Functionalism about possible worlds

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Various writers have proposed that the notion of a possible world is a functional concept, yet very little has been done to develop that proposal. This paper explores a particular functionalist account of possible worlds, according to which pluralities of possible worlds are the bases for structures which provide occupants for the roles which analyse our ordinary modal concepts. It argues that the resulting position meets some of the stringent constraints which philosophers have placed upon accounts of possible worlds, while also trivializing the question what possible worlds are. The paper then discusses a range of problems facing the functionalist position.

I

Possible worlds have been identified with abstract objects [e.g., Plantinga 1985: 88], with properties [e.g., Forrest 1986] and with spatiotemporally unified universes like our own [e.g., Lewis 1986: 71]. It is natural to feel a little perplexed when faced by the gamut of supposed possible worlds. The competing accounts do not seem like conflicting accounts of, say, the moon. We can be sure that defenders of the 'green cheese' theory are really disagreeing with advocates of the 'rocky stuff' view, because we can pin down what they are wrangling over. It seems much harder to trace some things that are similarly responsible for the torrent of work on possible worlds.

Lewis compares the idea that possible worlds theorists all believe in a single group of items with 'the foolish suggestion that all of us at least agree that God exists, although we disagree about his nature: some say He's a supernatural person, some say He's the cosmos in all its glory, some say He's the triumphal march of history,...Given *that* much disagreement about "His" nature, there's nothing we all believe in!' [1986: 140]. And Stalnaker insists that 'a possible world is not a particular kind of thing or place' [1984: 57]. Yet if arguments over the nature of possible worlds are unlike familiar quarrels over constitution, what are they like?

Some philosophers advocate a functionalist approach to theories of possible worlds. Van Inwagen writes, for instance, that the various accounts of possible worlds differ over which entities 'are fit to fill a certain role in philosophical discourse about modality, essence, counterfactuality, truth-theories for natural languages and so on' [1986: 193]. Similar remarks have

been made by Lewis and Stalnaker [e.g. Lewis 1986: 140; Stalnaker 1991: 140 – 1; Stalnaker 1984: 57]. More recently, Sider writes that '[m]odal concepts lay down a structural requirement: our talk of possible worlds and the rest is about any structure that is suited to play the relevant role' [2002: 310].

The functionalist perspective on possible worlds promises to illuminate the dispute over their nature by holding it apart from vulgar differences over constitution. But no functionalist conception has ever been explored in detail. This paper formulates and investigates a specific functionalism about possible worlds, one which has obvious similarities to more familiar functionalist approaches to other topics.

The presented functionalism has various virtues. For instance, it provides analyses for modal claims and truthmakers for modal truths which meet the stringent demands made by some philosophers. And its supporters can make very light work of the question what possible worlds are, as the functionalist position implies that any sufficiently large collection of items is a plurality of possible worlds.

The paper also considers the major challenges facing the suggested functionalist stance. The most serious of these arise from the analytical methodology underlying the position. Some of the difficulties are very general ones about which this paper has little to say. But others focus on the functionalist conception's characteristic analytical claims about modality, and those difficulties present perhaps the most significant outstanding obstacles to the theory considered here.

II

Lewis expounds his functionalist method of analysing mental concepts in the following passage:

> Suppose we've managed to elicit all the tacitly known general principles of folk psychology. Whenever M is a folk-psychological name for a mental state, folk psychology will say that state M typically occupies a certain causal role: call this the M role. Then we analyse M as meaning 'the state that typically occupies the M-role'. Folk psychology implicitly defines the term M, and we have only to make that definition explicit.
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> [1999b: 299]

Lewis's remarks embody a functionalist method of conceptual analysis, one which generalizes an attractive model of the meanings of theoretical terms which is owed to Ramsey and Carnap. The relevant approach has some influential supporters, including Jackson and Lewis himself.[1]

The method's advocates state that many of our terms are embedded within (perhaps wholly or partly tacitly known) theories which implicitly

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[1]The approach is defended in Jackson [1998], and it seems clearly to underlie Lewis's discussion of mental concepts in section I of [1999b]—see also [1986: 55]. Smith [1994] applies the approach to moral concepts, as does Jackson [1998].

define them. The theories implicitly define the terms by associating their semantic values with certain roles. More precisely, the theories implicitly define the terms by including principles which relate the terms' semantic values to those of other implicitly defined terms and to further items. We can analyse the concepts expressed by the implicitly defined terms by identifying the terms' implicit definitions.

Consider, for instance, the concept *being red*. Jackson holds that there is a theory which implicitly defines the predicate '_ is red' and thereby generates an analysis of the concept *being red*. For example, Jackson claims that the following 'subject-determining platitude' helps to fix the meaning of '_ is red': '"red" denotes the property of an object putatively presented in visual experience when that object looks red' [1998: 89].

Suppose that we have analysed some concept, say that of *being red*, by identifying the principles which implicitly define an expression. And imagine that the roles set forth in those principles are occupied by a certain item. Then the relevant item can be assigned to the concept *being red* as its semantic value.[2] We can accordingly identify facts about being red—facts which our analysis identifies with ones concerning whatever occupies the relevant roles—with facts about the previously mentioned item.

The approach to analyses just articulated is certainly open to question. But it is nonetheless attractive and it seems like a very natural starting-point from which to develop a functionalist conception of possible worlds. What now follows is one way to develop a functionalist position from that origin.

III

Suppose that Lewis's functionalist analytical methodology is applied to our ordinary modal concepts. Then the following ensues. First, our ordinary modal expressions are claimed to belong to a shared theory which implicitly defines them. Second, it is asserted that our ordinary modal concepts are analysable by identifying the roles which the relevant theory uses to implicitly define terms which express those concepts. And third, it is stated that those concepts have as their semantic values—if they have anything—items which occupy the concepts' analysing roles.

How are accounts of possible worlds to be fitted into that picture? While we may manage to analyse our normal modal concepts by identifying suitable associated roles, that leaves it open whether those roles are occupied. One might naturally see theories of possible worlds as attempts to close that gap. That is, one might treat accounts of worlds as efforts to describe structures which supply occupants for the roles which analyse our

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[2]There is another option here: one might identify the property *being red* with the functional property *being a property which fills such-and-such roles*; and one could then regard the items which fill those roles as mere *realizers* of the property *being red*. (For a brief discussion of this strategy in relation to the philosophy of mind, see Lewis [1996: 307].) One could similarly recast the functionalist approach to possible worlds articulated in the next section by identifying our ordinary modal properties with functional ones. I won't explore that option any further here, but it deserves further discussion.

ordinary modal concepts.[3] The functionalist position developed in this paper starts from that idea.

More fully, the functionalism on which this paper will focus—hereafter called 'functionalism about possible worlds' or, when context permits, simply 'functionalism'—has the following character. It assumes that Lewis's functionalist analytical methodology can be applied to our ordinary modal concepts. The approach then explicates the notion of a *plurality of possible worlds* in the following functionalist manner: some things are a plurality of worlds if they play a suitable role within a structure that, first, supplies occupants for the roles which analyse our everyday modal concepts, and second, meets certain core structural constraints described in the next section.[4] Finally, functionalism states that an item is *a possible world relative to* a specific plurality of worlds just in case it belongs to the relevant plurality.[5]

A natural question concerning the above position arises at this point. What will functionalists say if there are many equally good occupants for the roles which analyse some modal concept, say the concept *being possible*? It has been asserted that the implicit definitions associated with functionally analysable concepts always involve a uniqueness presupposition stating that the relevant roles are not multiply-occupied. For instance, Lewis makes that claim in his early expositions of his functionalist philosophy of mind [e.g., 1999a: 253–8]. If that proposal is correct, functionalists about possible worlds must claim that every ascription of possibility is false if the analysing roles for that concept are multiply occupied.

While implicit definitions may sometimes involve a uniqueness constraint, it seems too demanding always to impose one. Must functionalists about, say, colour concepts really hold that nothing is red if the roles which analyse the concept *being red* turn out to have many occupants? That is a bit strong; it is at least reasonable for them to say instead that the predicate '_ is red'

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[3]The suggested perspective nicely fits large swathes of Lewis [1986: chap. 1], which seeks to illustrate the ways in which possible worlds provide 'a philosophers' paradise'. Although I have restricted theories of possible worlds to finding occupants for the roles which analyse modal concepts, as far as I can tell that restriction is not crucial to what follows. The theories may also be used to supply occupants for the roles which analyse semantical concepts, for instance, as the next section illustrates. It is worth noting that other kinds of theories of modality can be treated as attempts to find occupants for the roles which analyse modal concepts—the fictionalist position outlined in Rosen [1990] might be viewed in that light, for instance.

[4]It is worth noting that functionalism implies that an application of Lewis's functionalist analytical methodology to our ordinary modal concepts will not itself generate an analysis of the very notion *being a plurality of possible worlds*. For functionalism puts that concept apart from our ordinary modal concepts— the concept *being some things which form suitable parts of a structure that supplies occupants for the roles which analyse concepts C1, C2*, etc. is surely distinct from the concepts *C1, C2*, etc. themselves. The resulting stratified picture of modal concepts—with our ordinary modal concepts at the ground level and various 'philosophical' modal concepts that are defined in relation to the functionalist analyses of the base level concepts—is relevant to some issues arising below; see footnote 29.

[5]This could be simplified so that functionalists state that something is a possible world if it forms part of a plurality of worlds, but I prefer the structure-relative definition used in the text because it better acknowledges the fundamental role which whole structures play in the functionalist account. (The central role of structures could be even more fully acknowledged, by building the functionalist position on the notion *being a plurality of worlds relative to structure S*, but for simplicity's sake I've avoided travelling down that path.) The functionalist construal of a range of notions standardly employed by possible worlds theorists will incorporate similar acknowledgements of the importance of structures; for example, functionalists will not speak of the 'accessibility relation on possible worlds' *simpliciter*, but rather of structure-relative accessibility relations. (Thanks to an anonymous referee for making me aware that functionalists will need to engage in this sort of reformulation of familiar discourse about possible worlds.)

denotes each occupant of its analysing roles.[6] The functionalism developed here consequently allows that the roles which analyse our ordinary modal concepts may have numerous occupants. In particular, it allows that there may be various pluralities of possible worlds which underlie distinct structures that supply occupants for the roles which analyse our ordinary modal concepts.[7] Section VIII contains further discussion of how functionalists may relate the semantic values of our modal concepts to the truth values of modal propositions employing those notions.

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IV

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The following general picture is shared by possible worlds theorists. There is a structure containing a plurality of possible worlds and an accessibility relation upon them. The structure assigns each truth-evaluable item, like a sentence of English, a truth-value relative to each world. In fact, each such (unparadoxical, unvague, and otherwise untroublesome) item is either true at a given world or false at the world. 'Possibly, *P*' is true at a possible world *w* just in case there is a world *y* which is accessible from *w* and at which *P* is true. There is also an actual world, one at which all and only the actual truths are true.

A lot of possible worlds theorists would embellish the above picture. In particular, many of them expect possible worlds to be mapped onto domains. Those world-relative domains are supposed to form the basis for constructions which are in turn associated with the constituents of truth-evaluable items. The constructions are to be used in the model-theoretic style, to compositionally generate the world-relative truth values of truth-evaluable items, using world-relative versions of notions like denotation and satisfaction.[8]

So, for example, many possible worlds theorists would expect the predicate '_ exists' to be associated with a function which carries each world to the predicate's extension at that world (viz., the world's domain) and the rigid designator 'Humphrey' to be associated with a function and a constant element x, where the function at least takes each world whose domain contains x to x itself. They would then hold that 'Humphrey exists' is true at a world just in case x is an element of the world's domain. In what follows, I shall assume that putative possible worlds are indeed to be associated with domains which generate truth-conditions in the hopefully familiar way that I have just gestured towards.

[6]It is worth noting in this connection that Lewis himself eventually dropped the idea that implicit definitions invariably rest upon uniqueness presuppositions. He decided, following Field, that when the roles embedded in implicit definitions are multiply occupied, 'it might be better, sometimes or always, to say that' the expressions which the roles implicitly define are 'ambiguous in reference' [Lewis 1999b: 301]. ([Field 1973], which Lewis cites, uses the idea of partial or ambiguous reference to elucidate alterations to scientific theories.) Lewis's original uniqueness constraints resulted from a conscious strengthening of Carnap's ideas [Lewis 1999a: 255].

[7]Nolan [2002] considers a position on which there may be various pluralities of worlds—for description and further discussion of the view discussed by Nolan see footnotes 19, 22, and 26 below.

[8]A lot of recent semantical work on natural languages employs this kind of approach. The tactic started with Carnap [1947], was greatly refined by Montague [1974], and underlies a significant amount of contemporary semantic theory, as a cursory glance through Lappin [1996] reveals.

Suppose there is a structure which meets the core demands made by possible worlds theorists, the ones imposed by the preceding picture of a plurality of possible worlds and their domains. Assume, that is, that there is a structure of *world*s*, *accessibility**, and '*truth* at*' relations, where world*s are associated with domains which compositionally generate the world*-relative truth*-values of truth-evaluable items. Then well-known examples suggest that the preceding structure will supply occupants for the roles which analyse various modal concepts.[9]

Consider modal sentences which express claims that are formalizable within propositional or first-order modal logic. We can start substituting talk about worlds* and the rest for occurrences of 'possibly, _' and necessarily, _' in those sentences. So, for instance, a given sentence of the form 'possibly, _' (with nonmodal '_') can be correlated with a sentence of the form 'for some world* α which is accessible* from the actual world, _ is true* at α'. A given sentence of the form 'necessarily, possibly _' can be correlated with a sentence of the form 'for every world* α which is accessible* from the actual world*, there is a world* β which is accessible* from α and at which _ is true*'. A given sentence of the form 'possibly, necessarily, possibly _' can be correlated with a sentence of the form 'for some world* α which is accessible* from the actual world*, and for every world* β which is accessible* from α, there is a world* γ that is accessible* from β and at which _ is true*'.

In fact, given a modal sentence of the sort described at the head of the last paragraph, we can find an equivalent one phrased in terms of worlds* and their companions. Thus consider (S) 'there might have been something which doesn't actually exist'. We can map that sentence onto the following one concerning our given structure of the world*s: (S*) 'there is a world* *w* which is accessible from the actual world* and which it is true* that there is something *x* such that *x* does not exist in the actual* world [i.e. *w*'s domain includes something that is not a member of the actual world*'s domain]'.

Our assumed world* relative truth-conditions for ascriptions of possibility then ensure that (S*) is true precisely if our original modal sentence (S) is true* at the actual world*. But the special feature of the actual world*—that exactly the actual truths are true* there—means that (S) is true* at the actual world* just in case (S) is actually true. Putting everything back together, we get that (S*) is true precisely if (S) is true. More generally, we can freely paraphrase ascriptions of possibility and necessity using sentences which make quantificational claims about our structure of world*s and the rest.

Suppose that we now consider sentences which contain not only 'possibly, _' and 'necessarily, _' but also the counterfactual conditional 'if it were the case that _, it would be the case that . . .'. We can measure the similarity of world*s, using resemblances between the classes of truths* at the respective world*s and the ways in which facts about the world*s' domains

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[9]The following remarks do not demonstrate that the structure of worlds* and the rest can be used to do the relevant jobs, because the roles which define the concepts of necessity and possibility are never explicitly identified. The points simply make it hard to see how those roles could make demands which world*s couldn't be used to satisfy.

compositionally determine those world*-relative truth*s. Arguments owed to Lewis [e.g., 1973], Stalnaker [e.g., 1968] and others then support the contention that occurrences of 'if it were the case that _, it would be the case that ...' in our modal sentences can be treated using '... is true* at each world* which is suitably similar to α and where _ is true*'.

Some important semantic notions also look susceptible to treatment using our structure of worlds* and the rest.[10] For instance, we might identify propositions with classes of world*s—where the proposition expressed by a given truth-evaluable item is taken to be the class of world*s at which the item is true*.[11] We might also follow an important strand of research in formal semantics, and identify the meanings of sentential constituents with constructions based upon world*s and their domains which generate the world*-relative truth*-values of sentences. For instance, the meaning of the name 'Humphrey' might be identified with a function which carries each world* to a certain element of the actual world*'s domain.[12]

The core assumptions made by possible worlds theorists look appealing when viewed through the lens of the functionalist approach. Functionalism also helps to remove some obscurities surrounding the debate over the nature of possible worlds. The vast gulfs which separate possible worlds theorists no longer seem so puzzling, for instance—different philosophers merely think that radically different groups of things are fit for certain tasks.

Here is another reason why possible worlds theorists should welcome the functionalist position. The following assertions, made by Lewis and Stalnaker, would be widely cheered:

> I myself, of course, do think that modal operators are quantifiers over possible worlds
>
> [Lewis 1986: 20]

> [S]tatements about what is possible are to be explained in terms of quantification over possible worlds
>
> [Stalnaker 1984: 57]

Functionalists can happily make such claims. For instance, they identify the property of being possible with whatever fills the roles which analyse the concept of possibility. And if there are any existing structures that satisfy the core constraints applying to possible worlds, those structures promise to supply occupants for the roles which analyse that concept. Remarks like the

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[10]Lewis [1986: section 1.4] surveys some uses like the following ones.
[11]'But what if our world*s are constructed from propositions?' Assuming, as the above paragraph evidently does, that the general functionalist model of analyses applies to the notion of a proposition, that question asks us to consider situations in which our world*s are constructed from things which fill certain analysing roles. But such situations are unproblematic; the arguments in favour of identifying propositions with classes of possible worlds simply suggest that in those situations, we will have some more things which fill the relevant roles, viz. classes of our world*s.
[12]While the constant element just cited may not be the very man Humphrey, the conditions which we imposed upon our structure of worlds* and the rest mean that, relative to that structure, the element will have to meet a plethora of Humphrey-related constraints. So, for instance, those conditions ensure that 'Humphrey lost the election to Nixon' is true* at the actual world*, because Humphrey actually lost the election to Nixon; hence the ordered pair containing the denotation*s of 'Humphrey' and 'Nixon' relative to the actual world* must fall under the extension* of '_ lost the election to ...' at the actual world*.

ones just quoted are, however, a little harder to accept if functionalism isn't adopted.

From a nonfunctionalist perspective, Lewis's and Stalnaker's comments are most naturally read as asserting the existence of covert semantical aspects of ascriptions of possibility and necessity. On that reading, the remarks strain credulity. The modal operators 'possibly' and 'necessarily' have well-known analogies with the quantifiers 'some' and 'all', to be sure, and we sometimes express modal claims using quantificational idioms which invoke things like 'ways things might have been'. But the idea that talk of possibility and necessity was always subcutaneously quantificational is so strong that it should only reluctantly be accepted.[13] Functionalism therefore provides an attractively sensible construal of Lewis's and Stalnaker's comments.

The next section further illustrates the power of the functionalist position, by looking at how it can straightforwardly accommodate some demands which many people make of possible worlds.

<div align="center">V</div>

Some philosophers hanker after theories of modality which reduce the modal to the nonmodal. Lewis, for instance, writes that 'primitive modality is bad news' [1986: 242], while Sainsbury states that a wholly nonmodal analysis of modality is 'something devoutly to be desired' [1995: 105]. Can those who disdain primitive modality endorse functionalism?

They can. Consider, first, the picture of how to analyse modal concepts which underlies functionalism. Modal locutions are represented as belonging to a tacitly known theory which implicitly defines them. We are then to analyse modal concepts by identifying the relevant implicit definitions. If that picture is accurate, there will be a clear sense in which modal concepts are nonmodally analysable. For we will be able to identify the implicit definitions which analyse modal concepts without employing prior modal notions.

How so? The answer apes a point which is familiar from discussions of functionalist theories of mind [e.g., Lewis 1999b: 299]. Suppose that our modal concepts are expressed by terms $t_1, \ldots, t_n$. The t_is are, it is being assumed, implicitly defined by a tacitly known theory T. In fact, T generates a *collective* implicit definition of the t_is, one which doesn't rely upon our being able to understand any of them: each item in a given n-tuple can be regarded as the semantic value of the corresponding t_i just in case the relevant items stand in the relations to one another and to other items which, T states, hold between the semantic values of the various t_is and

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[13]In a similar vein, Lewis objects to a proposed analysis of 'modalised comparatives'—statements like 'a red thing could resemble an orange thing more closely than a red thing could resemble a blue thing'—using 'numerical measures of degrees of resemblance and numerical inequalities of those degrees' by flatly asserting that 'that's not how the English does it' [1986: 13]. Interestingly, he allows that the analysis might nonetheless be 'correct', which suggests that he does not expect analyses to reveal (perhaps covert) aspects of meaning.

further items. *T* thus generates nonmodal analyses of modal concepts, by defining the t_is all at once.

There is, then, no reason for enemies of primitive modality to worry about the functionalist analyses of modal concepts which form the basis of functionalism about possible worlds. The functionalist approach is also compatible with various further stances which may be taken by philosophers who scorn primitive modality. It can, for instance, accommodate the idea that modal truths have nonmodal truthmakers; modal truths will presumably have nonmodal truthmakers if the roles which analyse modal concepts can be filled in suitably nonmodal ways.[14]

Following on from that last point, the functionalist perspective seems clearly to encompass the general idea that theories of possible worlds should try to identify truthmakers for modal truths.[15] For once we have found occupants of the roles which analyse modal concepts, we will have found a subject matter which supplies semantic values for the components of modal statements, facts about which thereby fix the truth-values for modal propositions. It is hard to see what more could be wanted from an account of the truthmakers of modal truths.

VI

Functionalism is hopefully looking like a natural framework within which to locate theories of possible worlds. This section argues that the functionalist conception of possible worlds is what we can call, with a nod to a related position in the philosophy of mathematics, a 'structuralist' one. The following section argues that functionalism therefore has a very happy consequence.

To structuralism, then. A conception of possible worlds is a *structuralist* account just in case it holds that any sufficiently large group of things counts as a plurality of worlds. More precisely, let the *X*s and the *Y*s be some existing things. Take a proposed account of the conditions under which there is a plurality of worlds. Assume that those conditions might have been met, perhaps by a group of Lewis's putative possible worlds. And suppose that if they had thereby been met, there would have been a one-one mapping from the Lewis-worlds and their inmates to the *X*s and the *Y*s. Finally, assume that the previous two assumptions combine with the suggested account of worlds to imply that the *X*s are an existing plurality of worlds whose inhabitants are the *Y*s. Then the mooted conception of worlds is a structuralist one.

The preceding ideas can be applied to the functionalist position. Let's suppose that a scenario of the following kind—a *many-world* scenario—is possible. First, there is a group of Lewis-worlds. Second, the Lewis-worlds form part of a structure which meets the core constraints applying to possible worlds.[16] Third, some such structure based upon the Lewis-worlds

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[14]Which they doubtless can be; see Sections VI and VII below.
[15]That general idea is endorsed in the literature by, for example, Lycan [1979: 308–12], Roy [1993: 336], Shalkowski [1994: 678].

supplies occupants for the roles which analyse our modal concepts. And, fourth, there is a one-one mapping f from the Lewis-worlds and their inhabitants to the Xs and the Ys, where the Xs and the Ys actually exist.

Then functionalists should be structuralists just in case the previous assumptions combine with the functionalist position to ensure that the Xs are in fact a plurality of possible worlds whose domains are drawn from the Ys. And that will hold if the assumptions guarantee that the Xs and Ys meet the following conditions: they form part of an actual structure which meets the core constraints applying to possible worlds; and that structure supplies occupants for the roles which analyse modal concepts.

To see why structuralism should appeal to functionalists, we need to consider a possible many-world scenario in more detail. Take some property F of Lewis-worlds or their inhabitants. F's extension E within our many-world scenario corresponds to the following class of actual existents: the class E' of precisely those Xs and Ys which result from applying the one-one mapping f to a member of E. There is thus a *proxy* property whose actual extension corresponds to F's extension in our many-world scenario—viz., the property *being a member of E'*. Similarly, each relation holding between Lewis-worlds or between Lewis-worlds and their inhabitants in the many-world scenario corresponds to a proxy relation on the Xs and Ys, while relations between Lewis-worlds and propositions correspond to relations between Xs and propositions.

The *possibility* of our many-world scenario thus ensures that the Xs *actually* form part of a structure which satisfies the core constraints applying to possible worlds. For instance, our many-world scenario contains accessibility relations on the Lewis-worlds and 'truth at' relations between the Lewis-worlds and propositions which meet the condition that for each proposition P, 'possibly, P' is true at a Lewis-world w just in case there is a Lewis-world which is accessible from w and at which P is true. It is straightforward to show that the proxy relations corresponding to such pairs of accessibility and 'truth at' relations combine to satisfy the same constraint.

Can we draw the further conclusion that functionalists should be structuralists? We may draw that conclusion if the assumed possibility of a many world scenario ensures that the Xs and Ys form part of a structure that provides actually existing occupants for the roles which analyse modal concepts. And it seems likely to ensure that. For here is a striking feature of the philosophical work which breathes life into the idea that modal statements can always be paraphrased using talk about possible worlds: it proceeds without essentially relying upon assumptions about what possible worlds are really like.

I cannot realistically hope to demonstrate that fact, as the relevant literature is simply too large. But the contention can nonetheless be given substantial support, by citing apposite examples and by describing the philosophical landscape in which theories of possible worlds are located.

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[16]To be properly punctilious, I should remark that those core constraints need to be treated rigidly; they need, that is, to be taken as stating the conditions under which, *given how things actually are*, there will be possible worlds. In particular, it is being assumed that the Lewis-worlds in the many world scenario meet the condition that there is a Lewis-world at which all and only the *actual* truths are true.

The following discussion therefore attempts to bolster the claim in those ways.

First of all, some supportive cases. Section IV above showed that if we have a bunch of things which meet the core constraints applying to possible worlds, it is plausible that we will be able to fill the roles which analyse the concepts of possibility and necessity. Those core constraints are, however, purely structural. There is nothing in the conditions themselves which dictates that possible worlds should be abstract rather than concrete, for instance.

Or consider Lewis's book *Counterfactuals*. It contains the most famous statement of Lewis's theory of possible worlds, on which they differ from actuality 'not in kind but only in what goes on at them' [1973: 85]. But that theory plays no real role in the book; it isn't even mentioned until the fourth chapter, by which point Lewis has set up his framework for handling counterfactuals. Lewis's discussions of counterfactual conditionals merely assume that there are arrangements of possible worlds which obey certain structural demands (see, for instance, Lewis's discussion of 'variably strict conditionals' at [1973: 13 – 19]). Stalnaker's account of indicative conditionals and counterfactuals is similarly free-standing [e.g., 1984: chap. 7]. Lewis's and Stalnaker's ideas therefore support the view that the conceptual roles that analyse counterfactual concepts will make purely structural demands upon possible worlds.

Another example. In their book *Science and Necessity*, Bigelow and Pargetter develop a 'rich modal language . . . to express the modal notions that are essential for science' [1990: 92]. They elaborate the meanings of the sentences in their modal language using possible worlds semantics, before arguing that possible worlds should be identified with structural universals [1990: 15 – 21, 120 – 59, 203 – 13]. As they see it, their task as possible worlds theorists is 'to fill in the details about the nature of possible worlds' so that the sentences in their modal language are answerable to a particular type of truthmakers [1990: 165]. But they explicitly state that the formal semantical ideas which they've employed involve 'minimal assumptions about the nature of possible worlds, about whether they are abstract or concrete, primitive or reducible, and so forth' [1990: 121].

A final bunch of specimens. A recently published collection of 'the essential readings' in formal semantics [Portner and Partee 2002] contains papers by Dowty, Groenendijk and Stokhof, Heim, Kartunnen, Kratzer, Montague, and Stalnaker, which seek to use possible worlds in understanding the semantics of various types of locutions. Those authors' arguments lend impressive support to the idea that structures meeting the core constraints applying to possible worlds will provide occupants for a wide range of concepts. Yet none of the papers says anything about, or relies on any assumptions concerning, what possible worlds are really like.[17]

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[17]Thus consider Dowty's discussion of 'likeness' of worlds [Portner and Partee 2002: 273 – 7]; Groenendijk and Stokhof's comments on 'atomic interrogatives' [Portner and Partee 2002: 438]; the start of section 2.2 of Heim's paper on the projection problem for presuppositions [Portner and Partee 2002: 253]; Kartunnen's sixth footnote [Portner and Partee 2002: 417]; Kratzer's outline of 'basic notions' and her ensuing discussion of 'grades of possibility' [2002: 292 – 301]; sections 2 and 3 of Montague's paper [Portner and Partee 2002: 23 – 9]; and the early parts of Stalnaker's paper [Portner and Partee 2002: 147 – 51].

Systems of possible worlds are assumed to provide the foundations for structures which have certain structural features, for sure, but the intrinsic characteristics of worlds are left wide open.

More generally, the overall form of the debate over the nature of possible worlds bears out the view that the analysing roles for modal concepts will be indifferent to what possible worlds are really like. Everyone knows that possible worlds illuminate modality. The light flows from multifarious principles owed to linguists, logicians, and philosophers, which license movement between familiar claims and ones which mention possible worlds. Those bridging principles animate functionalism's leading idea, that theories of possible worlds should be treated as efforts to find occupants for roles which analyse modal concepts.

The competing theories of possible worlds attempt, at the very least, to supply systems of items which underlie structures that can be used to underpin such bridging principles. But the discrepancies between the opposed theories are spectacular enough that there are no interesting nonstructural similarities between the structures to which their proposed totalities of worlds belong. (Recall Lewis's comment that is 'foolish' to think that the opposed accounts of possible worlds are attempts to describe a single group of items [1986: 140].) And that is because the bridging principles don't impinge directly on the nature of worlds. Rather, the principles only dictate that pluralities of worlds must belong to structures which have a certain shape.[18]

What seems to be a closely related point is made by Sider, who endorses 'a sort of structuralism, if you like', on which the roles which define what possible worlds are 'do not (much) constrain the intrinsic properties of candidate possible worlds and individuals' [2002: 310]. Stalnaker is another writer who would perhaps be friendly to the ideas which were just defended. He favours a view whereby 'a possible world is not a particular kind of thing or place', a view which

> leaves the *nature* of possible worlds as open as extensional semantics leaves the nature of individuals. A possible world is what truth is relative to, what people distinguish between in their rational activities. To believe in possible worlds is to believe only that those activities have a certain structure, the structure which possible worlds theory helps to bring out.
>
> [1984: 57]

The corpus of research which motivates the thought that theories of possible worlds may provide occupants for the roles which analyse modal concepts leads, I have claimed, to the idea that those roles will be indifferent to the inner natures of possible worlds. Now, we assumed that the Lewis-worlds in a many-world scenario form part of a structure which fills the roles which analyse modal concepts. Yet if those roles are indifferent to what possible worlds are really like, it is very hard to see why those roles won't equally be filled by the components of a structure containing the Xs and Ys

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[18]This is to some extent unsurprising. Uses of possible worlds in formal semantics tend to be decidedly model theoretic, and model theorists do not distinguish between isomorphic models.

plus proxy properties and relations. The work cited earlier certainly supports the contention that a proxy structure would do just as well. We can thus infer from our initial assumptions that the Xs and Ys form part of a structure that supplies occupants for the roles which analyse modal concepts. If that is right, functionalists should be structuralists.[19] What follows?

<div align="center">VII</div>

Here is something which it is reasonable to believe: the cumulative hierarchy of sets exists. And it is also fair to accept that, necessarily, any group of items can be mapped one-one onto some sets from the cumulative hierarchy. For suppose that we are given a bunch of things. No group of items could be more numerous than the ordinals. Hence either there are fewer of our things than there are ordinals or there are ordinal-many of our entities. But in the first case, there is an ordinal α such that we have α-many items—and therefore our things map one-one onto the α-many ordinals less than α. And in the second case, the considered plurality maps one-one onto the ordinals.[20]

Those assumptions are not beyond question. But I suspect that they would be widely accepted by possible worlds theorists, who tend of necessity to be friendly towards hefty but useful ontologies, and they are used in what follows. Now suppose that there could be a plurality of possible worlds and their occupants. It follows from the assumptions flagged above that there could be a one-one function from the possible worlds and the rest onto some sets from the cumulative hierarchy. But the cumulative hierarchy exists. Hence, structuralists will say, some pure sets are a plurality of worlds. For the defining characteristic of structuralism about worlds is that it implies that if there could be a plurality of possible worlds and their occupants which map one-one onto certain actually existing things, then the latter items constitute an existing plurality of possible worlds and their inhabitants.

We saw in the previous section that functionalists should be structuralists. If functionalists can reasonably think that there could be a plurality of possible worlds, they may therefore infer that some pure sets are a plurality of worlds. But it is very hard to see why functionalists cannot sensibly think that there could be a plurality of worlds. For the weighty recent tradition of research on possible worlds buoys up the idea that if there were some things which formed the basis for suitably-shaped structures, the roles which

[19]Nolan [2002] considers and rejects the view that a sufficient condition for a group of objects to be possible worlds is that they should form part of a structure satisfying the conditions that, for any proposition P, 'Possibly P iff P has the "true according to" relation to some possible world, and Necessarily P iff P has the "true according to" relation to all possible worlds' [2002: 7]. As those conditions are purely structural, the proposed view is a structuralist account in the sense defined above, and Nolan himself describes the preceding position using the term 'structuralism' [2002: 10]. The position that Nolan rejects is similar to but different from the one expounded in this paper; in particular, it fails to employ Lewis's functionalist method of conceptual analyses, leaving it open to certain objections to which the current position can reply (see footnote 22 below and the ensuing portion of the main text).
[20]This mapping will not be capturable as a set, of course; like for instance the addition function on the ordinals, it will only be capturable as a proper class.

analyse modal concepts would be filled; that is, to put the latter point in functionalist terms, there would be a plurality of worlds. It equally supports the idea that structures having the relevant forms could exist.

To illustrate the point, let's briefly reconsider the best-entrenched of the various specific examples of uses for possible worlds which were considered above. We saw in Section IV that if there is a structure which meets the core constraints applying to possible worlds, it is plausible that there will be occupants for the roles which analyse possibility and necessity. But it is seems sensible to hold that the core constraints applying to possible worlds are satisfiable—they seem no more inconsistent than the structural demands made by, for instance, ZFC.[21]

More generally, the combined efforts of linguists, logicians, and philosophers have made it reasonable to think that the roles which analyse modal concepts may be filled using structures which satisfy suitable purely structural constraints. But a major failing of that research *isn't* that it has tended to produce structural demands which are evidently unsatisfiable. Although opinions may differ as to whether, for instance, structures meeting the structural conditions embedded in Lewis's work on counterfactuals can really supply occupants for the roles which analyse counterfactual concepts, there are no apparent reasons for thinking that Lewis's conditions just cannot be fulfilled.

Functionalists should be structuralists. Functionalists may reasonably accept that there could be a plurality of possible worlds. Structuralists who believe that there could be a plurality of worlds may infer that some pure sets are such a plurality. Hence functionalists may hold that some pure sets are a plurality of possible worlds. And that is among functionalism's most alluring features—it allows one to make very light work of what many have taken to be profound problems in metaphysics, the questions whether there is a plurality of worlds and, if so, what the members of such a plurality could be.

VIII

This section seeks to address various worries about functionalism which may have occurred to the reader. Here is the first. Functionalists can, if the arguments of the previous section are sound, claim that some pure sets form a plurality of possible worlds.[22] But, it might be urged, possible worlds ought

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[21]The various arguments discussed in Kaplan [1995] show that care nonetheless must be taken when setting the core constraints in a larger intensional context.

[22]The arguments in fact broaden to show that if, according to functionalism, some things form a plurality of possible worlds, then anything whatsoever forms part of a plurality of worlds. My response to the objection currently being considered is easily adapted to cover related objections stemming from that point, however, so I'll stick to considering the objection concerning pure sets. Nolan [2002] notes that the position described in footnote 19 implies that any sufficiently large group of objects counts as a plurality of worlds, and regards this as a problem with the position. One of his worries about that consequence is that it fails to respect the intuition that possible worlds should have 'something perspicuously to do with modality' [2002: 10]—I am about to develop a functionalist response to a closely related objection in the main text. He also intuits that possible worlds should 'somehow form a reasonably natural kind' [2002: 10]. I don't share that intuition, but no matter: although the purely structuralist nature of the functionalist position is diluted if Nolan's requirement is imposed upon pluralities of worlds, functionalists who are sympathetic to that constraint will still find it easy to identify pluralities of worlds. For pure sets both form a reasonably natural kind and will plausibly underlie structures that supply occupants for the roles which analyse our ordinary modal concepts.

to have some intimate connection with *modality*. Yet isn't it obvious that pure sets are without any suitably close relationship to modal matters? Functionalism is therefore inadequate, because it fails to respect the intuitive truth that a plurality of possible worlds should have something to do with modality.

Functionalists can respond to that objection. They hold that if there is a structure which meets certain structural conditions, there are occupants for the roles which analyse modal concepts, giving us truthmakers for modal truths. Assuming that the arguments of the previous section are sound, some pure sets form the basis for a structure which meets the relevant structural conditions. Hence a structure built upon pure sets provides occupants for roles which analyse modal concepts, and facts about that structure therefore make true modal truths. What extra degree of intimacy could one reasonably want from a candidate plurality of worlds?

Of course, functionalists will concede, one cannot detect the links between pure sets and the modal facts merely by meditating upon the inner nature of pure sets. But so what? One cannot discern the role of neural states in our psychological lives simply by staring at brains. Yet it would be absurd to object to functionalism about the mental on the grounds that it fails to ensure that putative mental states have 'a sufficiently intimate connection to psychology'.

Here is another objection, this time to the previous section's argument that functionalists about possible worlds should be structuralists. It might be predicted that those arguments will generalize to form arguments for the view that functionalists about the mental should also be structuralists. But it is clear that functionalists about the mental *shouldn't* be structuralists. For it is ridiculous to hold that functionalists about the mental should accept that any sufficiently numerous group of items forms a system of beliefs, desires, and the rest.

That worry neglects a significant difference between functionalism about possible worlds and functionalism about the mental. Functionalists about the mental hold that mental states have characteristic causal roles, in mediating between inputs, further mental states, and outputs. But sensible functionalists about possible worlds will deny that the roles which implicitly define modal notions include any causal ones. For it isn't any part of our conception of modal properties that they should feature in causal transactions.

The earlier argument for thinking that functionalists should be structuralists relied upon the following thesis: a structure will provide occupants for the roles which analyse modal concepts just in case it satisfies various purely structural conditions. But the causal roles invoked by functionalists about the mental place evidently nonstructural conditions upon putative occupants of the roles which analyse modal concepts. Hence there is no danger that my earlier argument will generalize to yield the false conclusion that functionalists about the mental should be structuralists.

I want next to consider one of functionalism's main components, the idea that we accept a theory which generates associates modal concepts with analysing roles. That thesis is likely to provoke queries about the view that

theories can yield functional analyses, in addition to questions relating to the specific assertion that we accept a theory which supplies functional analyses of modal concepts. I'm not now going to consider questions of the first variety, however, as properly defending the functionalist approach to analyses is more than I can hope to undertake in this paper.

Waiving very general worries about functional analyses, then, why might one think that modal concepts are functionally analysable? Although the following remarks hardly settle the matter, various considerations combine to lend plausibility to that thought. First of all, it is hard to see how certain attractive models of how concepts may acquire semantic values can be applied to modal concepts. For instance, facts about necessity do not seem able to causally influence us, so the notion of necessity cannot be handled using the causal theories which have been applied to natural kind terms and proper names. Nor do we confront facts about necessity experientially, so necessity cannot be treated in the manner of phenomenal concepts like *looking red*. Finally, one would struggle to produce even remotely uncontroversial explicit nonmodal definitions that might be held to determine the semantic values of such modal concepts as possibility and necessity.

It therefore seems reasonable to surmise that certain fundamental principles serve to implicitly fix the semantic values of our modal concepts, in accordance with the general functionalist model of analyses. And that conjecture looks more attractive when we attend to the nature of modal inquiry. Very many of our modal opinions are formed a priori, and those which aren't seem at least to arise from the coupling of nonmodal a posteriori truths with a priori modal principles. Consider, for instance, our knowledge that Venus is necessarily distinct from Mars, which arises from our a posteriori knowledge that Venus isn't Mars along with our a priori knowledge that whenever x and y are distinct, x is necessarily distinct from y.

We must therefore have a fecund source of a priori modal knowledge. It is natural to think that that source will have a certain structure, one which seems generally to be found within the a priori realms: it will consist of various fundamental a priori principles which yield further a priori conclusions when operated upon using a priori reasoning. Our knowledge of some of the relevant fundamental principles may be explicit (the principle that necessity implies possibility might be a pertinent case) while our knowledge of others will doubtless be tacit (certain principles of recombination may fall into this category).[23] But either way, the fundamental principles which yield our a priori modal knowledge seem rich enough that functionalists may reasonably conjecture that they form the fabric of a theory which generates functional analyses of our modal concepts.

So, for example, consider the proposition that I might have been born in Shiptonthorpe. My knowledge of that truth rests partly upon my a priori

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[23]For instance, see the principles of recombination stated at Lewis [1986: 87–92]. Lewis's principles are put in terms of the parts of possible worlds, but the general idea behind them—that given any two separate things, it is possible for there to be coexisting intrinsic duplicates of them—can be divorced from Lewis's manner of phrasing.

knowledge of a general principle, namely that for any place which exists at the time at which some person is born, that person's birth could have been at least partly situated at that place. My a priori knowledge of the foregoing general principle perhaps rests in turn upon my a priori knowledge of the following even more general recombinatory principle: for any spatially located event e which occurs at time t and which features a particular group of objects, and for any spatial location p which exists at t, it is possible for an intrinsic duplicate of e featuring the same group of objects to occur at least partly at p. The preceding process of uncovering increasingly general principles could doubtless be continued, but it would eventually end. And— or so functionalists will claim—the principles which the process would finally uncover help to implicitly define the modal concepts occurring therein.[24]

Here is another worry. The end of Section III claimed that functionalists should hold that if there are various distinct ranges of occupants for the roles which analyse modal concepts, then modal concepts have multiple semantic values. But suppose that functionalists accept that the analysing roles for, say, the concept *being possible* may be occupied by various items, so that the concept *being possible* has various semantic values. Now take some modal proposition featuring the concept *being possible*.

Each of the acceptable semantic values for *being possible* will combine with the semantic values for the other constituents of that modal proposition to determine one of the truth-values *truth* and *falsity* (ignoring for the moment irrelevant complications that may arise in the cases of vague, paradoxical, or otherwise problematic propositions). But surely functionalists ought to accept that those truth-values will sometimes *vary* according to which of the acceptable semantic values for *being possible* is being combined with the other semantic values belonging to the further concepts occurring in the given modal proposition?

That query would be especially worrying for functionalists if variations of the described sort were to arise even in the case of relatively mundane modal propositions. Functionalists would, for instance, be in trouble if their position implied that the semantic values of the components of the proposition that there could be diamond tables sometimes combine to determine the truth-value *truth* and sometimes

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[24]Some well-known debates concerning the metaphysics of modality raise hard questions about the precise content of the principles which implicitly define our ordinary modal concepts. For instance, Chisholm [1967] generated a fund of thought-experiments in which small alterations in the properties of a single individual x are chained together to produce an individual who is qualitatively indiscernible from some individual who is actually distinct from x (we start with actual Adam and end up with somebody who is indistinguishable from Noah, say), or in which the supposedly possible alterations to x's characteristics appear to force a radically foreign nature upon x (humans metamorphose into poached eggs over the course of possible situations, and so forth). One functionalist response to the puzzling nature of Chisholm-style examples is to say that the principles which implicitly define our modal concepts somehow provide a verdict on the correct description of those examples, although it is currently unclear what that verdict says. (For instance, to take the 'humans becoming poached eggs'-type cases, perhaps part of what implicitly defines our modal concepts are principles according to which sortal concepts of a certain level of specificity, like *being a human* and *being an egg*, are always essentially possessed by things which fall under them and necessarily incompatible with one another.) The supervaluationist version of functionalism described later in this section allows for a quite different response, however: functionalists can at least entertain the possibility that there is no fact of the matter about how Chisholm-type cases should be described. (Many thanks to an anonymous referee for bringing the relevance of these cases to my attention.)

combine to yield the truth-value *falsity*. But functionalists can reasonably be optimistic that their position won't have such unwelcome consequences. For we saw above that they may reasonably claim that the analysing roles for modal concepts are dictated by the fundamental a priori principles which generate modal knowledge. And our fount of a priori modal knowledge unequivocally dictates that there could indeed be diamond tables.

It is, however, much less clear that our a priori modal knowledge has anything decisive to say about very abstruse modal matters. So consider the proposition that there could be as many asteroids as there are ordinals. Why think that we know any modal principles which, perhaps in conjunction with nonmodal truths, guarantee a determinate truth value for that proposition?[25] If we don't know any such principles, the analysing role for possibility cannot guarantee that the acceptable semantic values belonging to the constituents of the proposition that there could be ordinal-many asteroids always combine to determine a single truth-value.

Functionalists thus need to explain how they propose to handle the shifting truth-values which may result from the possession of multiple semantic values by modal concepts. There are a couple of paths down which they may choose to travel. The different approaches result from more general attitudes towards the multiple semantic values which proponents of functional analyses may sometimes have to assign to concepts. One particularly appealing strategy, which I shall now describe, employs the method of *supervaluations*.[26]

Take some modal proposition *P*, for instance one stating that something is possible. Suppose that there are various distinct occupants of the roles which analyse the concept of possibility, so that the preceding concept has many semantic values. *Supervaluationist* functionalists state that *P* is true just in case each of the occupants of the analysing roles for possibility so combines with the semantic values of the further constituents of *P* to determine the truth-value *truth*. They say that *P* is false precisely if each of the occupants of the analysing roles for possibility so combines with the semantic values of the further constituents of *P* to determine the truth-value *falsity*.

Functionalists cannot be sure that the semantic values of the constituents of each modal proposition will always combine to yield a unique truth-value. In particular, the truth values determined by combining the semantic values belonging to the constituents of abstruse modal claims like 'there might have been ordinal-many asteroids' may vary according to which of the semantic values belonging to the modal concepts found therein is being used. Supervaluationist functionalists will say that the modal propositions featuring in such cases are neither true nor false. Hence supervaluationist

[25]An analogous point applies to Rosen's modal fictionalism [1990: 341–4].
[26]For more on supervaluationism, see Keefe [2000]. Nolan [2002: 9–10] considers two supervaluationist versions of the position described in footnote 19. Another approach open to functionalists is to treat any assignments of multiple semantic values resulting from functional analyses as corresponding to ambiguities. The resulting proliferation of meanings is unattractive and ad hoc, however, so I haven't bothered to discuss the suggested approach in detail. But it is worth noting that the positing of ambiguities does allow functionalists to preserve bivalence for modal sentences, once those sentences are disambiguated.

functionalists must be ready to deny that the principle of bivalence always applies to modal propositions.[27]

   People will probably differ over the extent to which that last point counts against supervaluationist functionalism. My own view is that it is no big deal. I cannot see what would lead one to require a truth-value for every modal proposition, apart from a stubborn insistence that the principle of bivalence applies everywhere. There seems to be little in our ordinary modal thought that forces upon us the view that there is a fact of the matter about whether there could be, say, ordinal-many asteroids.[28] So why should we disdain supervaluationist functionalism for failing to ensure that modal propositions are always bivalent?

   In sum, functionalists can provide a supervaluationist treatment of the divergent truth values which may result from the multiple semantic values belonging to modal concepts. More work evidently needs to be done to determine whether that treatment's apparent failure to ensure bivalence for modal propositions is a serious drawback. But, for the moment at least, there are no compelling reasons for thinking that functionalists should be upset by the prospect of denying that the principle of bivalence always applies to modal propositions.[29]

IX

Functionalists face some stern challenges. In particular, one of functionalism's central presuppositions, that modal concepts are functionally analysable, needs a rather more formidable defence than the one offered in the previous section. Functionalism nonetheless has some obvious virtues. It makes good sense of the astonishing range of theories of possible worlds. It shines an appealing light on the central ideas shared by possible worlds theorists. It makes strong analytical claims of the type which attract many possible worlds theorists, but ones which aren't wildly implausible. It can accommodate numerous constraints which people have put upon theories of possible worlds. And it deftly handles the question what possible worlds are. For those reasons, functionalism should appeal to plenty of philosophers.

   Take Lewis. The analyses which underlie functionalism were inspired by Lewis's own recipe for analyses. Further, functionalism employs

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[27]Supervaluationist functionalists don't have to deny that the law of excluded middle applies to modal propositions, however. For they may say that each modal proposition of the form '*P* or not-*P*' is true, on the grounds that the semantic values belonging to the constituents of each proposition of that form always combine to determine the truth-value *truth*.

[28]That specific claim may be mistaken. But if there are elements in our ordinary thought which force an answer to whether there could be ordinal-many asteroids, functionalists will insist that those elements arise from our grasp of a theory which implicitly defines the modal concepts, and that the analysing roles for those concepts therefore determine a settled truth value for 'there might have been ordinal-many asteroids'. The general point being made above doesn't depend upon the cogency of the particular example being used.

[29]I should remark that the preceding supervaluationist approach is only meant to be applied to modal propositions which draw exclusively upon our ordinary modal concepts. In particular, functionalists don't offer supervaluationist truth-conditions for statements which employ the functionalist understanding of possible worlds. (For instance, as an anonymous referee pointed out, a supervaluationist understanding of the truth-conditions of 'some pure sets form a plurality of possible worlds' would make a mockery of the arguments in Section VII.)

wholly nonmodal analyses of modal concepts and it allows one to identify pluralities of possible worlds—viz., ones consisting of pure sets— that are as nonmodal as one could want. All that and not a talking donkey in sight! Functionalism therefore balances the demands of overall theory and commonsense far better than Lewis's own, notoriously incredible, views.

Or consider Jackson. He compares philosophers who won't traffic in possible worlds with people who refuse 'to count [their] change at the supermarket because of the ontological mysteries raised by numbers' [1998: 11]. Yet he ducks the question what possible worlds are, acknowledging that he is declining to address 'a fundamental issue in ontology' [1998: 11]. Now, Jackson accepts the general functionalist approach to analyses which functionalism about possible worlds incorporates. If he extends that analytical method to modal concepts, he can adopt functionalism. And functionalism would provide him with a tidy answer to the question what possible worlds are, as we have already seen.

More generally, functionalism about possible worlds should attract those who are inclined to think that the functionalist method of analysis can be very widely applied. For it is unclear why they would suspect that that method cannot be applied to modal concepts. Yet if the method is applicable to modal concepts, it seems clear for the reasons presented in Sections VI and VII that there will be what functionalists regard as pluralities of possible worlds; that is, there will be structures which both satisfy the core constraints articulated in Section IV and supply occupants for the roles which analyse modal concepts.

This paper began by emphasizing that various philosophers have converged upon the idea that the dispute over the nature of possible worlds ought to be viewed from a functionalist perspective. Yet little has previously been done to refine that promising suggestion. The consequences of the refinement studied here show that the suggestion is nonetheless worth elaborating.[30]

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