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manner that provokes the student into careful and critical thought on these issues, then this book certainly gets that job done. On the other hand, one likes to think (imagine or hope) that the very best student will not be satisfied by anything less than full development and defense of views endorsed by teacher or author, in which case Aune's two objectives will converge. In view of the problems cited above, I am afraid that in such a setting this book will leave Aune (or his apologist) many hard questions to answer.

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THE METAPHYSICS OF MODALITY. By GRAEME FORBES. New York, N.Y., The Clarendon Press of Oxford University Press, 1985. Pp. x, 257.

Forbes's book covers a wide range of topical issues in the metaphysics of modality. The book is well written, well informed, and interesting throughout. Although I have serious reservations about the soundness of some of Forbes's positions, I have learned much from reading the book, and I recommend it to anyone with an interest in the field.

The first three chapters cover largely familiar terrain: possible-world semantics for propositional and first-order modal logic, the *de re/de dicto* distinction, and the problem of transworld identity. Forbes's generally lucid exposition and judicious choice of topics make this material suitable for an introductory course in modal metaphysics. Chapter 3 contains a modified counterpart theory designed to invalidate the sentence, "everything necessarily exists." (On Lewis's theory, the natural translation of this sentence is a theorem.) To this end, Forbes *stipulates* that at worlds where an object has no existent counterparts, it nonetheless has a non-existent counterpart: the object itself. This has the desired result, but at a cost: it undermines the explanatory role of the semantics. Any such stipulation seems to conflict with Forbes's requirement that the semantics *explain* validity and invalidity (pp. 70–76).¹

Chapter 4 contains an interesting, although inconclusive, defense of anti-realism with respect to possible worlds. Forbes's anti-realism requires

¹For further discussion of Forbes's counterpart theory, see David Lewis, *On the Plurality of Worlds* (New York, N.Y.: Basil Blackwell, 1986), pp. 8–13.

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that all possible-worlds discourse worth preserving can be translated into a modal language that lacks explicit quantification over worlds (p. 80). I can mention only one problem here. By narrowly focusing upon a single use of possible worlds—the explanation of validity for S5 modal logic—Forbes has failed to take into account the full costs of rejecting possible worlds. Many of the uses to which possible worlds have been put will escape translation into Forbes’s modal language, even allowing the controversial enhancements to the language that Forbes suggests.²

Chapters 5 and 7 contain, respectively, useful developments of modal set theory and a semantics of vagueness. Chapter 9, the final chapter, contains an interesting, although sketchy, discussion of the source of knowledge of necessary truths. Forbes holds that such knowledge arises entirely from the *a priori* analysis of concepts. He argues, correctly, that such a view need not conflate metaphysical and epistemological notions. But I cannot agree with Forbes’s claim that knowledge of necessary truths arises solely from the analysis of *non-modal* concepts (p. 131). Such knowledge is based in part upon *a priori* principles of modal plenitude, principles that do not arise from the analysis of non-modal concepts alone.

The heart of Forbes’s book, Chapters 5 through 7, contains an evaluation of essentialist theses about sets, organisms, and artifacts. These chapters are marked by bold metaphysical theses; but also, I think, by arguments that are unconvincing or incomplete, and by a failure to face squarely implausible consequences of the view put forth. In presenting Forbes’s view, I first focus upon worlds that branch from the actual world, where two worlds branch from one another if they “have some initial segment of their courses of history in common” (p. 151). On Forbes’s account, sets and organisms are treated alike: a set or an organism can exist at two branching worlds, even if it exists in part after the time of branching; *de re* modal assertions about sets or organisms are interpreted according to Kripkean semantics with transworld identity; sets and organisms have non-trivial individual essences that determine necessary and sufficient conditions for transworld identity. An artifact, on the other hand, exists at two worlds only if the worlds branch and it exists entirely before the time of branching; *de re* modal assertions about artifacts are interpreted according to a counterpart theory with degrees of counterparthood; artifacts have fuzzy essences that determine fuzzy sets of counterparts.

Why are organisms classified with sets, rather than with artifacts? Forbes holds that sets existing at different worlds are identical if and only if they have the same members. This cannot be justified, he argues, unless

²For a survey of some of the uses to which possible worlds have been put, see David Lewis, *op. cit.*, pp. 5–69.

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one assumes that the transworld identity of sets is in some sense grounded, and that intrinsic features of sets do the grounding. That seems right for sets. He then elevates this into a universal demand: all identity judgments must be intrinsically grounded. This demand, he claims, can be used to establish non-trivial necessary and sufficient conditions for the transworld identity of organisms.

Forbes incautiously asserts that *all* identity judgments must be intrinsically grounded (pp. 140–145), although he provides no idea how this demand could be universally met without incurring a vicious circle or infinite regress. I focus only upon the relevant weaker claim, that all *transworld* identity judgments must be intrinsically grounded. By “grounded,” Forbes apparently means grounded in qualitative features of worlds. In particular, Forbes holds that if *a* exists at world *w*, and *w* is qualitatively identical with world *v*, then *a* exists at *v*. (Compare *Case 1*, p. 128.) Forbes thus rejects a version of *Haecceitism* according to which “each individual [has] a primitive identity or thisness,” and holds instead that “non-trivial conditions sufficient for transworld identity can be given” (p. 148). When Forbes adds that transworld identities must be *intrinsically* grounded, he apparently asserts that whether *a* existing at *w* is identical with *b* existing at *v* depends only upon *intrinsic* qualitative features of *a* at *w* and *b* at *v*. (Note that an object has intrinsic features only relative to a world, lest questions of intrinsic features presuppose questions of transworld identity.) In particular, Forbes holds (A) if *b* and *c* at *v* are qualitative *duplicates*, that is, have all their intrinsic qualitative features in common, and *a* at *w* exists in part after *w* and *v* branch, then *a* at *w* is identical with neither *b* nor *c* at *v*. (Compare *Case 2*, pp. 128–129.) Forbes also seems to hold (B) if *a* at *w* and *b* at *v* are qualitative duplicates, then *a* is identical with *b*.

If this is Forbes’s view, there is trouble. (A), together with the use of genuine transworld identity in evaluating *de re* assertions about organisms, requires that the following *de re* sentence be false for any organism *a* that has no qualitative duplicate: “*a* could have existed and had a qualitative duplicate.” That seems wrong. The problem results from Forbes’s unlikely mixture of anti-Haecceitism with genuine transworld identity. Neither the Haecceitist with genuine transworld identity nor the anti-Haecceitist with counterpart theory has any difficulty accounting for the truth of the sentence.³

There is worse trouble. (B) requires that the following *de dicto* sentence be false for any object *a* that has no qualitative duplicate: “There could have existed two qualitative duplicates of *a*.” For if this sentence were true,

³In special cases, the anti-Haecceitist solution will require that there be distinct possibilities for *a* within a single possible world. See David Lewis, *op. cit.*, pp. 227–235.

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(B) would require that *a* be identical with two objects not identical with each other. This result, I think, is intolerable, and a *reductio* of Forbes's position. It is tantamount to accepting the necessity of the identity of indiscernibles in its strongest, least plausible, form.⁴

Does Forbes really hold (B) as well as (A)? Consider Forbes's main argument for the essentiality of origin with respect to organisms that come from "propagules" (pp. 138–140). (A propagule is an "organic antecedent," such as a zygote or acorn, that "directs the development of an organism.") Forbes argues that it is essential to any such organism to come from the propagule from which it actually came. His argument has us consider an oak tree at the actual world, *w*^{*}, that comes from an acorn *c*, and a world *w* at which no oak tree comes from *c* but at which an oak tree (almost) indistinguishable from the actual oak tree except with respect to origin comes from a different acorn *c'*. Suppose, contrary to the essentiality of origin, that the tree in *w* is the actual tree. Forbes claims this is inconsistent with the demand that identity judgments be intrinsically grounded. For consider a world *u* at which *c'* produces a tree intrinsically indistinguishable from the *c'*-tree in *w*, and at which *c* also produces a tree. According to Forbes, any answer to the question—which, if any, of the two trees in *u* is identical to the actual tree?—must posit ungrounded identities. The first part of his argument goes as follows:

Suppose . . . the *c*-tree in *u* is the actual tree. Then, since the trees in *u* are distinct, the *c'*-tree in *u* is not the actual tree, and so the *c'*-tree in *u* is not the same tree as the *c'*-tree in *w*, which . . . is the actual tree. But there is no difference whatever between these *c'*-trees. . . . Hence [the supposition requires] a transworld numerical difference where there is nothing [intrinsic] in virtue of which this difference obtains (p. 139).

Here, and at later stages as well, the argument clearly rests upon (B). That, I think, is ample reason to reject the argument.

Even if one did not reject (B), the argument would fail by proving too much. If 'oak tree' is everywhere replaced by 'snow crystal' and 'acorn' by 'condensation nucleus' (that is, dust particle, etc.), the argument demonstrates the implausible thesis that it is essential to any snow crystal to have condensed around the nucleus that it actually did.⁵ Forbes would presum-

⁴For an anti-Haecceitist position that is not committed even to weak forms of the identity of indiscernibles, see David Lewis, *op. cit.*, pp. 220–227. Lewis does not reject *haecceities*, non-qualitative properties of "thisness."

⁵Indeed, Forbes's argument is a fleshed-out version of a much-discussed argument of Saul Kripke's designed to prove the essentiality of origin for *material objects*; see *Naming and Necessity* (Cambridge, Mass.: Harvard University Press, 1980), n. 56. Of course, Kripke would not accept Forbes's way of fleshing the argument out.

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ably block the snow crystal argument by invoking counterpart theory: the actual snow crystal could have come from a different nucleus than it did in virtue of having an appropriate counterpart at another world w . The identity between the snow crystal in w and the actual snow crystal need not be accepted, and the argument cannot get off the ground. But, in the same way, the counterpart theorist can block the argument as applied to organisms. Forbes needs to argue that counterpart theory is *illegitimate* when applied to organisms, though perfectly legitimate in other cases. This he does not do. He claims only that counterpart theory *need not* be applied to organisms because organisms, unlike artifacts (and snow crystals?), are not susceptible to modal sorites such as Chisholm's paradox (p. 190). But is this claim true? It requires that if a single gene of my zygote had mutated, then I would not have existed. That seems wrong. Forbes has offered no convincing reason for analyzing modal assertions about organisms one way and modal assertions about artifacts another.

What about worlds that do not branch from the actual world? Forbes seems to think that the demand to ground transworld-identity judgments will require that non-branching worlds never have objects in common (except in special cases involving "separable" courses of events) (p. 151). This follows from the assumption that transworld-identity judgments must ultimately be grounded in intraworld-identity judgments. But this notion of grounding is quite different from the anti-Haecceitist notion considered above. Assuming Forbes accepts (B), these two notions conflict rather badly: they jointly require that if w and v are non-branching worlds, then a at w and b at v are never qualitative duplicates (except for the special case), and that is wrong. Moreover, the branching constraint on transworld identity is implausible in its own right if *de re* assertions are analyzed in terms of transworld identity. It requires, for example, that the matter of this world could not have been differently arranged throughout the entire past. Indeed, it seems to require that if anything different had happened to one of my ancestors before the time I came into existence, then I would not have existed. Any theory with these consequences has failed to capture our ordinary ways of thinking about modality.

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