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MODAL REALISMS

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I. Introduction

Possibilism—the view that there are non-actual, merely possible entities—is a surprisingly resilient doctrine.[1] One particularly hardy strand of possibilism—the modal realism championed by David Lewis—continues to attract both foes who seek to demonstrate its falsity (or at least stare its advocates into apostasy) and friends who hope to defend modal realism (or, when necessary, modify modal realism so as to avoid problematic objections).[2] Although I am neither a foe nor friend of modal realism (but some of my best friends are!), like many I continue to be fascinated by the doctrine.

Accordingly, I am interested in developing what I take to be the best version of modal realism. This paper is an attempt at satisfying this goal. The question to be asked is not, "should we be modal realists?", but rather, "given that we are to be modal realists, what kind of modal realist should we be?"

Here, I present a series of versions of modal realism such that each member of the series avoids a serious objection that plagues its predecessor; each theory is stronger than its ancestor. The progression of theories demonstrates in a suitably Hegelian fashion the virtues of the final theory discussed. Additionally, the presentation shows how flexible possibilism is: there are many interesting and viable versions of modal realism besides the one defended by David Lewis.[3] You may think you have an objection to possibilism in general, and you may be right—or you may be merely objecting to one particular formulation of possibilism.

The final theory developed has attributes interesting enough to warrant mentioning them now. First, the final theory is committed to *overlap*: one and the same object is literally at different possible worlds. Second, the final theory accepts a substance-attribute dualism and holds that the attributes are *tropes*. Third, the final theory identifies worlds with *structured fusions of tropes*: possible worlds are maximal clusters of particularized properties. Fourth, according to the final theory, to be at a world is to exemplify a trope that is part of that world;

de re representation works via instantiation. Finally, the final theory accepts *absolute actuality*: whether a world is actual is not context-sensitive, as David Lewis maintains; instead, there is a primitive, absolute fact about which world is actual. The final version is similar in important respects to one prominent *actualist* theory of possible worlds. This results in a blurring of the line between possibilist and actualist theories of modality.

Additionally, the following features of the theory are nice. The theory is both *ontologically* and *ideologically* economical: it makes use of few ontological categories, and its conceptual primitives form a tidy and compact system. The notions of *possibility* and *necessity* are not among the primitives: they are reductively defined. Finally, the theory is *flexible* in that it makes possible a robust realism about the *de re* modal properties of individuals, while at the same time allows for the kind of inconstancy of *de re* representation championed by Lewis.

Let's get started.

II. Lewisian Modal Realism

Although the details of Lewis's Modal Realism (henceforth: LMR) are well known, it will be useful to briefly review them in order to highlight points of comparison with other modal realist theories. All possibilists accept that there are merely possible, non-actual entities. Lewis claims that possible objects are *concrete* and as equally real as you or the chair upon which you sit; some merely possible objects are persons who even bleed when you prick them. The largest of these possible objects are *worlds*, which are maximally spatiotemporally related *fusions* of concrete objects (Lewis 1986a: 69-81).[4]

LMR is an economical theory with respect to both its ontology and its ideology. Lewis's fundamental ontology consists in two categories: concrete objects (*urelements*) and classes. Concrete objects are members of classes, but do not have members themselves. They are *spatiotemporal entities* that can be related to each other via spatiotemporal relations.[5] Concrete objects could be identified with regions of spacetime or occupants of spacetime or both; LMR does not force us to choose. *Properties* are identified with classes of entities; *propositions* are identified with classes of possible worlds.[6] Since these categories are ones in which we already believe, LMR brings with it no new categorical commitments.[7]

LMR is ideologically economical. The ideology of a theory consists in the stock of undefined concepts employed in the official statement of theory.[8] First, because Lewis's ontology is lean, we need not pay the cost in ideology that large ontologies typically bring. For commitment to many ontological categories also brings commitment to the primitive predicates required to express how these ontological categories are related. For example, if one accepts that substances and attributes form different ontological categories, it seems that one must also

accept a primitive instantiation predicate, which links members from the two categories. If one accepts a dualism of spacetime region and material occupant, then it seems that one must also accept a primitive occupation predicate. LMR is committed only to a dualism between class and member, and so need accept only one primitive predicate that applies to pairs of things from distinct ontological categories, namely, the membership predicate.[9]

Second, LMR provides the resources to analyze various modal concepts. For example, given LMR, one can say that a proposition is *possibly true* just in case it is true at some worlds; a proposition is *necessarily true* just in case it is true at all worlds. The analyses of other modal notions have been discussed elsewhere, so I will move on.[10] The important things to note are that LMR promises a reductive account of modality and that this has been taken to be one of the main strengths of LMR.

However, there is a standard set of complaints against LMR. The first complaint is that LMR analyses *de re modal claims* by way of *counterpart theory*. Given LMR, each possible object occupies exactly one possible world, so truths about how an object could have been can't be made true by facts about how that object is at other possible worlds. Instead, claims of the form *x could have been F* are made true by the existence of a counterpart of *x* that is *F*. Similarly, claims of the form *x is essentially F* are true just in case all of *x's* counterparts are *F*. A counterpart relation is a similarity relation, but which similarity relation is relevant to evaluating the truths of *de re* modal claims is contextually determined. So whether a particular *de re* modal claim, such as "Fred is essentially a person" expresses a truth is not contextually invariant: in some contexts it does, and in others it doesn't.[11] Moreover, most of the similarity relations invoked will be *vague*. So for many *de re* modal claims, it will be indeterminate whether they are true. We can summarize this complaint against LMR with the following slogan: real objects have real essences. The "essences" given by counterpart theory are far too flexible, context-sensitive, and indeterminate to be the real essences of real objects.[12]

It is interesting to note that, on Lewis's official view, there are *entities* that have real essences, specifically, *properties*. According to Lewis, the *de re* modal features of properties are not to be understood in terms of counterparts. Instead, properties enjoy a kind of transworld identity, and their *de re* modal properties are never context-sensitive, vague, or indeterminate. Properties are treated with a kind of respect that objects do not enjoy. Lewis does not treat objects with full ontological seriousness. We will see that MRO improves on this situation.

III. Modal Realism with Overlap (MRO)

The way the modal realist can avoid the objection from counterpart theory is to abandon counterpart theory and embrace *modal realism with overlap* (MRO). According to MRO, *de re* modal claims about objects are not made true by facts

about counterparts of the objects in question; they are made true by facts about the objects themselves, by the features that these objects literally have at other worlds. I will briefly present the details of MRO here; elsewhere I have argued for this formulation of MRO; see McDaniel (2004). We begin with MRO's account of possible worlds:

(1) w is a possible world if and only if (i) w is a region of space-time, (ii) every part of w is spatiotemporally related to every other part of w, (iii) no part of w is spatiotemporally related to anything that is not a part of w. [McDaniel 2004: 147]

The worlds of MRO are similar to the worlds of LMR in that both are maximal spatiotemporal entities. The salient differences are that the worlds of MRO are explicitly taken to be maximal spatiotemporal *regions* and that material objects—things that *occupy* spatiotemporal regions—are not literally *parts* of possible worlds. Instead, a material object is *at* a world just in case there is some region R such that (i) the object is wholly present at R and (ii) R is a part of w; a region R exists at a world iff it is a part of that world; see McDaniel (2004): 147. According to MRO, *atness* reduces to *occupation*.[13] An object is at more than world by occupying a region that is part of one of the worlds while occupying a different region that is part of one of the other worlds. Modal objects enjoy multi-location.

On MRO, objects are not parts of worlds, although they are saliently related to parts of worlds. Objects have parts *at* parts of worlds: the fundamental parthood relation defined on material objects is a *three-place relation*, *x is a part of y at region r*. The parthood relation defined on regions of spacetime is a two-place relation, *x is a part of y simpliciter*. Objects and worlds not only do not overlap, but cannot overlap given that objects and worlds are unified by numerically distinct parthood relations.

Given MRO, objects are literally wholly present at different possible worlds. And the properties that an object literally has at other possible worlds are literally the properties that this very same object at our world could have had.[14] That an object occupies a region or has a property at that region is not context-sensitive or vague or indeterminate.[15] Real objects have real essences.

Cian Dorr has pointed out to me that the view discussed here still leaves room for vagueness and context-sensitivity in sentences attributing essential properties, if this is something we desire. Consider a claim like "Humphrey is essentially human". This sentence could have vague truth conditions if it is indeterminate what object "Humphrey" refers to. As noted in McDaniel (2004), MRO does countenance (in a sense) coincident entities, i.e., entities such that there is a world w and objects x and y such that, x occupies a region that is a part of w if and only if y occupies that region.[16] Given a suitably liberal view on what sorts of coincident entities to countenance—entities that, presumably, would differ in the actual world not at all, but occupy distinct regions at distinct possible worlds—it

is hard to see how we could determinately refer to any one of them with an ordinary proper name.[17] One could even argue that names will turn out to be vague and context-sensitive in a way that corresponds closely to the way in which the counterpart relation is vague and context-sensitive.

The moral is: if we want context-sensitivity or vagueness, we can have it, and still respect the claim that real objects have real essences. We need only endorse a suitably robust principle of plenitude for objects. Note, however, that the friend of MRO is *not* required to endorse such a principle. It is an optional theoretical move that MRO allows but does not mandate.[18]

MRO is *flexible* in this respect, and that's a plus. However, there are costs to MRO. First, although MRO still provides a reductive account of modality, it is both ontologically and ideologically less economical than LMR.

First, properties cannot straightforwardly be identified with sets of possible objects, since properties are had by objects in this system relative to regions of spacetime. Andy Egan (2004) argues that the friend of overlap could take properties to be functions from worlds to individuals. This is a route worth exploring, but I am hesitant to adopt this view. Functions are not primitive entities in Lewis's ontology; they are actually relations, sets of ordered tuples. Ordered tuples are also not primitive entities; they are also set-theoretic constructions. But there are many ways of constructing ordered tuples; e.g., one could identify $<x,y>$ with $\{\{x\}, \{x,y\}\}$. Alternatively, one could identify $<x,y>$ with $\{\{x,0\}, \{y\}\}$. In fact, there are infinitely many ways of constructing ordered tuples. All that is required is that the manner of construction ensures that:

$$<x, y> = <w, z> \text{ iff } x = w \text{ and } y = x.$$

This means that for any particular relation, there are infinitely many set-theoretic constructions that are candidates for being the reductive base. And if some relations are perfectly natural, then there is some special manner of constructing these relations that really picks out the perfectly natural relations. Since this seems implausible (why is it this manner of construction rather than that one?), Lewis's reduction of sparse relations to sets of ordered tuples is problematic.[19]

If this argument is sound, then it's clear that Egan's theory of properties faces the same worry. As already noted, functions are not primitive entities in Lewis's ontology. If these entities aren't good enough to be sparse relations, they certainly are not good enough to be sparse properties.

Lewis has a problem with natural relations, but not natural properties.[20] Egan has a problem with both natural properties and relations. Does this difference make a difference, or is Lewis in no better shape than Egan? This depends on our views about the nature of relations. Perhaps Lewis could argue that he actually doesn't need perfectly natural *relations*, since he could appeal to the intrinsic properties of the fusion of the relata supervening on this alleged natural relation. Lewis accepts that all natural relations are *external relations*. External relations do

not supervene on the qualitative characters of their relata, but they do supervene on the qualitative character of the fusion of their relata. So Lewis could attempt to forgo perfectly natural external relations, and replace them with perfectly natural intrinsic properties, specifically, the ones that supervene on the relation.[21] But this move is not available to the friend of MRO who takes Egan's solution, since he has problems not just with relations, but with properties as well.

The upshot is that MRO may be committed to an ontological distinction between attribute and instantiator. The friend of MRO can't take properties to be unstructured sets, and she probably can't take properties to be functions.

A second and related worry is *the problem of accidental intrinsics*: since being short is a property I actually have but could have lacked, I have this property relative to some worlds and not others. But intuitively being short is a property I have *simpliciter*; it is an intrinsic property, not a relation to a region.[22] Regardless of whether being short is an intrinsic property—I've argued elsewhere (McDaniel (forthcoming)) that shape properties in general are not intrinsic—it is unpleasant to relativize the *having* of fundamental properties to regions.

Third, MRO is committed to an explicit ontological distinction between region and occupant, and accordingly is committed to a primitive tie—the relation of *occupation*—between items of these two categories. Although the occupation relation is not a modal relation, acceptance of it requires yet more ideology.

There are semi-technical ways to avoid this last worry, which I will briefly mention here but not explore further. First, one could hold that regions of spacetime *constitute* the objects that occupy them. (I heard this idea from John Hawthorne.) In order to make room for genuine overlap, one must hold that non-identical regions can nonetheless constitute one and the same object. Second, one could hold that spatiotemporal points are world-bound, identify material objects with fusions of spacetime points, but deny that fusions of points are world-bound. In order to make room for overlap, one must hold that distinct sets of spacetime points can nonetheless compose one and the same object. There are precedents for both sorts of positions, but developing these ideas further would take me too far from the main road.[23]

Fourth, MRO says that to be possible is to be at a world, which in turn is to occupy a region of spacetime. So MRO implies that, necessarily, everything is spatiotemporal. This is unduly restrictive. Modal realism should provide a full ontology of the possible.

A better version of MRO should address all of these problems. Fortunately, we can modify MRO in a simple and elegant fashion so that it no longer faces them. We do this by appealing to *tropes*. A *trope* is both a particular and a property: it is a qualitative aspect of a thing that not shared by other things. Tropes are never multiply instantiated; instead, often times, many tropes will perfectly resemble one another.[24] So the shade of white had by this piece of paper is perfectly similar but numerically distinct to the shade of white had by this other piece of paper.

The notion of perfect similarity appealed to by the friend of tropes is not to be cashed out in terms of shared properties. Arguably, it should be taken as a primitive notion, so we should keep this fact in mind when evaluating the ideology of a modal theory formulated using tropes.

It will emerge that the postulation of a certain kind of trope does the friend of modal realism with overlap a lot of good.

IV. MRO and the Problem of Accidental Intrinsics

In McDaniel (2004), I noted that MRO is surprisingly similar to a view about how objects persist through time, specifically, *endurantism*. The similarities are as follows. Both MRO and endurantism hold that objects are "wholly present" at different regions of spacetime, i.e., bear the *occupation* relation to more than one non-overlapping region of spacetime. On both views, the parthood relation defined on material objects is a three-place relation. Finally, on both views material objects have properties only relative to spatiotemporal regions. Accordingly, I claimed that MRO is the modal analogue of endurantism.

Given that MRO is the modal analogue of endurantism, proposed solutions to the problem of temporary intrinsics for endurantism should translate into proposed solutions to the problem of accidental intrinsics for MRO. Fundamentally, they are the same problem.

What we want is a metaphysical account of what happens when objects undergo change. Fans of the problem of temporary intrinsics insist that this metaphysical account must respect two constraints. First, the *having* of properties must not be irreducibly relative to times, spacetimes, or relations to other objects. If we indulge in the luxury of reification, we can state this constraint as follows: the instantiation relation that links particulars to their intrinsic properties is a *two-place* relation, not a three-place relation between objects, times (or spacetimes or other objects), and properties. Second, when an object undergoes intrinsic change, there must be a reasonable sense in which that very object has one intrinsic property after another.

Perdurantism can accommodate both constraints. The perdurantist holds that persisting objects have a temporal part at each location that they are present. These temporal parts stand in a two-place relation to intrinsic properties; intrinsic change consists in variation of the intrinsic properties of these temporal parts.[25] The friend of genuine overlap between possible worlds will not be happy with the modal analogue of perdurantism as a solution to the problem, since it is inconsistent with her view.

The two standard endurantist accounts of change do not respect these constraints. One account holds that the having of properties is always relative to times.[26] A second account holds that the alleged temporary intrinsic properties that generate the problem are really relations to times, and hence not genuinely intrinsic properties.[27] The only endurantist account that seems to respect these

two constraints is the *presentist* account, according to which (1) the only things there are, are presently existing things and (2) objects have properties at a time only if that time is present.[28] Obviously, modal realists of the sort I'm discussing will be unhappy with the modal analogue to the presentist solution to this problem, since that analogue is a kind of actualism!

One thing that the endurantist might say is that respecting these constraints is not mandatory. However, there is a version of endurantism that respects these constraints without embracing presentism. This solution to the problem of temporary intrinsics has been defended by Douglas Ehring (1997): the solution appeals to tropes.[29] Ehring's solution is to maintain that tropes are *momentary*: no trope lasts longer than an instant. The shade of white of this piece of paper . . . too late, it's gone . . . here is another . . . it's gone too! But each of these momentary shades of white perfectly resemble each other. Each shade of white is a temporary yet *intrinsic* property of the piece of paper. An object undergoing intrinsic change instantiates a series of dissimilar intrinsic momentary tropes. Suppose I dye the white piece of paper red. The paper accordingly has changed. We can understand this change as follows: the piece of paper instantiates (at least) two short-lived (but non-simultaneous) tropes: a whiteness trope and a redness trope, the latter of which is located temporally later than the former. No intrinsic property is treated as a relation to a time, although each intrinsic property lasts no longer than the time at which it is instantiated. Moreover, if we choose to reify the instantiation relation, we need not think of it as a three-place relation between a thing, a property, and a time: objects *just plain have* these short-lived tropes.

We can think of Ehring's solution as proposing a kind of perdurantism for properties, not objects. According to the standard perdurantist, when an object—"Bob"—undergoes an intrinsic change from being *F* at time *t1* to being *G* at time *t2*, Bob has a temporal part at *t1* that is *F* and a temporal part at *t2* that is *G*. If we accept Ehring's solution, we can hold that the semantic value of a predicate like "is *F*" or the referent of an abstract noun like "the property of being *F*" is the class of all instantaneous *F*-tropes. On this view, when Bob undergoes intrinsic change, Bob instantiates something like a spatiotemporal part of the property of being F—an instantaneous F-trope—that is located at *t1* and something like a spatiotemporal part of the property of being *G*—an instantaneous *G*-trope that is located at *t2*. Ehring's solution is as effective as the perdurantist's solution.

One might worry that Ehring's momentary tropes will be no more acceptable to the standard endurantist than temporal parts.[30] After all, isn't it bizarre that these entities come and go even if nothing else seems to change? Two responses: first, one could hold that tropes come and go only when objects undergo intrinsic change, without giving up any of the merits of Ehring's solution. And presumably the endurantist should have no problem with that, provided that the endurantist believes in tropes to begin with. Second, the endurantist shouldn't care about having entities *per se* come and go—if the endurantist believes in spacetime points or instants of time, they do the same thing, and no one cares about *that*.

The modal analogue of Ehring's attractive solution is to take properties to be *world-bound* as well as *time-bound*. Because MRO is the modal analogue of endurantism, Ehring's solution to the problem of temporary intrinsics is also a solution to the problem of accidental intrinsics. Since each trope is bound to a particular time, each trope is bound to some region of spacetime. Given MRO, each region of spacetime is worldbound; it exists only at the world of which it is a part. Just as each trope is instantaneous—confined to a single moment of time—each trope exists at exactly one possible world in virtue of occupying exactly one spatiotemporal region that is part of that world.[31] An object that is short but could have been tall instantiates a shortness trope that is bound to the actual world and a tallness trope that is bound to some other possible world. Both the shortness and the tallness tropes are had intrinsically yet accidentally, as is desired.

We should forestall a worry. Bob could have been in pain, but is not. So in some other world, Bob instantiates a world-bound pain trope. So why doesn't Bob hurt? Answer: Bob does hurt *there* in that other world, although he is doing alright here in the actual world. We still can't say that Bob is hurting *simpliciter* unless we are restricting our attention to that other world. But this is no cause for alarm. Consider what the friend of temporal parts says when a perduring object ceases to be in pain: Bob was hurting at t, but isn't now. Bob has a temporal part that is just plain hurting, but we can't say that Bob *himself* is just plain hurting. Both solutions solve the problem of temporary or accidental intrinsics even though we are not allowed to say of Bob that he is hurting simpliciter.

To say that particular tropes are world-bound is not to say that maximal resemblance classes of tropes are world-bound. A class C of tropes is a maximal resemblance class just in case (i) every trope in C perfectly resembles every other trope in C and (ii) no trope not in C perfectly resembles some trope in C. A maximal resemblance class of tropes C is world-bound just in case there is a world w such that every element of C exists at and only at w. If maximal resemblance classes are world-bound, then, given MRO, trouble looms: no red object would have been red had things gone otherwise, since there would be no red tropes to instantiate at other possible worlds.

So I reject the world-boundedness of maximal resemblance classes. Instead, maximal resemblance classes are *spread* across the space of possible worlds in the following sense: some tropes in C exist in one world while different tropes in C exist in a distinct world. This blue object could have been red; there is a world at which it instantiates a red trope.

V. New Worlds for MRO

World-bound tropes do more than solve the problem of accidental intrinsics. We can also use the notion of a trope to define a broader class of worlds than those currently countenanced by MRO. This will enable the friend of MRO to defuse

the objection that MRO implies that, necessarily, everything is spatiotemporal; some of the new worlds allowed in will be clearly non-spatiotemporal.

Let's begin by noting that tropes can do much of the work in formulating a kind of modal realism with overlap that spatiotemporal regions do in formulating MRO. First, both tropes and regions are world-bound. Second, the objects that instantiate the tropes and occupy the regions are not. In order to properly formulate a version of modal realism with overlap, we needed a two-category ontology, according to which members of one category (the regions) are world-bound, whereas members of the other category (the material objects) could be wholly present at distinct worlds.[32] On the previous scheme, being *at* a world reduced to *occupying* a part of a world. Here too we shall adopt a two-category ontology, according to which there are substances and attributes. We take the attributes to be particular properties, i.e., tropes.[33] The similarities between how an object relates to a region and how an object relates to a trope suggest a new account of worlds, according to which worlds are maximal clusters of tropes and to be at a world is to instantiate a part of the cluster.

One putative difference between tropes and regions of spacetime is that the parts of regions are ordered or structured by various relations, such as distance relations, whereas it may seem that tropes are structured in this way only derivatively. Regions are intrinsically structured whereas clusters of tropes seem to lack this kind of intrinsic structure. And it might seem that something could be a world only if it has a kind of intrinsic ordering or structure.

A related concern is that the world-boundedness of points and regions seems better motivated than world-boundedness for tropes. Points and regions are parts of spacetime, and one might hold that they have their places in this larger whole as a matter of necessity. If this is right, a world with a different spacetime is a world with different points and regions. But we might wonder why one would want to say the same thing about tropes. Initially, they don't seem to be essentially connected to every other trope or to their space-time region.[34]

In order to assess these worries, we would need a worked out account of the identity conditions of tropes. In a recent paper, "The Individuation of Tropes," Jonathan Schaffer (2001) argues that the friend of tropes should endorse what he calls the *spatiotemporal individuation principle*, according to which, "x and y are distinct tropes iff they are either not exactly resembling, or at distant locations (Distance(x,y) $>$ 0)" [249].[35] Schaffer argues that this account of how tropes are individuated captures the thematic conception of tropes: tropes best do the work they are called on to do if they are individuated in accordance with this principle. As Schaffer points out, this conception of the identity conditions of tropes is not committed to substantival spacetime; it is the distance relations instantiated by the tropes that do all the work [2001, pp. 251]. On this scheme, tropes bear distance relations to each other that are unmediated by a substantival spacetime.[36] Objects presumably bear distance relations to each other in virtue of either being built out of tropes that bear the distance relations to each other or by instantiating these tropes.[37]

If this conception of tropes is correct, then certain clusters of tropes can have a kind of intrinsic structure or ordering that is similar to the intrinsic structure or ordering of regions. Clusters of tropes may be suited to serve as worlds. Note also that, on this conception, tropes are partially individuated by spatiotemporal relations, just as spatiotemporal regions are. (Actually, one could hold that, since every spatiotemporal point is intrinsically alike, spatiotemporal points are individuated by spatiotemporal relations *and* resemblance, just like tropes.)

Schaffer is clear that this principle is an *intra-world* principle of individuation, not an *inter-world* principle. In the context of modal realism, a more general inter-world principle of individuation states that tropes x and y are distinct just in case they are either not exactly resembling, or the distance between x and y is greater than zero, or they fail to bear any distance relation to each other (but each bears a distance relation to other tropes). However, this new principle is still insufficiently general given that we wish to construct non-spatiotemporal worlds out of tropes. For if we accept this account of the individuation of tropes we are forced to say that, necessarily, every trope is spatiotemporal.[38]

Spatiotemporal relations are examples of *perfectly natural relations*, or at least I shall assume this in what follows.[39] Perfectly natural properties and relations carve nature at the joints; they account for genuine cases of objective similarity between things (or groups of things, in the case of relations). It is important for our project here that not every predicate corresponds to a perfectly natural property or relation. In fact, only a privileged few do.

Let us say that some entities are *naturally related* just in case they bear some perfectly natural relation to each other. So whenever two tropes are spatiotemporally related, it follows that they are naturally related. If tropes can be non-derivatively related by spatiotemporal relations, there is no reason to hold that they cannot be non-derivatively related via *other* natural relations. (It may be that *actually* all perfectly natural relations are spatiotemporal, but the modal realist typically believes in more than what is contained in actuality.) We achieve full generality by individuating monadic tropes not by spatiotemporal relations alone but by perfectly natural relations in general:

(TI2): *monadic tropes* x and y are distinct iff either (i) x and y do not exactly resemble or (ii) there is a trope z and natural relation R such that x bears R to z but y does not bear R to z (or vice-versa).[40]

Two points should be made. First, we should count each determinate of a perfectly natural determinable as a perfectly natural property or relation. Thus, the spatiotemporal criterion of trope individuation is subsumed under TI2. Second, we need a criterion for relation tropes as well. We can individuate relation tropes by their relata: *r1* is distinct from *r2* if and only if *r1* and *r2* do not perfectly resemble or the fields of *r1* and *r2* are not identical.[41]

This fully general account of trope-individuation allows for non-spatiotemporally related tropes—and thereby allows for the possibilities, cherished by many, of ghosts and gods.[42] And more importantly for our purposes here, this account also allows for a more general characterization of possible worlds. We now define a *maximal structured complex of tropes*:

(MST): w is a *maximal structured complex of tropes* =df. there are some tropes, the *ts*, such that (i) for each *t1* that is one of the *ts*, there is a *t2* that is naturally related to *t1*, (ii) there is no trope s that is not one of the *ts* yet is naturally related to one of the *ts*, and (iii) w is the fusion of the *ts*.[43]

And we can now introduce our new account of possible worlds:

(PW): w is a *possible world* =df. w is a maximal structured complex of tropes.[44]

Since this account of worlds does not explicitly employ spatiotemporal notions, it does not imply that every world is spatiotemporally unified. We now need to define what it is to be *at* a world:

(EAW): x *exists at* w =df. a part of x is a part of w or instantiates a part of w.[45]

Note that the account provided here ensures that substances are never parts of the worlds that they are at, just as on MRO, occupants are never parts of the regions they occupy.

De re modal predication is trickier. Obviously, we want to accept the following claims:

(DR1): x is *essentially* F =df. for all worlds at which x exists, x is F.

(DR2): x is *possibly* F =df. there is a world at which x is F.

And obviously we can, since the genuine modal realist has genuine objects that are genuinely F at various worlds, in virtue of being F at regions that are parts of those worlds. The modal realist need say nothing more; she certainly is not obligated to provide an analysis of predication.

However, some trope theorists have adopted views about predication that complicate our picture. For example, if we accept that for every meaningful predicate, there is a class of tropes that is its semantic content, we can give what at first looks like a reasonably straightforward account of *de re* modal predication:

(DR3): x is *possibly* F =df. there is a world w such that an F-trope exists at w, and x instantiates this F-trope.

(DR4): x is *essentially* F =df. for all worlds w at which x exists, x instantiates an F-trope that exists at w.

However, there are two worries about (DR3) and (DR4). First, some (most?) friends of tropes hold a *sparse* theory of tropes, according to which only a relative few, privileged predicates have corresponding classes of tropes.[46] The desire to hold a sparse theory of tropes is commendable. But perhaps one can accommodate abundant tropes by taking them to be (often less than maximal) structured complexes of tropes, or classes of tropes, or classes of tropes and objects.[47] If we do take this route, we should be clear that when constructing these worlds, we explicitly appeal only to basic tropes: a possible world is a maximal structure of basic or privileged tropes.

The second worry is that it is unclear how to explain how an abundant trope exists at a world. The natural thing to say, I suppose, is that an abundant trope exists at a world just in case each of its constituents exist at this world. But there may be problems lurking around the corner.

Let us call the theory of modality that conjoins (MST), (PW), (EAW), (DR1) and (DR2), *MRO2*.

VI. Reintegrating Regions

How do regions of spacetime fit into the picture? On MRO, regions of spacetime played a central theoretical role: the notion of a region was used to define the notion of a possible world. Regions do not loom large in the theoretical picture of MRO2. What is the relation that regions bear to worlds, given MRO2?

I will discuss three answers to this question but will not officially adopt any of them; each view has some plausibility, and for my purposes here they each work equally well.

The first answer is a relationalist response. Note that, unlike the previous version of MRO, MRO2 does not require substantivalism about spacetime. MRO2 was formulated by appealing to tropes and natural relations; unlike MRO, spacetime regions are not explicitly mentioned by any component of MRO2. So MRO2—unlike MRO—allows for a *relationalist* model of spacetime, according to which there strictly speaking are no spatiotemporal regions. Instead, spatiotemporal reality consists in the network of spatiotemporal relations. Given the formulation of worlds discussed in section V, it is natural to think that the fundamental bearers of these spatiotemporal relations are monadic tropes, although this claim is not required.

The second answer is *standard substantivalism*. On a fully substantivalist picture, regions of spacetime are genuine substances, and accordingly should be treated as other non-adjectival entities. On this picture, regions of spacetime can enjoy genuine transworld identity, provided that one and the same spacetime region can instantiate distinct parts of distinct maximal structured complexes of

tropes. So, unlike the old version of MRO, this new version allows that regions of spacetime need not have all of their properties essentially. For the reasons given in McDaniel (2004), I don't count this as much of a gain. (In McDaniel 2004, I argued that massive essentialism for spatiotemporal regions wasn't much of a cost.) However, conversations with other philosophers have convinced me that *some* philosophers will view this feature of MRO2 as an improvement. Note, however, that some entities still suffer from massive essentialism: each trope, after all, is bound to its own world.

There is a third way to reintegrate regions of spacetime back in the picture if one desires. We can develop, if we like, a view somewhere between the relationalist and substantival view of spacetime. This view agrees with the relationalist that spatiotemporal regions are not *substantival*, but also agrees with the substantivalist that they do not consist solely in *relations*. On this third view, spatiotemporal regions are monadic properties.

This third view is perhaps the most unfamiliar, and has several intriguing features, so I will spend more time discussing it. This third view is not hard to motivate. First, note that spatiotemporal regions are actually very trope-like. Consider spacetime points. Each spacetime point is in itself just like every other spacetime point, and yet each spacetime point is a particular. Similarly, each -1 charge trope is exactly similar to every other -1 charge trope, and yet each is a particular. There is no positive, intrinsic feature of a spacetime point other than its being a spacetime point. Analogously, there is nothing more to what's it like to be a -1 charge trope than being a -1 charge trope. These similarities are very suggestive. If spacetime regions aren't tropes, why are they so trope-like?

One theory of locations identifies them with properties.[48] If we take the similarities at face value, we could hold that a region of spacetime is a location-trope, or fusion of location-tropes. On this scheme, all spacetime points are duplicate location-tropes; regions are duplicates just in case there is a 1-1 correspondence between their point-parts that preserves spatiotemporal relations. This theory is more economical than its predecessor not only because it subsumes the category of regions under the category of tropes, but also because it eliminates the need for a primitive tie between regions and occupants. The occupation relation, given this view, is simply a special case of instantiation: to occupy a region of spacetime is to instantiate it, or to have parts that instantiate parts of it.

Admittedly, an odd feature of this view is that there will be many uninstantiated tropes, specifically, the unoccupied point-properties. I'm not sure how objectionable this is. Many philosophers accept uninstantiated universals. Are uninstantiated tropes any worse?

One might worry that there is a problem of individuation. If we allow uninstantiated tropes, we face the question, what makes *some* uninstantiated tropes *many* instead of *one*? In virtue of what are two perfectly resembling missing shades of blue *two*?

This problem is analogous to the problem the modal realist faces in individuating merely possible fat men in doorways. What makes two merely fat people in doorways *two*? The Lewisian modal realist answers this challenge by individuating possibilia *spatiotemporally*: each possible object occupies a distinct region of spacetime. We can say something similar: all monadic tropes are individuated in the same way, regardless of whether they are instantiated or not: by the natural relations they bear to other tropes. There is no problem of individuating the uninstantiated.

Lewis (1986b: 44-45) worries that either the friend of uninstantiated *universals* has no right to call these things *universals*, or that the only way to explain why they are universals is by appealing to primitive modality: they are universals because they *could* be (multiply) instantiated. Is there a parallel problem for uninstantiated tropes? What right do we have to call them tropes?

We don't have a parallel problem. First, we shouldn't claim that something is an (uninstantiated) trope because it could be instantiated. In addition to invoking a modal notion that would be hard to reduce on this view, the claim is actually false: if a trope is uninstantiated, then, in virtue of being bound to a single world, that trope is essentially uninstantiated. Second, we don't need to appeal to the possibility of instantiation to explain why an uninstantiated trope is still a trope. Instead, we appeal to *resemblance*, which as the reader should recall, is a notion that the trope theorist typically appeals to in other contexts. An uninstantiated trope is a trope in virtue of resembling an instantiated trope. And note that the friend of MRO can hold that *every* uninstantiated trope perfectly resembles some instantiated trope in some world or other; this follows from two extremely plausible claims. These claims are that (1) no maximal resemblance class of tropes is world-bound and (2) every maximal resemblance class of tropes has one instantiated element. Endorsing either claim does not require primitive modality. This should suffice to secure the claim that uninstantiated tropes are tropes.

One might worry that if regions are identified with tropes, then some tropes will be multiply instantiated.[49] Suppose, for example, that a point-sized object instantiates a red trope. On this view, the red object exemplifies a trope of being point-sized. Isn't the red trope also where the object is at? And so doesn't the red trope also exemplify that same trope of being point-sized? But then some trope is multiply instantiated, which is what universals are supposed to do, not tropes.

There are three responses available here. First, why say that the red trope is located anywhere? Isn't it enough to say that the red trope is exemplified by something located? That suffices for the red trope to enjoy location derivatively. However, this response won't work if co-located *substances* are allowed, so we need to explore other options. Option two: allow that tropes can be multiply instantiated. But this might sound contradictory: isn't the defining feature of tropes their essential singularity? Perhaps. But what's in a name? Perhaps there is a middle position on the problem of universals that lies between pure tropism and pure universalism. On this middle view, there can be properties that perfectly

resemble each other, and yet are not identical. (On the universalist view, perfectly resembling properties are identical.) And yet some of these properties can be multiply instantiated. (On the pure tropist view, no properties are multiply instantiated.) As far as I can tell, these two positions are independent, and hence there is a third position in logical space. Whether the entities quantified over by this third position deserve to be called 'tropes' or 'universals' is a matter over which we should remain indifferent. What matters is whether they can do the theoretical work they are called on to do.[50]

A final possibility is to allow that there are co-located regions of space (i.e., regions at zero-distance from each other) whenever there are co-located material objects. Each of these regions is a singly instantiated trope. Since there are three possibilities, and each of them appears feasible, I won't adjudicate here between them.

As I noted, the third theory of the nature of spacetime is more economical than the standard substantivalist theory. And although the commitment to uninstantiated tropes is *odd*, it does not rule the theory out. Moreover, there is a second reason to identify regions of space with properties. Elsewhere, I (and others) have argued that, if we accept a dualism of region and occupant, we ought to claim that the shapes of material occupants are not intrinsic properties.[51] The shapes of regions of spacetime seem to be intrinsic properties, but if both regions and material objects are *substances*, there is an apparently inexplicable necessary connection between the shape of a material object and the shape of the region it occupies. Necessarily, a material object has the same shape as the region it occupies; but how can the intrinsic properties of two entities be necessarily connected in this way? The solution to this problem, I claimed, was to hold that material objects gain their shapes in virtue of their relations to the regions of space that they occupy; an upshot of this move is that the shape of a material object is an extrinsic property of the object.

However, if regions of spacetime are identified with tropes, I think we can undercut this argument. For if regions of spacetime are identified with tropes, it is more natural to think of regions of spacetime as *the shape properties themselves*, and not simply as the things that *have* shape properties. On this view, a region of spacetime is a location as well as an intrinsic shape property. A material object that occupies a region of spacetime has a shape in virtue of occupying this region, but this doesn't mean that the shape of the material object is not an intrinsic property. Far from it!—the shape of the material object *is* the region of spacetime, which we can freely take to be as intrinsic as the mass, charge, etc. of the object. We have an apparently inexplicable necessity: necessarily, if something occupies exactly one spacetime point, it is point-sized. But on this view, there is no mystery: spacetime points are particular properties of being point-sized, and the occupation relation is a special case of the instantiation relation. Obviously, if something instantiates a trope of being point-sized, it is point-sized.

On the previous version of MRO, regions of spacetime are structured complexes of spatiotemporally related points, and worlds are maximal regions of

spacetime. Each spacetime region is world-bound. Consider a maximal region of spacetime. This is the sort of thing that the older version of MRO identifies with a possible world. If we adopt the third theory about spacetime, some maximal regions of spacetime will still count as worlds on MRO2; consider, for example, a world in which the only features that objects enjoy are spatiotemporal. However, most of what were considered worlds by the older version of MRO emerge as mere proper parts of worlds on MRO2. Worlds like ours, for example, have complicated qualitative characteristics that overlay the spatiotemporal aspects of the world; such worlds can be thought of as regions of spacetime *plus* the worldbound tropes compresent with them.

Our new account of worlds also allows for worlds that contain no spatiotemporal regions as parts; instead, they are composed of non-spatiotemporal tropes naturally related by non-spatiotemporal relations. Unlike the previous version of MRO, the current version makes room for such worlds. So, given this definition of a world, we avoid the worry that modal realism implies that, necessarily, everything is spatiotemporal.[52]

VII. Comparisons of MRO2 with Some Existing Views

Although the formulation of MRO2 is reasonably clear, the novelty of the view may be off-putting. A comparison with other existing views about the nature of possible worlds may increase its plausibility. I will now briefly compare MRO2 with views developed by Phillip Bricker (1996 and 2001) and Peter Forrest (1984 and 1986).

Consider the account of possible worlds developed by Phillip Bricker, according to which worlds are maximal fusions of externally related entities. Like MRO2, Bricker's account of possible worlds makes use of the notion of an external relation; Bricker's worlds are unified not simply by spatiotemporal relations and are not merely spatiotemporally isolated from each other: they are absolutely isolated. However, the fact that possible worlds are absolutely isolated from each other obviously implies that overlap between worlds is impossible. Counterpart theory must be brought in to provide truth conditions for *de re* modal statements.

Nothing in Bricker's modal system *ontologically* distinguishes worlds from those things that are at the worlds. Being at a world is for Bricker what it is for Lewis: being a literal part of that world. MRO2, like MRO, ontologically distinguishes worlds from the things that worlds contain, and identifies the containment relation with an already familiar cross-categorical relation: occupation in the case of MRO, instantiation in the case of MRO2. It is this fact that allows for genuine overlap between worlds. MRO2 is to Bricker's view what MRO is to Lewis's view: MRO2 is a natural way to reformulate a view like Bricker's in order to accommodate genuine transworld identity. (I note that Bricker (1996) is sympathetic to a trope-theoretic view of properties.)

Consider next the account of possible worlds developed by Peter Forrest, according to which non-actual possible worlds are uninstantiated, but possibly instantiated, structural universals. According to Forrest, a possible world is a maximal property cluster. In this respect, Forrest's account of possible worlds is very similar to MRO2, since MRO2 says that possible worlds are maximal property clusters.

However, there are still significant differences. First, Forrest's view is (allegedly) an *actualist* view: despite being uninstantiated, Forrest maintains that these maximal property clusters are *actually existing things*. No property fails to actually exist on Forrest's account; however, given MRO2, there are many properties that exist but do not actually exist. (There are also no *objects* that fail to actually exist on Forrest's view, but there are many such objects given MRO2.)

Perhaps Forrest's views can accommodate possibilities that MRO2 cannot. According to MRO2, worlds are maximally naturally inter-related clusters. Accordingly, there are certain putative possibilities—possibilities in which there are disconnected bits of reality that are not naturally related—that MRO2 apparently cannot accommodate, and that Forrest's view might.[53] Whether MRO2 can accommodate these possibilities will be discussed in section VIII; for now let's briefly discuss whether Forrest's view can accommodate these possibilities.

It's not obvious that Forrest's view can. According to Forrest, possible worlds are maximal structural universals. All structural universals have structure. The elements of a structural universal that contribute the structure are relations, and reasonably natural relations to boot. So it seems that for Forrest all possible worlds are ultimately unified by the natural relations contained in them or in their proper parts. It is not at all clear that Forrest's view, as it is currently formulated, can accommodate the possibility of island universes.[54]

There are other, more serious, dissimilarities between Forrest's view and MRO2. A second obvious difference is the properties that make up Forrest's worlds are *universals*, whereas the properties that make up the worlds of MRO2 are *tropes*. This difference is metaphysically significant: for many jobs, bundles of tropes and universals perform equally well.[55] But the job of constructing possible worlds is different. The mode of composition of MRO2's possible worlds is straightforwardly *mereological*: worlds are simply fusions of maximally related tropes. However, the mode of composition that generates structured universals from simple universals is not mereological.

According to Forrest, structural universals are composed of their simpler parts; the manner in which a structural universal is composed of simpler universals is the same manner in which a *state of affairs* is composed of particulars and universals.[56] Let us call this (alleged) manner of composition *structure-making*; let us call the alleged "parts" of something generated by the structure-making relation its *s-parts*.[57] Structure making does not obey an extensionality principle: if x and y have the same s-parts, then x is identical with y. Consider the structural universal *methane*. A methane molecule consists of one carbon atom bonded to each of four hydrogen atoms; according to the friend of structural universals,

the universal *methane* consists of *being a carbon atom*, *being a hydrogen atom*, and the *bonding* relation [Lewis 1986b: 33]. Consider next a butane molecule, which consists of four carbon atoms and ten hydrogen atoms; but the structural universal *being a butane atom* consists of *being a carbon atom*, *being a hydrogen atom*, and the *bonding* relation. Both structural universals have the same s-parts (although of course their instances differ with respect to their genuinely mereological parts.) *States of affairs* are no better; the state of affairs in which I love you has the same s-parts as the state of affairs in which you love me—the constituents are simply you, me, and love—but these states of affairs are distinct. Extensionality does not hold for this mode of composition.

Given MRO2, we have no need for structure-making. Ordinary mereology allows us to build our worlds; no unfamiliar mode of composition was invoked in their construction. This is because the elements of the worlds of MRO2 are tropes, and this makes a crucial difference. So MRO2 has an advantage in ideology over Forrest's view: MRO2 employs only one primitive mode of composition, whereas Forrest's employs two primitive modes of composition.

So despite some interesting similarities—both views identify possible worlds with maximal property structures—there are salient differences. With respect to these differences, MRO2 is the better view.

MRO2 has a lot going for it. However, I believe it too must be modified; MRO2 does not play the role of absolute spirit in our pseudo-Hegelian quest for the best version of modal realism. For MRO2 is inconsistent with the possibility of island universes.

VIII. Island Universes and Absolute Actuality

Lewisian modal realism faces a notorious problem: it implies that spatiotemporally disconnected island universes are impossible. (There is no possible world that fails to be maximally spatiotemporally interrelated on Lewis's view.)[58] MRO2 (and the view developed by Phillip Bricker) do not face *this* problem, since they can allow that there are worlds that are spatiotemporally disconnected but somehow *naturally* related. But they face an analogous problem: they imply that it is impossible that reality be *naturally* disunified, i.e., divide into proper parts such that there is no natural relation that relates parts of these proper parts to each other.[59]

Fortunately, Phillip Bricker (2001) has shown us how to accommodate these possibilities within the possibilist's frame work. We need not modify our definition of a world. Instead, we re-examine the standard definitions of *possibility* and *necessity* in terms of worlds. Bricker's suggestion is that instead of defining *possibility* as truth at *a* world, we define *possibility* as truth at *a* world or at *some worlds*. Modal operators are to be understood as *plural* quantifiers over possible worlds.[60]

This elegant solution allows us to easily accommodate the possibility of disconnected parts of reality—it is true at any *plurality* of worlds that reality is

disunified—without changing our ontology. However, there is a price to be paid in *ideology*. We cannot accept both Bricker's solution and Lewis's account of *actuality*, according to which the term "actual" functions as an indexical: to say that something is *actual* is to say that it is spatiotemporally related to me. Nor can the friend of MRO2 hold that to say that something is actual is to say that it is naturally related to me. (According to MRO2, I am at many non-actual worlds that contain non-actual entities naturally related to me.) Instead, we must hold that actuality is *absolute*: there is a non-perspectival fact about which world or worlds are actual. In Bricker's terms, *actuality* is categorical but not universal—some worlds exist but are from the absolute perspective not actual.

Let's call the theory that combines the ontology of MRO2 with an account of possibility and necessity cashed out in terms of plural quantifiers over worlds and absolute actuality, *MRO3*. MRO3 gives us the full range of *de dicto* possibilities; it includes those neglected by its predecessors. This fact will please the possibilist. MRO3 respects two intuitions typical of actualists: that real objects have real essences and that actuality is categorical, not world-relative.

There is one strange feature of MRO3 that should be discussed: given the current analysis of modality in terms of plural quantifiers over worlds and that MRO3 says that objects are wholly present at more than one world, we arrive at some very bizarre possibilities. There are worlds at which I am wholly present; hence it is possible that I am wholly present in two spacetime regions, neither of which bear any spatiotemporal, causal, or other natural relations to each other. (And so forth for other material objects.) I am prepared to swallow this consequence, if need be. After all, since MRO3 implies that I am in fact wholly present at many worlds, why should one be bothered by the further claim that I *could* be wholly present at two different spacetimes?

However, there is a way to avoid this result if need be. Instead of claiming that a proposition is possible just in case it is true at some world or worlds, we say:

> (NWP): A proposition is possibly true just in case it is true at some worlds the *ws* such that (i) if there are more than one of the *ws*, then there is no object *x* that is wholly present at more than one of the *ws*.

NWP implies that, although in fact I am wholly present at many worlds, it is not possible that I am wholly present at disconnected regions or property clusters. I leave it to the reader to adjudicate whether the friend of MRO3 should endorse NWP as well.

Is MRO3 the best version of possibilism? I am inclined to think that it is. But there is one more modification of MRO3 that I wish to discuss. I am not sure whether this modified theory is a *better* view than MRO3 (I am not inclined to think that it is), but I must also confess that I am not sure whether the modified theory is still a version of *possibilism*. Still, the theory is intriguing, and worth discussing.

IX. Privileging the Actual

Let us call the final view to be discussed *Actualist Possibilism*. The name is ugly, but it reflects my uncertainty about whether this view is merely a possibilist view in name only. In fact, it is a kind of hybrid of both actualism and possibilism.

We've discussed several formulations of modal realism. On the most recent formulation—MRO3—actuality is fundamental and absolute, although, of course, it is not universal: many things are merely possible. The actualist should find this feature of MRO3 congenial.

Obviously, the actualist will still be unhappy MRO3. But what is the main source of the actualist's unhappiness? The actualist hates the talking donkeys, the fifty-mile long diamonds, and the mountains made of gold that populate the possibilist's universe. I submit that the actualist does not despise the merely possible properties that these objects exemplify. After all, many actualists happily quantify over entities that seem similar enough: actually existing, uninstantiated but possibly instantiated properties.

This fact about the typical actualist's psychology suggests an interesting theory, which is possibilist in name but actualist in spirit. Informally, Actualist Possibilism is the view at which one arrives when one takes the ontology of MRO3 and then *deletes* the non-actual *substances* from the ontology, but leaves the *actual* substances and *all* of the (actual and non-actual) tropes. According to the Actualist Possibilist, there are merely possible *entities*—and so the view is still (probably) a possibilist view—but there are no merely possible *things* in the rich sense: to be a *substance* is to be an *actual* substance.[61] The Actualist Possibilist privileges the actual twice over: there is an absolute fact about which world or worlds are actual, and there are no non-actual substances.

As I mentioned, no tropes are "deleted", so there are uninstantiated tropes on this view. (There may be uninstantiated tropes already if we accept the third way of integrating spacetime regions discussed in section V.) Since the worlds of MRO3 are the worlds of Actualist Possibilism, tropes are still individuated by their resemblance to each other along with the external relations they bear to each other. Some tropes simply lack bearers.

Actualist Possibilism countenances *alien properties*, which are non-actual perfectly natural tropes not exemplified by any actually existing thing. And perhaps *some* actualists will find this objectionable as well.[62] But I doubt that *most* of them will, since most of them are up to their ears in uninstantiated alien universals, false but possibly true propositions about alien universals, or states of affairs that contain alien universals that don't obtain but could have. What are a few or even infinitely many alien tropes to someone who holds one of *those* views?

Modal claims wholly about actual substances—for example, a claim that two actually existing substances could have been further apart from each other—are understood by the Actualist Possibilist in the same way as they are by the friend of MRO3. (It is true that two actually existing substances could have been further

apart just in case there is a world at which these two individuals are further apart.) However, modal claims that are not wholly about actual substances obviously require a different treatment. Consider, for example, the claim that there could be an object that does not actually exist. Given MRO3, there is a world at which there is an object that does not actually exist, that is, there *exists* a non-actual object that instantiates some part of that world. No such object *exists* given Actualist Possibilism, so the analysis of this sentence cannot be the same. We need some different route.

Although there are no merely possible objects in this ontology, there are *surrogates* for them. For although we have removed the merely possible objects, the same bundles of tropes that (loosely speaking) would be instantiated were MRO3 true still remain. These surrogates can be used to provide the truth-conditions of de dicto modal claims: it is possible that something is F just in case there is a possible world that contains an F-trope. (This F-trope may or may not be a privileged or basic trope.) We can even account for alien individuals that instantiate properties not found in the actual world. Let F be such a property: it is possible that some actual thing x be related to a (non-actual) F-thing just in case there is a world w such that (i) x instantiates a part of w and (ii) there is an F-trope that is a part of w.

What about the *de re* modal properties of the non-actual? How can this view account for the fact that my merely possible older brother could have been a philosopher? Since surrogate possible individuals are world-bound—each is a part of exactly one world—we cannot provide the same analysis of *de re* modal predication for aliens as we do for actual substances. Instead, if we wish to account for such *de re* claims, we need to appeal to a familiar device: counterpart theory.

Suppose that instead of merely deleting the *non-actual* substances from the ontology of MRO3, we deleted all substances from the ontology. If we were motivated to do this, we would presumably identify ordinary objects with bundles of world-bound tropes. We would arrive at a modal version of the standard trope-bundle theory of objects. Humphrey, on this view, would be a bundle of tropes. In order to account for the fact that Humphrey could have won, we would need to appeal to counterparts of Humphrey: other bundles that exist at other worlds. And presumably we would have no problem introducing the relevant counter-part relations to serve this need. We would, however, have to deal with the vagueness and context-sensitivity that counterpart theory typically brings. In effect, MRO3 would reduce to something Bricker's view of possible worlds, with the bundle theory of objects taken as an explicit ontological analysis of concreta.

Accordingly, the Actualist Possibilist should be able to think of bundles of merely possible tropes as *surrogates* for merely possible substances. Although these surrogates for possible individuals are bound to a single world, it is easy to see how a surrogate in one world could resemble a surrogate in another world, both with respect to its nature as a complex of tropes, and with respect to

its location in a relational structure. These respects of resemblance allow us to make sense of the notion of a counterpart; *de re* modal claims concerning merely possible individuals can be understood in a counterpart theoretic way.

But how to precisely formulate this view is tricky. Unfortunately, a formal statement of the view will have to wait for another time: if something like this view can be motivated, then we will want a clean, formal statement. For now, we shall content ourselves with anticipatory remarks.

I think Actualist Possibilism has been characterized clearly enough to enable us to ask what could motivate such a view. There are two kinds of motivations: those stemming from actualist scruples, and those stemming from considerations internal to possibilism.

First, possibilists are familiar with actualist's complaints about non-actual objects: there are no talking donkeys! But if Actualist Possibilism is a form of possibilism—and recall that the Actualist Possibilist does believe in merely possible tropes—then possibilism *per se* is not committed to the existence of talking donkeys. There is a version of possibilism—Actualist Possibilism—that accommodates this intuition.

Second, Robert Adams (1981) has argued that real things have non-qualitative aspects—they have a *thisness* not captured by any *suchnesses*—and so possibilities concerning real things are not purely qualitative. Adams holds that the only real substances are actual substances. According to Adams, possibilities about the merely possible are to be understood purely *qualitatively*; the merely possible does not have a thisness.

Actualist Possibilism is able to accommodate Adam's conclusions. On the Actualist Possibilist view, to have a *thisness* is literally to have a non-qualitative nature. Things with a *thisness* are *substances*, instantiators of properties, and not mere bundles of them. On the Actualist Possibilist view, things with thisness enjoy genuine transworld identity: possibilities about them are not purely qualitative, and, like the previous versions of modal realism with overlap, real objects have real essences. Not so with the surrogates of the merely possible: these things are mere bundles of properties. They lack a substantial core. They are not real objects and accordingly do not enjoy transworld identity; possibilities about the merely possible are purely qualitative and are accounted for by counterpart theory.

Is Actualist Possibilism an *actualist* view? It seems not, since there are non-actual entities, and these entities are *particulars* to boot. But its possibilist credentials are not impressive: the Actualist Possibilist agrees with the actualist that actuality is categorical, and that no substance fails to be actual, and it approximates the view defended by Peter Forrest (which, recall, is allegedly an actualist view) far better than MRO2.[63] Obviously, the fact that the view is difficult to classify does not reflect poorly on it. Actualist Possibilism deserves to be properly formulated and further explored.[64]

Notes

1. This definition of possibilism can be traced back to Adams (1974), which is reprinted in Loux (1979). See also Bennett (forthcoming-a), Bennett (forthcoming-b), and Menzel (2000).
2. Lewis's modal realism was first explicitly articulated in Lewis (1973); Lewis (1986a) is a full-dress defense of modal realism.
3. Other versions of modal realism include those defended in Bricker (1996) and (1999), McDaniel (2004), and Miller (2001).
4. x is the fusion of some ys just in case the ys compose x.
5. Or "analogues" of spatiotemporal relations; see Lewis (1986a): 74-76. I will ignore this complication in what follows.
6. See Lewis (1986a): 50-69. Lewis discusses a kind of structuralism about classes in Lewis (1991), according to which there are no entities that are the classes. This theory obviously complicates his theory of properties, but I won't talk about this complication here.
7. We are, of course, committed to many more entities of the same kinds we already believed in. Lewis discusses this in Lewis (1973): 87.
8. On the notions of ideology and ideological economy, see Quine (1951), Lewis (1970), and Oliver (1996).
9. Lewis's preferred basic cross-categorical predicate is "is a singleton of". On Lewis's view, x is a member of y iff x's singleton is a part of y. On this issue, see Lewis (1991).
10. See, for example, Lewis (1973) for an analysis of various kinds of counterfactual conditionals.
11. Obviously, a claim like "Fred is essentially a person" can be context-sensitive if "Fred" or "person" is context-sensitive; I ignore this complication here.
12. Two points. First, we should note that many friends of counterpart theory will count these features as virtues of the theory. Second, the counter-part theorist could claim that 'is a counterpart of' is precise and not at all context-sensitive. It's hard to see, though, how this strategy could work if we still maintain that the counterpart relation is a similarity relation. The only real alternative seems to be to take the notion of a counterpart as primitive. But this would be undesirable, since it would clearly be a modal primitive—and a *de re* modal primitive to boot!
13. It follows from this account of possible worlds that regions are world-bound, and hence have all their properties essentially. In McDaniel (2004), I acknowledge that this is a cost, but argue that it is a small cost. We will soon look at versions of modal realism with overlap that do not have to pay this cost.
14. See McDaniel (2004): 150-153 for a detailed discussion of how *de re* modal predication works given MRO. Briefly, the friend of MRO holds that an object o is F at a world w just in case o bears the *is F at* relation to some region that is a part of w. (World-relative predication is treated as being nearly perfectly analogous to time-relative predication on this view, which is to be expected—in McDaniel (2004), I pressed the claim that MRO is the modal analogue of endurantism.)
15. Doesn't quantum mechanics show that it can be vague whether an object occupies a region? It doesn't; see Lewis (2004) for why.

16. x and y are not strictly coincident, since there are regions at other possible worlds that one of them occupies while the other does not. See McDaniel (2004): 153-154 for further discussion.
17. For example, suppose one countenances a particularly *maximalist* version of MRO. (I owe the term "maximalism" and the idea expressed by it to Matti Eklund.) We can describe such a view as follows. Let us say that any fusion of spacetime regions is itself a spacetime region, even if that region is scattered, or even decomposes into regions that are not world-mates of each other. Let us say that a region of spacetime is *filled* just in case it decomposes without remainder into regions occupied by material objects. On the maximalist view, for any filled region of spacetime *R* and any regions the *rs* such that the *rs* compose *R*, there is a material object that occupies all and only the regions that are among the *rs*.
18. See the appendix of Karen Bennett (2004) for a discussion of how *de re* modal claims could work given the principles of plentitude discussed here.
19. This argument comes from Sider (1996), which is in turn based on Forrest and Armstrong (1984).
20. Ted Sider has pointed out to me that, insofar as Lewis endorses structuralism about set-theory, he also has a problem with properties. On Lewis's flirtations with structuralism, see Lewis (1991).
21. Since these properties will be properties of composites, presumably making this move will require Lewis to abandon his Humean Supervenience. For a discussion of Humean Supervience, see the Introduction in Lewis (1986d), and "Humean Supervenience Debugged" in Lewis (1999).
22. See Lewis (1986a): 201-205 and McDaniel (2004).
23. This is not to say that these positions are not worth developing! But every inquiry of the kind engaged in here must either be incomplete or unending.
24. Friends of tropes include D.C. Williams (1953), Keith Campbell (1981) and (1990), Douglas Ehring (1997) and (2004).
25. David Lewis defends the temporal parts response to the problem of temporary intrinsics in Lewis (1986a: 201-205).
26. This view is championed by Sally Haslanger (1989) and Mark Johnston (1987).
27. Hugh Mellor (1981: 111-114) defends this view, as does Peter van Inwagen (1990). This view seems to have been defended by Bertrand Russell (1903: 469).
28. The presentist response to this problem is defended by Mark Hinchliff (1996): 121-122 and Trenton Merricks (1994): 168.
29. Although Ehring shows that this solution helps solve the problem of temporary intrinsics, it's not clear to me that Ehring himself endorses the claim that tropes are momentary.
30. Matthew McGrath and Karen Bennett have pressed me with this worry.
31. It's natural to think that a trope exists at a world by occupying a region that is part of that world. We will look at a more sophisticated picture momentarily.
32. This was the lesson learned in McDaniel (2004).
33. A two-category ontology of tropes and substances is defended by C.B. Martin (1980).
34. Dean Zimmerman brought these two worries to my attention.
35. An unstated presupposition of this account seems to be that tropes are the size of spatiotemporal points; we will see that the view developed later does not require this presupposition.

36. On this scheme, the compresence relation that some friends of tropes use to "construct" objects is identified with the relation of *is zero distance from*.
37. The former option is clearly Schaffer's preferred choice.
38. Schaffer (2001) seems willing to say this. But, as we shall see, we can generate a principle that does the work that Schaffer wants the principle to do without requiring us to say this.
39. For worries about this claim, see Bricker (2001).
40. Objects can have properties. Properties can exemplify properties as well, even if the properties are tropes. So just as objects can stand in relations, properties too may stand in relations, even if both the properties and the relations in question are tropes.
41. The fields of a relation is the union of its domain and range; an object is in the field of a relation just in case it is related to some other object by that relation or it relates to some other object by that relation.
42. See Schaffer (2001): 251-252 and Campbell (1990): 54.
43. If we want, we can expand this definition to allow worlds that consist in but a single trope. It's important to note that friends of tropes do not typically reify a resemblance relation. Although there are many tropes that resemble each other, there is no resemblance-relation. (If there were, it would follow that there is only one maximal cluster of tropes.)
44. According to John Bacon (2002), if we accept merely possible tropes, we can identify possible worlds with sets of tropes; he also hints that this way of construing possible worlds may require primitive modality. The worlds discussed here are not simple sets of tropes; but we require no primitive modality to characterize them.
45. John Bacon (2002) briefly discusses a similar proposal.
46. The trope theory of D.C. Williams is not sparse; the trope theory of Keith Campbell is sparse.
47. I assume that all (less than perfectly natural) purely qualitative properties can be identified with structured complexes or classes of actual and possible tropes in a way that mimics Lewis's identification of properties with classes of actual and possible concrete particulars. For impure properties and relations—such as *being near David Lewis*—we may need to include concrete objects in these bundles as well.
48. The claim that locations are properties is defended by O'Leary Hawthorne and Cover (1998); a modified version of this view is discussed in Rodriguez-Pereyra (2004).
49. I owe this worry to Matthew McGrath.
50. It seems to me that if one adopts this position, one will be unable to embrace the account of trope/property identity discussed earlier. But that account of trope/property identity is negotiable, and in any event is not a constitutive part of MRO2.
51. See McDaniel (forthcoming), Parsons (forthcoming), and Skow (forthcoming).
52. This account of possible worlds is in many ways similar to the one defended in Bricker (1996) and Bricker (1999). I will discuss Bricker's account of possible worlds in section VII.
53. I thank Dean Zimmerman for discussion of this point.
54. Although Forrest could adopt the position discussed in section VIII.

55. This point is stressed in Armstrong (1989).
56. See Armstrong (1986), Forrest (1986), and Lewis (1986b & 1986c). Note that Armstrong's views on the structure of states of affairs have changed; for his newer views, see Armstrong (2004).
57. For a more detailed discussion of structure-making, and whether it is a kind of composition, see McDaniel (unpublished).
58. Obviously, this is a problem for MRO as well.
59. See Bricker (2001): 33-39.
60. Bricker also discusses the options of taking modal operators to be singular quantifiers over classes of worlds and aggregates of worlds. There are subtle differences between these options, but none of these affect what follows.
61. Actualist Possibilism is (in this respect) similar to view defended in Miller (2001).
62. I thank Mark Heller for bringing this worry to my attention.
63. Ted Sider has mentioned to me the following exciting suggestion: what if the Actualist Possibilist claims instead that none of the objects in their ontology are non-actual, although many are non-*actualised*? Perhaps such a view would be a genuinely actualist view, although its ontology seems no different than the ontology of the Actualist Possibilist as previously characterized. In virtue of what is a view *possibilist*?
64. I thank Karen Bennett, Ben Bradley, Ben Caplan, Cian Dorr, André Gallois, Cody Gilmore, Mark Heller, Matthew McGrath, Jonathan Schaffer, Ted Sider, Brad Skow, Takashi Yagisawa, and Dean Zimmerman for helpful comments on earlier drafts of this paper.

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