Possible Worlds II: Nonreductive Theories of Possible Worlds

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In another review, I noted the spread of possible worlds as a tool for theorizing to fields far removed from the metaphysics of modality, including epistemology, ethics, linguistics, and decision theory. I noted there that theorists in those other areas rely on:

(SC) it is possible that ϕ iff there is a w such that w is a possible world and 'ϕ' is true at w.

I briefly discussed a view (see (Lewis, 1986)) which attempts to use (SC) to provide a theory of possible worlds aimed at using (SC) to reduce modality.[1]

This review sets aside such reductive theories of possible worlds, and concentrates instead on four leading nonreductive theories. Though some of these theories have reductive variants, the versions that figure most prominently in contemporary discussions disavow any ambition to reduce modality to non-modal terms. I start by considering what theoretical purposes other than reduction possible worlds might serve (§1). I will then turn to the consideration of the four leading views (§§2-5).

1 What's a Theory of Possible Worlds Good For?

If possible worlds don't provide the means to reduce modality, why should we believe in them? If (SC) does not provide a template for a reduction why think it's true?

Providing a reductive theory of possible worlds is only one of the tasks to which possible worlds have been put. Another ambition for a theory of possible worlds is to explain their nature in such a way as to illustrate and underwrite their fitness as tools for *end-users* in fields far removed from the metaphysics of modality, the semantics of modal discourse, or the analysis of modal concepts. **I have already noted that possible worlds are used as a tool in a wide variety of other philosophical (and not-so-philosophical) projects.**[2]

Let's call a theory of possible worlds suitable for satisfying this second ambition *user-friendly*; and I will call a theory *user-hostile* insofar as it fails to be user-friendly. There are a number of ways in which a theory of possible worlds might be user-hostile. Most obviously, a theory could be incoherent, or imply some contradiction or manifest absurdity. But there are at least three subtler forms of user-hostility, and so three correlative constraints on user-friendly theories of possible worlds. **First, it would be user-hostile to deny (SC); in particular, it would be user-hostile to deny the existence of those possible worlds required by instances of (SC). End-users generally presume (SC) in their theorizing, so rejecting (SC) by denying the existence of the requisite possible worlds would count as a strike against user-friendliness. Call this the *constraint of existence.*** Second, it would be user-hostile to indulge in ontological extravagance, by requiring there to be entities whose existence we would ordinarily deny. Securing the existence of possible worlds by claiming that there are flying pigs, talking donkeys, or purple penguins, for instance, would be user-hostile. The *constraint of ontological modesty* is that theories of possible worlds should avoid ontological extravagance so far as possible. Third, it would be user-hostile to require some substantial and controversial claim about what's possible, since it makes an end-user's theory hostage to the abstruse modal claims debated among metaphysicians of modality. The *constraint of modal modesty* is that theories of possible worlds should remain neutral on substantial, controversial modal theses so far as possible.

User-friendliness does not hang on providing the means to reduce modality. Appeal to modality is pervasive in end-users' theorizing. They make liberal use of modal notions, like what good reasoning *can* establish, or what actions it is *possible* for an agent to perform. If the condition *w is a possible world* turns out to be modal, then this would pose no additional threat to the cogency of their theorizing. A theory of possible worlds can be user-friendly without being

reductive.

2   The Naive Theory

I begin with a theory of possible worlds on which the notion of a possible world is explained in terms similar to other notions conveyed by English expressions of the form "possible F". This theory explains *being a possible world* on the model of such ordinary, and straightforwardly modal, notions as *being a possible Republican nominee for president in 2008.* Someone is a possible Republican nominee for president in 2008 just in case it is possible that he be a Republican nominee for president in 2008. Mitt Romney, John McCain, and Rudolph Giuliani are all possible Republican nominees for president in 2008. The gas station around the corner is not a possible Republican nominee for president in 2008.

So suppose we explain the notion of *being a possible world* along similar lines: x is a possible world iff it is possible that x be a world. A world, we may assume, is a concrete cosmos of the same sort as the vast cosmos in which we all live, move, and have our being. This view is defended by Kit Fine.[3] **I will call it *the naive theory* to mark the fact that it is the theory of possible worlds we get by naively interpreting "possible world" as an ordinary English expression of the form "possible F."** The naive theory clearly cannot be used to reduce possibilities to non-modal terms, since the notion of *being a possible world* is explained in terms of possibility. So the theory is not reductive. There is reason to think that this view is not user-friendly either.

First, apply the constraint of modal modesty. 'It is possible that Bush lost the 2000 electoral vote' is true and so part of the common-sense description of the modal facts. **Next, apply the existence constraint, which enjoins the acceptance of (SC) and, in particular, the existence of those possible worlds required by instances of (SC).** (SC) requires that there be a possible world such that 'Bush lost the 2000 electoral vote' is true at that world. The concrete cosmos in which we live is a possible world, according to the conception we are considering, just as the Republican nominee in 2008, John McCain, is a possible Republican nominee in 2008. But 'Bush lost the 2000 electoral vote' is not true at the world in which we all live. So the naive theory seems to require that some w is a possible world distinct from the actual world. Perhaps it is plausible to hold that there might have been a world w distinct from our world.

3

But (SC) requires more. The world w in question must exist;[4] we may not appeal to the truth of 'Bush lost the 2000 electoral vote' at w if w is something that doesn't exist, but might have.**So, to be clear, the naive theory and the existence and modal modesty constraints jointly require that there be a w among the things that in fact exist that is a possible world, and is distinct from the actual world.**

Now apply ontological modesty. It is overwhelmingly plausible to claim that there are no worlds (no concrete cosmoses) other than the actual world. Accommodating this evident ontological fact requires that our w be a possible world, but not a world. At first, this might seem to be perfectly fine. Someone can be a possible Republican nominee for president in 2008 without being a Republican nominee for president in 2008. Why should possible worlds be any different from possible nominees? Why not claim that something can be a possible world without being a world?

The problem is that we would also ordinarily deny that there is an individual that might have been a world but isn't. Consider the non-worlds among us. It is implausible to think that any among you, me, the antarctic ice sheet, the space shuttle *Endeavour*, the First World War, the square root of two, the region between the tip of your nose and your chin, *etc.*, might have been the same sort of all-inclusive thing as our concrete cosmos.

This problem can be avoided by violating any one of our three constraints. Fine chooses to violate the existence constraint, denying that non-actual possible worlds exist. The attendant cost in user-friendliness can be somewhat ameliorated by endorsing a variant of (SC), which replaces the quantifier "there is a w" with "*it is possible that* there is a w":

(SC)$^-$ it is possible that ϕ iff it is possible that there is a w such that w is a possible world and 'ϕ' is true at w.

In summary, the naive theory abjures reduction and may be less user-friendly than we might initially have hoped.[5]

3 Fictionalism

The naive theory appears to require an ontologically extravagant commitment to the existence of many worlds – many concrete cosmoses – if it is to accommodate

some evident modal facts. We have just seen that Fine suggests we avoid this problem by rejecting (SC) in favor of a close variant. An alternative theory of possible worlds offers another way of pursuing this strategy. According to this view, called *fictionalism*, there are no possible worlds other than the actual world. Taken literally and at face value, (SC) has false instances. But there is a true surrogate for (SC). For there is a story, a work of fiction, according to which there are lots of non-actual worlds. Call this story PW. We obtain the surrogate for (SC) by replacing talk of what worlds w there are in fact with talk about what worlds w there are according to the story PW. The fictionalist theory is introduced in (Rosen, 1990).[6] Fictionalists differ over the contents of PW, but by Rosen's lights that content is given by the theory of possible worlds offered by David Lewis (1986). What's true concerning the existence and nature of possible worlds according to the fiction is just what Lewis's theory says on the matter. In particular, the fiction PW contains a number of postulates specifying an ontology borrowed from Lewis's theory: there are many cosmoses, and many inhabitants of those cosmoses. The inhabitants are a varied lot. Our cosmos does not contain any animate headless bodies. Other cosmoses do. PW guarantees this by containing both (i) a complete account of all the non-modal facts concerning the actual world, and (ii) a principle of recombination:

(RECOMBO) If x_1 is an individual in a cosmos w_1, x_2 is an individual in a cosmos w_2, ..., then there is a cosmos $w^\forall$ containing any number (including 0) of duplicates of x_1 and any number (including 0) of duplicates of x_2, and ..., size and shape permitting.[7]

PW asserts the existence in this cosmos of your head and also of the rest of your body, since that fact is reported by a complete account of the actual non-modal facts.[8] And (RECOMBO) thus requires that there be a cosmos containing some duplicates of your body but no duplicates of your head.

With such a specification of PW in hand, the fictionalist now proposes in effect to revise (SC) by inserting a reference to PW:

(SC)$_F$ it is possible that ϕ iff *according to PW* there is a w such that w is a possible world and 'ϕ' is true at w.[9]

She then helps herself to Lewis's interpretation of the right-hand-side of (SC)$_F$. For instance, while Lewis's theory holds

5

> There might have been some headless animate bodies iff there is a cosmos containing headless animate bodies

the fictionalist claims instead

> There might have been some headless animate bodies iff according to PW: there is a cosmos containing headless animate bodies.

Asserting the existence of the fiction PW does not appear to make any modal claims. According to PW, being a possible world amounts to being a cosmos, and there doesn't seem to be anything modal about that. So why think fictionalism is a nonreductive theory of possible worlds? The answer is that the notion *what's true according to PW* seems itself to be modal. To see this, note that PW leaves much about the plurality of worlds implicit. For instance, PW is inexplicit about the existence of a cosmos containing purple penguins. The explicit claims of PW don't mention purple penguins at all (other than to say that there aren't any in our cosmos). What the fictionalist needs is a way of extracting from the explicit claims of PW the implicit detailed information about non-actual worlds and their inhabitants needed to satisfy the full panoply of instances of $(SC)_F$. Modal means of extraction are ready to hand: Divers (1999, p. 335), for instance, suggests an explicitly modal definition:

(DEF) $\Box((\text{According to } PW, \phi) \text{ iff } \Box(PW \Rightarrow \phi))$.[10]

But no such modal characterization will do if we are to use $(SC)_F$ in the service of reducing necessity to non-modal terms. It is far from obvious that such a non-modal means of extraction is available.[11]

This problem leads Rosen to suggest giving up on reduction, and insisting that $(SC)_F$ can be used instead to license the use of the possible worlds idiom without committing us to ontological extravagance.[12] That is, Rosen suggests we give up on reduction, and settle for user-friendliness.

How user-friendly is fictionalism? The replacement of (SC) by $(SC)_F$ avoids ontological extravagance. Fictionalism does not require that there be other cosmoses containing headless animate bodies. It only requires that there be other such cosmoses *according to a particular fiction.* It is ontologically extravagant to assert that hobbits exist. It is plain sense to assert that hobbits exist according to a certain fiction. Fictionalism is not perfectly user-friendly, however. It does not endorse (SC), and in particular violates the constraint of existence. **Also,**

as noted in my review of Lewis's theory,[13] (RECOMBO) makes a substantial and controversial modal commitment against the necessity of laws of nature. Modal modesty, which enjoins neutrality on such controversies, is thereby violated.[14]

Less obvious but more serious forms of user-hostility loom. The fictionalist's replacement $(SC)_F$ for (SC) requires the impossibility of any claim ϕ if it's not the case that, according to PW, ϕ is true. So, if it turns out that PW does not require there to be a cosmos containing purple penguins, then the fictionalist is committed to the impossibility of purple penguins. But PW does not require there to be a cosmos containing purple penguins. The claims about there being lots of cosmoses with lots of inhabitants in them, imposes no requirement that some of those inhabitants be purple penguins. (RECOMBO) is supposed to do some of this work. But duplicate the penguins of this cosmos as often or as seldom as you like, and you will not come up with any purple ones.[15] And PW doesn't say anything else about what inhabits the non-actual cosmoses. So it's not the case that, according to PW, there is a cosmos containing purple penguins. Thus, the fictionalist is committed to the impossibility of purple penguins. This is a violation of modal modesty, and implausible to boot.[16]

The sort of fictionalism we have been discussing violates the constraints of existence and modal modesty, and has some implausible consequences. On Fine's development, the naive theory avoids the implausibility in question and does better on modal modesty. So we already have one theory of possible worlds that seems better off than the sort of fictionalism we have been considering. There are others.

4 Property-based conceptions

A variation on the naive theory's explanation of the nature of possible worlds yields a popular and influential family of theories. This family of views, *property-based conceptions*, results from replacing appeal to worlds with appeal to property- or state-like entities in the naive theory's explanation of the nature of possible worlds.[17] One version, for instance, holds that possible worlds are possible states of a world: x is a possible world iff x is a state such that it is possible that a world be in state x. There are a wide array of variations on this theme. Some theorists hold that possible worlds are maximal *states of affairs* that ei-

ther do obtain or could have obtained (Plantinga, 1973); others that possible worlds are complete *ways things might have been* (Stalnaker, 1976); still others that possible worlds are complete possible *histories* of the world (Kripke, 1980, p. 17).[18]

The first thing to notice about property-based conceptions is that they will not underwrite a reduction of modality. For instance, the notion of a possible world-state is clearly a modal notion. In fact, our explanation of the modal notion in question used the very same possibility operator that appears on the left-hand side of (SC).

But property-based conceptions seem to do well on user-friendliness. A conspicuous virtue of property-based conceptions is their apparent ontological modesty. It is plausible to think that there are states the world could have had but doesn't. Property-based conceptions seem also to be modally modest: they appear to accommodate the truth of all instances of (SC) without undertaking any implausible or even controversial modal commitments. For instance, it is very plausible to hold that there is a world-state *containing a loss by Bush of the 2000 election.* This is exactly the sort of thing required by (SC) according to property-based conceptions that identify possible worlds with possible world-states. Similarly, we are antecedently inclined to affirm that there is no possible state of a world *being such that 2 + 2 ≠ 4.* So, though property-based conceptions will not serve the ambition of reducing modality, they do seem at first to be more user-friendly than either the naive theory or fictionalism.[19]

But there is reason to think that property-based conceptions ultimately must manifest one or another form of user-hostility. For the sake of exposition, I will assume that all property-based conceptions require that there is a property that a world might have had corresponding to each possible world-history, world-state, or way things might have been. Consider, for instance, the property-based conception according to which possible worlds are *ways things could be.* Suppose, plausibly, that one of the ways things could be is that Bush lost the 2000 electoral vote. Then, I am assuming, there is a corresponding property *being a world containing a loss by Bush of the 2000 electoral vote.* Likewise, I assume that the existence of a possible world-state S implies the existence of the property *being a world in state S*, and similarly for the existence of a world-history H.

Let's call a property *individual-involving* if it is specifiable only by reference

8

to a particular individual. It is possible that Charles Windsor, the Prince of Wales, have an eleventh granddaughter. Let us consider, then, a situation in which Windsor had an eleventh granddaughter. That eleventh granddaughter would be what metaphysicians call an *alien individual*: an individual who does not exist at the actual world. In such a situation, there would be an individual-involving property of a world, call it *elevenliness*, specifiable in terms of the particular alien individual who turns out to be Windsor's eleventh granddaughter: the property of *containing her*.[20] An initial problem that the possibility of aliens poses for property-based conceptions is that, though it is possible that there have existed different individuals from the ones which actually exist, it is implausible to claim that there are properties involving such individuals. It would violate ontological modesty, for instance, to affirm the existence of any property that, like *elevenliness*, involves a particular possible eleventh granddaughter of Windsor. Property-based conceptions appear to require such properties, given the possibility that Charles Windsor have an eleventh granddaughter.

Faced with possibilities involving aliens, proponents of property-based conceptions propose to trade in commitment to properties involving alien individuals for commitment to properties involving only general conditions expressible without reference to any particular individual. For instance, a proponent of a property-based conception may trade elevenliness in for the property *being a world containing an eleventh granddaughter of Windsor*. On this response, a property-based conception will not require the existence of a property, possession of which guarantees that a world contains a *particular* possible eleventh granddaughter of Windsor; it will only require the existence of a property possession of which guarantees that a world contains an eleventh granddaughter of Windsor, no matter who that turns out to be.[21]

But this response does not solve the underlying problem: trading individual-involving properties in for general properties leads to modal extravagance.[22] It seems possible that there be, in addition to an eleventh granddaughter of Windsor, a distinct child who, to all outward appearances, is just like Windsor's eleventh granddaughter. The two girls might even be identical twins, genetically very similar, or even indiscernible, because they emerged from the same gametes. The eleventh granddaughter came before the twelfth because she was born, say, a few minutes earlier – another royal accident of birth. It thus seems possible

that Windsor have genetically identical eleventh and twelfth granddaughters, who might have switched places. The birth order for the identical twins might have gone differently.

So far, the modal claims are simple common sense, given the biological facts about identical twins. But a more difficult question looms. Take the situations in which Windsor has an eleventh and twelfth granddaughter who are identical twins. In some such situation, the eleventh will have certain features, other than her mere distinctness from her sister, which allow us to discern her from the twelfth. She might grow to be 5'11, while her sister only grows to 5'10. She might reside in London, while her sister resides on a country farm. She might dye her hair purple, while her sister sticks with her natural color. Call this bunch of features the *career* of the eleventh.[23] The twelfth will also have a career, different in many ways. Consider now whether the twins could have switched careers. Is it possible that Windsor have had an eleventh granddaughter with a certain career, which might have been enjoyed in each exact detail by someone else?

The question is vexed. If the answer is 'yes', then there is no interesting necessarily sufficient condition for being a particular possible 11th granddaughter of Charles Windsor. This merits calling the 'yes' view *insufficientism*. Insufficientism is ripe for generalization. Any one of us could have had a twin.[24] And, if twins can switch careers, any one of us could have switched careers with our twin; there would be no interesting modally sufficient condition for being any particular person. Insufficientism runs counter to a tradition which holds that identity facts must be determined by further intrinsic features.[25] Note that insufficientism is consistent with the view that there are interesting modally necessary conditions for being a particular person. For instance, the idea that nothing coming from completely different gametes could be me is not ruled out; I could not switch with just anybody, but I could switch with my identical twin. I confess that I suspect that insufficientism is true. It is nevertheless a very controversial claim, a substantive, non-logical modal matter if ever there was one. The modal modesty constraint requires that a theory of possible worlds remain neutral on this substantial and controverisal modal matter.

The existence and ontological modesty constraints require property-based conceptions to deliver a 'no' answer to our question: it is not possible for Charles Windsor to have had an eleventh granddaughter with a certain career, which

might in turn have been enjoyed by someone else. Suppose for the purposes of *reductio* that there might have been such a granddaughter. There are two possibilities claimed here: the possibility for Windsor that he have had an eleventh granddaughter with a certain career, and the embedded possibility that that career have been enjoyed in every particular by someone else. These possibilities are incompatible. Meeting the constraint of existence will thus require the existence of two possible worlds (the first accessible from the actual world, and the other accessible from the first). These two worlds will be exactly alike, except with respect to which individual has the career in question. In this sense, they will be "qualitatively identical." On property-based conceptions, there must be two properties that both might have been properties of a world, but which differ only with respect to which individual has the relevant career. Hence there is no specifying what it takes for something to possess either property except by reference to the particular individual who has that career. The two properties are each individual-involving properties, differing only with respect to which individual is involved.

Now apply the constraint of ontological modesty. We are antecedently inclined to deny that there is any such thing as a property involving a certain individual if there is no such thing as the individual in question. If Socrates had never existed, neither would the property of *being him*. The situation is no different for merely possible objects. And we are antecedently inclined to deny that anyone who might have been the eleventh granddaughter of Charles Windsor actually exists.[26] So affirming insufficientism while avoiding ontological extravagance requires that neither of these properties exist, contrary to the demands of the existence constraint.

The fundamental problem with property-based conceptions is that, intuitively, the actual world does not provide the properties the view requires to back possibilities involving aliens. Though there might have been a particular individual who was Windsor's eleventh granddaughter, there is no such thing as the property of *being her*. A symptom of this fundamental difficulty is that the conceptions require one of three forms of user-hostility: (i) *modal extravagance*: incurring a substantial and controversial modal commitment by denying insufficientism; (ii) *denying existence*: denying that all of the possible worlds required by the truth of all instances of (SC) exist; or (iii) *ontological extravagance*: accepting the existence of properties involving merely possible eleventh

granddaughters of Windsor.[27]

In the literature, this objection is often put in terms of requirements that property-based conceptions impose on the ontology of properties.[28] Property-based conceptions appear to commit end-users to the existence of uninstantiated properties. For instance, nothing in fact instantiates *being a world containing a loss by Bush of the 2000 electoral vote*, but the property-based conception requires there to be such a property.

A defender of property-based conceptions might hope to take refuge in the idea that the required uninstantiated properties can be constructed out of instantiated properties. For instance, it might be held that *being a world containing a loss by Bush of the 2000 electoral vote* is constructed out of a number of instantiated properties and relations, including *being a world*, *being an electoral vote*, the *containing* relation, the *losing* relation, *etc.* But this just puts off the problem. If the defender of the property-based conception is to avoid the user-hostile reliance on controversial theses concerning modal facts, then she may not assume that it is impossible that there should be an instance of a *simple* property P that is not actually instantiated. Call such a property an *alien property*. On the assumption that it is possible that there be such a property, the property-based conception seems to commit us to there being some such property as *being a world containing an instance of P*, which seems in turn to require the existence of the alien property P. At this point, the dialectic follows the script established by the dispute concerning alien individuals, with the causal role and pattern of instantiation of P taking the place of the career of a possible eleventh granddaughter of Charles Windsor.

5   Representational Theories

One final variation on the naive theory's explanation of the nature of possible worlds bears mention. This sort of view, a *representational theory*, results from replacing the naive theory's appeal to worlds with an appeal to representations as of worlds: w is a possible world iff w is a representation of what a world is like that might have been true.[29] On this view, possible worlds are something like stories.[30] Some stories describe situations that could not be true; according to the representational theory, possible worlds are stories which could have been true.[31]

Explained in this way, representational theories seem useless for reducing modality. The notion of a *possibly true* story is evidently modal.[32] It appears, then, that representational theories of this sort will be nonreductive.

How about user-friendliness? Some have argued that representational theories fall prey to paradox. It might be thought that the representationalist requires a one-one correspondence between possible individuals and their actual-world representations. There are reasons to think that there is no upper limit on the number of possible individuals, in the sense that, for any possible world, there is a possible world with strictly more individuals.[33] Since the actual cosmos in which we live must be accurately represented by some possible world on the representational theory, there is a possible world with strictly more individuals than there actually are. The individuals of this bigger possible world cannot correspond one-one to the individuals that actually exist, contrary to the requirements of representational theories. This leaves the representationalist a few options: (i) develop a representational theory that does not require a one-one correspondence between *possibilia* and their actual-world representatives; (ii) violate the constraint of existence by denying (SC) in favor of something like (SC)⁻; or (iii) violate modal modesty by denying that there could be more individuals than there actually are.[34] The second option is user-hostile because it requires us to deny that all instances of (SC), taken literally and at face value, are true. The third option is user-hostile because it pins a substantial and implausible modal commitment on end-users. So the first option seems indicated.

Assuming representationalist theories can avoid the problem posed by needing a representation for every possible individual, they seem initially to be user-friendly.[35] They aren't ontologically extravagant. It is plausible to think that there are representations that aren't accurate but might have been. The sentence "Bush lost the 2000 electoral vote", for instance, might have been true. And it's not too much of a stretch to suggest that there are richer representations as of entire worlds that aren't accurate but might have been, especially if these are somehow made up of representational elements in which we already believe.

But it turns out that, like the other nonreductive views we have canvassed, representational theories encounter difficulties accommodating the possibility of aliens. The dialectic mirrors the one we encountered when considering the user-

friendliness of property-based views: assuming that insufficientism is true drives a representationalist either to deny the existence of all of the worlds required by instances of (SC), or to some ontological extravagance. The property-based conception appeared to require the existence of individual-involving properties that discern particular possible eleventh granddaughters of Charles Windsor. Representational theories appear instead to require the existence of representations that discern particular possible eleventh granddaughters of Charles Windsor, in the sense that those representations represent, refer to, or pick out one such individual but not another.

But, given insufficientism, we are antecedently inclined to deny that there are any such representations. There are no names, pictures, sculptures, photographs, *etc.*, depicting one, but not another possible eleventh granddaughter. Even if we allowed individuals to represent themselves, so that, *e.g.* unnamed real numbers represented themselves, it is implausible to claim that any such possible eleventh granddaughter exists. Insufficientism guarantees that there is no non-individual-involving condition which discerns them, and so no way of framing a description or picture of the career of such a possible eleventh granddaughter that would distinguish her from her twin. Of course, if we were able to discern the two *possible worlds* in question, then we could frame such a condition: *being the individual who enjoys career C at world w*. But, given that possible worlds are themselves representations as of worlds, there seems to be nothing in virtue of which one of these representations could true while the other false, and so nothing to discern them so far as what's true at them.[36]

6   Conclusion

The results of our brief, crude, and admittedly incomplete canvass have not been encouraging. Every view we have discussed suffers from some user-hostility. It should be possible to do better.[37]

Notes

[1](deRosset, 2009).

[2]**For instance, a conspicuous and seminal use of possible worlds is as a basis for a variety of semantic theories. See the citations and very brief discussion at (deRosset, 2009, pp. XXXX) [CITE!] [PAGE NUMBERS NEEDED!].**

[3]See (Fine, 1985, 2003) for a defense.

[4]For the purposes of this paper, I am using 'exist' as a shorter equivalent for 'is among the things that there are.' Hence, 'x exists' in the sense of this paper is equivalent to 'there is a y such that $y = x$.' Further, I am abstracting away from complications introduced by the fact that, for many things, existence is temporary. Thus, in the parlance I am adopting here, 'The Colossus of Rhodes exists' remains true, even though the Colossus of Rhodes is no longer among us. I believe that this usage tracks at least one use of "there is/are" in English, which might sometimes get used, *e.g.* in encyclopedia entries, as in 'there are three great ancient Greek philosophers: Socrates, Plato, and Aristotle.'

[5]The main text is a simplification on two fronts. First, Fine's view is that a claim is possible just in case it is possible that there be a world w such that the claim is *actually* true at w; see (Fine, 1977, 1985, 2003) for discussion. Second, Fine's view is that we need not reject (SC) outright. Fine (2003) holds that the expression "there is a w such that w is a possible worlds and ..." (or "some possible world w is such that ...") just means "it is possible that there is a w such that w is a world and actually ...." By Fine's lights, (SC)$^-$ thus makes explicit what (SC) already means. In the main text, I am assuming that end-users' quantifiers are unambiguous, and range only over existent things; more generally, I assume that the quantifiers in instances of (SC) on which an end-user relies are to be interpreted the same way as quantifiers in the rest of her theory.

[6]Our discussion of fictionalism will focus on Rosen's development of the view. Thus, views I attribute below to the fictionalist are often accurately attributable only to Rosen's version.

[7](Lewis, 1986, pp. 87–90), (Rosen, 1990, p. 335). The qualification "size and shape permitting" is inserted to avoid problems concerning the maximum possible size for a cosmos.

[8]I borrow the example from (Lewis, 1986, p. 88). I am assuming for present purposes that the existence of both your head and the rest of your body is reported by a complete account of the actual non-modal facts. This assumption requires that you have two undetached parts: your head and the rest of your body. If this assumption fails, then it's not the case that, according to PW, there is a cosmos with an animate headless body.

[9]This exposition differs slightly from Rosen's. Let ϕ be any possibility claim, and let ϕ^* be the analysis of ϕ according to Lewis's theory. Rosen's fictionalist claims

(F) ϕ iff according to PW, ϕ^*.

[10]Endorsed at (Brogaard, 2006, p. 81).

[11]This point is made by (Rosen, 1990, §8), (Melia, 2008, p. 139) and (Fine, 2003).

[12]Brogaard (2006) agrees that nonreductive fictionalism is the better sort. Cf. Fine's development of an alternative form of fictionalism in (Fine, 2003), which, he claims, avoids the problems afflicting the version we are considering.

[13]**(deRosset, 2009, pp. XXXX). [CITE!] [PAGE NUMBERS NEEDED!]**

[14]**This violation of modal modesty applies only to versions of fictionalism, like Rosen's, that include (RECOMBO) in PW. A fictionalist can evade the problem if she finds some other means for filling in the details concerning the contents of non-actual worlds. Thanks to BW.**

[15]**See (deRosset, 2009) for a more thorough discussion of this issue. [CITE!] [PAGE NUMBERS NEEDED!]**

[16] Rosen (1990, §7) acknowledges the problem, posed with respect to the series of claims, for each cardinal number κ, that there might have been κ non-overlapping physical objects. His suggested fix is to stipulate that, where the fiction PW is silent, there are truth-value gaps. This does not help with the charge of implausibility. For in both the case of the upper limit on the possible number of non-overlapping physical objects, and the case of the possibility of purple penguins, the verdict "no truth value" is implausible; in the latter case, it is more implausible that the verdict "false." **Like the prior charge of modal extravagance (see n. 14), this charge depends on Rosen's incorporation of (RECOMBO) in PW.**

[17] I think this is a useful way to think of the view; its proponents do not present the view in this way, though the discussion in (Stalnaker, 1976) is suggestive.

[18] Property-based conceptions also come with accounts of what it is for a sentence to be true at a possible world. For instance, Plantinga (1973) holds that a sentence is true at a state of affairs just in case, necessarily, the sentence is true if that state of affairs obtains.

[19] A caveat: if one is inclined to deny that there are property- or state-like entities, then one may be reluctant to accept a property-based conception, taken literally and at face value. So the property-based conception fails on its face to be user-friendly for every sort of user. Similarly, if one hoped (see (Lewis, 1986, §1.5)) to use possible worlds and their inhabitants to provide an analysis of properties, states, or histories, then the correlative property-based conception would be useless.

[20] Here I benefit from discussion of these issues with DC.

[21] See, *e.g.* Bennett's (2005, p. 317) response to this problem.

[22] This problem has been discussed by many commentators in one form or another, including (McMichael, 1983), (Lewis, 1986, pp. 158-65), and, most recently, (Bennett, 2005, p. 317).

[23] Note that the career of a twin may include such relational features as, *e.g.* her being within two meters of the Duke of Cornwall at some particular time, and her being born 20,738,274 seconds after the death of Louis XVI. Thus, the career of an individual may indirectly embrace the entire history of the universe.

[24] Forbes (1980, pp. 354–5) dissents, arguing that no non-twin could be a twin. So perhaps the claim that any one of us could have been a twin is a matter of controversy. Even so, the underlying point still stands.

[25] Exemplars of this tradition include (Forbes, 1980), (Wiggins, 1980, 94–99) and (Noonan, 1985).

[26] I picked the number 11 just for illustration. If Windsor's sons turn out to be more fecund than is convenient for this argument, some higher number, *e.g.* 111, may be required. Similarly, if it turns out that some actual granddaughter of Windsor's might have been the eleventh, or by some miracle of modern medicine the 111th, then we may perhaps have to tweak the relation a little to exclude actual granddaughters.

[27] Faced with this trilemma, some property-based theorists bite the bullet by violating the constraint of existence. They propose to deny some instances of (SC) in favor of (SC)$^-$. See, for instance, (Salmon, 1989, pp. 17-8n.). Other property-based theorists bite the bullet by accepting ontological extravagance. See, for instance, (Plantinga, 2003, pp. 116–7). Bennett's (2005) discussion of this problem suggests that she proposes instead to pin a substantial modal commitment against insufficientism on end-users, violating modal modesty.

[28] See, for instance, (Lewis, 1986, pp. 159ff.).

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