-69.

2. Donald Davidson, "The Logical Form of Action Sentences," in *The Logic of Decision and Action,* ed. by Nicholas Rescher (Pittsburgh: University of Pittsburgh Press, 1967), pp. 81-95, hereinafter cited as "Logical Form."

3. Donald Davidson, "Truth and Meaning," *Synthese,* 17 (1967), 304-23.

4. In this connection, see James D. McCawley, "A Program for Logic," in *Semantics of Natural Language,* pp. 498-544.

quantifier around the whole lot) and claimed to have thereby solved Kenny's problem of 'variable polyadicity': he does not have to treat *fly* as having a different number of arguments in (1) than in

(3) Amundsen flew to the North Pole.

and is in addition able to show that (3) follows from (1) on the basis of standard rules of inference. Davidson, unfortunately, did not make clear whether he wanted to treat *all* adverbs as being conjuncts in logical structure. He could easily be suspected of holding that view, since he proposes a conjunctive treatment for one kind of adverb that seems an unlikely candidate for such a treatment; specifically, he analyzes (4a) as (4b):[5]

(4) a. I flew my spaceship to the moon.
b. $(\exists x)$ [Fly(I, my spaceship, x) & To(x, the moon)].

Fodor takes Davidson as holding that 'Adverbs in action sentences report properties of events, and the logical form of an action sentence containing adverbial modifiers is a conjunction' (p. 51). He refers to the formula $(\exists x)[V(p_1, p_2, \ldots, p_n, x)$ & $Dx]$ as 'Davidson's canonical form for a simple action sentence containing an adverbial modifier'. I maintain that the position which Fodor attributes to Davidson is absurd and moreover is inconsistent with Davidson's view of actions.

Fodor states that Davidson would have to analyze one or other of (5a-b) as (5c):

(5) a. Clearly, John spoke.
b. John spoke clearly.
c. $(\exists x)$ [Speak(John, x) & Clear(x)].

He then objects against Davidson that whichever one is analyzed as (5c), Davidson will have no analysis available for the other. I will consider first the proposal that (5a) has the logical structure (5c), which Fodor finds a plausible analysis. If that proposal is accepted, then sentential adverbs such as *clearly* will play a different role in the logical structure of action sentences such as (5a) than they do in other sentences such as

5. This means that Davidson presumably would take (2) as an abbreviation for $(\exists x)$ [Fly(Amundsen, x) & To (x, the North Pole) & In (x, 1926)]. I have ignored, as did Davidson, the question of what relationship there may be between the transitive *fly* of (4a) and the intransitive *fly* of (3).

(6) a. Clearly, John is incompetent.
b. Obviously, all of the conspirators have fled.
c. Probably, no one is more stupid than Max.

To put it slightly differently, the possibility of combining these adverbs with a sentence has nothing to do with whether the sentence is an 'action sentence'; however, the analysis of (5a) as (5c) would mean that in action sentences such adverbs are combined in logical structure with something (the action) to which they are irrelevant and which is not even present in the logical structure of other sentences in which such adverbs occur. Secondly, the analysis of (5a) as (5c) is inconsistent with a rather basic claim that Davidson has made about actions: that John's pulling the trigger, his firing the gun, his shooting his mother-in-law, his killing his mother-in-law, and his murdering his mother-in-law are not five different actions but a single action described five different ways. If combined with the analysis of (5a) as (5c), Davidson's claims about actions would yield the absurd result that the following argument is valid:

John's pulling the trigger is the same action as his murdering his mother-in-law.
Clearly, John pulled the trigger.
Therefore, clearly, John murdered his mother-in-law.

To uphold Davidson's view of actions without committing oneself to the validity of this argument, it is necessary to interpret sentential adverbs such as *clearly* as being predicated not of an action but of something else, and the most obvious proposal is that *clearly* (or, better, *clear*) is predicated of a proposition.[6]

6. There is great reluctance on the part of philosophers to speak of anything as being predicated of a proposition. Items of the Lukasiewicz category s/s are most often spoken of as 'operators' or 'connectives' rather than as 'predicates'. However, that terminological practise leads to absurdity when applied to elements such as *believe,* which combine with not just a proposition but an individual *and* a proposition. Treatments of *believe* by those who refuse to allow anything to be predicated of a proposition range from the devious practise of writing the 'believer' as a subscript and thus making it not appear typographically like the first argument of a two-place predicate, to Prior's schizophrenic judgement that *fear* and *think* are 'predicates at one end and connectives at the other' (A. N. Prior, *Objects of Thought* [Oxford: Oxford University Press, 1971], p. 19). Setting up a logical semantics for predicates with propositional arguments appears not to present any insuperable problem, provided that the set of all propositions can be enumerated. A

The analysis of (5b) as (5c) encounters the kind of problems which Terence Parsons, quoting unpublished work of John Wallace, mentions in "The Logic of Grammatical Modifiers." [7] Just as *The doctor administered the medicine through a tube* does not entail *The doctor cured the patient through a tube,* under the assumption that the doctor's administering the medicine is the same action as his curing the patient, so *John spoke clearly* does not entail **John convinced me clearly* under the assumption that John's speaking and his convincing me are the same action.

Fodor claims that examples (5a-b) show that the role of adverbs in logical structure cannot be reduced to a combination of quantification and conjunction. It should be evident from my last two paragraphs that I agree with him about that much. However, that is where my agreement with him ends. Fodor's description of the difference between the modifiers of (5a) and (5b) is as follows: 'The adverbial phrase may modify the *entire* sentence, or it may modify (just) the verb phrase of the sentence. [5a] would seem to be a case of the first kind of relation and [5b] to be a case of the second' (p. 56). As a description of the surface structure of the sentences, this is fine; however, Fodor makes clear that he means this as a description of the deep syntactic structure as well.[8] Fodor's conception of deep structure is thus something not far removed from surface structure and a long way removed from logical form. I would

grammar which purports to specify what logical structures are possible can be taken as defining the set of 'all propositions'.

7. Terence Parsons, "The Logic of Grammatical Modifiers," in *Semantics of Natural Language,* pp. 127-41.

8. I reject the distinction between syntax and (linguistic) semantics which Fodor assumes, and likewise the notion of 'deep structure' which goes along with that distinction; the closest analogue to Fodor's and Chomsky's 'deep structure' which I accept is 'logical structure'. See James D. McCawley, "A Program for Logic," and George Lakoff, "Linguistics and Natural Logic" (*Semantics of Natural Language,* pp. 545-665), for exposition of the conception of grammar which Lakoff and I subscribe to. Within our theoretical framework, incidentally, there appears to be no reason to recognize 'verb phrase' as a syntactic category. Those constituents which linguists such as Fodor label 'VP' are simply sentences which have lost their subjects through deletion or 'Subject-raising' (in the case of a 'simple' sentence such as *Dick likes scallion cakes,* the tense is the predicate of a higher clause: [Present (like Dick scallion cakes)], and raising of the subject of the 'subordinate' clause into the 'main' clause leaves *like scallion cakes* as a constitutent of the sentence).

expect someone who held such a view of deep structure to also hold that the relation between deep structure and logical form is rather complex. Curiously, Fodor seems to assume throughout that the relationship must be rather simple: that modifiers in deep structure must correspond either to conjoined sentences (if they modify a sentence) or to members of some homogeneous class of hitherto unidentified logical elements (if they modify anything other than a sentence). Such an assumption is embodied in the following passage: 'The other way of putting the point is that there are a number of important differences between the syntax of natural languages and the syntax of the standard logical formalisms. Among these is the fact that natural languages acknowledge modifiers both on sentences and on constituents, whereas the standard formalisms acknowledge only the former' (p. 61).[9] Fodor proceeds to give up all hope of an analysis of 'constituent modifiers' in terms of conjoining *and embedding* of sentences, without even mentioning the literature discussed by Davidson in "Logical Form," e.g. von Wright's analysis of *I went from San Francisco to Pittsburgh* as 'I caused [(I be in San Francisco) to become (I be in Pittsburgh)]'. While the specific proposals of Georg von Wright, Anthony Kenny, Roderick Chisholm and others that Davidson took up are all highly programmatic and solid arguments against them can be constructed, Fodor is hardly in a position to reject approaches of that type as categorically unworthy of consideration, the attitude which his silence suggests he takes. Fodor also appears to believe that a modifier in a deep structure must correspond to a 'modifier' (which for him appears to include 'predicate') in logical structure. He thus fails to consider analyses (like that of von Wright cited above) in which a surface modifier (e.g. *from San Francisco*) corresponds to (part of) an *embedded clause.*

Von Wright's proposal was an attempt at analyzing the logical structure of a complex clause in terms of just predicates and indices, where predicates are allowed to take propositions as arguments. I maintain that all of Fodor's putative examples of 'constituent modification' are amenable to such an analysis, provided that the logic is enriched so as to admit presuppositions and descriptions of sets,

9. In saying this, Fodor repeats his earlier error of treating sentential modifiers as if they were predicated of the action (if any) rather than of the proposition. The standard formalisms in fact do not cover *Clearly, John spoke.*

which presumably any serious proposal for the logical form of sentences of natural languages would have to admit. Consider first Fodor's putative example of 'constituent negation':

(7) a. It was not John who left his house.
b. It was not his house that John left.

The 'problems for the standard formalisms' which Fodor sees in (7) have nothing to do with negation but are inherent in the sentences of which (7a-b) are obviously the negations:

(8) a. It was John who left his house.
b. It was his house that John left.

What Fodor says about (7) is equally applicable to (8): 'It is arguable that [they] are logically equivalent, but it is pretty clear that they differ in their presuppositions' (p. 62). Any analysis which distinguishes (8a) from (8b) on the basis of their differences in presuppositions can immediately be converted into an equally good analysis of (7a) and (7b), with the negation of (7a-b) being ordinary sentence negation.[10]

Fodor's remaining examples of 'constituent modification' are the following:

(9) a. John spoke clearly.
b. John will do the job in a minute. (the sense in which 'a minute' is the duration of the job)
c. John cooked the meal slowly. (the sense in which 'slowly' gives the rate at which the meal cooks, not the rate at which John does the cooking)
d. John aimed his gun at the target. (the sense which implies that if John fires the gun and all goes well, the bullet will hit the target)

10. The supposed examples of 'constituent negation' that I have seen do not establish the need for recognizing any such entity. For example, the sense of *They were arguing about nothing* which can be paraphrased as 'They were arguing about something trivial' (discussed by Ray S. Jackendoff in "An Interpretive Theory of Negation," *Foundations of Language,* 5 (1969), 218-43) allows an analysis as 'They were arguing about something which was not anything (important)', which involves sentence negation. (One unexplained puzzle about this use of *nothing* is that it is impossible as the subject of the clause, e.g. *Nothing was being discussed* cannot be interpreted as 'Something trivial was being discussed'.)

e. John made the model by hand.
f. John owns a typical Georgian house.
g. John bakes well.
h. John left the umbrella at the station.

In (9a), what is being said to be clear is the speech that John produced; compare the nominalized version *John's speech was clear. Speak* allows a surface direct object only to a limited extent (e.g. *John spoke those words calmly*), but it is fairly clear that *John's speech* is logically an object-nominalization of *speak*; I accordingly propose that the logical structure of (9a) is:[11]

(10) $(\exists x)\ (\iota y\colon \text{Speak}(\text{John}, y, x))\text{Clear}(y)$.

A serious proposal for the logical structure of (9b) will have to amount to a proposal for the logical structure of 'accomplishment' expressions, in the sense of Zeno Vendler.[12] An 'accomplishment' is a combination of an 'activity' and an 'achievement' (again, in Vendler's sense). For example, the difference between

(11) a. Bill combed his hair for two minutes. (Activity)
b. Mike combed his hair in two minutes. (Accomplishment)

is that in (11b) the combing terminates with the event (= 'achievement') of its becoming the case that his hair is in place, whereas (11a) makes no reference to any culmination of the activity; when two minutes had passed, Bill's combing stopped and Mike's combing finished. *In two minutes* conveys the information that the interval from the beginning of the activity to its culmination is equal to (or less than) two minutes.[13] I conjecture that the logical form of *John ran a mile in five minutes* is something like

11. To represent definite descriptions, I use a formula like $(\iota x\colon Fx)Gx$ rather than the more traditional $G((\iota x)Fx)$, or $((\iota x)Fx)G((\iota x)Fx)$, rejecting the former as (at least sometimes) ambiguous and the latter as redundant.

12. Zeno Vendler, "Verbs and Times," *Philosophical Review*, 66 (1957), 143-60.

13. Note by contrast that *for two minutes* gives not the length of time *elapsed* from start to stop but rather the total amount of time *taken up* by the (possibly interrupted) activity. If a person runs half a mile in two minutes, then stops for a minute to drink some coffee, and then runs another half mile in two minutes, it is appropriate to say that he ran a mile in five minutes but not that he ran a mile in four minutes, that he ran for four minutes but not that he ran for five minutes.

(12) (∃x)(John do x & x consist of running & x end with (John has gone a mile in x) & x last five minutes).

In that case, the logical form of (9b) would be (leaving out anything corresponding to *will*):

(13) (∃x)(John do x & x end with (the job is done) & x last a minute).

There is no analogue to the second conjunct of (12), since *do the job* leaves the nature of the activity unspecified.

(9c) is a case of the phenomenon (discussed at some length in James D. McCawley, "Prelexical Syntax" [14] and "Syntactic and Logical Arguments for Semantic Structures" [15]) of an adverb modifying not the clause in which it appears but a clause which is embedded in the logical structure of that clause. If *John cooked the meal* is assigned a logical structure 'John did something which caused the meal to cook', the logical structure of (9c) would differ only by the addition of *slowly* as a modifier of the clause 'the meal cooks.') (9d) allows a similar analysis except that there the adverb is not really a modifier of the embedded clause: the logical structure would be 'John did something which caused the gun to be aimed at the target'. *Aimed* is here an adjective, not a participle. Note that a gun can be aimed at the target without anyone having aimed it at the target, just as a sign can be nailed to a door without anyone having nailed it there (it is nailed to the door if there are nails extending through it and into the door, holding it in place, regardless of how the nails got there, whether by a person hammering them in with a solid object or pushing them in with his bare hands or by a miracle in which God made nails appear out of nowhere; one can say that a person nailed something to the door only if he hammered the nails in; see McCawley, "Prelexical Syntax").[16]

14. James D. McCawley, "Prelexical Syntax," *Georgetown University Monograph Series on Languages and Linguistics,* 24 (1971), 19-33.

15. James D. McCawley, "Syntactic and Logical Arguments for Semantic Structures," *Proceedings of the Fifth International Seminar on Theoretical Linguistics* (TEC Corporation, Tokyo), forthcoming.

16. *Aimed at* makes implicit reference to the path of a projectile and is thus not logically equivalent to *pointed at*: bullets do not always travel in a straight line. An analysis of *aim* and *point* (as in *He aimed/pointed the gun at my head*) as causative structures provides the solution to the 'worry'

(9e) is open to the kind of analysis proposed in George Lakoff's "On Instrumental Adverbs and the Concept of Deep Structure," [17] according to which instrument expressions reflect a logical structure involving the three-place predicate *use* (as in *He used a knife in peeling the potatoes*). The logical structure of (9e) would also have to involve *only*: (9e) says not only that John used his hands but that he used no other source of power; and the variable bound by *only* would have to range over 'sources of power': (9e) implies that John didn't use a lathe, but it does not imply that he didn't use a knife. In this case, a 'Davidsonian' analysis is quite plausible: 'use' can perfectly well be taken to be a relation between an agent, an instrument, and an action, though it of course could not be taken to be a one-place predicate of an action such as figures in the 'canonical form' which Fodor attributes to Davidson.

In (9f), *typical* refers not to a property of the house but to a relationship between the house and the class of things that it is said to typify. Thus, the logical structure of (9f) will have to involve reference to that class, e.g.[18]

(14) $(\exists x)$ (Own(John,x) & Typical(x, {y: y is a Georgian house})).

(9g) is a generic sentence, and I am no more prepared to propose a logical structure for it than for any other generic sentence.[19] It is

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which Fodor discusses in the last paragraph of the long footnote which concludes his paper: how can we analyze adverbs in such a way as to insure the validity if (i) and the invalidity of (ii)?

(i) He pointed the stick.
Therefore, he pointed the stick at something.
(ii) He waved the stick.
Therefore, he waved the stick at something.

Point is a causative of 'is pointed at'; transitive *wave* is a causative of intransitive *wave* (e.g. *The branches were waving in the breeze*). Thus, *point* is three-placed and transitive *wave* two-placed.

17. George Lakoff, "On Instrumental Adverbs and the Concept of Deep Structure," *Foundations of Language,* 4 (1969), 4-29.

18. Since Fodor is concerned with *typical* and not with *Georgian,* I have not bothered to analyze the role of *Georgian* in *Georgian house.*

19. For discussion of the syntactic and semantic intricacies of generic sentences, see John M. Lawler, "Generic to a Fault," *Papers from the Eighth*

a generic counterpart to such nongeneric sentences as

(15) John baked that pie well.,

or more idiomatically,

(16) John did a good job of baking that pie.,

and can be paraphrased as 'Whenever John bakes, he typically/usually does it well'. This paraphrase refers to an act type ('Baking') and involves a variable ranging over acts of that type and suggests that *good* (or *well*) in (9h) and (15)-(16) is a two-place predicate that is predicated of a person and an action. In combination with Davidson's conception of actions, this analysis yields absurd results. For example, it implies that (in the case discussed in connection with (7)) if John pulled the trigger well he fired the gun well.[20] I am not sure which should be held to be the culprit: the proposed analysis of *good* or Davidson's conception of actions. This is the first example I have examined which has given me serious doubts that it is correct to identify John's pulling the trigger with his firing the gun: it brings out that there is more to firing the gun well than pulling the trigger; e.g. aiming the gun; one can be an expert at pulling triggers but still be incompetent at aiming guns and thus be competent at *discharging* guns and still be incompetent at *hitting targets*. Thus pulling the trigger well, i.e., with a steady squeeze and without jerking, is a necessary but not sufficient condition of being a good marksman.

I suspect that it is in fact necessary to distinguish between the action of pulling the trigger and the action of firing the gun but am more confident that the action of firing the gun is the same as the action of shooting his mother-in-law. Being in no position to resolve this question, I will leave it up in the air, expressing the hope that those who are interested in the analysis of actions will have something to say soon about *John fired the gun well,* etc.

(9h) is similar to (9c) and (9d), though it is less obvious what its logical structure is. (9h) refers to John's doing something which

Regional Meeting, Chicago Linguistic Society (1972), 247-58; and Robin T. Lakoff, "The Pragmatics of Modality," ibid., pp. 229-46.

20. I have no explanation for the ungrammaticality of many sentences involving *well* for which paraphrases involving *do a good job of* are grammatical:

John did a good job of shooting his mother-in-law.

*John shot his mother-in-law well.

causes the umbrella to remain at the station and implies that until John performed that action the umbrella was with him. The following thus seems a reasonable guess as to the logical structure of (9h):

(17) (∃x)[Do(John, x) & Cause(x, (Become(Not(With(the umbrella, John))) & (for some interval after x, At(the umbrella, the station))].

I must emphasize that in proposing the above formulas as candidates for the logical structure of (9a-h), I have done little more than make conjectures. Any proposed logical structure requires justification on the basis of its interaction with logic (i.e. does it, plus otherwise valid rules of inference, suffice to yield all and only the inferences which it is appropriate to draw from the sentence whose content it is supposed to represent?) and linguistics (i.e. can rules for the relationship between logical form and surface structure be formulated which take in the sentences in question as special cases and are consistent with previously established rules and with otherwise valid generalizations about grammatical rules and their organization?).[21] It would not surprise me at all if all of the above formulas turned out to be deficient in many details or if some of them turned out to be incorrigibly wrong; I have not done sufficient work on most of the problems involved in (9a-h) to be in a position to make proposals that I would take really seriously. My chief reason for presenting them is to show that plausible proposals which analyze away all of Fodor's putative cases of 'constituent modification' are not hard to come by and that Fodor was thus overly hasty in rejecting the kind of analyses presented by Davidson in "Logical Form." Fodor's examples show something which hardly anyone would contest: that classical first-order predicate calculus is insufficient to represent the content of all the sentences of a natural language. How-

21. For example, the logical structures proposed here are inadequate it they plus the rules of grammar which they necessitate and those which are otherwise necessary do not explain why the adverbs of (9a-h), as Fodor pointed out, cannot be moved to the beginning of the clause (e.g. *At the target, John aimed the gun* cannot have the sense of (9d) but only a sense in which the target is the place where the aiming is carried out). In "Syntactic and Logical Arguments for Semantic Structures," I sketch a possible explanation of the nonpreposability of the adverbs of (9c-d) on the basis of logical structures such as are presented above.

ever, they do not raise any obvious problems for predicate calculus with presuppositions, sets, and propositional arguments. Fodor has not demonstrated that the notion 'constituent modification' is relevant to anything other than surface structure and relatively superficial stages of syntactic derivations.

I note finally that in the course of this paper I have proposed three different analyses for three things that are traditionally called 'manner adverbs' (*John spoke* CLEARLY; *John cooked the meal* SLOWLY; *John bakes* WELL); I would propose a fourth analysis for *John spoke* CALMLY, in which calmness is predicated not of John's action nor of John's speech but of John. I do not consider my failure to provide a uniform analysis of manner adverbs to be a defect of my proposals; rather I regard 'manner adverb' as a pseudocategory which has been accepted only because the analysis and classification of adverbs so far has been done so superficially, both by linguists and by logicians.

JAMES D. MCCAWLEY

UNIVERSITY OF CHICAGO