Review: [Untitled]

Reviewed Work(s):
Determinism. by Bernard Berofsky
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exercise of *aretē* (virtue or excellence) and the attainment of *eudaimonia* is sufficient to classify him with the Homeric, competitive, and results-oriented tradition rather than with the Hellenistic, co-operative, and motivation-oriented approach.

There are many more points of agreement and disagreement which should have been discussed, but which must unfortunately go unmentioned. *From the Many to the One*, even though both "many" and "one" are spoken of in many ways and thus make Adkins' thesis less determinate than it appears to be, is a book that raises many, and even answers some, important questions. Not only is it "worth reading," but anyone who reads it will think about it. It is a significant addition to our understanding of Greek thought, and a good starting point for some important contemporary comparisons and contrasts.

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DETERMINISM. By BERNARD BEROFSKY. Princeton, Princeton University Press, 1971. Pp. viii, 330. $10.00.

The author's main purpose in this book is to "formulate a definition of determinism that can be used in discussions and debates about free will" (p.1). He rightly notes that few works on the problem of free will contain any careful definition or systematic discussion of determinism. Careful treatments of determinism do occur in books on the philosophy of science, but philosophers of science "have not been primarily concerned to orient their inquiries to questions of human freedom, responsibility, and morality" (p. 1).

A good book with this program is very much needed. *Determinism*, unfortunately, does not satisfy this need. One important reason for this is the way in which Berofsky introduces definitions. While his definitions may run on for a page or more (see, for example, the definition of "is higher on the scale of deductive systematization than," a key term, on pp. 205-206 and 207-208), his elucidatory examples are so simple and so infrequent that the reader is unable to see what work most of the clauses in the definition are doing. A definition that occupies a page and a half cannot be introduced *en bloc*: it must be built up by bits and pieces, with a lot of discussion and illustration along the way.

This problem is aggravated by the fact that Berofsky's use of logical symbolism and terminology (which he employs extensively in his definitions) is sloppy, and often evidences serious confusion. Witness this definition of "not open-ended":

> A predicate "P" is not open-ended if and only if "P*x*" entails "There are a finite number of individuals which satisfy 'P*x*' " [p. 186].

Taken literally, this is meaningless. If we had available some sort of notion of a predicate's "expressing" a property (for example, the English predicate ". . . is white" might be said to *express* the property of being white), and if we knew which predicates expressed which properties, then I suppose we could say that what Berofsky intends is that a predicate is "not open-ended" if and only if it is conceptually impossible (a vague term, chosen to reflect the vagueness of "entails") that an infinite number of individuals should possess the property it expresses. But this is only a guess. Berofsky's book demands a lot of this sort of guesswork.

Determinism is studded not only with logical barbarisms like the above, but also with scientific barbarisms (for example, "the constant of gravity is 32," p. 262), barbarisms plain and simple (for example, "schemata" treated as a singular noun, p. 178), and misstatements of fact (for example, on p. 254 we are told that "laws of coexistence" like the Boyle-Charles Law *entail* laws describing how systems change state with time).

Despite these obstacles, I think that most of Berofsky's conclusions can be understood, at least in broad outline. I have space to mention only the two that seem to me to be the most important. The first of these is that determinism is best thought of as a thesis about sentences. Let us examine his definition of determinism in some detail (see pp. 129-178 and p. 268).

An R-sentence is a true, contingent, sentence-type asserting (in order to avoid elaborate circumlocutions, I shall talk about sentences being true, being contingent, asserting, and so on) that something has some property, or that various things enter into some relation, at some particular time. Berofsky places various restrictions on what sorts of predicates may occur in R-sentences. Evaluative predicates are ruled out, for example. *Determinism* is the thesis:

(1) (x) [x is an R-sentence $\supset$ $(\exists y)$ $(\exists z)$ (y is a state-description sentence $\cdot$ z is a law-sentence $\cdot \vdash \ulcorner (y \cdot z) \supset x \urcorner$)]

(I have supplied the corners, and substituted the customary "⊢" for the author's unexplained "—⊣," which, I believe, he uses to indicate that what follows is an instance of a theorem of logic.) A state-description sentence is any conjunction of R-sentences, mathematical, logical, and linguistic truths, and true sentences of the form "$x = y$," with the following qualification: "The state-description must be logically . . . independent of the sentence the deterministic acount is about, and no sentence may refer to a time period subsequent to t, where t is the temporal designation in the sentence the deterministic account is about" (p. 268). (A logically true sentence of the form "$(y \cdot z) \supset x$," where y is a state-description sentence, z a law-sentence, and x an R-sentence, is a *deterministic account* of x.)

There are problems here. For one thing, the range of the variable "t" seems to comprise things that are both times and names of times. Use-mention conflation is a pervasive feature of the book. There is also a much more serious confusion: given the above explication of "state-description sentence," one cannot say, without further qualification, of a given sentence that it is or is not a state-description sentence. One can say only that it is or is not a state-description sentence that can legitimately be used in giving a deterministic account of some given R-sentence. But (1) contains as a part the open sentence "y is a state-description sentence" which must be either satisfied or not satisfied, without further qualification, by any sentence. What Berofsky needs to do is to replace this open sentence in (1) with something like "y is a state-description sentence that can legitimately be used in giving a deterministic account of x," supplying, of course, a suitable definition of the new two-place predicate.

I do not think, however, that we have yet got a satisfactory definition of determinism, since there are possible worlds in which (1) is false that are paradigms of deterministic worlds. Let us consider those simple possible worlds in which a finite and unchanging number of dimensionless particles move in straight lines at constant speed in Euclidean 3-space. Surely *all* such worlds are deterministic: there is exactly *one* possible future for each such world, given its state at any instant. But (1) is true only in *some* such worlds. For example, suppose that "At $t_0 + 10$ sec., particles A and B are exactly 5 cm. apart" (let us call this sentence "R") is an R-sentence in world W. And suppose we can find a state-description sentence S, which tells us the positions and velocities of A and B at, say, $t_0 + 9$ seconds, and which incorporates mathematical/linguistic truths such as the definition of constant velocity, the distance formula for Euclidean 3-space, and so on.

We have a law-sentence L that tells us that all particles always have a constant velocity. In this case, provided we have been clever enough in choosing the mathematical/linguistic truths that are among the conjuncts of S, $\ulcorner(S \cdot L) \supset R\urcorner$ will be an instance of a theorem of logic. So W presents no problem for Berofsky, at least as regards R. But there are many worlds very similar to W in which R is an R-sentence and in which there is no legitimately usable state-description sentence S', such that $\vdash \ulcorner(S' \cdot L) \supset R\urcorner$. Clearly, such a sentence would have to tell us the velocities of A and B at some time(s) earlier than $t_0 + 10$ seconds; but there are worlds like W in which *no* sentence asserting that some given particle has some given velocity at some given time is true. This is because, while there are indenumerably many velocities a particle might have, no language (at least, no language of the sort Berofsky is willing to consider; see p. 150) contains indenumerably many sentences. And (1) might very well be false in the actual world for just this sort of reason.

Probably Berofsky's best move would be to recast his definition in terms of entailment relations among propositions. (There are presumably at least c propositions.) He does not want to do this (pp. 172-173), since he thinks that sentences will serve his purpose as well as propositions, and that the notion of a proposition is unclear. If, however, as is quite common nowadays, propositions are conceived of as functions from possible worlds to truth values, the problems Berofsky finds with propositions vanish. Since Berofsky thinks that talk about possible worlds is "a heuristic device" (p. 54, n. 11), he might balk at quantifying over them. But surely quantifying over possible worlds is no more (and no less) dubious an activity than quantifying over sentence-types of which no token ever exists.

I now turn to Berofsky's second important claim: namely, that an account can be given of scientific laws that is purely Humean—that is, that contains no reference to any sort of "nomic" or "causal" necessity. The most difficult problem facing anyone who holds this position is the problem of *accidental truth*, of how to separate those generalizations that *just happen* to be true from those that "support their counterfactuals." For example, if "All baronets are bald" *just happens* to be true, though we are not entitled to say of, for example, Mr. Smith that if he were a baronet he would be bald, then "All baronets are bald" is not a law but only a datum; perhaps even a totally uninteresting datum.

Berofsky attempts to establish a set of necessary and sufficient conditions for a contingently true generalization's being a law, these

conditions being such that they involve no notion of causal necessity. Some of these conditions are of the familiar sort that rule out "illegitimate" predicates—for example, ". . . is identical to Nixon." But a good many accidental generalizations do not contain illegitimate predicates. Berofsky's conditions are so complex, even in broad outline (and I do not understand them except in broad outline), that I can do no more than offer a caricature of them here. Nevertheless, I think that a good deal of what is wrong with the caricature is wrong with the original.

Roughly, true generalizations about subject matter X fail to be laws if they cannot be fitted into the most comprehensive theories—that is, into the theories with the greatest power of providing nomological-deductive explanations of the observable facts, about X. Thus, "All baronets are bald" is (presumably) not a law-sentence, even if true, since (presumably) the only explanatory theories about baldness it can be fitted into in any systematic way explain (that is, allow us to deduce) fewer facts than do some systematic theories the axioms of which are stated in purely physiological language. The latter enable us to deduce all the facts the former do, and more besides. There are several other tests a generalization must pass in order to be certified a law, but they are less important and I shall not go into them.

This attempt seems bound to fail. Since, according to Berofsky, laws "support their counterfactuals," it is essentially an attempt to establish truth conditions for counterfactuals within the actual world. But counterfactuals are "other worldly": the question which of them are true in the actual world cannot be settled by determining what categorical propositions are true in the actual world; one must also somehow settle certain questions about the relations the actual world bears to other possible worlds. (I am not implying that I know what these questions are.)

An unfortunate consequence of Berofsky's definition is this: there could be two generalizations, each of which passes all his tests and is thereby a "law," and which support logically incompatible counterfactuals. Suppose, for example, there are two logically independent physical theories, T_1 and T_2. The axioms of each theory are, we suppose, true, and the theories are of equally good (say, *perfect*) explanatory power: the occurrence of any event can be deduced from the occurrence of prior events by assuming *either* the axioms of T_1 *or* of T_2. Now suppose that T_1 entails that if two quasars come within one light-year of each other, then an event of type A happens, and

that T_2 entails that, in that circumstance, no event of type A happens. (To render these assumptions consistent, we need only suppose that the common antecedent of these two material conditionals is false.) Now if T_1 comprises only laws, which, of course, support their counterfactuals, then "If two quasars were to come within one light-year of each other, then an event of type A would happen" is true. And, similarly, if T_2 comprises only laws, then "If two quasars were to come within one light-year of each other, then no event of type A would happen" is true. Therefore, T_1 and T_2 cannot *both* comprise only laws of nature: at least one member of the union of the axiom sets of the two theories must be an accidental truth. But every generalization that can be deduced from the axioms of either theory (including, of course, the axioms themselves) must pass Berofsky's comprehensiveness test, since it can be fitted into a theory (T_1 or T_2) than which no other is more comprehensive. This is admittedly only an argument against a caricature of Berofsky's theory. I think, however, that similar objections can be brought against the theory itself, though it is too obscure for me to feel entirely confident of this.

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PETER ABELARD'S ETHICS. An edition with introduction, English translation and notes by D. E. LUSCOMBE. New York, Oxford University Press, 1971. Pp. lxi, 144. $13.00.

Students of medieval philosophy will welcome D. E. Luscombe's edition of Abelard's *Scito Te Ipsum* (the manuscript title; Abelard refers to it as "Ethics" in his *Commentary on Romans*, p. liv). Although there are an eighteenth- and a nineteenth-century edition which, together with a fragment published in 1931 by C. Ottaviano, do provide the entire extant text, Luscombe's is the only edition to be based on all five extant manuscripts (pp. xl-xli). All that remains of this work is Book I, which contains a long discussion of sin, and a page and a quarter fragment of Book II, on virtue. The principal difference among the surviving manuscripts is that the mid-fourteenth-century Balliol College manuscript contains the latter as well as the former (pp. l-liii). Other differences are largely confined to spelling and word