

The Problem of Possibilia

Are there, in addition to the various actual objects that make up the world, various possible objects? Are there merely possible people, for example, or merely possible electrons, or even merely possible kinds?

We certainly talk as if there were such things. Given a particular sperm and egg, I may wonder whether that particular child which would result from their union would have blue eyes. But if the sperm and egg are never in fact brought together, then there is no actual object that my thought is about.¹ Or again, in the semantics for modal logic we presuppose an ontology of possibilia twice over.² For first, we countenance various possible worlds, in addition to the actual world; and second, each of these worlds is taken to be endowed with its own domain of objects. These will be the actual objects of the world in question, but they need not be actual simpliciter, i.e., actual objects of our world. What are we to make of such discourse? There are four options: (i) the discourse is taken to be unintelligible; (ii) it is taken to be intelligible but nonfactual, i.e. as not in the business of stating facts; (iii) it is taken to be factual but reducible to discourse involving no reference to possibilia; (iv) it is taken to be both factual and irreducible.³ These options range from a full-blooded form of actualism at one extreme to a full-blooded form of possibilism at the other. The two intermediate positions are possibilist in that they accept the intelligibility of possibilist discourse but actualist in that they attempt to dispense with its prima facie commitment to possibilia. All four positions have found advocates in the literature. Quine, in his less irenic moments, favours option (i); Forbes ([85], p. 94) advocates option (ii), at least for certain parts of possibilist discourse; many philosophers, including Adams [74] and myself, opt for (iii); while Lewis [86] and Stalnaker [75] have endorsed versions of (iv), that differ in how full-blooded they take the possible objects to be.

My focus in the present article is on the third option. I wish to see to what extent reference to possibilia might be understood in other terms. Can we regard talk of possibilia as a mere *façon de parler*, perhaps somewhat in the same manner as

¹ Cf Gupta ([80], 20, n.15).

² See Kripke [63] for a standard exposition of the semantics.

³ See Fine [01] for a general discussion of what these various options amount to.

talk of the average man or of infinitesimals?⁴ I shall not be concerned to argue directly against any of the other options. However, any argument for the viability of (iii) is indirectly an argument against the plausibility of these other options. For (iv), especially in its more extreme forms, offends against what Russell has called our 'robust sense of reality', (i) offends against our even more robust sense of what is intelligible, while (ii) offends against our somewhat less robust sense of what is factual. It is therefore preferable to go with the third option, if we possibly can.

§1 Problems with Proxy Reduction

The most obvious way to make sense of possibilist discourse is in terms of surrogates or proxies. With each possibilium x is associated another entity x' , acceptable to the actualist, and any statement $\phi(a, b, \dots)$ about the possibilium a, b, \dots is then understood in terms of a corresponding statement $\phi'(a', b', \dots)$ about the associated entities a', b', \dots . As a model for such a reduction, we may take the logicist-style reduction of numbers to sets: each number is associated with a 'representative' set, and a statement about numbers is then understood in terms of a corresponding statement about the associated sets.⁵

But what is the relationship between a possibilium and its surrogate? For which entities are the possibilium traded in? The simplest view on the matter is that the relationship is one of identity; each entity is traded in for itself. But such a 'reduction', if it may be called that, is always available to us. And so how can it serve to alleviate ontological qualms in any particular case? The answer is that the significance of such a reduction must lie in the way the entities are described. We have a domain of entities that is characterized in problematic terms. It is then shown how each entity from this domain is identical to an entity from a domain that is characterized in relatively unproblematic terms; and doubts about the entities, qua members of the problematic domain, are thereby laid to rest. A physicalist's doubts about the ontological status of mental events, for example, might be put to rest in this way if he comes to believe that every mental event is in fact a physical event.

Is a similar kind of view available to the actualist? Can he maintain that possibilium are really just Y 's, for some actualistically acceptable description Y (i.e. for some

⁴ As should be clear from Fine [01], the viability of any reduction will also depend upon its success in accounting for our understanding of modal discourse and our knowledge of modal truth. See Peacocke [01] for a broader discussion along these lines.

⁵ For more on the general approach, see Quine ([64], [69]).

description that makes no reference to merely possible objects)? After all, the possible winners of a race consist of the actual losers. So could not something similar be true in the case of possible worlds? Could not every possible X be identical to an actual Y, for some actualistically acceptable description Y?

It seems to me that no view of this sort can be correct. Suppose, to fix our ideas, that it is maintained that every (merely) possible person is identical to an actual property - one perhaps that specifies its 'essence'. Consider now a possible person. Then it is possibly a person. But no property is possibly a person and so no possible person is identical to a property: for there is a possibility for the one, viz. that of being a person, which is not a possibility for the other.

A similar difficulty besets many other identifications of this sort that have been proposed. Possible states of affairs, for example, have often been taken to be propositions. But this cannot be correct, since any possible state of affairs is possibly a state of affairs but no proposition is possibly a state of affairs. Or again, Stalnaker ([76], 230) and Plantinga ([74], 44) have suggested that we might think of a possible world as a way the world might have been. But a possible world is possibly the world, just as a possible person is possibly a person, yet no way the world might have been is possibly the world, just as no way I might have been is possibly me. Thus it is not just that the actual world is not a way things might be, as emphasized by Stalnaker ([76], 228) and van Inwagen ([80], 407); no possible world is such a way either.

Whatever the merits of reduction via identity in other contexts, it is of no avail here. If there is to be a proxy reduction, it had better be achieved by means of proxies that are distinct from the possible worlds themselves.

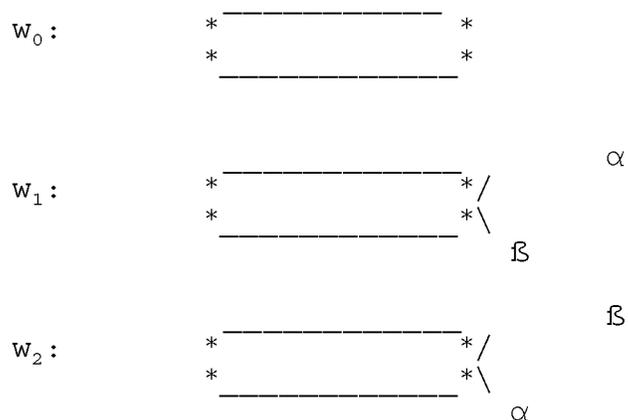
But again, an obvious solution suggests itself. For why not 'identify' each possible world with a proposition that is true in that world alone (or, if we wish to pick out a particular proposition, with the conjunction of all propositions that are true in the world)? And why not identify each possible object with a property that is necessarily borne by that object alone (or with the conjunction of all properties that are necessarily borne by the individual)? Each possible world, be it world or object, is in effect identified with a description by which it might be specified.⁶

The main difficulty with this proposal is that there can be no assurance, from an actualist point of view, that distinct possible objects or worlds can be identified with distinct

⁶ A view of this sort was originally proposed by Prior ([77], chap. 2), though only for the case of worlds. Essentially the same account was later given by Adams ([74], 204). The extension to possible individuals was proposed by Fine [77] and possibly by Plantinga [76] (though not if his disclaimers in [85], 330-332 are to be trusted).

surrogates. Let us provide a simple illustration of the difficulty. Suppose there is some radioactive material in the actual world w_0 that just happens not to emit any particles from a certain time on but that *might* have emitted two particles of the same type at that time. These two particles, call them α and β , are presumably merely possible; they are not identical to any actual particles. And it is plausible to suppose that there is no actualistically acceptable means by which they might be distinguished. Of course, there is a possible world w_1 in which α is distinguished by one trajectory and β another. But if there is such a world, then there is presumably another world w_2 just like it in which the trajectories are interchanged. For what is so special about α as opposed to β that it is destined to have the one trajectory rather than the other?⁷ Thus we will be as unable to distinguish between the worlds as we are to distinguish between the particles themselves.

If we pretend that w_1 and w_2 and the actual world w_0 are the only worlds that there are, then we might depict the scenario as follows:



Here, in this miniature 'pluriverse', the worlds w_1 and w_2 are actualistically indiscernible, as are the particles α and β . Given that there is no actualistically acceptable means by which the particles or worlds might be distinguished, they will be associated with the very same surrogates, since any actualistically acceptable means of associating them with distinct surrogates would provide us with an actualistically acceptable means of distinguishing between the particles or worlds themselves; and given that this is so, the reduction must fail, since it will not even be capable of representing the fact that the particles or worlds are distinct.

Another kind of problem case arises from the possibility of there being indiscernible individuals *within* a world. Imagine

⁷We might even suppose that there were convincing scientific reasons for allowing both possibilities in determining the probability of emission.

a universe of eternal recurrence (with respect to both past and future) in which a Messiah appears in every epoch. There are then infinitely many possible Messiahs; and, given that there are only finitely many actual individuals who *could* be Messiahs, then infinitely many of these Messiahs will be mere *possibilia*; and presumably each of them will be actualistically indiscernible from the others.

A third kind of case arises from the possibility of there being indiscernible natural properties or kinds.⁸ There are two subcases here, just as in the case of individuals, depending upon whether the indiscernibilities are *intra-world* or *inter-world*. Pure cases of inter-world indiscernibility might always be disputed on the grounds that the identity of a kind, in these cases, is to be tied to role⁹. Thus given that the kinds are indiscernible in their respective worlds, their roles will be the same and hence the kinds themselves must be the same. However, intra-world cases are not so readily disposed of. Suppose, for example, that there are two fundamental kinds of matter in the universe, positive and negative, governed by such laws as: like matter attracts; unlike matter repels. The two kinds of matter would then have completely symmetric roles and so as long as they are 'alien' kinds, not of this world, there would again appear to be no actualistically acceptable way in which they might be distinguished.

There are two main responses to these arguments. One is to dispute the possibilities upon which they are based. It has sometimes been denied, for example, that there can be worlds that are qualitatively, or actualistically, alike and yet differ merely in the identity of the individuals that they contain¹⁰; and, under such views, there would only be one possibility for α and β depicted by w_1 and w_2 in the picture above, not two. But there is something unsatisfactory about making the reduction dependent upon such views - both because they are controversial and because we wish to explain what sense might be given to possibilist discourse by someone who did not accept them. It would be preferable, if at all feasible, to provide a reduction which was free from any substantive assumption about what was or was not possible.

The second response to the cases is to accept the putative possibilities and yet deny that they involve genuine actualist indiscernibilities. Despite our claims to the contrary, it will be maintained that the particles or the Messiahs or the kinds of matter can be actualistically distinguished after all. For let

⁸ See Bricker ([87], 349-53), Lewis ([86], 158-65) and McMichael [83] for examples of this sort.

⁹ As on the views of Swoyer [82] and Shoemaker ([80], [98]).

¹⁰ Eg., by Lewis ([86], 4.4) and Adams [81].

x be any given possible object. Then associated with this object will be a certain identity property, the property of being identical to x . But in contrast to the object x itself, this property - like all properties - will exist necessarily. It will therefore be an actual object; and so we may use it, in an actualistically acceptable way, to distinguish x from all other objects.¹¹ (Of course, when x itself is a property or the like, we may proceed directly, by this line of reasoning, to the conclusion that it necessarily exists.)

One way of dealing with this response is to deny the claims of necessary existence upon which it depends. The property of being identical to Socrates, it might be countered, can only exist when Socrates exists; and the kind *positive matter* can only exist in a world in which there is positive matter.¹² But there is, I believe, a more fundamental objection to be made. Let us suppose that an actualist comes to the view that (necessarily) properties necessarily exist. Should the properties that he previously took to be problematic because they were merely possible now be regarded as unproblematic? I think not. Rather, they should still be taken to be problematic, though for reasons that no longer turn on their being merely possible.

For a more fundamental way to understand the actualist's position is that he objects to the idea that general possibilities might be the source of a distinctive ontology of objects that instantiate those possibilities. Consider the possibility that there is a talking donkey ($\Diamond \exists x Px$). The possibilist will claim that it follows from this possibility that there really is an object, possible if not actual, that instantiates it; there is an object, that is to say, that is possibly a talking donkey ($\exists x \Diamond Px$). The actualist will deny that there need be any such object (except as a mere *façon de parler*) and, in general, he will be suspicious of any object whose existence would appear to depend upon its being the instantiator in this way of a general possibility.

But the identity properties of merely possible objects and the alien kinds are just of this sort. It is only because of the possibility of there being an identity property for such and such a possibilium and it is only because of the possibility of there being a kind which plays such and such a role that we are led to believe that there are such properties or kinds. Without the belief in the general possibilities, we would have no reason to believe that there were such things. On this understanding of what lies behind the actualist's position, then, he will remain suspicious of these properties and kinds on account of their possibilist origins, even though he accepts that they

¹¹ See Plantinga [76].

¹² Fine ([77], §4) and McMichael ([83a], 60-61) develop objections along these lines.

exist. He will think of them, like other problematic existents, of standing in need of analysis in terms of existents of another sort.¹³

§2 The Possibility of Proxy Reduction

As a result of these difficulties, many philosophers have given up on the idea of proxy reduction; and, indeed, the difficulties in the particular reduction proposed above might appear to extend to any reduction whatever. For consider again our miniature pluriverse with its three worlds w_0 , w_1 , w_2 and its two particles α and β ; and suppose that a represents, or goes proxy for, α . Then it must also represent β . For a must be an actual object (or, at least, actualistically acceptable); and so, if it failed to represent β , we could distinguish between α and β in an actualistically acceptable manner, since α would have the property of being represented by a while β would not. This therefore suggests that it will in general be impossible to obtain a unique proxy for each possible individual and that any acceptable form of proxy reduction must therefore fail.

Uniqueness of proxies is not, however, necessary for a proxy reduction to succeed.¹⁴ We may reduce three-dimensional Euclidean geometry to real analysis by identifying each point with a triple of real numbers. But the identification is far from unique. Indeed, any given point might be associated with any given triple. But the ambiguity will not matter as long as it does not result in any ambiguity in truth-value of the sentences to be reduced. This therefore suggests that we may let a represent α and b represent β under one scheme of representation as long as we are also prepared to allow that a represents β and b represents α under another. The previous difficulty then disappears since, given the symmetric nature of the representations (which cannot themselves be actualistically distinguished), we will be left with no way to distinguish between α and β .¹⁵

A problem remains, however. For a similar story should be told about w_1 and w_2 . There will be two proxies, say w and v , that indifferently represent w_1 and w_2 or w_2 and w_1 . Suppose now that we pick on a particular scheme of representation, say that in which a represents α , b represents β , w represents w_1 , and v represents w_2 . Then how are we to determine which paths for a

¹³ A related objection is made in Fine ([85], §2) and an altogether different objection to the necessary existence of alien properties is developed by Lewis ([86], 160-1).

¹⁴ Contrary to what the criticisms in Lewis ([86], 158 & 163-4) might appear to suggest.

¹⁵ Curiously, similar difficulties arise in understanding Cantor's account of cardinal numbers as sets of units (Fine [98a]).

and b are to be assigned in w ? Whatever we say, the paths assigned in v must be the reverse. But there seems to be no basis for taking the paths to go one way rather than the other. Thus even when we pick on a particular scheme of representation, there appear to be irresolvable indeterminacies in how it is to be applied.

In order to solve this further difficulty, we must somehow 'coordinate' the representation of individuals and worlds. Let me indicate one way in which this might be done.¹⁶ Let us suppose that we use the distinct actual entities w_1, w_2, \dots as proxies for the possible worlds and the distinct actual entities i_1, i_2, \dots as proxies for the merely possible individuals. Then coordination may be achieved by means of a *proxy-pluriverse*. This consists of the class W of world-proxies, the class I of individual-proxies, and a class of proxy relationships, where each proxy relationship is of the form $\langle w, R, i_1, i_2, \dots, i_n \rangle$, for w a proxy-world, R an (actual) n -adic relation, and i_1, i_2, \dots, i_n proxy-individuals. Intuitively, a proxy relationship indicates that the relation R holds of the possible individuals represented by i_1, i_2, \dots, i_n in the possible world represented by w . Thus a proxy-pluriverse represents how the pluriverse might be; it provides an explicit tabulation, via the proxies, of the relationships that hold of the possible individuals in each of the worlds.¹⁷

A proxy pluriverse will not in general be 'realistic'; it will not represent the way the pluriverse really is. How then are such proxy pluriverses to be singled out? In order to answer this question, let us suppose that we are given a well-ordering i_1, i_2, \dots of all the proxy-individuals; and let us say that the proxy-world w of the proxy-pluriverse is realized by a corresponding well-ordering of individuals x_1, x_2, \dots if R holds of $x_{k_11}, x_{k_12}, \dots, x_{k_1n}$ just in case $\langle w, R, i_{k_11}, i_{k_12}, \dots, i_{k_1n} \rangle$ is a proxy-relationship of the proxy pluriverse. Thus a proxy-world will be realized by an assignment of individuals to proxy-individuals (x_1 to i_1, x_2 to i_2, \dots) if it correctly represents the relations that hold among those individuals. So, for example, it will represent R 's holding of x_1, x_3 (via the proxy-relationship $\langle w, R, i_1, i_3 \rangle$) just in case R does hold of x_1 and x_3 . A proxy-pluriverse may now be said to be *realistic* (under a given well-ordering of its proxy-individuals) if possibly there

¹⁶ The basic idea behind the method is presented in Fine ([77], 148) and a related approach has been developed by Sider ([01], §5).

¹⁷We shall suppose that distinct proxy-worlds enter into different relationships - so that if $w \neq v$ then there is a relation R and proxy-individuals i_1, i_2, \dots, i_n which are such that $\langle w, R, i_1, i_2, \dots, i_n \rangle$ is a proxy relationship within the proxy pluriverse while $\langle v, R, i_1, i_2, \dots, i_n \rangle$ is not, or vice versa.

is an x_1 , possibly there is an x_2, \dots such that:

- (i) each x_i is distinct from a_1, a_2, \dots , where a_1, a_2, \dots is a list of all the actual individuals;
- (ii) x_j and x_k are distinct for $j \neq k$;
- (iii) necessarily any individual is identical to a_1 or a_2 or \dots or to x_1 or x_2 or \dots ;
- (iv) each proxy-world is possibly realized by x_1, x_2, \dots ;
- (v) it is necessary that some proxy-world is realized by x_1, x_2, \dots .

Clauses (i)-(iii) say that x_1, x_2, \dots are pairwise distinct and together constitute the domain of possibilia; clause (iv) says that each of the proxy-worlds represents a genuine possibility (under the given assignment of individuals to proxy-individuals); and clause (v) says that the proxy-worlds exhaust the genuine possibilities.¹⁸

Given a realistic proxy-pluriverse, we may then quantify over the proxy-worlds and the proxy-individuals as if they were the possible worlds and the possible individuals of the real pluriverse. Thus instead of saying that R holds of certain possible individuals in a given possible world, we may say that $\langle w, R, i, j \rangle$ is a proxy-relationship within the given proxy-pluriverse. There will of course be many realistic pluriverses (and many ways of ordering their proxy-individuals). But the ambiguity will not matter, since different realistic pluriverses are isomorphic and hence will yield the same truth-value for any given possibilist claim.

The resulting reduction is highly inelegant. It requires enormous expressive resources in order to capture a relatively modest extension in expressive power. For whether a given proxy-pluriverse is realistic depends upon the truth of the infinitary proposition given by the clauses (i)-(v) above. And so, in stating any given reduction, we must either possess the means to express this infinitary proposition, in which case the language of the reduction must itself be infinitary, or we must possess the means to refer to this proposition (or to a corresponding sentence), in which case the language of the reduction must be capable of describing the structure and semantics of an infinitary language or ontology of propositions.

But there is a more serious problem. For how can we be sure that there is a realistic proxy-pluriverse? The problem is essentially one of cardinality. For in order for a proxy-pluriverse to be realistic there must possibly be an x_1 , possibly be an x_2, \dots such that x_1, x_2, \dots are all the possible individuals that there are. There must therefore be as many variables ' x_1 ', ' x_2 ', \dots - or operators 'possibly an x_1 ', 'possibly an x_2 ', \dots - as there are possible objects. But suppose there are c such operators, for some cardinal number c . It is then arguable that there could be a greater, infinite

¹⁸ A similar modal description of the pluriverse is given in Fine ([77], 147).

number d of possibilia. For there could be a possible world that contained d 'parallel' universes, each with its own particles; and since there are presumably only finitely many actual particles (and since, necessarily, each particle is necessarily a particle), at least d of these particles from the parallel universes will be nonactual.

There are perhaps ways in which this latter problem can be solved.¹⁹ But a general form of the cardinality worry remains. For if a proxy-reduction is to succeed, there must be a one-one correspondence between the possible individuals and worlds of the pluriverse, one the one side, and the objects of the actual world, on the other. (Or perhaps we should say, more cautiously, between the possible individuals and worlds of the pluriverse and the objects of some possible world, since one might carry out the reduction from the perspective of some possible world, viewed as actual, rather than from the perspective of the actual world itself.)

But is such an assumption reasonable? Will there be a world within the pluriverse of the same 'size' as the pluriverse itself? This is a difficult question (and of some interest in itself). But I am inclined to think the answer is 'no'. For there is a puzzle whose solution appears to require that we give the assumption up.²⁰ I shall state the puzzle for the case of 'communicating egos', though there are other forms it might take.

We imagine ourselves attempting to ascertain how many possible Cartesian egos there are. Now even if there are no actual Cartesian egos, there could be one. That is:

(1) There is at least one possible ego.

It is also plausible that:

(2) Given any possible world containing one or more egos, there is a possible world in which those egos exist and in which, for any subclass of those egos, there is an ego which is in telepathic communication with just those of the given egos that are members of the subclass.

Finally, we may wish to maintain that:

(3) Given any class of possible egos, there is some possible world in which they all exist.

¹⁹ One solution, suggested in Fine ([77],148), is to use so-called 'quasi-classes' to set up a one-one correspondence between the possibilia and the actualia (a great gain in elegance and simplicity is thereby also achieved). Quasi-classes are the possibilist counterpart of plural quantification (in the sense of Boolos [84]) and were introduced, along with the general idea of plural quantification, in Fine ([77], 146-7).

²⁰ Some related arguments, based on diagonal considerations, have been discussed by Forrest and Armstrong [84], Bringsjord [85], Menzel [86a], and Kaplan [95].

Although each of these assumptions is individually plausible, together they are inconsistent. For from (3) (letting the class be the class of all possible egos), it follows that:

(4) There is a possible world (call it Descartes' world) in which all possible egos exist.

From (1), it follows that:

(5) Descartes' world contains some egos.

And from (2), it follows that:

(6) Given any possible world which contains some egos, there is a possible world which contains more egos, since in the world with telepathic communication there will be more communicating egos than egos with which they communicate. But (4) and (6) are incompatible with one another, since there can be no possible world which contains more egos than the class of them all. What are we to say? Which of the assumptions (1) - (3) should be given up? It is natural to suppose that it should be (3). But we would like this principle for the most part to be true. And if we ask what is it about the class of all possible egos that prevents them from all existing, the only acceptable answer would appear to be that the class is too large. In other words, the domains of each possible world will be subject to a 'limitation of size'; and even though the pluriverse may be capable of exceeding this size, the worlds within the pluriverse will not be. Each such world will possess an 'actual' or 'actualizable' infinity of objects and be incapable of accommodating the 'potential' infinity of possible objects that belong to the pluriverse as a whole.²¹ But if this is our motivation for rejecting the possible existence of all possible egos, then we are obliged to conclude that there are more possible egos than there are objects in any possible world, since it is only this that prevents them all from possibly existing.

If this is right, then the assumption that there could be as many actuals as possibles is untenable and the whole idea of a proxy reduction should be abandoned.²² But even if it is not right and another solution to the puzzle be discovered, there is still something unsatisfactory, for the reasons already given, about having the adequacy of the reduction depend upon such

²¹ This is a distinction that may be easier for the actualist rather than for the possibilist to maintain. For the actualist may argue that just as there is no perspective (one transcending all ordinals) from which the class of all sets is given, so there is no perspective (one transcending all possible worlds) from which the class of all possibilities is given. (In this connection, see Menzel ([86a], [86b]) and Grim [86]).

²² There is a related problem over cardinality in representing Fregean abstracts as sets within the cumulative hierarchy (Fine [98b]).

substantive metaphysical views; and it would be desirable if some other way of of reducing possibilist discourse could be found.

§3 Reduction without Proxies

It is important to bear in mind that a reduction need not proceed via proxies. The mother of all reductions, Russell's theory of descriptions, cannot readily be regarded as one in which entity gives way to entity and another example, more pertinent to our present concerns, is that in which quantification over pairs is replaced by quantification pairs. Instead of saying 'there is a pair x such that ...', one says 'there is an x_1 and an x_2 such that ...'. Here there is no single entity that goes proxy for a pair. Many philosophers seem to have followed Lewis ([86], 141) in supposing that they must either go with proxy reduction ('ersatzism') or accept possible worlds realism. But this is a false dilemma. For as I have indicated in previous work²³, it is possible to provide a straightforward nonproxy reduction of possibilist discourse.

The basic idea is to take modality as primitive and to treat the possibilist quantifier 'there is a possible object x ' as equivalent to 'possibly there is an object x ' - where the second quantifier (in the scope of the possibility operator) is actualist, ranging in each world over the actual objects of that world. Thus to say that there is a possible object that is possibly a talking donkey is to say that possibly there is an object that is possibly a talking donkey.

Unfortunately, the above method does not work in all cases. To say that there is a possible object that is not actual is not to say that possibly there is an (actual) object that is not actual, since the latter claim is necessarily false while the former claim is presumably true. The method must therefore be modified. The difficulty is that the possibility operator takes us to another world, whereas we wish to evaluate the statement governed by the possibilist quantifier in the original world. We therefore need some device to take us back to the original world. There are various ways in which this might be done, but let me here present just one. Back-reference is to be achieved, in the most direct and straightforward manner, by means of reference to the actual world. Thus to say that there is a possible object that is not actual will be to say that the actual world is such that it is possible that there is an object whose non-existence is compatible with that world being actual. And, in general, to say that some possible object ϕ 's is to say that the actual world is such that it is possible that there is an object whose ϕ -ing is compatible with that

²³ Beginning with Fine ([77], 130-9). A comparison with the standard proxy reduction is made in Fine ([85], 180-3) and some technical details can be found in Fine ([79], [81], [82]).

world being actual.

Of course, this reduction requires reference to the actual world. But such reference is not objectionable to the actualist as such, for his complaint is against the possibles of a given kind - whether they be worlds or individuals - and not against the kinds themselves.

The reduction of possible worlds is now merely the special case of the reduction of possible individuals in which the individuals are taken to be the worlds. Thus to say 'for some possible world' will be to say 'possibly for some (actual) world' in the simplest case; and back-reference can be achieved in the general case in the same way as before. (Thus worlds will now play a double role, as the objects of quantification and as the means for securing back-reference).

Of course, we do not get rid of the world on this approach - merely, *possible* worlds. But the problem for the actualist is not with the actual world, but with possible entities, whether they be worlds or of some other kind. If we also wish to get rid of the actual world and treat it as a special kind of fact, say, or proposition, then this is something that might be tacked onto the present reduction but is of no concern to the actualist as such.

The beauty of the method is that it does not require any addition to the ontology. Quantification over *possibilia*, be they worlds or individuals, is eliminated in favour of the corresponding quantification over *actualia*. There is a direct trade between the the ontology of *possibilia*, on the one hand, and the ideology of modality, on the other. Moreover, the assumptions upon which the reduction depends are minimal. It need only be assumed that:

- (1) necessarily there is a world; and
- (2) necessarily, for any world and true proposition, the truth of the proposition is implied by the existence of the world.²⁴

Once these assumptions are granted, the adequacy of the reduction is guaranteed.

The main difficulty with this approach is that it is not clear how it is to be extended to quantification over sets of possibles (Fine [77], 145). We could try to understand such quantification as quantification over possible sets. But a possible set can only consist of *compossibles*, i.e. of objects that can possibly all exist, whereas we should also allow for quantification over all sets of *noncompossible* objects.

A uniform solution to this problem is available in the case of any proxy reduction, since a set of the objects from the class of objects to be reduced can always be identified with the set of their proxies; and it would be desirable if a uniform

²⁴ If we wish to take care of questions concerning the identity of worlds, then it should also be assumed that there is necessarily at most one world.

solution could also be obtained in the case of any nonproxy reduction. One possibility here is to treat quantification over sets as a certain form of plural quantification. To say that there is a set X is to say, in effect, that there are certain individuals x_1, x_2, \dots ; and to say that $x \in X$ is to say, in effect, that x is one of the individuals x_1, x_2, \dots . Let us be a little more precise. Suppose that we are somehow equipped with an understanding of a first-order language L_1 in which the quantifiers range over what we shall please to call individuals; and let it be granted that our understanding extends, in principle, to sentences of infinitary length (we could equally well work with propositions rather than sentences). Suppose that we now introduce a quantifier $\exists X$ over sets of individuals; and consider any sentence ϕ of the resulting language. We wish to extend the truth-predicate to the resulting language, though without quantifying over sets. This may be done inductively on the logical complexity of the sentence to which the truth-predicate is applied. The clauses in the case of the truth-functional connective and the quantifier $\exists x$ over individuals are straightforward. And so that leaves sentences of the form $\exists X\phi$. Intuitively, we wish to say that such a sentence is true iff an instance is true, but we have no straightforward way of saying what an instance is. What we may do instead is to find a first-order counterpart of an instance. This may be obtained in two steps. First we replace each free occurrence of the set-variable ' X ' in ϕ by a term ' $\{x_1, x_2, \dots\}$ ' with a given number of distinct new variables ' x_1 ', ' x_2 ', \dots (sets give way to individuals); and then we replace each atomic subformula ' $x \in \{x_1, x_2, \dots\}$ ' in the resulting formula by ' $x = x_1 \vee x = x_2 \vee \dots$ '. (membership gives way to identity), and similarly for all other atomic subformula involving $\{x_1, x_2, \dots\}$ ²⁵. Let the resulting sentence be ϕ' . Then an instance of $\exists X\phi$ is a sentence of the form $\exists x_1, x_2, \dots\phi'$.

We thereby obtain truth-conditions for a language L_2 with variables for both individuals and sets of individuals. The method can be extended to a language L_3 with quantifiers that range over sets of 'rank' ≤ 2 , i.e. over sets whose members are either individuals or sets of individuals; and the construction may then be continued into the transfinite. We thereby obtain truth-conditions for a language L_α of arbitrary order α ; and so, as long as we are able to identify the sets we wish to quantify over as those whose rank is less than a given ordinal α , we are in a position to account for quantification over such sets in terms of our understanding of the base language.

This reduction does not allow us to eliminate reference to sets altogether, since the definition of truth requires the full

²⁵ Atomic formulas of the form $\{x_1, x_2, \dots\} \in x$, $x \in y$ and $x = \{x_1, x_2, \dots\}$ are replaced by \perp ; and $X = Y$ is treated as definitionally equivalent to $\forall x(x \in X \leftrightarrow x \in Y)$. Special provision should be made for the null class.

resources of set theory.²⁶ But the reduction does show how we may extend our understanding of quantification over sets of arbitrary rank to the ontology of any infinitary first-order language. And since our nonproxy reduction of possibilist discourse extends straightforwardly to the infinitary quantifier 'there are possible objects x_1, x_2, \dots ', we are thereby able to account for higher-order quantification over sets of possible individuals, sets of such sets, and so on throughout the cumulative hierarchy.²⁷

§4 Fictionalism

We have argued against any proxy reduction of the possible to the actual and in favour of a certain form of nonproxy reduction. But are there any other acceptable forms of nonproxy reduction?

One candidate is the modal fictionalism of Rosen [90].²⁸ The possibilist wishes to assert:

(e) possibly there are talking donkeys iff there is a possible world in which donkeys talk.

And, in general, where ϕ is a modal claim and ϕ^* is its possibilist translation, the possibilist will maintain:

(E) ϕ iff ϕ^*

But, given that he accepts the possibility of talking donkeys and other such modal claims, he is thereby committed to a plethora of possible worlds. The fictionalist, by contrast, will think of the possibilist's views of the pluriverse as constituting a fiction and will therefore replace (e) with:

(e') possibly there are talking donkeys iff it is true according to the fictional account of the pluriverse that there is some possible world in which there are talking donkeys;

and, more generally, he will replace (E) with:

(E') ϕ iff it is true in PW that ϕ^* ,

where PW is the fictional account of the pluriverse. In this way, he can take advantage of the possible world semantics for modal discourse without committing himself to its ontology. In making the transition from ordinary modal claims to their possibilist translation, we enter a fictional realm of possible

²⁶ Indeed, it also requires that we be able to treat the domain of sets in the object-language as a set within the meta-language. But this set-theoretic 'ascent' is something which one might argue is always available to us.

²⁷ The idea behind this reduction derives from Goedel's reconstruction of Russell's no-class theory in [90], 132.

²⁸ A related form of fictionalism, to which similar criticisms apply, is that of Armstrong [89]. An altogether different approach, which I shall not discuss, is that of Forbes ([85], 89-95). The view is critically examined in Cresswell ([90], 47-62) and Chihara ([98], chap. 4).

worlds and their inhabitants, according to the fictionalist, rather than one that is genuinely there.

The view, as stated, would appear to fall flat on its face. For on any account of the fiction PW that might reasonably be proposed, there will presumably be possibilist translations ϕ^* of modal claims ϕ whose truth-value is not settled within PW. Perhaps ϕ^* is the claim that there is a possible world in which there are more than N_{17} individuals. It is not then implausible to suppose that:

(I) it is not true in PW that some possible world contains more than N_{17} individuals and it is not true in PW that every possible world contains at most N_{17} individuals.

But, from the modified equivalence (E') above and the first part of (I), it follows that it is not possible that there are more than N_{17} individuals and, from (E') and the second part of (I), it follows that it is not necessary that there are at most N_{17} individuals. And this is a contradiction.

In the face of this difficulty, Rosen ([90], 341-3) has suggested that modal claims ϕ like the one above should be taken to be indeterminate, i.e., to be neither true nor false. But this is of no help in avoiding the contradiction unless principle (E') is somehow modified. Presumably, the intent is that it should take the form:

(E'') it is true that ϕ iff it is true in PW that ϕ^* , where 'it is true that' is an operator that converts an indeterminate statement into one that is false. But the scope of the view is now seriously compromised, for we lack any account of what it is in general for a modal statement ϕ to hold. Where ϕ is indeterminate, we would like there to be a possibilist or quasi-possibilist translation that is correspondingly indeterminate. But the fictionalist is unable to provide any such translation, since ϕ^* and 'In PW, ϕ^* ' are both false. Thus the fictionalist is unable adequately to represent the question 'Is it possible that there are more than N_{17} individuals?'. He can only provide a question to which the answer is 'No', whereas we want a question to which the answer is neither 'Yes' nor 'No'.

Numerous other difficulties for the view have been raised.²⁹ Three that strike me as especially serious are as follows. First, the account depends upon a problematic notion of what it is to be true in a fiction. For can we understand this notion in the required way without already presupposing an understanding of modality? Second, it is not clear how to specify an adequate fiction PW, one that will deliver the right truth-values, without already presupposing the truth of the modal statements whose truth-conditions are in question. Third, the account does not adequately represent the content of modal

²⁹ See Rosen ([90], [93], [95]), Brock [93], Noonan [94], Divers [95], Hale [95], Nolan [96], Chihara [98], and Sider [00].

claims even should it get their truth-value right. To make the controversial claim that things are necessarily spatio-temporally connected is not to claim that it is true in a fiction, in which every possible world is taken to be spatio-temporally connected, that every possible world is spatio-temporally connected, even should the claim be true. (To some extent, these difficulties are interdependent. We might solve the first difficulty, for example, by taking truth-in-a-fiction to be strict logical implication, but the second difficulty then becomes more acute).

From our own point of view, Rosen's fictionalism involves a large element of overkill. For it attempts to get rid of the ordinary modal idioms in addition to the ontology of possible worlds and individuals. But suppose we are happy with the modal idioms and merely wish to rid ourselves of possibilities. A much more satisfactory form of fictionalism can then be maintained. For we can take the possible worlds semantics itself to constitute a fiction. Thus among the basic postulates of the fiction will be the following:

- (i) A statement is true iff it is true in the actual world;
- (ii) Possibly A is true in a world iff A is true in some world;
- (iii) Something ϕ 's is true in a world w iff some individual of w ϕ 's in w .

We also import all truths into the fiction as long as their quantifiers are restricted to what is actual.³⁰

There are three major differences between our fictionalism and Rosen's. First, instead of telling a metaphysical story about the constitution of the pluriverse, as with Rosen's account, our fiction tells a semantical story about the connection of the pluriverse with the modal facts. Second, truth-in-a-fiction is not a new substantive notion for us; it is simply logical implication (in the strict sense). Third, the connection between modal and possibilist claims is reconceived. Instead of modifying the original equivalence (E) to (E') (or to (E'')), we modify it to: (E''') it is true in the fiction that (ϕ iff ϕ^*).

Thus the original equivalence (E) is itself taken to be assertible within the given fiction and reasoning can proceed within the fiction as if we were bona fide possibilists.

It is clear, in the light of these differences, that our account is not subject to the difficulties mentioned above. Since we do not insist upon (E'), the difficulty over indeterminacy does not arise. But should the actualist statement ϕ be true, there is no difficulty in showing that ϕ^* is true in the fiction. For (ϕ iff ϕ^*) will be true in the fiction by the semantical postulates, ϕ will be true in the

³⁰ This corresponds to Rosen's 'encyclopedia' ([90], 335). We need the restriction to prevent the importation of something like 'everything is actual'.

fiction by importation, and so ϕ^* will be true in the fiction as a logical consequence. Thus (E') will never fail when ϕ is either true or false; and there will be no unwanted gaps. Since the imported modal truths may be used in this way to deliver the correct possibilist consequences, there is no special difficulty in providing an adequate noncircular account of what the fiction is. Finally, there will be no difficulty over according the correct content to modal claims, since no attempt is made to ascribe a content to them. Our aim is simply to adopt a fictionalist simulacrum of possibilist discourse.³¹

The new form of fictionalism is analogous to if-then-ism in the philosophy of mathematics³² and is not without its attractions. It is still subject to difficulties, however. For we have substantive views about the nature of possible worlds - we do not think of them as mere ciphers. We are inclined to think, for example, that no two worlds can be exactly alike or that what is true at a world cannot be different from what it is. These views should not, of course, be understood as being literally true of how things are for the fictionalist, since he does not believe in many worlds, but it should be possible for him to understand them as being true of how things are in the fiction. Thus he should take it to be true in the fiction that no two worlds are exactly alike or that what is true in a world cannot be different from what it is. However, under the most natural construal of what the fiction is, these various questions concerning the content of the fiction will not be settled one way or the other. The worlds serve merely as pegs upon which to hang the modal truths and nothing beyond their serving this structural role need be said about their nature. So the view will suffer from a problem of incompleteness after all, not with respect to ordinary modal claims but with respect to the superstructure of worlds within which they are embedded.

How might this incompleteness be repaired? There are two main options. The first is to add postulates to the fiction that explicitly describe the nature of the worlds. Thus there may be a postulate stipulating that no two worlds are exactly alike. But we then face a variant of the third of the objections listed above. For to claim, in the intended sense, that no two worlds are exactly alike is not to claim that this is true in a fiction in which it has been stipulated to hold. The other option is to have these various claims follow from actualist modal truths in much the same way that the existence of worlds with talking donkeys follows from the possibility that donkeys talk. Thus suppose we take it to be true that

³¹ I might note that the objections made by Brock [93] and Hale [95] are also inapplicable to the present version of fictionalism.

³² As characterized in §3 of Putnam [67], for example.

necessarily for any (actual) world w and necessarily for any distinct world v there is some elementary fact holding in v but not in w (or vice versa). Then the rest of the fiction might be so set up that, once this modal truth is imported into the fiction, the desired possibilist truth concerning the discernibility of distinct worlds will follow. But in this case, the fictionalism does no work for, given that our actualist modal language already contains quantification over worlds, possibilist quantification over worlds and individuals will be definable in the manner of our own reduction. Thus fictionalism of the supra-modal sort is either inadequate or redundant.³³

References

- Adams R. M., [74] 'Theories of Actuality', *Nous* 8, 211-31, reprinted in Loux [79], 190-209.
- Adams R.M., [81] 'Actualism and Thisness', *Synthese* 49, 3-41.
- Armstrong D. M., [89] 'A Combinatorial Theory of Possibility', Cambridge: Cambridge Univ. Press.
- Boolos G., [84] 'To Be is to be the Value of a Variable (or Some Values of Some Variables)', *Journal of Philosophy* 81, 430-50, reprinted in 'Logic, Logic, Logic', Cambridge MA: Harvard Univ. Press.
- Bricker P., [87] 'Reducing Possible Worlds to Language', *Philosophical Studies* 52, 331-355.
- Bringsjord S., [85] 'Are There Set-theoretic Possible Worlds', *Analysis* 45.1.
- Brock S., [93] 'Modal Fictionalism: a Reply to Rosen', *Mind* 102, 147-50.
- Chihara C. S., [98] 'The Worlds of Possibility', Oxford: Clarendon Press.
- Cresswell M. J., [90] 'Entities and Indices', Dordrecht: Kluwer.
- Divers J., [95] 'Modal Fictionalism Cannot Deliver Possible Worlds Semantics', *Analysis* 55, 81-80.
- Fine K., (and A. N. Prior) [77] 'Worlds, Time and Selves', London: Duckworth.
- Fine K., [79] 'First-order Modal Theories II - Propositions', *Studia Logica* 39, 159-202.
- Fine K., [81] 'First-order Modal Theories I - Sets', *Mous* 15, 117-206.
- Fine K., [82] 'First-order Modal Theories III - Facts', *Synthese*, 53, 43-122.

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- Fine K., [85] 'Plantinga on the Reduction of Possibilist Discourse', in 'Profiles: Alvin Plantinga' (ed. Tomberlin & Inwagen), Dordrecht: Reidel, 145-186.
- Fine K., [98a] 'A Defence of Cantorian Abstraction', *Journal of Philosophy* XCV12, 599-634.
- Fine K., [98b] 'The Limits of Abstraction', in 'The Philosophy of Mathematics Today' (ed. M. Schirn), Oxford: Clarendon Press (1998), 503-630.
- Fine K., [01] 'The Question of Realism', to appear in Imprint.
- Forbes G., [85] 'The Metaphysics of Modality', Oxford: Oxford Univ. Press.
- Forbes G., [89] 'Languages of Possibility', Oxford: Blackwell.
- Forrest P & Armstrong D. M., [84] 'An Argument Against David Lewis' *Theory of Possible Worlds*, *Australasian Journal of Philosophy* 62, 164-8.
- Grim P., [86] 'On Sets and Worlds: A Reply to Menzel', *Analysis* 46, 186-91.
- Goedel K., [44] 'Russell's Mathematical Logic', in 'The Philosophy of Bertrand Russell' (ed. P. A. Schilpp), Evanston: Northwestern University, reprinted in 'Kurt Goedel, Collected Works, II', Oxford University Press, 1990.
- Gupta A., [80] 'The Logic of Common Nouns', Yale Univ. Press, 20n.
- Hale B., [95] 'Modal Fictionalism - A Simple Dilemma', *Analysis* 55, 63-7.
- Kaplan D., [75] 'How to Russell a Frege-Church', *Journal of Philosophy* 72, 716-729, reprinted in Loux [79], 210-224.
- Kaplan D., [95] 'A Problem in Possible-World Semantics', in 'Modality, Morality and Belief: Essays in Honor of Ruth Barcan Marcus' (ed. W. Sinnott-Armstrong), Cambridge: Cambridge Univ. Press.
- Kripke S., [63] 'Semantical Considerations on Modal Logic', *Acta Philosophica Fennica* 16, 83-94, reprinted in 'Reference and Modality' (ed. L. Linsky), Oxford: Oxford Univ. Press, 1971.
- Lewis D., [86] 'On the Plurality of Worlds', Oxford: Blackwell.
- Loux M., [79] (ed.) 'The Possible and The Actual', Ithaca: Cornell Univ. Press.
- McMichael A., [83a] 'A Problem for Actualism about Possible Worlds', *Philosophical Review*, 92, 49-66.
- Menzel C., [86a] 'On Set-theoretic Possible Worlds', *Analysis* 46, 68-72.
- Menzel C., [86b] 'On the Iterative Explanation of the Paradoxes', *Philosophical Studies* 49, 37-61.
- Nolan H., Hawthorne J. O., 'Reflexive Fictionalism', *Analysis* 54,

- 23-32.
- Noonan H., [94] 'In Defence of the Letter of Fictionalism',
Analysis 54, 133-39.
- Peacocke C., [01] 'Principles for Possibilia', to appear.
- Plantinga A., [74] 'The Nature of Necessity', Clarendon: Oxford.
- Plantinga A., [76] 'Actualism and Possible Worlds', Theoria
42, 139-
160, reprinted in Loux [79], 253-273.
- Prior A. N., [77] 'Egocentric Logic', reprinted as chapter 2 of
'Worlds, Times and Selves'.
- Prior A.N., (and K. Fine) [77] 'Worlds, Times and Selves',
London:
Duckworth.
- Putnam H., [67] 'The Thesis that Mathematics is Logic', in
'Bertrand Russell: Philosopher of the Century' (ed. R.
Schoenman), London: Allen & Unwin, 273-303.
- Quine W. V. O., [64] 'Ontological Reduction and the World of
Numbers', Journal of Philosophy 61, 209-216, reprinted in
'The
Ways of Paradox', New York: Random House, 1966.
- Quine W. V. O., [69] 'Ontological Relativity', New York:
Columbia
Univ. Press.
- Rosen G., [90] 'Modal Fictionalism', Mind 99, 327-354.
- Rosen G., [93] 'A Problem for Fictionalism about Possible
Worlds', Analysis 53, 71-81.
- Rosen G., [95] 'Modal Fictionalism Fixed', Analysis 55, 67-73.
- Shoemaker S., [80] 'Causality and Properties', in 'Time and
Cause'
(ed. P. van Inwagen), Dordrecht: D. Reidel, reprinted in
'Identity, Cause and Mind: Philosophical Essays', Cambridge:
Cambridge University Press.
- Shoemaker S., [98] 'Causal and Metaphysical Necessity', Pacific
Philosophical Quarterly 79, 59-77.
- Sider T., [01] 'The Ersatz Pluriverse', to appear.
- Stalnaker R. C., [76] 'Possible Worlds', Nous 10, 65-75,
reprinted
in Loux [79], 225-234.
- Swoyer C., [82] 'The Nature of Causal Laws', Australasian
Journal
of Philosophy 60, 203-23.
- Van Inwagen P., [80] 'Indexicality and Actuality', Philosophical
Review 89, 403-206.
- Williamson T., [98] 'Bare Possibilia', Erkenntnis 48, 257-73.