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### Humean supervenience and enduring things

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## HUMEAN SUPERVENIENCE AND ENDURING THINGS

Sally Haslanger

### I. Introduction

Historically, debates over the persistence of objects have centered on the need to resolve paradoxes concerning change. Such paradoxes come in many forms, but the basic concern can be stated quite simply: how can an object persist through change? An object that undergoes change will not have the same properties before and after the change; but objects with different properties are distinct, so strictly speaking an object *cannot* persist through change. This is paradoxical, for ordinary objects certainly do persist through change.

Contemporary discussions of persistence provide a variety of responses to the threat of paradox; the main strategy has been to avoid conflict with our ordinary judgments of persistence by introducing temporal qualifications in propositions describing the change. From these discussions we find that not only is it possible for things to persist through change, but there are a number of consistent ways things might do so.<sup>1</sup> The acknowledgment that persistence is a coherent option significantly shifts the focus of debate. No longer is the issue whether we are forced to give up a commitment to persisting things (on pain of contradiction), to accept instead a radically revisionary commitment to complete flux. We may assume that we are correct in thinking that some things persist through change. But because there are several possible ways to account for the persistence of objects, the issue now is to determine how things persist in the actual world. What sort of persistence do actual things exemplify?

We may sharpen this question by considering two kinds of persistence: perdurance and endurance. David Lewis characterizes the distinction as follows:

Let us say that something *persists* iff, somehow or other, it exists at various times; this is the neutral word. Something *perdures* iff it persists by having temporal parts, or stages, at different times, though no one part of it is wholly present at more than one time; whereas it *endures* iff it persists by being wholly present at more than one time.<sup>2</sup>

So, e.g., an object may persist over a stretch of time either by consisting of short-lived stages that are present in succession through that time, or alternatively, an object may persist over a stretch of time by being wholly present throughout the interval. Both ways of persisting are possible; at least some worlds have perduring objects, and some endure-

<sup>1</sup> See, e.g., D. Lewis, *On the Plurality of Worlds* (Oxford: Blackwell, 1986) pp.202-205; and D. Armstrong, 'Identity Through Time' in P. van Inwagen (ed.) *Time and Cause* (Dordrecht: Reidel, 1980).

<sup>2</sup> D. Lewis, *op. cit.*, p.202.

ing objects, and some presumably have both. But which sort of world is ours?

In response to this question, Lewis (and others) have defended a view I shall call the 'metaphysic of temporal parts' (MTP), or sometimes simply the 'perdurance theory'. The MTP claims that:

- (a) There are no actual *enduring* particulars, and
- (b) There are actual particulars that persist by *perduring*, i.e., they are present at times by having temporal parts or stages at those times.<sup>3</sup>

In opposition to the MTP, others (including myself) have defended an ontology of actual enduring things, thus denying thesis (a). This view, call it the 'endurance theory', allows that there may actually be both enduring and perduring things; it opposes the metaphysic of temporal parts on the question of whether there are actual enduring particulars.<sup>4</sup>

Lewis has offered several arguments against the endurance theory, perhaps the most notable being the argument from temporary intrinsics.<sup>5</sup> I have addressed that argument elsewhere.<sup>6</sup> My focus in this paper will be to evaluate another argument against endurance suggested by Lewis' work; the idea is, briefly, that because the actual world consists of nothing but an arrangement of 'perfectly natural intrinsic properties', in particular, micro-qualities 'which need nothing more than a point at which to be instantiated', and what supervenes on that arrangement, we can conclude that there are no enduring things; instead actual things persist by perduring.<sup>7</sup> I will return to elaborate this suggestion, but first it is important to comment briefly on two general concerns about this debate over endurance.

First, some may complain that there is no genuine issue in the debate, in particular there is nothing ontological at stake, because the endurance and perdurance theorists are simply using different terminology to say the same thing. Hence, we should be free to choose whichever terminology we find appealing without thinking that there is a genuine disagreement that must be settled. This complaint raises a number of issues I will not go into here, though it is worth forestalling some impatience with what follows by indicating a direct line of response. In short, we can articulate a claim in terms shared by both the perdurance and endurance theories, which one asserts and the other denies. Consider the following claim that is true iff there is at least one enduring thing:

<sup>3</sup> This is a fairly weak claim about perdurance; it asserts only that some things perdure. It doesn't assert that all and only the things which we intuitively judge to persist perdure. Thus the MTP commitment to (a) and (b) allows it to be a revisionary doctrine. Note, however, that Lewis seems to take it as a goal of his account that we can set conditions on perdurance which enable it to capture (more or less) our ordinary intuitions about persistence. See, e.g., D. Lewis, *Philosophical Papers, Vol. II* (Oxford: Oxford University Press, 1986) p.xiii.

<sup>4</sup> See, e.g., S. Haslanger, 'Persistence, Change, and Explanation', *Philosophical Studies* 56 (1989) pp.1-28, and 'Endurance and Temporary Intrinsics', *Analysis* 49 (1989) pp.119-125.

<sup>5</sup> D. Lewis, 'Rearrangement of Particles: A Reply to Lowe', *Analysis* 48 (1988) pp.65-72, and *On the Plurality of Worlds*, pp.203-205.

<sup>6</sup> Haslanger, 'Endurance and Temporary Intrinsics', *op.cit.*

<sup>7</sup> Lewis makes this suggestion in the Introduction to his *Philosophical Papers, Vol. II*, p.x. Admittedly, Lewis' remarks there are sketchy, so it is difficult to tell exactly what connection he sees between the doctrine of Humean supervenience and the MTP. In what follows I will use his remarks as a springboard to reconstruct an argument which Lewis himself may or may not endorse, but which is broadly within the spirit of his program.

- E) There are distinct times  $t$  and  $t'$ , and there is an  $x$  such that  $x$  is wholly present at  $t$  and  $x$  is wholly present at  $t'$ .

The endurance and perdurance theorists certainly seem to agree on their interpretation of identity, existence, negation, and conjunction, and can also agree on the notion of 'being wholly present at a time'. Nevertheless they disagree over whether (E) is true. Since (E) cannot be both true and false, and there is no reason to think it is neither, one or another of the views must be wrong. Either there are enduring things in the sense articulated in (E), or there aren't. To pursue the objection by insisting that the perdurance and endurance theorists *cannot* mean the same thing by (E), (or that (E) is meaningless?) is at this stage, highly implausible.

The second objection concerns the issue of whether there is anything metaphysics can teach us about whether actual particulars endure or perdure. After all, if there are actual enduring particulars, it's a contingent matter that there are, and it is often thought that contingent matters are not a proper subject matter for metaphysics. Needless to say, the issue of the limits of metaphysical inquiry is not one we will settle here. However, again a brief comment may be useful. One of the aims of metaphysics is to determine what it is reasonable to think that there is. In the course of our inquiry we may discover very general principles that guide our research. Some of these principles will be appropriate to our inquiry because they set the limits on what it could be reasonable to believe, others because they are compelling simplifying assumptions.

Admittedly, it is an important and difficult task to figure out the status of such principles, e.g., are there are any such principles immune from empirical refutation? But supposing that one has adopted such a principle, there is a further task of determining what (if any) ontological consequences it has: given the principle, what constraints does it impose on our ontological commitments? The project of this paper falls within this latter task. (Very roughly) if we grant the principle that the actual world consists of just a distribution of natural micro-qualities, and what supervenes on this distribution, what consequences does this have for our ontology of particulars? Although it is important to ask what reasons we might have to believe the supervenience principle just mentioned, this is not my primary concern here.

## II. Humean Supervenience

In order to motivate the case against endurance, it is helpful to begin with a picture of what our world is like. One idea guiding this picture is of construction: the complex and lovely world we know is 'built up' from an arrangement of tiny things and their properties. The prevailing images are patchworks and mosaics, or less charmingly, dot-matrix printouts.<sup>8</sup> To use Lewis' words: '... all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another'.<sup>9</sup> However, just as we

<sup>8</sup> For example, Armstrong speaks of patchworks in D. Armstrong, *A Combinatorial Theory of Possibility* (Cambridge: Cambridge University Press, 1989) p.20; Lewis speaks of mosaics in *Philosophical Papers, Vol. II*, p.ix, and of dot-matrix pictures in *On the Plurality of Worlds*, p.14.

<sup>9</sup> Lewis, *Philosophical Papers, Vol. II*, p.ix.

may find patterns across a mosaic, we may find patterns across the particular facts of this world; but any facts concerning such patterns supervene on the little local matters of fact. Lewis fleshes out this picture as follows:

We have geometry: a system of external relations of spatio-temporal distance between points. Maybe points of spacetime itself, maybe point-sized bits of matter or aether or fields, maybe both. And at those points we have local qualities: perfectly natural intrinsic qualities which need nothing bigger than a point at which to be instantiated. For short: we have an arrangement of qualities. And that is all. There is no difference without a difference in the arrangement of qualities. All else supervenes on that.<sup>10</sup>

There is a compelling idea here, for it is plausible to think that what happens *over* time, and *over* space, depends on what happens at particular points along the way. For our purposes in the discussion of persistence, we should focus on the temporal dimension of the picture: *what happens across time depends upon what is the case at each moment*. Spelling out this idea can be tricky, but the guiding intuition is that there are occurrent facts that concern just what obtains at a moment; and there are also non-occurrent facts that concern what obtains for longer than a moment; and the non-occurrent facts depend on the occurrent. Lewis suggests we cash this out in terms of supervenience: worlds that differ in what obtains over time, also differ in what natural qualities are instantiated moment by moment.

The metaphysics of temporal parts seems to fit easily in this picture: start with an arrangement of momentary things. The occurrent facts that form the supervenience base are those that concern the instantiation of intrinsic micro-qualities in point-sized objects. Because perduring things are simply mereological aggregates of the momentary things, plausibly perdurance supervenes on this arrangement: worlds indiscernible with respect to their distribution of micro-qualities in point-sized objects will be indiscernible with respect to what perdures. And if all persistence is just perdurance, then what persists in a world depends on the arrangement of momentary things and their micro-qualities. But is there room in this picture for enduring things as well?<sup>11</sup> To begin, more needs to be said about supervenience.

### *Restricted Supervenience and Natural Possibility*

Supervenience claims come in many forms. Lewis' proposal just quoted, labeled the doctrine of 'Humean supervenience'<sup>12</sup>, is a 'global' supervenience claim<sup>13</sup>, which, more-

<sup>10</sup> *Ibid.*, pp.ix-x.

<sup>11</sup> If the imagery of mosaics and patchworks is apt, it would seem not; just as no single patch is wholly present at two distinct places on a quilt, likewise no particular is wholly present at two distinct times. But how well does the imagery capture the insights which motivate it?

<sup>12</sup> Lewis, *Philosophical Papers, Vol. II*, p.ix, and *On the Plurality of Worlds*, p.14.

<sup>13</sup> On the differences and relationships between 'weak', 'strong', and 'global' supervenience claims, see J. Kim, 'Concepts of Supervenience', *Philosophy and Phenomenological Research* 45 (1984) pp.154-177; "'Strong" and "Global" Supervenience Revisited', *Philosophy and Phenomenological Research* 48 (1987) pp.315-326; and 'Supervenience for Multiple Domains', *Philosophical Topics* 16 (1988) pp.129-150. Kim has noted that global supervenience is a very weak claim, e.g., it does not entail either weak or strong supervenience, and he doubts whether global supervenience is enough to support claims of dependency between sets of properties.

over, he offers as *contingent* and *restricted*.<sup>14</sup> Contingent supervenience claims are familiar from attempts to define materialism: to be a materialist one need not rule out the very possibility of spirits. Some worlds have spirits, even if ours does not. Instead we look to articulate a materialist thesis which locates our world among a special set of worlds, and postulates, e.g., that between members of this restricted set there is no mental difference without a physical difference.<sup>15</sup>

Similarly Humean supervenience is contingent; we allow that in some worlds what properties or relations are instantiated is not determined by the arrangement of micro-qualities. And so likewise we restrict the supervenience: our world belongs to a restricted set of worlds such that if they fall short of being duplicates, they also differ in their arrangement of micro-qualities. In effect, we evaluate the claim that the features of the actual world supervene on the arrangement of natural micro-qualities with respect to a designated inner sphere of worlds. But how do we define the restricted sphere of worlds relative to which we make the comparisons?

Lewis suggests that both for materialism, and more broadly for Humean supervenience, we define the relevant sphere in terms of the worlds' instantiated natural properties. On Lewis' view, natural properties are a subset of all the properties there are; in contrast to the wide array of gerrymandered, disjunctive, and extrinsic properties, natural properties are such that:

Sharing of them makes for qualitative similarity, they carve at the joints, they are intrinsic, they are highly specific, . . . there are only just enough of them to characterise things completely and without redundancy.<sup>16</sup>

Moreover, a property is natural or unnatural *simpliciter*, not relative to a world. And there is no presumption that what distinguishes natural properties is their part in what we think of as 'Nature'<sup>17</sup>, though many hold out hope that physics will eventually provide the inventory of natural properties instantiated in the actual world.<sup>18</sup> Our world displays only a limited set of the natural properties and relations; in other worlds there are natural properties that make no appearance here.

With this in mind, let us say that a property is *alien* to a world W, just in case it is not instantiated in W.<sup>19</sup> We can then use this to specify an inner sphere of worlds relative to

<sup>13</sup> *continued* . . .

There are many important questions about global supervenience I will pass over without comment in this discussion. However, it is important to note that because Lewis will need to allow for different domains of individuals to instantiate the base and supervening properties, standard versions of weak and strong supervenience are not suitable for his purposes. See below, section V, and Kim, 'Supervenience for Multiple Domains'.

<sup>14</sup> On the idea of contingent and restricted supervenience claims, see D. Lewis, 'New Work for a Theory of Universals', *Australasian Journal of Philosophy* 61(1983), esp. pp.361-364.

<sup>15</sup> See, e.g., Lewis, 'New Work for a Theory of Universals', and T. Horgan, 'Supervenience and Microphysics', *Pacific Philosophical Quarterly* 63(1982) pp.29-43.

<sup>16</sup> Lewis, *On the Plurality of Worlds*, p.60.

<sup>17</sup> For example, there may be genuine social kinds whose members share natural properties (in Lewis' sense), but the properties they share do not fall within the proper subject matter of natural science, nor are they properties determined by 'nature' (whatever that might mean).

<sup>18</sup> Lewis, *On the Plurality of Worlds*, p.60, fn.44.

<sup>19</sup> Lewis offers a more complex definition of an 'alien' property: a property is *alien* to a world W, just in case (1) it is not instantiated in W, and (2) it cannot be analyzed as a conjunction or struc-

a world  $W$ : a world  $W^*$  is *naturally akin* to a world  $W$  just in case no natural properties alien to  $W$  are instantiated in  $W^*$ ; or in other words, every natural property instantiated in  $W^*$  is instantiated in  $W$ . For our purposes the point to keep in mind is that the relevant inner sphere *around us* consists of those worlds whose natural properties are also instantiated here. Humean supervenience claims that among these worlds, there is no difference without a difference in the distribution of natural micro-qualities.

Can we make this more intuitively accessible? The leading idea behind the restriction of supervenience to these inner worlds is that the distribution of a world's natural properties (and relations) determines the rest: the natural properties are the ones that make the difference. We want to allow that in different worlds, e.g., ones that are richer than ours in their natural properties, things happen, the likes of which we will never see — and some impoverished worlds will never see the likes of what goes on in ours. But such happenings (or non-happenings) are, in an important sense, not possibilities for us, *given our store of natural properties*. Given a set of properties that constitutes our natural resources, then worlds with just these natural resources are limited in what other properties are instantiated and how they are distributed. Worlds in which alien natural properties are instantiated may not abide by these constraints, but neither do they offer natural possibilities for us.

Humean supervenience, in particular, claims to capture the full range of natural possibility: it proposes that the specified base set of micro-qualities along with the external relations of spacetime, are our *full* natural endowment, and within the sphere of worlds confined to this endowment, fix these properties, and you've fixed the rest. Although some worlds may vary from ours without a reflection in their arrangement of micro-qualities, such variation requires natural properties not to be found in the actual world.

### *A Challenge to Endurance?*

Whether or not one fully endorses the doctrine of Humean supervenience, it stands as a

<sup>19</sup> *continued...*

tural property whose constituents are all natural properties instantiated in  $W$  ('New Work for a Theory of Universals', p.364). Lewis includes the additional clause in the definition of 'alien' property as a concession to Armstrong. Using conjunction as an example, the worry is whether we should include within the inner sphere of worlds around us those in which *being P and Q* is instantiated, where  $P$  and  $Q$  (individually) are natural properties instantiated in our world, but nothing is actually *both*  $P$  and  $Q$ . Lewis' statement of materialism allows such worlds within the inner sphere; he is not wholly explicit about this in his description of Humean supervenience, yet his comments in *Philosophical Papers, Vol. II*, p.x, suggest the same allowance. However, it is important to note that in *On the Plurality of Worlds*, pp.91-92, Lewis describes an *alien individual* as one that either instantiates an alien property or 'combin[es] non-alien properties in an alien way' (e.g., by co-instantiating properties which are not actually co-instantiated); and there he also defines an *alien world* as one that contains an alien individual. So it would seem that we could state a version of Humean supervenience which defines the restricted sphere of worlds (within which the supervenience allegedly holds) as those worlds which are non-alien.

As will be clearer in what follows, the main issue is whether we want to count a world which contains an alien individual as offering a natural possibility for our world. By dropping the second clause of the definition, I am allowing (at least for the sake of argument) that it is not. Moreover, by narrowing the inner sphere I am limiting further what properties might be actually instantiated. Since this doesn't advantage the endurance theorist, and because it will simplify discussion immeasurably to leave out the qualifications, I think this move is legitimate. However, I recognize that the added qualifications may matter later in the discussion (especially in sections V and VI), in a way that I can't yet see.

challenge to determine how far it can take us in accounting for the richness of the actual world; at the very least it provides a framework in which we can do justice to the temporal intuition (mentioned earlier) that what happens across time depends upon what is the case at each moment. But what, if anything, does the doctrine leave out? For example, is there an argument which shows that a commitment to Humean supervenience is incompatible with a commitment to actual enduring particulars? Lewis writes,

... there might be things that endure identically through time or space, and trace out loci that cut across all lines of qualitative continuity. It is not, alas, unintelligible that there might be suchlike rubbish. Some worlds have it. And when they do, it can make differences between worlds even if they match perfectly in their arrangement of qualities.

But if there is suchlike rubbish, say I, then there would have to be extra natural properties or relations that are altogether alien to this world. Within the inner sphere of possibility, from which these alien intrusions are absent, there is indeed no difference of worlds without a difference in their arrangements of qualities.<sup>20</sup>

On at least one plausible reading of this passage, it would suggest that enduring things are the sort of 'rubbish' that our world (thankfully) excludes, due to the good fortune of its being a Humean world.<sup>21</sup>

These remarks raise a serious challenge to the endurance theorist. The principle that what happens 'over time' depends on what happens 'at a time' is attractive, and it is important for the endurance theorist to evaluate whether a commitment to enduring things requires one to reject it. Can we fit enduring particulars into the picture? How?

In the sections that follow I will first develop an argument which undertakes to show that if we accept the doctrine of Humean supervenience, we should conclude that there are no actual enduring particulars; even further, there are no enduring particulars within the inner sphere. In short, the instantiation of endurance is not a natural possibility for our world. After presenting the argument, however, I will then turn to consider where it goes wrong, and will suggest that there are enduring particulars even in Humean worlds, including ours.

### III. Is Endurance Alien?

Let us allow that ours is a Humean world, so the natural properties of the actual world are just 'the external relations of spatio-temporal distance between points'<sup>22</sup> together with

<sup>20</sup> Lewis, *Philosophical Papers, Vol. II*, p.x.

<sup>21</sup> George Bealer helped me see that there are other readings. For example, consider the sentence: 'there might be things that endure identically through time or space, *and* trace out loci which cut across all lines of qualitative continuity' (my emphasis). What is Lewis denying in denying this possibility? Bealer suggests that Lewis is not excluding *all* enduring things from inner worlds, rather, he's only excluding the enduring things that fail to follow lines of qualitative continuity. Nevertheless, I will pursue a reading on which Lewis is excluding enduring things altogether, and will reconstruct an argument to that effect; that this is Lewis' intention seems more clear from his recent, 'Humean Supervenience Debugged' (typescript).

<sup>22</sup> For the relevant definition of external relations see Lewis, 'New Work for a Theory of Universals', p.356, fn.16; see also his *On the Plurality of Worlds*, p.62. Note that Lewis wants



a set of 'intrinsic properties which need nothing bigger than a point at which to be instantiated'.<sup>23</sup> (Following Lewis, I will sometimes simply use the term 'qualities' or 'natural qualities' to refer to these natural micro-properties arranged across points of spacetime.) For our purposes the relevant point is that the base qualities distributed across spacetime will be 'temporally micro-', or occurrent properties. Intuitively, an occurrent property is one grounded wholly in an instant; for the time being, let us say that a property is *occurrent* just in case one need not exist for more than an instant in order to instantiate it.<sup>24</sup>

It is important to note that both endurance and perdurance are non-occurrent. Given how we've defined the terms of the debate, we must allow that there is more than one way to exist at a time: one may exist at a time by being *wholly present* at a time, or by being *partly present* at a time, i.e., by having a part that is wholly present at a time. In keeping with this, a property is non-occurrent just in case one must be *present* (either wholly or partly) for more than an instant in order to instantiate it. This holds of both perdurance and endurance.<sup>25</sup>

If *x endures* then there are distinct times *t* and *t'* such that *x* is wholly present at *t*, and *x* is wholly present at *t'*.

If *x perdures* then there are distinct times *t* and *t'*, and there are distinct parts of *x*, *y* and *z*, such that *y* is wholly present at *t* & *z* is wholly present at *t'*.

Because both endurance and perdurance are non-occurrent, if they are instantiated in Humean worlds, they must supervene.

Given this background, we are now in a position to ask: is endurance instantiated in the actual world? It would seem not, if (as Lewis suggests) enduring things 'trace out loci which cut across all lines of qualitative continuity'; endurance 'can make differences between worlds even if they match perfectly in their arrangement of qualities'.<sup>26</sup> The idea is that enduring things are not bound to the paths of qualitative continuity in their travels through spacetime; even if we suppose that there were only well-behaved enduring things in our world, the endurance of such things would not supervene, for in other qualitatively indiscernible worlds, enduring things would misbehave. So allowing

<sup>22</sup> *continued. . .*

to allow that the relations of spatio-temporal distance are natural, so on his view, they must be intrinsic. He accounts for this by saying that they are external relations, intrinsic to the pairs, but not to the relata. However, a pair that instantiates such 'intrinsic' relations must be present at different points (by having parts which are wholly present at the different points); so plausibly the relations of spatio-temporal distance are not occurrent. (Note, however, that the temporal relations between spacetime points, although non-occurrent, supervene trivially, since such relations are included in the base.) I will assume in what follows that the properties of enduring, perduring, and being a stage (or momentary thing) are not relations of spatio-temporal distance.

<sup>23</sup> Lewis, *Philosophical Papers*, Vol. II, p.x.

<sup>24</sup> This is not a fully adequate characterization of an occurrent property if occurrent properties are 'temporally intrinsic', i.e., if their instantiation must be grounded wholly in one time. Some properties which need nothing longer than an instant to be instantiated nevertheless are 'temporally extrinsic', because their instantiation depends on what happens at other times. At a later point in the paper I revise the characterization of occurrent property given here.

<sup>25</sup> See Lewis, *On the Plurality of Worlds*, p.202.

<sup>26</sup> Lewis, *Philosophical Papers*, Vol. II, p.x.

endurance to play itself out in the inner sphere of worlds wreaks havoc with the (restricted) supervenience of the non-occurrent properties on the occurrent.

Can we spell this out a bit further? Suppose endurance is itself a natural property. If it is, then its actual instantiation would directly violate Humean supervenience, for Humean supervenience denies that there are any such non-occurrent properties (other than the relations of spatio-temporal distance) among those in the naturalistic base of our world. Similarly, if endurance supervenes, but depends for its distribution on a richer base than the Humean offers, then again its actual instantiation would be a direct violation of Humean supervenience, for, by hypothesis, it would require the instantiation of non-Humean natural properties. In either case, if we allow that endurance is actually instantiated, then there are worlds within the inner sphere (e.g., the actual world itself) whose natural endowment exceeds the Humean specifications.<sup>27</sup>

But so far this argument rests on the assumption that the instantiation of endurance depends on natural properties beyond those included in the Humean base; is this supposition warranted? We might ask: is there anything required *beyond* Humean qualities in order to instantiate endurance? Consider a test case: is there a world that duplicates ours exactly in its distribution of micro-qualities, but lacks enduring things altogether? Suppose there is. Then the instantiation of endurance requires something more than *our* distribution of micro-qualities; assuming that our world is Humean, endurance requires more than our world provides. But this strategy of argument could only show that the *actual* distribution of natural qualities is insufficient for endurance; it doesn't show that endurance requires something more than Humean micro-properties. Are there other Humean worlds that tolerate endurance? Could merely a *redistribution* of the natural micro-qualities give rise to enduring things? It would seem not if we can always subtract enduring things without disrupting the distribution of the Humean base. (Let us call this the 'argument from subtraction'.)

So consider those worlds whose natural endowment includes at least our micro-qualities, and also includes enduring particulars. For any such world, *W*, is there another world that duplicates its distribution of these micro-qualities, yet which lacks enduring things? More precisely, can we find among worlds whose natural endowment is exactly the Humean base, a micro-duplicate of *W*, but which lacks endurance? It might seem so. For example, even if in some worlds micro-qualities are instantiated by enduring particulars, we can always replace the enduring subject of a given micro-quality with a point-sized particular that instantiates the same micro-quality, without altering the distribution of the Humean base. In short, a micro-quality never *needs* an enduring thing in order to be instantiated; point-sized things are enough. So from the point of view of distributing micro-qualities, enduring things seem to be an addition that is purely optional. If so, the instantiation of endurance depends on something more than an arrangement of micro-qualities across spacetime. Assuming our world is Humean, we should conclude that there are no enduring particulars; and if Humean supervenience has captured the extent of natural possibility, enduring things, although perhaps a distant metaphysical possibility, are not a natural possibility for us.

<sup>27</sup> In effect, since the assumption of actual endurance makes a difference to what properties count as alien, we narrow the inner sphere by retracting that assumption.

In summary, since endurance is a non-occurrent property, it is not included in the base set of natural qualities 'which need nothing bigger than a point at which to be instantiated'. Moreover, for any distribution of such micro-qualities we can assume they are instantiated by stages, and leave out enduring things altogether; but then if we suppose that there are enduring things, there must be something more than the distribution of micro-qualities to determine how endurance is instantiated. In effect, if there are enduring things in our world, then there are natural properties instantiated within the inner sphere of worlds beyond those included in the Humean base; and as a result some worlds in the inner sphere differ without differing in their distribution of Humean micro-qualities. This conflicts with the claim that our world is one in which Humean supervenience obtains. So granting Humean supervenience, we should conclude that there are no actual enduring particulars.

#### IV. Supervenience and Ontology

The argument just presented suggests that in worlds whose natural endowment includes only this-worldly micro-qualities and spatio-temporal relations, endurance is not instantiated because its instantiation requires more than this base affords.<sup>28</sup> The temporal parts theorist will claim, in contrast, that *perdurant* does supervene on the distribution of micro-qualities, and so poses no conflict with the doctrine of Humean supervenience. As I suggested above, perduring things are simply sums of momentary things. If we assume an ontology of momentary things, and if we allow that the sum-constituting relations are either included in the base (i.e., the relations of spacetime), or supervene on the base (e.g., qualitative continuity), then the distribution of momentary things will determine what perdures. This is important in order to sustain part (b) of the MTP.

However, we should hesitate here. So far in sketching how we might account for the supervenience of perduring things, I have assumed that the micro-qualities arranged across spacetime are instantiated in momentary things, or 'stages'. (On the face of it, we won't get perdurance to supervene unless we can be sure to have stages first.) But if we are going to allow that there are actual stages, then we should consider whether the actual instantiation of stagehood is compatible with Humean supervenience; i.e., is the property of being a stage part of the Humean base? Or does it supervene on the distribution of the base?

#### Stages

I'd like to suggest that the property of *being a stage*, i.e., a momentary thing, in the sense needed for the temporal parts theorist, is not plausibly included in the Humean base of natural qualities. So if it is instantiated in our world, it must supervene. To see this, we should consider whether the property of being a stage is an occurrent property, since beyond the relations of spatio-temporal distance, only occurrent properties are allowed in the base of perfectly natural qualities.

<sup>28</sup> Note that by excluding endurance from inner worlds, we can guarantee that it supervenes: no (inner) worlds differ with respect to endurance without differing with respect to the base, because none of them differ with respect to endurance. So there is a sense in which the distribution of micro-qualities within such worlds does determine the distribution of endurance; the distributions determine that endurance is not instantiated.

To be a stage in the relevant sense is not simply to be something ‘wholly present’ at a moment, since enduring things are wholly present at a moment. Moreover, a stage that has a part which endures (e.g., a complex object consisting of an enduring thing and a time) can’t be a stage in the sense needed by the MTP, since the MTP does not tolerate enduring things. So an MTP stage must be an object that (a) is wholly present a time, (b) does not endure, and (c) has no part which endures. That is, the stages needed by the MTP must be *exclusively* momentary things.

So far our characterization of an occurrent property would allow the property of being a stage to be occurrent. We’ve assumed that an occurrent property is one that individuals present only for an instant can instantiate; and to instantiate the property of being a stage, one need not be present for more than an instant. But we should consider whether this adequately captures the idea of being an occurrent property. The intuitive idea of an occurrent property is to be such that your instantiation doesn’t depend on what is the case at other times.<sup>29</sup> In other words, it is a temporally-intrinsic property. But the property of being a stage *does* depend on what happens at other times, for it requires that what instantiates it does *not* exist (or: is not present) at other times. In short, it is a negative extrinsic property.<sup>30</sup>

Offering an adequate non-circular definition of occurrent property is a challenge I’m not going to undertake here. But if we allow with Lewis that we should begin with a base of natural properties that are themselves intrinsic — including in this temporally intrinsic, or occurrent — it is reasonable to conclude that the property of being a stage shouldn’t count as part of the Humean base.<sup>31</sup> It is one of the cases we’d be trying to rule out in formulating an adequate definition of occurrent property. However, if the property of being a stage is not among the postulated base of micro-qualities, we must consider the question whether it supervenes.

### *Synchronic Unity*

The question before us is this: considering worlds like ours in their natural endowment, do those which have the same distribution of micro-qualities also have the same distribution of stages, i.e., the same distribution of exclusively momentary things? A thorough discussion of this question would take us into issues about the individuation of distributions I won’t take up right now; but let us allow that two worlds have the same distribution of micro-qualities just in case they each have the same inventory of micro-qualities instantiated at each point. The problem is that just given a set of micro-qualities instanti-

<sup>29</sup> Of course, in saying this we have to bracket tensed facts about the past or future that obtain at other times, for in some sense a property’s instantiation now might depend on the fact that yesterday it was going to be instantiated now. In effect, we can’t define occurrent property by saying that *P* is *occurrent* just in case *P*’s instantiation at *t* doesn’t depend on facts that obtain at times other than *t*; to get it right we’d have to say that its instantiation at *t* doesn’t depend on *occurrent* facts at times other than *t*. But this would introduce a circularity in the definition. Lewis’ strategy here is to begin with a (primitive) notion of naturalness to distinguish primary from derivative properties. An occurrent property is one whose instantiation at *t* doesn’t depend on what natural properties are instantiated at times other than *t*. I.e., intrinsicness (including temporal intrinsicness) is defined in terms of naturalness. See Lewis, ‘New Work for a Theory of Universals’, pp.355-357.

<sup>30</sup> See, D. Lewis, ‘Extrinsic Properties’, *Philosophical Studies* 44 (1983) p.199.

<sup>31</sup> Lewis, ‘New Work for a Theory of Universals’, pp.355-357.

ated *at a point*, it would seem to be an open question how the qualities are distributed among individuals at the point. Are the micro-qualities each instantiated by different though coincident (i.e., overlapping) individuals? Are all the micro-qualities instantiated by one individual? Do we allow indiscernible individuals at the point? In short, what determines that there is only one way (at least among inner worlds) that the given micro-qualities instantiated at a point can be distributed among individuals?

How one answers these questions will depend on one's metaphysical approach. Theorists clearly differ in their accounts of instantiation, and their chosen principles of synchronic unity: when are we entitled to conclude that there is something co-instantiating properties at a point?<sup>32</sup> But what's at stake here is whether we have a guarantee that (at least within inner worlds), given a set of qualities instantiated at a point, there is only one way that they can be distributed among stages. If not, then there will be worlds that have the same distribution of micro-qualities at each point, but differ in what momentary things there are. Admittedly, there are a variety of principles that, when combined, could assure that stages supervene on a distribution of micro-qualities; but the point is that if stages supervene, there must be a principle of synchronic unity which takes us from a distribution of instantiated qualities to an inventory of stages.

Given that there is a variety of options in formulating principles of synchronic unity, how should we proceed? I propose that we grant that stages supervene, and briefly consider what sort of principle might assure us that they do. At this point I want merely to suggest a principle of synchronic unity that plausibly supports the imagery of patchworks and mosaics, for our concern has been to see whether this picture leaves room for endurance. So: what principles do we use to construct the world's 'patchwork'? How do we get the point-sized 'patches'?

A fairly common view (especially popular with temporal parts theorists) is to insist that no two particulars occupy exactly the same spatio-temporal region. In keeping with this let us allow that at least within inner worlds, *given a set of natural qualities instantiated at a point, there is a single point-sized particular wholly present at the point that co-instantiates all of the qualities in the set.*<sup>33</sup> Accepting this has the consequence that if there are incompatible natural qualities, they are not instantiated at the same point.<sup>34</sup>

This principle is just an example; for my purposes the example is especially useful because it offers a parallel to the principle of diachronic unity I will eventually propose. In short, one main point of my argument will be to show that just as there are principles of synchronic unity that (given a distribution of micro-qualities) determine what momen-

<sup>32</sup> Note that questions of synchronic unity are strikingly similar to questions of diachronic unity: e.g., do we postulate individual tropes for each quality at a point, and use a kind of mereology to combine these individuals into wholes? Or do we allow that the same individual directly instantiates all the qualities at a point?

<sup>33</sup> This principle is crude. To guarantee that there are no other particulars instantiating qualities at the point, we could plausibly employ more basic principles that could work together to rule out overlap. A guiding idea would be that no two individuals instantiate the very same natural qualities and spatio-temporal position. For my purposes, however, we can make do with the crude principle, since the main point is to show that we need *some* principle in order to get stages to supervene.

<sup>34</sup> Note, however, that this doesn't do all the work, for in order to guarantee that stages supervene, we would have to consider additional principles governing spatially-extended momentary things.

tary things to admit into our ontology, there are principles of diachronic unity that determine what enduring things to admit. The argument from Humean Supervenience against endurance fails primarily because it assumes that such principles are not available to the endurance theorist. More generally, I will argue that the perdurance theorist employs a quite complex strategy for capturing our intuitions about persistence, and if we allow the endurance theory to mimic this strategy, the endurance and perdurance theories end up accommodating Humean supervenience equally well.

## V. Perdurance

Now we are in a position to return to the question whether perdurance supervenes on the distribution of micro-qualities. Granting that stages supervene, we can ask: do any two (inner) worlds that differ in what perdures also differ in their distribution of micro-qualities in stages? The answer seems clear: as indicated above, perduring things are mereological sums of the momentary things which are their parts. So long as the appropriate 'sum-constituting' relations between stages supervene on the qualities and spatio-temporal relations of the stages, then worlds indiscernible with respect to their arrangement of stages will be indiscernible with respect to perdurance. Because perdurance is (at least in principle) compatible with Humean supervenience, the MTP can tolerate persistence in Humean worlds. But does the MTP provide an account that does justice to our intuitions concerning actual world persistence? To answer this we need to consider in more detail how perduring sums are constituted, and more generally, the methods employed by the MTP in accounting for the diachronic unity of ordinary particulars.

### *Perdurance and Unrestricted Mereology*

Let us suppose that we allow unrestricted mereological aggregation to do the work of constructing persisting particulars. Employing a principle of unrestricted mereological aggregation, any collection of stages, however miscellaneous and gerrymandered, constitutes a particular.<sup>35</sup> However, if we rely on unrestricted aggregation, then it appears that the perdurance theorist ends up with both *too much* and *too little*, i.e., both too many and too few persisting things.<sup>36</sup> More specifically, is it plausible to claim that every such particular is a persisting thing (doesn't it give us too much)? And can we account for all the world's persisting things by treating them simply as aggregates constituted by relations supervening on the distribution of qualities (doesn't it give us too little)?

In considering persisting things, it is reasonable to think that persistence requires (at least) spatio-temporal continuity; however, if one indiscriminately allows all stage sequences to constitute perduring particulars, then two spatio-temporally distant and qualitatively diverse points may constitute a persisting particular. But it would be strongly counter-intuitive to say that such collections of points persist. Moreover, again

<sup>35</sup> Lewis endorses unrestricted mereology. See Lewis, *On the Plurality of Worlds*, p.211.

<sup>36</sup> A temporal parts theorist need not endorse unrestricted mereology. (In the terms I will introduce below, she need not opt for the strategy of abundance.) However, the appeal of unrestricted mereology is that its generality makes the introduction of perduring things look like a quasi-logical point. In my discussion of the MTP in this section, I gloss over a number of different strategies such a view might employ in arguing that perduring things supervene.

drawing on intuitions about persisting things, one might resist saying that every arbitrary sequence of stages, although particular, constitutes a ‘thing’ (or ‘object’). Real things are members of kinds, i.e., they display specific kinds of qualitative and causal continuity. Some perduring aggregates, however, are not plausibly members of kinds. Thus, it seems that if perduring particulars are just mereological aggregates, then the perdurance theorist has failed to offer an adequate account of persisting things. This is a significant point in the context of the argument against actual endurance, for Lewis proposed that enduring things do not supervene because enduring things ‘trace out loci which cut across all lines of qualitative continuity’; but isn’t there a sense in which the same holds true of mereological aggregates? Why is this a problem for endurance but not for perdurance?

There are a number of ways a perdurance theorist might respond. Given the working definition of persistence with which we began (a particular ‘persists iff, somehow or other, it exists at different times.’), let us allow that any mereological aggregate of parts persists, i.e., perdures.<sup>37</sup> We can then reserve the notion of *continuous persistence* for the more intuitive idea of things that enjoy spatio-temporal continuity. Likewise, the perdurance theorist can claim that any sequence of stages constitutes a particular ‘entity’, but allow that not all entities are genuine *objects*. Taking this option we grant that genuine objects are members of kinds, and kinds require, e.g., qualitative and causal continuity. Some mereological aggregates fail to be persisting objects, not because they fail to persist, but because they fail to be members of kinds. The point is simply that there is a difference between arbitrary collections of stages and ordinary things, and that many perdurance theorists acknowledge the need to account for that difference.

I claimed above that the perdurance theory seems to give us both too much and too little; we have considered how to handle the abundance, but what of its limits? Within the inner sphere of worlds, the only relations that can do the work of constituting the persisting material objects we know and love, are those that supervene on the distribution of natural qualities. But for some kinds of things, this may not be enough. For example, many believe that spatio-temporal and qualitative continuity is not enough to constitute most kinds of material object, for we need causal relations (between stages) as well. Thus it becomes a controversial issue whether causality supervenes on the distribution of qualities. I myself have doubts about this<sup>38</sup>, and Lewis admits worries about this as well.<sup>39</sup> These doubts are significant, and not just because they highlight the fact that there are some relations, e.g., causation, that pose challenges to Humean supervenience. What they also indicate is that it is not a settled question what relations between stages are sufficient to constitute what we take to be the genuine persisting objects.

Mereological aggregation within the inner sphere of worlds may fail to yield certain kinds of objects if those kinds require their members to have properties that do not super-

<sup>37</sup> Whether Lewis would endorse this is not wholly clear. E.g., he says: ‘Persisting particulars consist of temporal parts, united by various kinds of continuity.’ *Philosophical Papers, Vol. II*, p.xiii. If some mereological sums display no kind of continuity, then it would seem that some sums don’t persist. Yet he also claims that *x* persists if ‘somehow or other’ it exists at different times (*On the Plurality of Worlds*, p.202). I’m following the latter definition of persistence here.

<sup>38</sup> See Haslanger, ‘Persistence, Change, and Explanation’, *op.cit.*

<sup>39</sup> See Lewis, *Philosophical Papers, Vol. II*, p.xiii; and his Postscript B to ‘Survival and Identity,’ in D. Lewis, *Philosophical Papers, Vol. I* (Oxford: Oxford University Press, 1983) pp.76-77.

vene on the distribution of qualities. Here the example of causal continuity is again helpful. Suppose that in order for a given sequence of stages to be a person, the stages must be causally connected, and suppose that causal continuity does *not* supervene on the natural qualities. Then Humean worlds will have no perduring *persons* (though they may have perduring things which are person-like); in contrast, non-Humean worlds that duplicate ours in their arrangement of qualities, and also have non-supervening causal relations, will have perduring persons. Admittedly the example is controversial, for causal continuity may well supervene. But we don't need to rely on causal continuity to make the point. In outer worlds there will be relations that don't supervene on the arrangement of qualities, and these relations may be what makes the difference between something's being a mere sequence of stages and its being a perduring thing of a given (alien) kind.

From these reflections we can see that by supposing that there are certain kinds of objects, we may disrupt Humean supervenience: supposing that there are perduring spirits will be incompatible with Humean supervenience if in order to be a persisting spirit one must have properties that don't supervene on the distribution of our natural qualities. But in such cases, the Humean's strategy is to deny that such kinds are actually instantiated.

### *Strategies of Abundance and Conservatism*

We should now return to the question raised above: the argument against endurance claims that the supposition of actual enduring things conflicts with Humean supervenience, since enduring things 'trace out loci which cut across all lines of qualitative continuity'. We have noted that mereological aggregates in some sense do the same: at least, there are some perduring aggregates that display no qualitative continuity. However, the MTP avoids conflicts with Humean Supervenience, on one hand, by virtue of its abundance, and on the other, by virtue of its conservatism. First, *abundance*: perduring things supervene on the distribution of natural qualities not because they are better at following the paths of qualitative continuity than enduring things, but because perduring things are generated indiscriminately, without restriction. The world is a plenum of perduring things regardless of what qualities are or are not instantiated: paths through spacetime are not privileged by being occupied by a perduring thing, or to put it better: no path through spacetime is distinguished by *not* being occupied by a perduring thing. What Lewis seems to be assuming is that enduring things, unlike perduring things, do discriminate paths in spacetime, and do so without regard to qualitative continuity.

On the other hand, the MTP avoids conflict with Humean Supervenience by restricting what sort of things it assumes there are; this is its *conservatism*. As noted above, if one assumes that there are things that require more than a Humean world offers (e.g., spirits, maybe persons, maybe even causally integrated material objects), then conflicts will arise. Typically, the MTP theorist prefers not to make judgments about what *kinds* of things there are in the world, until it can be established that such things supervene. But suppose we allow the endurance theorist to employ the same strategies of abundance and conservatism; couldn't we likewise guarantee that enduring things supervene?



## VI. Endurance

There are a number of different kinds of endurance theory. I will begin by sketching briefly an indiscriminate endurance theory that parallels the unrestricted MTP in its strategies. Although this theory can't claim the virtue of great intuitive appeal, to my own mind its consequences are no more horrifying than the consequences of the MTP, and I think combining the two probably makes things better rather than worse. However, I also believe that there is something wrong about the broader strategies that both indiscriminate views employ for thinking about ontology. I will go on to suggest some ways that we might refine the indiscriminate endurance theory, indicating where I think there will be difficulties. And I'll then conclude with a few general remarks on the state of the debate.

*Indiscriminate Endurance*

An indiscriminate endurance theorist matches the indiscriminate perdurance theorist in ontological abundance, allowing a plethora of enduring particulars: those arrangements of natural qualities sufficient for there to be any sequence of stages, i.e., a perduring thing, is also sufficient for there to be an enduring particular instantiating (at different times) the occurrent properties of those stages. Roughly, for each sequence of times, and each sequence of sets of occurrent properties co-instantiated at those times, there is an enduring particular that instantiates (at each time) the associated properties in the sets.<sup>40</sup>

Endurance theorists face many difficult and substantive questions in spelling out such views (perhaps more because endurance has not received the systematic attention that mereology has), but the principles by which we get enduring particulars are not completely foreign to us. In general we accept particulars in our ontology by virtue of their instantiating properties. The momentary (point) things of the MTP are those entities which co-instantiate a given set of natural qualities and external relations of spacetime. The assumptions of co-instantiation are important: the MTP theorist assumes that there is a single particular co-instantiating the qualities at a point; the (indiscriminate) endurance theorist assumes that there is a single particular co-instantiating the qualities at [any] sequences of points along the temporal axis. In both cases we rely on principles which tell us that given a distribution of qualities across points, we can conclude that certain conjunctions obtain attributing the qualities to a single individual.

Of course it is one thing to assert the principles of co-instantiation, another to explain and motivate them. Although I won't be in a position to do a thorough job here, a few comments will help. When I introduced the idea of stages I suggested that the MTP theorist assumes that incompatible natural qualities are not instantiated at a single point; this was required if we assume that there is a single individual instantiating all the qualities at each point. However, we are not in a position to claim that incompatible qualities (or incompatible supervening properties) are never instantiated across sequences of points; this in fact would be required in order to accommodate genuine change. So how can we allow that there is a single (enduring) individual instantiating the incompatible

<sup>40</sup> This statement of the position will need further work in order to make sure we sift out those occurrent properties which might be had by a stage which could not be instantiated by an enduring thing.

sets of qualities?

The answer is that the enduring individual instantiates the properties *at different times*. There are several ways to develop this idea; here is a sketch of one way. Consider a distribution of qualities across points: a string of existential generalizations that simply locates the subject of each quality at a point. We have points; we have (momentary) subjects at points instantiating qualities; why should we hesitate to conclude that these momentary subjects instantiate the qualities *at times*? In effect, given a distribution of qualities (simply) instantiated by momentary things, begin by inferring that the momentary things *instantiate at a time* their qualities. Then introduce an endurance principle of co-instantiation: for each sequence of (sets of) properties *instantiated at a time*, there is something which instantiates at each of the times those properties.<sup>41</sup>

This proposal would allow temporal gaps in enduring things, and so for the reasons discussed above, it would be implausible to say that such enduring particulars *continuously* persist, but just as the perdurance theorist takes continuously persisting particulars to be those among the aggregates whose parts are spatio-temporally continuous, likewise the indiscriminate endurance theorist will privilege those sets of properties whose instantiations are spatio-temporally continuous as those one must instantiate in order to *continuously endure*. By adding further requirements of continuity among the sets of properties, one limits further what kinds of enduring *things* or *objects* there are. No doubt the unrestricted endurance theory is unlovely in its abundance; but parsimony is not in itself a virtue, and just as the MTP theorist can employ different 'ways of counting' to mitigate the shock of numbers, so can the endurance theorist.

It should be clear that on this indiscriminate or unrestricted endurance theory, enduring things supervene on the distribution of qualities. Again, this is by virtue of abundance; there is no path of spacetime that is not graced with an enduring particular, regardless of what qualities are instantiated there. As in the case of the MTP, the endurance theorist must employ a conservative strategy in order to avoid conflict with Humean supervenience, i.e., one must be careful in assuming what *kinds* of enduring

<sup>41</sup> Consider a function  $F$  from times to sets of qualities. We start with the MTP assumption of synchronic unity:

For all  $t$ , there is an  $x$  (stage), such that  $x$  has  $F(t)$ .

I propose we can then conclude:

For all  $t$ , there is an  $x$  (stage), such that  $x$  has  $F(t)$  at  $t$ .

To get endurers, we then conclude:

For any  $t$  and  $t'$ , there is an  $x$  (endurer), such that  $x$  has  $F(t)$  at  $t$ , and  $F(t')$  at  $t'$ .

To get perdurers, the MTP will claim:

For any  $t$  and  $t'$ , there is an  $x$  (perdurer), such that  $x$  has\*  $F(t)$ , and has\*  $F(t')$ .

(On the MTP account,  $x$  has\*  $F(t)$  iff  $x$  has a part which has  $F(t)$ .) Both the endurance and perdurance theorists rely on principles of diachronic unity which employ kinds of instantiation (*having\** and *having* . . . at  $t$ ) which differ from the assumed primitive instantiation (*having simpliciter*). But it is by no means obvious that *having\** is more acceptable than *having at t*. For example, one might argue that enduring things are not really a different kind of thing than the stages: both are wholly present at times and instantiate properties at times. Yet we can't say this of perdurers and stages. It is worth noting, however, that all this brackets out complications which arise to handle spatial extension — to start, it might help to replace the 't's above with 's/t' points, and work from there.

particulars there are, since some kinds of things will require that properties be instantiated which don't supervene on the distribution of qualities.

### *A Sparse Theory of Enduring Objects*

Admittedly, most endurance theorists would not be comfortable with unrestricted endurance, and will want to limit what endures. For most of us, the paradigm enduring particulars (if not the only ones) are those that meet conditions for membership in a kind; i.e., enduring particulars are genuine objects. The conditions for membership in a kind specify conditions for existence and for continued existence; they determine what changes an object of that kind can and cannot tolerate. Whether an object of a given kind *exists* and *continues to exist*, depends on what properties are instantiated and what changes occur. So in effect, under certain conditions specified by the kind, an object comes into existence, and it continues to exist until it undergoes those changes incompatible with things of its kind.

In other words, a discriminating endurance theorist will restrict the principle endorsed by the indiscriminate endurance theorist for accepting enduring particulars into our ontology; for only some temporally ordered sequences of properties — those meeting conditions constitutive of a genuine kind — are we entitled to say that there is something that co-instantiates them. This gives us a *sparse theory* of enduring objects.<sup>42</sup> But even with such restrictions, an enduring object's existence and continued existence will supervene on the pattern of properties which are instantiated, that is, at least as long as we maintain a conservative strategy in postulating kinds of enduring things.

(Consider, e.g., the long-standing project of analyzing the conditions for personal identity. In considering the changes that are compatible with the existence and continued existence of a person, one is plausibly trying to determine the arrangements of qualities (and causal relations) on which an enduring person supervenes.<sup>43</sup> Admittedly we can interpret this project as a matter of defining a unity relation that unites stages of a person into a perduring person, but we might ask whether this interpretation is adequately motivated. Is it not prompted by a lingering, although mistaken, temptation to think that endurance is not a coherent option?)

Although one might think that there are only a very few (real) kinds with very rigid conditions — thus making it hard to be an enduring thing — one might also think that there are lots of weird kinds, and correspondingly lots of weird enduring things. If you get weird enough, you end up back at unrestricted endurance. Needless to say, it is a terribly difficult question to say what exactly kinds are, how we determine what they are, and what ones there are. It is an old complaint to say that commitment to kinds requires one to privilege certain qualities or patterns of qualities over others when there is no basis for such preferential treatment. This is a problem I will admit, and one which I have little or nothing to say (on either side) that hasn't been said better by others. But we should note that there is a variant of the same problem for the perdurance theorist as

<sup>42</sup> Thanks to an anonymous referee for suggesting the use of the term 'sparse theory' here in order to echo the debate between Lewis and Armstrong on universals. (See, e.g., Lewis, 'New Work for a Theory of Universals', *op.cit.*)

<sup>43</sup> This appears clear, e.g., in S. Shoemaker, 'Personal Identity: A Materialist's Account' in R. Swinburne and S. Shoemaker, *Personal Identity* (Oxford: Blackwell, 1984).

well — at least for the perdurance theorist who wants to account for a difference between mere entities and genuine objects in terms of kinds.

In order to endure, one must be wholly present at more than one time; and in order to perdure, one must have parts that are wholly present at different times. No one disagrees about this. There is room for disagreement in both camps about what kinds of things endure and what kinds of things perdure. If one rejects the idea that endurance and perdurance must answer to the intuition that a persisting particular is a genuine spatio-temporally continuous (kind of) object, then one can opt for the indiscriminate versions of each (or even both), with the result that perdurance and endurance supervene unrestrictedly on the distribution of natural qualities; there is no path (or path-segment) through time that lacks an enduring/perduring particular. I maintain that both of the unrestricted principles which serve as the basis for the indiscriminate endurance or perdurance ontologies are substantive metaphysical principles; for example, both depend on controversial views about part and whole, and predication.<sup>44</sup> So it is not plausible to claim that unrestricted mereology is part of 'logic', whereas unrestricted endurance is not. The two are, in an important methodological sense, on a par.

The discriminating endurance theorist who opts for a sparse theory differs from the others in thinking that whether there is a particular that endures through a given path will depend on what properties are instantiated along that path, and what kind of thing is in question; she rejects the indiscriminate generation of entities favoured by the others. However, because the endurance of many kinds of things will supervene on the distribution of Humean qualities, a sparse theory need not violate Humean supervenience as long as it remains conservative about what kinds of things it admits.

## VII. Re-evaluation

With these accounts of endurance in mind, we should return to re-evaluate the argument against actual enduring particulars. Let me summarize the argument again: if there are actual enduring things, then because endurance is non-occurrent, it must supervene on the distribution of (Humean) natural qualities. Endurance supervenes only if any two worlds within the inner sphere that are natural duplicates, are also endurance duplicates. But because enduring things (to quote yet again) 'cut across all lines of qualitative continuity', the instantiation of endurance in the inner sphere allows worlds to be natural duplicates that differ in what endures. This violates Humean supervenience, so endurance is not a natural possibility for our world.

Here it is natural to wonder what sort of endurance theorist the argument is addressing. It is certainly not addressing an indiscriminate endurance theorist who (parallel to the indiscriminate mereologist) takes there to be, for any selection of points, an enduring thing wholly present at these points. On both of these views, the world is a plenum of entities, and endurance, like perdurance, supervenes on the distribution of natural qualities over spacetime. Nor is the argument addressing an endurance theorist who sets conditions on endurance in terms of spatio-temporal and qualitative continuity; for obvious reasons, such endurance too will supervene. Nor is the argument addressing a discrimi-

<sup>44</sup> For a critical discussion of unrestricted mereology, see e.g., P. van Inwagen, *Material Beings* (Ithaca, NY: Cornell University Press, 1990).

nating endurance theorist who opts for an appropriately conservative sparse theory. After all, insofar as it is plausible that there are any genuine perduring *objects* (and not just entities), it is plausible that membership in some kinds will supervene on the Humean base.

Instead, the argument seems only to be effective against an endurance theorist who takes a view short of indiscriminate endurance (so there are some limits to what endures), but where enduring things are randomly distributed relative to the distribution of natural qualities. Such enduring things are like little lost souls adventuring through the vast expanse of spacetime, taking on whatever qualities they encounter. It is difficult to think of anyone who would find such a view plausible, (though perhaps the image is inspired by the thought of 'bare particulars'). Such enduring objects are no *kind* of thing at all. Although they may exist in a plenum of enduring particulars (i.e., on the indiscriminate endurance theory), a sparse endurance theory will reject such things.<sup>45</sup>

But, you may ask, what of the argument that endurance requires more than the Humean base of natural qualities, because endurance can always be 'subtracted' without disruption of the base? Here I must insist that endurance cannot be 'subtracted'; e.g., if you have a distribution of qualities that makes for a horse's life history, then you have an enduring horse. I submit that the 'something more' that is not given in specifying the base is the co-instantiation of the sequence of properties in an enduring thing; but likewise the introduction of stages relies on 'something more' in assuming the co-instantiation of qualities at a point. The supervenience of one set of properties on another will typically depend on background ontological principles that interpret the facts of instantiation, and license the introduction of entities; this conclusion also bears on debates beyond the narrow issue of persistence. I have no doubt that MTP theorists will reject the principles on the basis of which enduring things supervene. But I think they are mistaken in doing so.

### VIII. Conclusion

The project of this paper has been to defuse one line of argument against the suggestion that there are actual enduring particulars. As I suggested at the beginning, the most significant current challenge to the claim that there are enduring particulars arises not out of puzzles about change, but from a sweeping and compelling picture of what our world is like, a picture that gives rise to analogies with patchworks and mosaics. If the world is just an arrangement of perfectly natural qualities in point-sized things, and what supervenes on that arrangement, are there enduring particulars? I have just argued that the existence of actual enduring particulars is compatible with the supervenience of all else on the limited Humean base. How can that be? What commits us to the imagery of a mosaic, and what intuitions guide this imagery?<sup>46</sup>

<sup>45</sup> Though let me qualify this last point. Such wandering enduring objects may be a kind of thing which is altogether foreign to us, something whose existence and continued existence is determined by qualities and relations alien to our world. Such particulars are possible; some worlds have them (though I would not be inclined to call such things 'rubbish', as Lewis does). If one accepts Humean Supervenience, one must conclude ours does not. But one might also choose to accept such non-Humean objects and reject Humean Supervenience instead.

<sup>46</sup> Note that the mosaic imagery is most important to Lewis (and Armstrong) as a model of *possibility*: typically they use it to motivate the principle of recombination. (Just as patches can be

The arguments I have offered suggest that the imagery is apt only if we accept a policy that allows the introduction of stages to co-instantiate micro-qualities, but discriminates against the introduction of enduring things to co-instantiate sequences of micro-qualities. One important issue that divides the endurance from the temporal parts theorist is whether mereology provides the only legitimate principles to guide our inferences concerning the existence of particulars. My strategy has been to ask: why should we endorse the introduction of stages and perduring things, and yet not enduring things? Are the principles we must adopt if endurance is to supervene any less plausible than those we must adopt for stagehood and perdurance to supervene?

More generally, the discussion should lead us to ask: under what conditions are we entitled to assert that there is a particular co-instantiating a set of properties? What is the relationship between diachronic unity and synchronic unity? On these background ontological principles the debate becomes most focused, and certainly the principles deserve more sustained attention than I have been able to offer here. Moreover, the emergence of such principles as underpinning the argument from supervenience should lead us to consider in what other contexts an emphasis on supervenience is masking a deeper ontological debate. But it is important to recognize that the doctrine of Humean supervenience justifies thinking of the world on the model of a patchwork, and likewise excludes enduring things, only if it is combined with further substantive and controversial principles about particulars and predication. Those of us who question the perdurance theorist's choice of principles need not reject Humean supervenience (though we might on other grounds). Nevertheless, we do perhaps face the challenge of finding better images than those of mosaics and patchworks to inspire our metaphysical imaginations.<sup>47</sup>

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<sup>46</sup> *continued. . .*

recombined in any way, so can particular facts . . .) In short, they want the units of possibility to be independent. But the supervenience of endurance doesn't threaten this: the base facts can be recombined in any way, even though *how* they are recombined will determine what endures. This raises important questions, however, concerning the extent to which an endurance theorist is committed to allowing necessary connections between distinct existences. (The denial of such necessary connections is, after all, what gives 'Humean' supervenience its name. See Lewis, *Philosophical Papers, Vol. II*, p.ix.) Endurance theorists have a number of options — including being willing to accept such necessary connections. I leave discussion of those options to another time.

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