

This is a preprint of an article whose final and definitive form will be published in *The Australasian Journal of Philosophy* [2008]; *The Australasian Journal of Philosophy* is available online at: <http://journalsonline.tandf.co.uk/>.

## MODAL REALISM WITH MODAL TENSE<sup>1</sup>

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### Abstract

Modal realists should fashion their theory by postulating and taking seriously the modal equivalent of tense, or *modal tense*. This will give them a uniform way to respond to five different objections, one each by Skyrms, Quine, and Peacocke, and two by van Inwagen, and suggest a non-Lewisian path to modal realism.

### 0. Introduction

The extensive parallel between temporal logic and modal logic has been widely and routinely acknowledged. This naturally raises the expectation that satisfactory metaphysical theories of temporality and modality will parallel each other accordingly. The methodologically pregnant part of this expectation encourages modal metaphysicians to look to the metaphysics of temporality for guidance. A number of prominent modal metaphysicians in fact recommend such

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<sup>1</sup> Various shorter versions of this paper were presented at: Keio University, Tokyo, and Kanazawa University, Kanazawa, Japan, October 2004; Southern California Philosophy Conference, Los Angeles, October 2005; the American Philosophical Association Pacific Division Annual Meeting, Portland, OR, March 2006. I thank the commentator on my Portland presentation, Uriah Kriegel, the Editor of this journal, and an anonymous referee for their helpful suggestions, which improved the paper.

a general methodological outlook [Kraut 1979, 1980; Adams 1986; Zalta 1987; Lycan 1994: 36; Sider 2001; Markosian 2004], while others refuse to be impressed by the metaphysical implications of the parallel between temporal and modal logics [Lewis 1986; Divers 2002; King 2003].

Modal realism is any theory that postulates possible worlds as real in such a way that merely possible individuals existing at merely possible worlds are as real as actual individuals existing at the actual world. (Actual individuals existing at the actual world are assumed to be fully real.)<sup>2</sup> My aim is to argue for the conditional claim that if the methodology of the fans of the parallel is adopted to implement a certain way of theoretical locution, which involves what I call *modal tense*, then modal realists will reap benefits. I take this to mean that modal realists should adopt the methodology and be modal tenses.

My advice to modal realists that they should be modal tenses is a recommendation concerning their theoretical locution. But it is not merely a recommendation to use certain words. Words express concepts. To accept a certain kind of locution and not others commits one to

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<sup>2</sup> It is customary to characterize modal realism along the following lines: (1) there are merely possible worlds, as well as the actual world, (2) there are possible individuals existing at those worlds, and (3) the possible individuals existing at merely possible worlds are as real as those existing at the actual world. I avoid such a characterization because I do not accept (1) and (2) unconditionally. I find the use of the existence predicate ‘there are’ in them problematic. I do not agree with David Lewis’s claim, with which many others concur, that the existence predicates (‘there are’, ‘exist’, and ‘there exist’) have a unique absolutely unrestricted reading. (See section V, sub-section 4 and section VI.) My view is that no absolutely all-inclusive domain is available to legitimize such a reading and therefore every occurrence of an existence predicate needs to be understood relative to a restricted domain. Each of (1) and (2) is true relative to some restricted domains and false relative to others, and ontologically serious discussion of those domains will already involve live issues between modal realists and their rivals.

The only widely known and widely discussed modal realist theory is David Lewis’s but my characterization of modal realism allows other versions of modal realism. See Section VII.

accepting a certain kind of concepts and not others. So my advice has conceptual implications. The repercussions of my advice do not stop there. Concepts carve out reality, and different kinds of concepts carve our reality differently. This has ontological implications. My advice will have little point if we can designate and quantify over all important modal facts adequately in modal-tenseless terms. My advice will be detrimental if some important modal facts can be designated or quantified over adequately only in modal-tenseless terms. Thus, in issuing the advice, I am committed to the ontological position that some important modal facts are modal-tensed facts, i.e., they can be designated or quantified over adequately only in modal-tensed terms, and that no important modal facts are modal-tenseless facts, i.e., none of them are such that they can be designated or quantified over adequately only in modal-tenseless terms.<sup>3</sup>

To illustrate the usefulness of my advice, I shall consider five independent objections to modal realism and argue that if modal realists adopt the modal-tensing way of theoretical locution, they will be able to respond to the objections in a uniform fashion. As those objections are logically independent of one another and differently motivated, the uniformity with which modal realists can counter them gives the modal-tensing way of theoretical locution a high degree of theoretical utility.

### I. Background Assumptions

One of the basic temporal logico-metaphysical tenets I shall assume is that the common temporal

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<sup>3</sup> This leaves it open whether some important modal facts are neither modal-tensed facts nor modal-tenseless facts. Some such facts might be able to be designated or quantified over adequately both in modal-tensed terms and in modal-tenseless terms, while others might be able to be designated or quantified over adequately neither in modal-tensed terms nor in modal-tenseless terms; the latter facts would defy expressive completeness of our modal language, with or without modal tense.

operators quantify over times. Another is that one time in particular is to be designated as the *present* time to play the familiar theoretical role as specified in standard temporal logic.

Correspondingly, one of the basic modal logico-metaphysical tenets I shall assume is that the common modal operators quantify over possible worlds. Another is that one possible world in particular is to be designated as the *actual* world to play the familiar theoretical role as specified in standard (Kripkean) modal logic.

In addition to lexical temporal modifiers like ‘always’ and ‘sometimes’, there are sub-lexical temporal modifiers, namely, tenses. I shall assume that tenses are modifiers of verbs and form an integral part of our temporal discourse. I take this assumption to be uncontroversial to everyone except serious de-tensers, who insist that tenses are theoretically dispensable.<sup>4</sup>

Even the most ardent fan of the parallel would concede that there are some obvious disanalogies between times and possible worlds. For one thing, it is highly plausible to think that there is a natural linear arrangement of times, whereas it is not at all plausible to suggest that there is any linear arrangement of possible worlds, let alone a natural one. Also, there seems to be a natural directionality in this linear arrangement of times. Time seems to *flow* from the past to the present and on to the future. This may be an illusion on our part, but if it is, it is a very powerful and almost irresistible illusion. In contrast, in the absence of any natural linear arrangement of possible worlds, it is senseless to speak of any appearance of natural directionality for possible worlds.

I propose that modal realists should take tenses seriously as temporal modifiers of verbs

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<sup>4</sup> Bertrand Russell says, ‘The occurrence of tense in verbs is an exceedingly annoying vulgarity due to our preoccupation with practical affairs.’ [1956: 248]

and introduce their modal analogs – modal tenses. There are many tenses in English, but due to the lack of natural ordering of possible worlds, we can afford to ignore most of them. For example, the contrast between the past tense and the future tense is lost in the case of modal tense. Also, it is uncertain that the contrast between a simple tense (e.g., simple past) and its complex cousins (e.g., past progressive, past perfect, etc.) has a modal analog.<sup>5</sup> We shall therefore focus only on the simple present tense and the simple past tense.

## II. Tense

Let us quickly review the semantics of the two tenses. The present-tensed form of a verb should be clearly distinguished from the tenseless, infinitive form. The present-tensed sentence, ‘Pat is a child’, is true as evaluated at time  $t$  if and only if Pat is a child at  $t$ . The present tense flags the time of evaluation as the relevant time to figure in the truth condition. The infinitive form, ‘Pat be a child’, on the other hand, is tenseless and hence fails to flag any time, relative to the time of evaluation, as the relevant time to figure in the truth condition. So, ‘Pat be a child’ as evaluated at any time lacks a truth condition. The present tense is essential and ineliminable in the definitions of all tenses, unless we postulate an artificial grammatical element to usurp the role of the present tense or decide to do away with tenses altogether.

A sentence with a present-tensed main verb should also be clearly distinguished from the same sentence with the adverb ‘now’ added. ‘Pat is a child’ does not always have the same truth condition as ‘Pat is a child now’. The former sentence has a truth condition which is sensitive to the time of evaluation,  $t_e$ , whereas the truth condition for the latter sentence is sensitive not to  $t_e$

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<sup>5</sup> I am inclined to think that the modal analogs of some such complex tenses can be made intelligible, but any serious discussion of this topic would take us too far afield.

but to the time of utterance,  $t_u$ . ‘Pat is a child now’ is true at  $t_u$  and  $t_e$  (as uttered at  $t_u$  and evaluated at  $t_e$ ) if and only if ‘Pat is a child’ is true at  $t_u$  and  $t_u$ ;  $t_e$  is irrelevant to its truth condition (unless it is  $t_u$ ) [Kamp 1971].

The present tense in natural language packs considerably more complications than sketched here. See [Kuhn 1989].

The past tense is to be understood in terms of the present tense and has its own complications. ‘Pat ate breakfast’ may have two different truth conditions, depending on whether there is some set of times,  $t^*$  (e.g., the set of times constituting yesterday), such that all members of  $t^*$  are before  $t_e$ , not all times before  $t_e$  are members of  $t^*$ , and  $t^*$  is appropriately salient in the context of utterance. If there is, then the sentence is true at  $t_u$  and  $t_e$  if and only if ‘Pat eats breakfast’ is true at  $t_u$  and some time in  $t^*$  (e.g., ‘Pat eats breakfast’ is true at the present time and some time yesterday, which is the case if and only if Pat ate breakfast yesterday). If there is not, then the sentence is true at  $t_u$  and  $t_e$  if and only if ‘Pat eats breakfast’ is true at  $t_u$  and some time before  $t_e$ . For more discussion, see [Partee 1973]. In contrast, ‘Sometime in the past, Pat ate breakfast’ only has the second truth condition. So does ‘Pat once ate breakfast’. Expressions like ‘sometime in the past’ and ‘once’ (in the relevant sense) may sometimes be suppressed on the surface. This complicates the task of interpreting past-tensed sentences. When the past tense occurs with an explicit mention of a particular past time, the mentioned time determines  $t^*$ . The expression ‘1964’ in the sentence ‘Pat was a child in 1964’ determines the year 1964 to be the sole member of  $t^*$ . (The uttered sentence and its features are considered part of the context of utterance. Note also that intervals of time, as well as moments of time, are times.) So, the sentence is true at  $t_u$  and  $t_e$  if and only if 1964 is before  $t_e$  and ‘Pat is a child’ is true at  $t_u$  and

1964.

### III. Modal Tense

I weigh less than 200 pounds but could have weighed 200 pounds. So I could have weighed more than I actually do. The adverb ‘actually’ in this sense is analogous to ‘now’; *cf.* ‘I used to weigh more than I do now’. Actuality in this sense is *actuality in the rigid sense*. ‘I actually weigh X pounds’ with the rigid sense of ‘actually’ is true at  $w_u$  and  $w_e$  (as uttered at a possible world  $w_u$  and evaluated at a possible world  $w_e$ ) if and only if ‘I weigh X pounds’ is true at  $w_u$  and  $w_u$ ;  $w_e$  is irrelevant to its truth condition (unless it is  $w_u$ ). At the same time, I may also speak truthfully in the following way: I do not actually weigh 200 pounds, but there is nothing necessary about what I actually weigh and I could have actually weighed 200 pounds. The adverb ‘actually’ in this sense is not analogous to ‘now’ and does not express actuality in the rigid sense. It expresses *actuality in the non-rigid sense*. ‘I actually weigh X pounds’ with the non-rigid sense of ‘actually’ is true at  $w_u$  and  $w_e$  if and only if ‘I weigh X pounds’ is true at  $w_u$  and  $w_e$ ;  $w_e$  retains its relevance [Hazen 1977; van Inwagen 2001a(1980); Lewis 1983: 22; Lewis 1986: 94]. The temporal adverb ‘currently’ may be said to be analogous to ‘actually’ in this non-rigid sense: *cf.* ‘Monarchy was current in France in 1777 but not now’.

The modal analog of the simple present tense may be expressed by the adverb ‘actually’ in the *non-rigid* sense. Let us call it the ‘simple actuality modal tense’, or the ‘*actuality tense*’. We have no separate modal tense corresponding to the rigid sense of ‘actually’ any more than we have a special tense corresponding to ‘now’ that is separate from the present tense. The modal analog of the simple past tense is the ‘simple non-actual possibility modal tense’, or the ‘*mere-possibility tense*’. There would be no point in precisely mimicking the temporal case by devising

an elaborate system of morphological transformations of verbs from the infinitive forms to modal-tensed forms. It will serve our purposes adequately if we use the simple subscripts, ‘<sub>a</sub>’ and ‘<sub>p</sub>’, for the actuality tense and the mere-possibility tense, respectively. For example, the sentence, ‘Chris is actually an accountant’, where ‘actually’ is read non-rigidly, will be replaced with ‘Chris is<sub>a</sub> an accountant’. We may retain the non-rigid adverb ‘actually’ for emphasis if we wish: ‘Chris is<sub>a</sub> actually an accountant’. This will not change the truth condition. ‘Chris could have been an artist’ will be replaced with ‘Chris is<sub>p</sub> an artist’.

Let us consider the mere-possibility tense first. As with the simple past tense, two cases need to be distinguished: (i) there is a set  $w^*$  of possible worlds such that  $w_e$  is not a member of  $w^*$ , not all possible worlds other than  $w_e$  are members of  $w^*$ , and  $w^*$  is appropriately salient in the context of utterance, and (ii) there is no such set  $w^*$ . If (i) is the case, the sentence ‘Chris is<sub>p</sub> an accountant’ is true at  $w_u$  and  $w_e$  if and only if ‘Chris is<sub>a</sub> an accountant’ is true at  $w_u$  and some member of  $w^*$ . If (ii) is the case, it is true if and only if ‘Chris is<sub>a</sub> an accountant’ is true at  $w_u$  and some world other than  $w_e$ .

It is easy to see how (ii) may apply. Take a temporal case first: ‘Chris is not an accountant but sometime in the past Chris was an accountant’ is true at  $t_u$  and  $t_e$  if and only if ‘Chris is not an accountant’ is true at  $t_u$  and  $t_e$  and ‘Chris is an accountant’ is true at  $t_u$  and some time before  $t_e$ . Likewise, ‘Chris is<sub>a</sub> not an accountant but possibly Chris is<sub>p</sub> an accountant’ is true at  $w_u$  and  $w_e$  if and only if ‘Chris is<sub>a</sub> not an accountant’ is true at  $w_u$  and  $w_e$  and ‘Chris is<sub>a</sub> an accountant’ is true at  $w_u$  and some world other than  $w_e$ .

In many important cases the world of utterance  $w_u$  is the actual world. So we shall henceforth assume that the actual world is the world of utterance and drop any explicit mention

of the world of utterance, unless absolutely necessary.

A typical case to which (i) applies involves restricted possibility. For example, the context of utterance may make it the case that ‘Chris is<sub>p</sub> an accountant’ is true as evaluated at the actual world if and only if Chris is an accountant at not just any non-actual possible world but one at which Chris gets all he wants. In such a case,  $w^*$  only includes those worlds at which Chris gets all he wants.<sup>6</sup>

The actuality tense is straightforward. ‘Chris is<sub>a</sub> an accountant’ is true as it is evaluated at  $w_e$  if and only if Chris is an accountant at  $w_e$ . ‘Chris is<sub>a</sub> actually an accountant’ (with ‘actually’ rigid) is true as it is evaluated at  $w_e$  if and only if Chris is an accountant at the actual world.

Like tense, modal tense needs to be incorporated into not only the object language but also the metalanguage for complete theoretical rigour. Insistence on complete theoretical rigour, however, is not always wise. If we are not allowed to suppress modal tense in our metalanguage, the preceding paragraph will have to be modified as follows:

The actuality tense is<sub>a</sub> straightforward. ‘Chris is<sub>a</sub> an accountant’ is<sub>a</sub> true as it is<sub>a</sub> evaluated at  $w_e$  if and only if (i) Chris is<sub>a</sub> an accountant at  $w_e$  if  $w_e$  is<sub>a</sub> the actual world, and (ii) Chris is<sub>p</sub> an accountant at  $w_e$  if  $w_e$  is<sub>a</sub> not the actual world. ‘Chris is<sub>a</sub> actually an accountant’ (with ‘actually’ rigid) is<sub>a</sub> true as it is<sub>a</sub> evaluated at  $w_e$  if and only if Chris is<sub>a</sub> an accountant at the actual world.<sup>7</sup>

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<sup>6</sup> In general  $w^*$  will almost always contain many members, whereas in the temporal case  $t^*$  may well contain just one member, e.g., the year 1964. Hardly any humanly possible context of utterance is so detailed as to determine a single possible world as the member of the salient set  $w^*$ . Almost all humanly possible contextual determinations of  $w^*$  proceed propositionally. No matter how much information the propositions in question may carry, they will almost never carry enough information to determine a unique possible world.

<sup>7</sup> There is much to be said about the use of the actuality tense in ‘is<sub>a</sub> true’, ‘is<sub>a</sub> evaluated’, and ‘is<sub>a</sub> (not) the actual world’, but space does not permit elaboration. For some related but

Such a modal-tensed metalanguage is an overkill. To avoid unnecessary and potentially annoying proliferation of subscripts, we shall suppress modal tense whenever doing so is unlikely to cause serious misunderstanding.

Pastness excludes (rigid) presentness in the sense that for any time  $t$ ,  $t$  is a past time only if  $t$  is not the present time (now). But of course this does not mean that ‘Chris was an accountant’ entails ‘Chris is not an accountant now’. The modal case is analogous. Mere possibility excludes (rigid) actuality in the sense that for any possible world  $w$ ,  $w$  is a merely possible world only if  $w$  is not the actual world. But this does not mean that ‘Chris is<sub>*p*</sub> an accountant’ entails ‘Chris is<sub>*a*</sub> not an accountant at the actual world’. The first sentence does not entail the second. This should dissuade us from blindly accepting the claim that English already contains the mere-possibility tense, namely, the subjunctive construction. It might be suggested that in such compound sentences as ‘If Chris were an accountant, Chris would be meticulous’ and ‘I wish Chris were an accountant’, the component sentence ‘Chris were an accountant’ is the surface form of ‘Chris is<sub>*p*</sub> an accountant’. Such a claim should not be uncritically accepted, for it is not implausible to suggest that ‘Chris were an accountant’ implies that Chris is not an accountant at the actual world.

One way to understand my proposal of modal tense is this. Consider the sentence ‘Chris is merely possibly an accountant’. In order to reveal its logical structure, one needs to relate the modal words ‘merely possibly’ to the rest of the sentence appropriately. There are three different ways to do this. The first way is to group the modal words as part of the predicate: ‘Chris is merely-possibly-an-accountant’. One may then explicate what it is to be merely-possibly-an-accountant. Possible-worlds theorists will say that  $x$  is merely-possibly-an-accountant only if  $x$  is

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limited discussion, see the end of section VI.

an accountant at some non-actual possible world. This partial explication in turn is subject to a number of different further explications, some realist and others not. The second way is to group the modal words as part of the subject term: ‘Merely-possible-Chris is an accountant’. One may then say more about what kind of individual merely-possible-Chris is. David Lewis’s counterpart theory may be understood to be an instance of this. The third way is the way of my proposal. It is to group the modal words as part of the copula: ‘Chris is-merely-possibly an accountant’. I propose that we should understand such a modally modified copula in a way analogous to the way we already understand the interaction of the copula with temporal modifiers. Consider the sentence ‘Chris is an accountant in 1999’ (where ‘is’ is understood in the historical present sense). The analog of the first way reads this as ‘Chris is an-accountant-at-1999’, the analog of the second way reads it as ‘Chris-at-1999 is an accountant’, and the analog of the third way reads it as ‘Chris is-at-1999 an accountant’. The expression ‘is-at-1999’ when uttered after 1999 should assume the form ‘was-at-1999’. I focus on this feature of the past tense. A realist understanding of the temporally modified copula ‘was-at-1999’ is commonplace and intuitive. My proposal is that we should take advantage of it to defend the mere-possibility tense.<sup>8</sup> The case of the actuality tense is straightforward.<sup>9</sup>

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<sup>8</sup> This way of looking at my proposal was suggested to me by Uriah Kriegel.

<sup>9</sup> Colin McGinn [2000: 74-83] offers a similar idea under the label ‘the copula modifier theory’. He contrasts the copula modifier theory with the predicate modifier theory David Wiggins proposes in [1976] and says, ‘Thus, according to the copula modifier theory, we do not work with an ontology of modal properties, rather, we take the stock of non-modal properties and think of them as possessed in different modes’ [2000: 77]. There is much in McGinn’s proposal that I agree with, but there are some important points of difference. McGinn says, ‘If I just say, “Socrates is a man” I do not commit myself to the mode of instantiation involved – the copula is modally neutral here – but the instantiation itself is always either necessary or contingent’ [Ibid.: 80-81]. I differ. If I just say, ‘Socrates is a man’, I usually commit myself to the actuality-tensed

#### IV. Modal Realism and Its Rivals

Recall that modal realism is any theory that postulates possible worlds as real in such a way that merely possible individuals are as real as actual individuals. Those who reject modal realism may do so by adopting one of two alternatives: postulating possible worlds as real but not in such a way as to make merely possible individuals as real as actual individuals, or not postulating possible worlds as real. Since we are assuming the possible-worlds framework, we shall ignore the latter alternative. The view of those who seize the first alternative is *actualism*. (I am using the word ‘actualism’ to designate a purely metaphysical position.) Actualism has a temporal analog, namely, *presentism*, which is the view that reality consists of what is now (as opposed to what was or what will be) and nothing else. The present tense of the verbs should be taken very seriously. Actualism and presentism are varieties of chauvinism.

The straightforward temporal non-chauvinism is *four-dimensionalism*, which says that past and future individuals, events, etc., are as real as the present ones. (This is four-dimensionalism in the broad sense. See [Rea 2003].) From the perspective of four-dimensionalists, we may as well pretend to adopt the God’s-eye point of view from outside time and speak by using only present-tensed verbs in something like the historical present sense. Thus at a certain time *t*, instead of saying, ‘Dinosaurs existed long time ago but they do not exist now’,

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understanding of the copula. I also do not understand what it means to say of ‘instantiation itself’ that it is ‘either necessary or contingent’. Another difference between us is that I work within the possible-worlds framework, whereas McGinn rejects the framework: ‘... modality belongs to a special ontological category: it consists neither in objects (unlike the possible worlds theory) nor in properties (unlike the idea of modal properties that goes with the predicate modifier view), but rather in items I have called *modes*’ [Ibid.: 83]. It is, however, unclear how deep this last difference is, as I allow possible worlds to constitute special ontological dimensions; see section VII.

we may pretend to step outside time and say, ‘Dinosaurs exist. They are temporally located at times long before  $t$  but not at  $t$ .’ Such a hypothetical viewpoint and slightly awkward-sounding English constructions help emphasize the ontological parity of all temporal things, past, present, and future.

Modal realism, being the modal analog of four-dimensionalism, embraces an equally metaphysically egalitarian perspective on the space of possible worlds and possible individuals. Therefore it might naturally be expected to allow, and even encourage, the hypothetical stepping out of the confines of the actual world and using the modal actuality tense universally in the way analogous to the four-dimensionalists’ use of (something like) the historical present tense. Actualism, on the other hand, embraces a decidedly chauvinist attitude toward the actual world and actual individuals as metaphysically privileged and therefore might be expected to insist on the importance of all modal tenses, including the mere-possibility tense, to mark the ontological difference between the actual and the merely possible. For example, actualists would be expected to say that mute donkeys exist <sub>$p$</sub>  and exist <sub>$a$</sub> , talking donkeys exist <sub>$p$</sub>  but do not exist <sub>$a$</sub> , and so on.<sup>10</sup> Thus, it strongly appears as if the divide between actualism and modal realism neatly corresponds to the divide between taking all modal tenses equally seriously on one hand and de-emphasizing the variety of modal tense and getting on with just the actuality tense in the modal

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<sup>10</sup> M. J. Cresswell [2006] argues that presentism and four-dimensionalism (which he calls ‘eternalism’) are logically inter-translatable both at the object-language level and at the meta-language level. If Cresswell is right, some might interpret his result as showing that the disagreement between presentists and four-dimensionalists is illusory, hence the difference between actualism and modal realism is illusory. That would be a mistake. Cresswell’s result, assuming it is correct, shows no such thing and has no such implication. As Cresswell himself repeatedly says, it instead shows that the dispute between presentists and four-dimensionalists cannot be solved by logic alone. The implication of this for us is at best that the difference between actualism and modal realism goes beyond logic.

version of (something like) the historical present sense on the other hand. I claim, however, that contrary to this appearance, the variety of modal tense is in fact modal realists' friend. Modal realists are best advised to take all modal tenses, including the mere-possibility tense, very seriously and resist all modal-tenseless languages in serious discussion of modal metaphysics and epistemology. As we noted earlier, the adoption of the modal-tensed locution will commit modal realists to a certain way to carve reality, which will enable them to shield modal realism from metaphysical and epistemological objections. In particular, modal realists will be able to formulate a uniform way to respond to a number of important objections in one full sweep.

#### V. Five Case Studies

1. *Skyrms's Epistemic Objection*: According to modal realism, talking donkeys are real though not actual. They are as flesh-and-blood as the actual mute donkeys that carry hikers in Grand Canyon. If so, we should be in a position in principle to know their existence by the same empirical means – call it 'M' – by which we come to know the existence of the mute donkeys in Grand Canyon. But we are not in such a position; at best we are in a position to know about them by means of our modal intuition or sophisticated philosophical argumentation. Therefore, talking donkeys are not real.

This is Brian Skyrms's epistemic argument against modal realism in a nutshell [1976: 326]. David Lewis responds by assuming that the empirical/non-empirical distinction for justification matches the contingent/necessary distinction for truth [1986: 112]. Without going into the details of Lewis's response, let us simply note that modal realists should not be required to rely on such a controversial assumption in order to respond to Skyrms. Adoption of modal tense will enable modal realists to give a different response which makes no such assumption.

Skyrms's objection fails when it moves from the flesh-and-blood-ness of talking donkeys to their knowability by M. The invalidity of this move is masked by the way Skyrms plays fast and loose in his reasoning, and when we reformulate the move more carefully and explicitly in modal-tensed terms, the error becomes clear. When modal realists say that talking donkeys are flesh-and-blood, they mean not that talking donkeys are<sub>a</sub> flesh-and-blood but that talking donkeys are<sub>p</sub> flesh-and-blood. Skyrms's objection claims that we are<sub>a</sub> not in a position to know<sub>a</sub> about talking<sub>p</sub> donkeys<sub>p</sub><sup>11</sup> by M. So if the objection is to be understood as properly directed at modal realists, it should be understood as assuming that if talking<sub>p</sub> donkeys<sub>p</sub> are<sub>p</sub> flesh-and-blood, then we are<sub>a</sub> in a position to know<sub>a</sub> about talking<sub>p</sub> donkeys<sub>p</sub> by M. But this assumption is implausible. We have no reason to believe that M is such that we are<sub>a</sub> in a position to use it to know<sub>a</sub> about individuals that are<sub>p</sub> flesh-and-blood. The apparent contrary impression is a direct result of conflating this implausible assumption with the claim that M is such that we are<sub>a</sub> in a position to use it to know<sub>a</sub> about individuals that are<sub>a</sub> flesh-and-blood. This conflation is masked by the absence of modal tense in the language Skyrms uses, and is parallel to the conflation of the implausible claim that the introspection – call it 'N' – by which I know about myself as I am now is such that I am in a position to use it to know about myself as I was twenty years ago, with the claim that N is such that I am in a position to use it to know about myself as I am now. The second claim is trivially plausible, whereas the first claim is not plausible at all. The conflation is unlikely to occur in the temporal case because English demands the correct use of tense.

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<sup>11</sup> The predicate 'is a talking donkey' is a surface form of 'is a donkey and talks'. The noun phrase 'talking donkeys' should be understood as shorthand for 'individuals that are donkeys and that talk'. Thus, the modal-tensed phrase 'talking<sub>p</sub> donkeys<sub>p</sub>' should be understood as shorthand for 'individuals that are<sub>p</sub> donkeys and that talk<sub>p</sub>'. The mere possibility-tense should not be understood as a modifier of nouns.

To put the matter slightly differently, we are unable to find merely possible talking donkeys by M for the reason analogous to the reason why we are unable to find live dinosaurs now. Live dinosaurs existed (in the past) but they do not exist (now). Analogously, talking donkeys exist<sub>p</sub> (at merely possible worlds) but they do not exist<sub>a</sub> (at the actual world). And this difference has epistemic repercussions, just as the difference between the past and the present does.

The assumption underlying Skyrms's objection might alternatively be understood to be the following claim: If talking<sub>p</sub> donkeys<sub>p</sub> are<sub>p</sub> flesh-and-blood, then we are<sub>a</sub> in a position to know<sub>p</sub> (as opposed to know<sub>a</sub>) about the talking<sub>p</sub> donkeys<sub>p</sub> by M. When understood this way, the assumption is plausible but poses no threat to modal realism, for the consequent of the conditional is plausible. We are indeed actually such that for some non-actual possible world *w*, we and talking donkeys exist<sub>p</sub> at *w* and we know<sub>p</sub> about them by M at *w*.

2. *Quine's Rhetorical Query*: Take W. V. Quine's famous rhetorical query: 'How many possible fat men are in the (actually vacant) doorway?' [1948] Quine does not expect an answer, as he thinks it is unanswerable. Quine's query in fact lacks sufficient specificity mainly due to the absence of modal tense, and once enough specificity is supplied it is perfectly answerable. If someone asked a ballplayer out of the blue, 'How many hits did you have?' it would not be a well-asked question, as the past tense would cover many games and seasons, and the context would be too impoverished to make any of them separately or collectively salient. So the appropriate response would be to ask for a more specific version of the question by saying something like, 'Which particular game(s) or season(s) do you have in mind?' The initial impression of unanswerability is explained as being the result of the lack of specificity in the

initial formulation of the question rather than the mysterious, hence objectionable, nature of hits. Quine's query should be treated in a similar manner, with the aid of modal tense. The obvious element to be subjected to modal tensing is the main verb 'are' in the predicate 'are in the doorway', but there is another readily noticeable element for modal tensing. Clearly, Quine is asking how many possible individuals who are fat men are in the doorway. This simple rephrasing of the query reveals a second occurrence of the verb 'are' in the relative clause.<sup>12</sup> Suppose we speak of exactly three possible worlds, the actual world @, a non-actual world w1, and another non-actual world w2, and exactly three possible individuals, x, y, and z, for each of these worlds, and assume that nothing else exists in logical space. Consider x, y, and z at one world to be either identical to or the counterpart<sup>13</sup> of x, y, and z, respectively, at any other world. Suppose also the following: (i) at @, x and y are<sub>a</sub> fat men and not in the doorway, whereas z is<sub>a</sub> not a fat man and not in the doorway; (ii) at w1, x is<sub>p</sub> a fat man and in the doorway, z is<sub>p</sub> a fat man and not in the doorway, and y is<sub>p</sub> not a fat man and is<sub>p</sub> in the doorway; (iii) at w2, x and z are<sub>p</sub> fat men and not in the doorway, whereas y is<sub>p</sub> a fat man and in the doorway. Given this simple picture, among the available readings of Quine's query are the following:

- (Q1) How many possible individuals who are<sub>a</sub> fat men are<sub>a</sub> in the doorway?
- (Q2) How many possible individuals who are<sub>p</sub> fat men are<sub>a</sub> in the doorway?
- (Q3.1) How many possible individuals who are<sub>a</sub> fat men are<sub>p</sub> in the doorway at w1?

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<sup>12</sup> Further paraphrasing would reveal more occurrences of 'are'. Among them would be one in 'individuals who are possible'. This would raise an interesting issue of modal-tensing the possibility predicate, but we will not pursue it here.

<sup>13</sup> Modal-tensing is not incompatible with counterpart theory, but we shall not take up this issue here.

(Q3.2) How many possible individuals who are<sub>a</sub> fat men are<sub>p</sub> in the doorway at w2?

(Q4.1) How many possible individuals who are<sub>p</sub> fat men at w2 are<sub>a</sub> in the doorway at w1?

(Q4.2) How many possible individuals who are<sub>p</sub> fat men at w2 are<sub>p</sub> in the doorway at w2?

Is the context and the manner in which Quine makes his query sufficiently clear to make any particular possible world stand out? If we assume that Quine is interested only in @, then his query is (Q1) and the answer is obviously 'Zero', for no actual fat men are<sub>a</sub> in the doorway at @. But it is unlikely that Quine is asking (Q1). (Q2) receives the same easy answer, as the doorway is<sub>a</sub> unoccupied at @ by any non-actual man, fat or otherwise. A moment's examination will tell us that the answers to the other questions are '1', '1', '2', and '1' in that order. (For (Q4.1), note that y is<sub>p</sub> a fat man at w2 and in the doorway at w1, even though y is<sub>p</sub> not a fat man at w1.) We may easily generate many more specific versions of Quine's query, but in each case the resulting specific query will have a definite answer. Therefore, Quine's query loses its rhetorical force.

If Quine's query is meant to ask for the total number of individuals who are<sub>p</sub> fat men at some possible world or other and are<sub>p</sub> in the doorway at some possible world or other, the answer is 'Infinite'. This is Terence Parsons' answer [1980: 20]. The use of modal tense enables us to see that this version of Quine's query is but one among many others which are systematically generated.

Richard Routley is more sensitive than Parsons to the different ways the query might be understood [1982: 159-63]. After pointing out the *de re/de dicto* distinction and disregarding the attribute of fatness, Routley distinguishes the following questions:

(R1) How many merely possible (non-actual) men are in that actual doorway?

(R2) How many men are possibly in that doorway?

(R2.1) Of what number  $n$  of men is it true that for those  $n$  men it is possible that they are in that doorway (together)?

(R2.2) Of what number of men is it true that it is possible that those men are in that doorway?

(R3) What is the largest number of men that can possibly be in that doorway? [Ibid.: 160-1, numbering mine]

Routley thinks that (R1) is the only correct way to understand Quine's query [Ibid.: 161, n. 13] and that the correct answer is 'Zero' [Ibid.: 159]. Clearly, he means 'are<sub>a</sub> in that actual doorway' by 'are in that actual doorway'. See also: 'It is logically possible that many fat men are in the doorway, but it would be quite invalid to infer that many possible fat men *are* in the doorway ...' [Ibid.: 161] (R1) - (R3) are all good possible readings of Quine's query but my disambiguation in terms of modal tense is more systematic and subsumes them as special cases.

3. *Peacocke's Reductio Argument*: Christopher Peacocke invites us to consider the following statements:

- (A) A merely possible human being is not a physical object.
- (B) Anything which is not a physical object is necessarily not a physical object.
- (C) A merely possible human being could exist and be a human being.
- (D) Necessarily, any human being is a physical object.

Each of these statements seems intuitively plausible. On modal realism, merely possible human beings are as real as actual human beings. Let  $\mathbf{a}$  be such a merely possible human being. Consider the following formalized versions of (what is entailed by) (A) - (D):

(A1)  $\sim Pa$

(B1)  $\forall x(\sim Px \supset \Box \sim Px)$

(C1)  $\Diamond(Ea \ \& \ Ha)$

(D1)  $\Box \forall x(Hx \supset Px)$

Modal realists should endorse (A1) - (D1), according to Peacocke, but (A1) - (D1) are jointly inconsistent; for (A1) and (B1) entail that  $\Box \sim Pa$  but (C1) and (D1) entail that  $\Diamond Pa$ . This is Peacocke's argument against modal realism [Peacocke 2002: 505]. If Peacocke is right, then while (A) - (D) are intuitively plausible, (A1) - (D1) lead to a contradiction. So we should not accept (A1) - (D1) as satisfactory formalizations of (what is entailed by) (A)-(D). Peacocke proposes to reject (C1) and replace it with the following radically different alternative:

(C2)  $\Diamond \exists z(Rzu \ \& \ Hz)$ ,

where **u** is a particular actual human egg, **v** is a particular actual human sperm, and necessarily anything that bears R to **u** and **v** is a unique human being arising from them. It is assumed that nothing actually bears R to **u** and **v**. This rather elaborate manoeuvre to avoid the contradiction is unnecessary, for Peacocke's argument does not work.

(A1) and (B1) are ambiguous with respect to modal tense. The ambiguity stems from the use of the verb 'is' as it occurs once in (A) and twice in (B). Obviously the main verb of (B), the second occurrence of 'is', should be understood as actuality-tensed, for it occurs within the scope of 'necessarily' as part of the necessitation of non-physicality. (Cf. The main verb 'is' in 'Anything which is not a physical object is always not a physical object' – understood as a completely general statement about all things past, present, and future – occurs within the scope of 'always' and should be present-tensed.) The predicate letters in (C1) and (D1) should also be understood likewise. The other two occurrences of 'is' do not lie within the scope of a modal

operator, so they may have either of the two modal tenses. Since these two occurrences of ‘is’ are clearly intended to be understood uniformly in the argument, there are only two cases to consider.

First, take the actuality-tensed reading:

$$(Ai) \quad \sim P_a \mathbf{a}$$

$$(Bi) \quad \forall x(\sim P_a x \supset \Box \sim P_a x)$$

$$(Ci) \quad \Diamond(E_a \mathbf{a} \ \& \ H_a \mathbf{a})$$

$$(Di) \quad \Box \forall x(H_a x \supset P_a x)$$

The same contradiction (supplemented with the actuality tense) is derivable as before but this time it is not worrisome, for (Bi) is a clear target for rejection. One way not to be physical at a world is not to exist at that world. Any merely possible physical object is such that it does not exist<sub>a</sub>, exists<sub>p</sub>, and is<sub>p</sub> a physical object at any possible world at which it exists<sub>p</sub>. So, any merely possible physical object  $x$  is such that  $x$  is<sub>a</sub> not physical and is<sub>p</sub> physical, i.e., ‘ $\sim P_a x \supset \Box \sim P_a x$ ’ is false.

Therefore, (Bi) is false.

Next, consider the mere-possibility-tensed reading:

$$(Aii) \quad \sim P_p \mathbf{a}$$

$$(Bii) \quad \forall x(\sim P_p x \supset \Box \sim P_p x)$$

$$(Ci) \quad \Diamond(E_a \mathbf{a} \ \& \ H_a \mathbf{a})$$

$$(Di) \quad \Box \forall x(H_a x \supset P_a x)$$

The same contradiction is still derivable but is again unproblematic, for this time (Aii) is false. Remember that  $\mathbf{a}$  is supposed to be a merely possible human being. So  $\mathbf{a}$  exists<sub>p</sub> and is<sub>p</sub> a human being, hence a physical object, at any possible world at which  $\mathbf{a}$  exists<sub>p</sub>. Therefore, ‘ $P_p \mathbf{a}$ ’ is true.

4. *Van Inwagen’s Ontic Objection*: There could have been a million-carat diamond. So

there is a possible world at which there is a million-carat diamond, which means, according to David Lewis's modal realism, that there is a million-carat diamond in the absolutely unrestricted sense of the existence predicate 'there is'. But there is no such diamond in the same sense of 'there is'. Therefore, Lewis's modal realism is false.

This is Peter van Inwagen's objection to Lewis's modal realism [2001b: 221-2]. Lewis draws a clear distinction between absolutely unrestricted use and restricted use of the existence predicate, and van Inwagen follows Lewis. William Lycan says that drawing this distinction the way Lewis does gives Lewis's theory a 'stunning advantage' over Meinongians, yet at the same time confers 'outrageous falsity' on it [1994: 25-9]. Van Inwagen's objection is an attempt to point out the 'outrageous falsity'. Whether or not Lewis needs to countenance an absolutely unrestricted existence predicate, not every modal realist needs to. My advice to modal realists is to eschew commitment to the absolutely unrestricted sense of 'there is' and formulate their position by means of modal tense instead. They should say that there is<sub>p</sub> a million-carat diamond. It is plausible that there is<sub>a</sub> no million-carat diamond, but whether there is<sub>p</sub> a million-carat diamond is a separate matter, and van Inwagen does not clearly distinguish them.

It is important to note that, even though some may propose to define the absolutely unrestricted sense of the existence predicate 'there is' in terms of the two modal tenses as 'either there is<sub>a</sub> or there is<sub>p</sub>', modal realists need not so define it. It remains an open question whether modal realists need other modal tenses than the two we have discussed and if they do, whether any of them goes beyond these two, that is, whether there is a modal tense – let us signify it by the subscript '<sub>m</sub>' – such that there is<sub>m</sub> an object which neither is<sub>a</sub> nor is<sub>p</sub>. Any theory that countenances such an object may be called *extended modal realism*. Extended modal realism might be said to be

extremely far-fetched and lack whatever plausibility possessed by non-extended modal realism. But whether extended modal realism is initially plausible or not is beside the point. What is important is that modal realism is compatible with extended modal realism and that modal realists are not committed *qua* modal realists to the definability of the absolutely unrestricted existence predicate in terms of a combination of modal tenses.

5. *Van Inwagen on Actuality*: In the course of examining various theses about the meaning of the phrase ‘the actual world’ van Inwagen comes to the following claim:

- (a) ‘The actual world’ means ‘the world we inhabit’ [2001a:178].

He rejects (a) in a short paragraph, as follows:

What does ‘the world we inhabit’ mean? This phrase can mean only ‘the world we exist in’. And this latter phrase is a necessarily improper description (like ‘the volume of space we are within’ or ‘the odd prime’). This is the case since each of us might have been at least a bit different and each of us, therefore, exists in more than one possible world [Ibid.: 179].

He spends an additional equally short paragraph to dismiss the counterpart theory. Modal realists could certainly agree with van Inwagen’s observation that the phrase ‘the world we inhabit (exist in or at)’ is necessarily improper. Van Inwagen takes this to be an objection against (a). Since he regards (a) to be a central claim of modal realism, he takes this to be an objection against modal realism. I do not claim that modal realists are committed to (a) or that they are not. For the sake of argument, I shall simply assume that the falsity of (a) would be a serious blow to some modal realists, including but not limited to Lewis. My claim is that adoption of modal tense will help those modal realists who wish to defend (a) in the face of van Inwagen’s objection.

To begin with, it is instructive to note that van Inwagen says that the impropriety of the phrase in question is like the impropriety of such phrases as ‘the volume of space we are within’ and ‘the odd prime’. The latter phrases are improper because they univocally express a property possessed by many. This is certainly one common way for a phrase to be improper but there is another equally common way. It is ambiguity. Adopting modal tense, proponents of (a) can say that the phrase in question is ambiguous between ‘inhabit<sub>a</sub>’ and ‘inhabit<sub>p</sub>’. It is clear that any proponent of (a) would want it to be understood in the first sense. When so understood, van Inwagen’s charge of impropriety does not apply to (a) any longer. Even though we inhabit<sub>p</sub> many worlds, we inhabit<sub>a</sub> only one world.

If one understands (a) as saying that ‘the actual world’ means ‘the world we inhabit<sub>a</sub>’, one commits oneself to understanding actuality of a world in terms of what it is for us to inhabit<sub>a</sub> a world. One should then not understand inhabiting<sub>a</sub> a world in terms of actuality of a world, on pain of vicious circularity. This is where a further objection against (a) may be made. It goes as follows:

The word ‘inhabit<sub>a</sub>’ means ‘inhabit the actual world’, where ‘actual’ is understood in the non-rigid sense. So, one cannot avoid understanding inhabiting<sub>a</sub> a world in terms of actuality of a world in the non-rigid sense. Thus, if (a) is meant to be a specification of the meaning of the phrase ‘the actual world’ in the non-rigid sense of ‘actual’, adoption of modal tense does not help prevent (a) from being circular. If, on the other hand, ‘actual’ in (a) is meant to be understood in the rigid sense, the circularity does not ensue. But in that case, ‘the actual world’ designates @ rigidly, so (a) should be put in a clearer way, such as the following:

(a’) ‘@’ means ‘the world we inhabit<sub>a</sub>’.

The lack of circularity is obvious here, but now the claim is false. The simple rigid designator '@' designates the world we inhabit<sub>a</sub> but, given the mismatch between its rigidity and the non-rigidity of 'inhabit<sub>a</sub>', '@' does not mean 'the world we inhabit<sub>a</sub>'. (Cf. The simple rigid designator 'now' designates the time we exist at, but it does not mean 'the time we exist at'.)

This objection is convincing provided that we grant its starting point. But the starting point need not be granted and proponents of modal tense should surely reject it. To claim that 'inhabit<sub>a</sub>' means 'inhabit the actual world' (where 'actual' is non-rigid) is to accept the use of the verb 'inhabit' without modal-tensing, and this is what proponents of modal tense should not do. The actuality tense in 'inhabit<sub>a</sub>' is ineliminable. Modal realists should say that 'inhabit<sub>a</sub>' means 'inhabit<sub>a</sub>'. When charged that it is uninformative, they should deny the existence of an informative definition. They should insist that the actuality tense is primitive, just as presentists insist that the present tense is primitive. If asked how we are supposed to grasp the meaning of any actuality-tensed verb in contrast to the mere-possibility-tensed form of the verb, they should say that we are supposed to grasp it in a way analogous to the way we grasp the meaning of a present-tensed verb in contrast to the past- or future-tensed form of the same verb. This may or may not satisfy van Inwagen, but it shows that there is a modal realist way to save (a) from his objection.

Phillip Bricker [2006] defends the 'Leibnizian Realism', the combination of two theses: (1) David Lewis's modal realism minus his 'relativist' theory of actuality, and (2) the claim that actuality is 'an absolute property that marks a distinction in ontological status'. Leibnizian realists do not reject the indexical analysis of the concept of actuality Lewis offers but contend that the property of actuality is absolute. Thus, according to Leibnizians, the indexical concept of actuality determines the absolute property of actuality. Strictly speaking, modal realism with modal tense is

neutral on the dispute between Lewisians and Leibnizians on actuality, for the equal reality of what is<sub>q</sub> and what is<sub>p</sub> does not entail their complete ontological parity. But it would not be surprising to see a modal-tensing realist take the anti-Leibnizian stance, perhaps along the following lines: Lewisians and Leibnizians agree that the concept of actuality is indexical. Take the arch indexical word ‘I’. The concept of I-ness (selfness) is indexical, and I would say – and everyone except solipsists and egotists would concur (in a delicate appropriately indexical-sensitive manner) – that the property of being I myself marks no special ontological status. Presentness is like that. The concept of presentness is indexical and the property of being present marks no special ontological status. Likewise, the concept of actuality is indexical and the property of being actual, understood in terms of the actuality tense, marks no special ontological status. Such an anti-Leibnizian position, though not entailed by modal-tensing realism, would not be without initial attractiveness. There is much more to be said about this, but we cannot pursue it here.

#### VI. Neither ‘Stunning Advantage’ nor ‘Outrageous Falsity’

Some might object to my advice to modal realists by saying that it is merely an advice to use a neologism and is therefore superficial and frivolous. To say that talking donkeys exist<sub>p</sub>, for example, is just another way of saying that talking donkeys exist at some merely possible world, they might say, and adopting modal-tensed talk changes nothing of substance. Such an objection is understandable but misses a crucial point of my advice. As we noted earlier, Lewis’s use of the modal-tenseless language is essential to what Lycan calls the ‘stunning advantage’ over Meinongians and the ‘outrageous falsity’ of his theory. According to Lewis, talking donkeys exist in the same sense in which the mute donkeys of Grand Canyon exist. The difference between the

two groups of donkeys is their location (in logical space). We readily and correctly understand the modally neutral senses of ‘exists’, ‘is a donkey’, ‘talks’, etc. They are the ordinary senses of the words. If this is so, Lewis’s quantification over the merely possible is not only intelligible but something we already understand readily. This is the ‘stunning advantage’ over Meinongians Lycan has in mind. At the same time, this prompts Lewis’s detractors to point out that talking donkeys have a radically different epistemic status for us (Skrms) or that in the ordinary sense of ‘exist’ we readily understand, talking donkeys simply do not exist (van Inwagen).

I reject the claim that there are ordinary senses of verbs that are modally neutral. I claim instead that we ordinarily and readily understand the modal-tensed senses of verbs.<sup>14</sup> This is key to the way I handle the five objections to modal realism. No modal realist who did not insist on modal tense could legitimately mimic my moves.

My advice does give away the ‘stunning advantage’ over Meinongians, but not completely. Tensed verbs are perfectly intelligible. My proposal is that modal-tensed verbs are analogously intelligible, whereas the Meinongians supposedly postulate a mysterious realm of reality separate from the familiar realm of reality without informative explanation.

Modal realists maintain that merely possible objects are real. How should we read ‘are real’ here? By my own light, the verb phrase must have a definite modal tense. Is it ‘are<sub>a</sub> real’ or ‘are<sub>p</sub> real’? Actualists would be happy to say that talking donkeys are<sub>p</sub> real just as much as presentists would be happy to say that dinosaurs were real. To distance themselves from

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<sup>14</sup> A modal-tenseless sense is at best an artificial product manufactured out of modal-tensed senses by means of disjunction in a way analogous to the way the four-dimensionalist tenseless sense of ‘is’ may be construed by a presentist to be the disjunction of ‘is’ (in the present tense), ‘was’, and ‘will be’.

actualists, modal realists therefore must say that merely possible objects not only are<sub>p</sub> real but also are<sub>a</sub> real. Furthermore, they should perhaps also say that all merely possible objects, as well as actual objects, are<sub>a</sub> real and are<sub>p</sub> real at every possible world.

## VII. Conclusion

Modal tense is not a gimmick. It is a mistake to think that ‘There are<sub>p</sub> talking<sub>p</sub> donkeys<sub>p</sub>’ is a gimmicky way to say the same thing as ‘There are talking donkeys at a merely possible world’. I advise modal realists to regard the latter sentence as not fully articulate and refrain from using it. They should instead stick to the former sentence. The mere-possibility tense is definable in terms of the actuality tense. Other modal tenses, if there are any, should also be so definable. But the actuality tense is not definable in modal-tense-neural terms. In this sense, modal tense is ineliminable.

Modal realists are better off as modal tensors. This, of course, does not mean that no modal theorist opposed to modal realism can benefit from modal tensing. But our discussion at least shows that modal tensing will afford modal realists a more effective way to counter objections.

I suspect that there are modal tenses other than the simple actuality and mere-possibility tenses. Modal realists should uncover and investigate them all and use them to formulate, elaborate, and defend their theory. Furthermore, taking modal tense seriously is only part of a larger methodological strategy. Following the parallel between worlds and times in a bold yet careful way gives modal realists a powerful framework in which to construct a full theory. Our currently dominant modal realist theory is Lewis’s, but Lewis refuses to take the parallel seriously. This means that adoption of a variety of modal tense may lead to various non-Lewisian realist

theories of modality, depending mainly on which theory of temporality is followed. Most if not all of them, I suspect, will construe possible worlds as points in logical space the way moments of time are points in temporal space. Possible worlds are simply locations identified by modal axes the way temporal points are locations identified by a temporal axis. This invites, *inter alia*, the view that the universe is spread out in modal dimensions as well as in spatiotemporal dimensions. Such a modal-dimensionalist version of modal realism will present a metaphysical picture of possible worlds and possible individuals sharply different from Lewis's theory. See [Yagisawa 2002] for an early attempt to sketch such a picture. A more complete exploration will be left for another occasion.

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