# Worlds within Worlds:
# a Dilemma for Modal Realism

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In this paper I will present an argument that David Lewis' modal realism is self-refuting, and that the contradiction that makes it self-refuting can only be blocked by modifying certain other of Lewis' philosophical commitments. My argument will proceed as follows. First, I will briefly describe the motivation for and the main components of Lewisian modal realism. Second, I will explain Lewis' view of what it is for an individual or a set to exist in a world. Third, I go on to argue that Lewis' position creates a dilemma for modal realism: either each world contains all the other worlds as parts, which violates the principle that worlds are spatiotemporally isolated, or worlds are reducible to sets, which violates the principle that worlds are individuals. Finally, I briefly discuss a suggestion by Divers that strongly bears on this problem.

## Modal Realism

I begin with a summary description of modal realism. Modal realism is motivated by the broadly Quinean view that quantifying over possibilia provides us with the best way of making sense of modal claims, a position that Lewis (1986a) defends in considerable detail as "a philosopher's paradise."

Lewis identifies possibilia with worlds. Worlds are concrete ("a big physical object" [Lewis, 1986b: 1]) and non-overlapping. They are non-overlapping because they are spatiotemporally, and therefore causally, segregated from one another. Items are spatiotemporally or causally related to one another just in case they are parts of the same world, and no two worlds share any parts. As Lewis says, "Worlds are spatiotemporally and causally isolated from one another; else they would not be whole worlds but parts of a greater world" (1986a: 84). So, the principle that worlds are spatiotemporally isolated entails that *no world can be part of any other world*. There is an infinite plurality of worlds, because every possibility — every way the world could be or could

have been — corresponds to the facts that obtain at some world. No constituent of a world can exist at more than one world, on pain of violating Leibniz' Law. So, talk of transworld individuals must be understood in terms of constituents of worlds and their counterparts at other worlds (where counterparts are understood as other-worldly constituents that are similar to them).

Modal realism allows one to translate modal talk into a non-modal idiom of possible worlds which, Lewis claims, should be understood realistically. A claim is possibly true iff it is true of some world, necessarily true iff it is true of all worlds, not possibly true iff it is true of no world, and contingently true iff it is not true of some worlds. With suitable modifications (which need not concern us here) the modal realist framework can also be used to give an analysis of *de re* modality. The concept of actuality is understood indexically. The *actual world* is just the world to which one belongs, and all worlds are therefore actual from the standpoint of their inhabitants.

## Two Ways of Being in a World

To understand the modal realist view of what it is to exist in or "inhabit" a world, it is helpful to consider Lewis' basic ontological commitments. Worlds are composed of simple particulars. They are aggregates of Humean spacetime points instantiating "perfectly natural" properties, upon which other things in that world supervene. As he puts the point, "all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another" (1986b: xi). The only non-individuals admitted into the Lewisian ontology are sets. Other non-individuals, such as properties, numbers, propositions, and events are reducible to sets, so if one quantifies over these sorts of entities, as Lewis does, then one must, on Quinean grounds, admit them into one's ontology. Lewis states that individuals exist in or "inhabit" worlds if they are parts of those worlds.

A world is a large possible individual; it has smaller possible individuals as parts. A galaxy, a planet, a man, an electron — these things inhabit their world simply by being parts of it. Just as the electron is part of the man, and the man in turn

is part of his planet which is part of its galaxy, so the galaxy in turn is part of its world. And so are its parts, and their parts,... since the relation of part to whole is transitive. Any possible individual is part of a world, and in that sense it is *in* a world. (As a special case a world is an improper part of itself). Worlds do not overlap; unlike Siamese twins, they have no shared parts. Thus…no possible individual is part of two worlds (1983b: 39).

But he also states that there are two other ways that we can think of entities being in a world. One concerns mereological sums of individuals existing in different worlds. Lewis (1983b: 40) describes these as impossible individuals and they need not concern us here. Finally, there is the way that sets are "in" worlds. Because "the whole-part relation applies to individuals and not sets…no set is in any world in the sense of being part of it" (Ibid.). Rather than thinking of sets as in worlds in virtue of being parts of worlds, Lewis proposes that we think of them as items that "exist alike from the standpoint of all worlds, just as they have no location in time and space but exist alike from the standpoint of all times and places" (Lewis 1983b: 39). Because we quantify over numbers, properties, etc. when we evaluate the truth of sentences whose domains are restricted to a single world, we can say that numbers, properties, etc., are "in" worlds only because they exist from the standpoint of those worlds.

In *On the Plurality of Worlds*, Lewis recasts the individual/set distinction as the concrete/abstract distinction. After initially stating that he is unsure about the basis for the distinction between abstractness and concreteness, he turns to what he describes as four conventional interpretations of the distinction, using each of them to arrive at a judgment about the meta-physical status of worlds. According to what he calls *the way of example*, some items, for instance "donkeys and puddles, protons and stars" (Lewis, 1986: 82) are paradigmatically concrete. "I am inclined to say," he writes, "that…a world is concrete rather than abstract—more donkey-like than number-like" (Lewis, 1986: 83). *The way of conflation* equates the abstract/concrete distinction to the universal/particular distinction or the set/member distinction. Lewis' verdict is

"that worlds are individuals not sets" so therefore "worlds are concrete" (Ibid.).

In terms of *the negative way,* abstract items have no spatiotemporal location, do not enter into causal relations, and are never indiscernible from one another, unlike concrete items. The key point in Lewis' detailed discussion of the negative way is that "whole worlds …cannot stand in spatiotemporal and causal relation to anything outside themselves" but they "can inherit concreteness from their parts" and so "worlds and their parts… are concrete" (Lewis, 1986: 85). Finally, *the way of abstraction* has it that abstract entities are abstractions *from* concrete entities. Lewis asserts that "worlds are concrete" as "they lack no specificity, and there is nothing for them to be abstractions from" (Lewis, 1986: 86). He concludes, "So, by and large,… it seems that indeed I should say that worlds as I take them to be are concrete; and so are many of their parts, but perhaps not all."

The phrase "but perhaps not all" might seem puzzling. It might be taken to mean that Lewis is entertaining the possibility that sets can be parts of worlds, but the context makes it clear that he is referring to the possibility that there are non-individual non-sets ("if universals and tropes are non-spatiotemporal parts of ordinary particulars that in turn are parts of worlds, then here we have abstractions that are parts of worlds" [86]).[1]

## A dilemma for modal realism

It is not clear that the notion of something existing from the standpoint of a world can be reasonably construed as a notion of that thing being *in* that world without being part of it. But let us suppose that Lewis' explanatory strategy is satisfactory. In that case, every possible individual exists only as part of a world, and every set exists only from the standpoint of worlds, thus not allowing that individuals exist in worlds in virtue of existing from the standpoint of them or that sets are in worlds in virtue of being parts of them.[2]

03    I have chosen to use the weaker claim that modal realism is possibly true rather than the stronger one that modal realism is necessarily true, which is perhaps more consistent with what modal realists assert. After all, if modal realism is only possibly but not necessarily true, there are some worlds at which it is false. If my argument goes through for the weaker claim it will, a fortiori, go through for the stronger one.

In this section, I will argue that the claim that modal realism is true entails a contradiction. If modal realism is true, then there exists an infinite plurality of worlds. Given that the modal realist framework has it that truthmakers for modal claims are facts that obtain in worlds ("in" in either of the two senses specified by Lewis), it follows that the truth of modal realism itself must rest on facts that obtain in worlds. As I have explained above, Lewis accepts two interpretations of what it is for something to be "in" a world. Concrete objects are in worlds iff they are parts of worlds and abstract objects are in worlds iff they are accessible from the standpoint of worlds. But neither of these is adequate for the truth of the claim that there are possible worlds. If the claim that modal realism is made true by worlds having a plurality of worlds as their parts, this violates the principle that worlds are spatiotemporally isolated. And if modal realism is made true by a plurality of worlds existing from the standpoint of some world, this violates the principle that worlds are concrete.

The argument proceeds as follows.

1.  Modal realism is possibly true.[3]
2.  A claim is made possibly true by what obtains at some world.
3.  If modal realism is true, then there is an infinite plurality of worlds.
4.  Worlds are concrete individuals, not sets.
5.  Each world is spatiotemporally isolated from the others.

These first five premises are uncontroversially core commitments of the modal realist framework. I now want to argue that their conjunction entails a contradiction.

6.  If possibly modal realism is true, then there is an infinite plurality of worlds in some world.

(6) is entailed by premises 1 through 3. It might be interpreted in two different ways. It might be a claim to the effect that an infinite plurality of worlds exists from the standpoint of some

world. Or it might be interpreted as the claim that an infinite plurality of worlds is part of some world (that is, that each of these worlds is part of that world). So:

> 7. If modal realism is true, an infinite plurality of worlds is either part of some world or exists from the standpoint of some world.

If we interpret (6) as the first disjunct of (7), this contradicts (5). But as (5) is an indispensable component of the modal realist account of worlds, this interpretation is untenable. So:

> 8. It is not the case that an infinite plurality of worlds exists as part of some world.

This leaves us with the second disjunct:

> 9. There exists an infinite plurality of worlds from the standpoint of some world.

For (9) to be true, it must be the case that it is the infinite *set* of worlds, rather than the worlds themselves, that exists from the standpoint of some world. Put somewhat differently, for (9) to be true, it must be the case that the infinite plurality of worlds is an abstract object. However, although the set of worlds is, if anything, an abstract object, the worlds themselves are concrete individuals. In saying that modal realism is possibly true, the modal realist is saying something about the existence of concrete individuals (worlds) rather than saying something about a set. Consider the actual world $w$ and just one possible world $w^*$. Suppose that $w^*$ is in $w$ in virtue of existing from the standpoint of $w$. This would require that $w^*$ is an abstract object rather than a concrete individual which, according to Lewis, it must be.

So, given (5) it follows that:

> 10. It is not the case that an infinite plurality of worlds exists from the standpoint of some world.

But if that is the case, then, given (8) we must conclude that:

11. The infinite plurality of worlds is not in any world, and therefore:
12. Modal realism is false.

## Addressing the problem

Divers (2002, also 1999) recognizes that Lewisian modal realism has difficulty giving an intelligible analysis of modal claims that are not restricted to worlds. He distinguishes between what he calls "ordinary" modal claims and what he calls "extraordinary" ones. Ordinary modal claims, such as "Possibly, pigs fly" are world-restricted claims. They are true just in case the possible item—in this case, flying pigs—are parts of some world. Extraordinary modal claims, such as "It is possible that there is a plurality of worlds" are not world-restricted, and must be treated differently than ordinary claims, because if they are treated in that fashion one must say that worlds are parts of other worlds.

Clearly, modal claims about modal realism need to be treated differently than other, more ordinary, modal claims. I have argued above that modal realism does not have the resources to do this, thus giving rise to the dilemma. Because Divers regards Lewis' explanation that abstracta are "in" worlds by existing from their standpoint as "at least ad hoc, worryingly vague, and perhaps even so improperly explicated as to merit classification as a primitive" (Divers, 2002: 89), he does not conceive of the problem as a dilemma. He proposes that sentences such as "It is possible that A iff A" and "It is possible that there is a plurality of worlds" should be considered as extraordinary modal claims. "It is possible that there is a plurality of worlds" should be expressed as something like the assertion that there are at least two non-identical worlds ( ExEy [Wx ^ Wy ^ ¬(y = x)]). Hence, he suggests, the modal realist "appeals to the extraordinary interpretation of modal claims whenever she intends or interprets the associated non-modal content as content that is not world-restricted content" (2002: 50).

This is a significant departure from modal realism as Lewis

envisioned it, as it does not accord with Lewis' insistence that modal claims are made true by what is in all, some, or no worlds. It is not clear to me whether this solution is preferable to others, such as simply allowing that individuals can be in worlds in the same way that sets can be in worlds or exchanging modal realism for one or another ersatz version of possible world theory. But whatever the solution, it seems clear that some departure from Lewisian modal realism is required.

## Conclusion

Lewis argued that modal realism is justified insofar as it provides the best account of the truth of modal statements. So, an orthodox modal realist—that is, one who adheres to modal realism just as Lewis articulated it—might say that we should assume the truth of modal realism in spite of the problem that I have elucidated because it still provides the best account of the truth of modal statements. Maybe yes, maybe no. Lewis did not regard the correctness of modal realism as a foregone conclusion. Although he argued that modal realism succeeds better than any of its alternatives, he also conceded that:

> Maybe the theoretical benefits to be gained are illusory, because the analyses that use possibilia do not succeed on their own terms. Maybe the price is higher than it seems, because model realism has unacceptable hidden implications. Maybe the price is not right; even if I am right about what theoretical benefits can be had for what ontological cost, maybe the very idea of accepting controversial ontology for the sake of theoretical benefits is misguided. Maybe—and this is the doubt that most interests me—the benefits are not worth the cost, because they can be had more cheaply elsewhere (Lewis 1986a: 4-5).

There is not yet, and perhaps will never be, philosophical consensus on whether the benefits of modal realism outweigh its costs. If my analysis in this paper is anywhere near correct, any such cost/benefit analysis needs to consider the dilemma that I describe.

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