

## *Can There be Spatially Coincident Entities of the Same Kind?*

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### **I Introduction**

The majority of philosophers believe that the existence of spatially coincident entities is not only a coherent idea but that there are millions of such entities.<sup>1</sup> What such philosophers do not countenance are spatially coincident entities of the same kind.<sup>2</sup> We will call this 'Locke's

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1 For the traditional view, see John Locke *An Essay Concerning Human Understanding*, Peter Nidditch, ed. (Oxford: Oxford University Press 1975), 328. David Wiggins has written the seminal modern essay 'On Being in the Same Place at the Same Time,' *Philosophical Review* 77 (1968) 90-5. The richest recent defense is by Lynne Rudder Baker, *Persons and Bodies: A Constitution View* (Cambridge: Cambridge University Press 2000). For a fuller list of references, see Eric Olson, *The Human Animal: Identity Without Psychology* (Oxford: Oxford University Press 1997), 175 n. 3. A minority of philosophers do not believe that there exist spatially coincident entities of *different* types. I place myself in this group. See Peter van Inwagen, *Material Beings* (Ithaca: Cornell University Press 1997), 97-102; Dean Zimmerman, 'Theories of Masses and Problems of Constitution,' *Philosophical Review* 104 (1995), 90; Michael Burke, 'Copper Statues and Pieces of Copper,' *Analysis* 52 (1992) 12-17; and W.R. Carter, 'Our Bodies, Our Selves,' *Australasian Journal of Philosophy* 65 (1998) 308-19.

2 David Oderberg suggests that Locke's thesis be described as one forbidding spatially coincident substances of the same kind. This is because there could be two nonsubstances of the same kind in the same place. Two shadows or two waves could occupy the same place but they are not substances. 'Coincidence Under a Sortal,' *The Philosophical Review* 105 (1996) 145-71. Though I am sympathetic to Oderberg's

Thesis' since the denial goes back to *An Essay Concerning Human Understanding*. It is there that Locke wrote, 'For we never finding, nor conceiving it possible that two things of the same kind should exist in the same place at the same time, we rightly conclude that, whatever exists anywhere at any time, excludes all of the same kind, and is there itself alone.'<sup>3</sup> It is not clear to me that the believer in spatially coincident entities can draw the 'ontological line' where Locke does. Many of the reasons that lead Locke and others to maintain that there exist spatially coincident entities of different kinds would also suggest that there are spatially coincident entities of the same kind. To illustrate this claim, a scenario of spatially coincident roads will be presented.

After the introduction, I will try to capture what it is that might be thought of as so problematic about spatially coincident entities of the same kind but that doesn't likewise plague spatially coincident entities of different kinds.<sup>4</sup> The latter are alleged to avoid problems of individuation that the former do not. Next on the agenda will be a discussion of a recent attempt by Christopher Hughes to present a counterexample to Locke's Thesis.<sup>5</sup> My contention is that Hughes's example has too many controversial assumptions. After exploring some problems with Hughes's view, the example of two spatially coincident roads will be presented. It will be argued that features which make the majority of philosophers amenable to the existence of spatially coincident entities of a distinct kind are likewise present in my example of the pair of spatially coincident roads. Then to reinforce intuitions in support of spatial coincidence of the same kind, and to prevent a four dimensionalist response that avoids positing them, a twist on the original roads example, reminiscent of Gibbard's Lump-Goliath scenario, will be provided.<sup>6</sup>

Following the presentation of the (allegedly) spatially coincident roads will be a statement of what intuitive notions must be given up to avoid the counterintuitive prospect of two roads in the same place at the

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distinctions, for the purposes of this paper I am going to ignore it. This won't have any affect on the paper's thesis and it allows me not to get into debates about what makes something a substance, whether there are any, how do they avoid reduction to bare substrata, whether we must speak of bundles of tropes, etc.

3 Locke, *An Essay Concerning Human Understanding*, 328

4 It is assumed throughout this paper that the alleged spatially coincident entities are composed of the same matter.

5 Christopher Hughes, 'Same-Kind Coincidence and the Ship of Theseus,' *Mind* 106 (1997) 53-67

6 Allan Gibbard, 'Contingent Identity,' *Journal of Philosophical Logic* 4 (1975) 187-221

same time. Readers can avoid the conclusion of spatial coincidence only at the expense of denying the reality of any roads or having to accept some extremely counterintuitive principles about the nature of roads. For instance, they may be forced to claim that a road cannot become smaller when just a short section of it is destroyed, or that two roads cannot overlap even for short distances.

However, if readers refuse to abandon their intuitions about the properties of roads and how they come into and go out of existence, then they will be compelled to accept the existence of spatially coincident entities of the same kind.<sup>7</sup> And they won't be able to keep the number at two. If they allow a pair of spatially coincident roads, they will, in certain situations, have to tolerate hundreds of roads in the same place at the same time. While this conclusion is unwelcome, the reasons leading us to it are the same as those that provide support for believing that there are spatially coincident entities of different kinds such as a statue and a lump of clay, or even a road and the collection of bricks (or slab of asphalt) that constitutes it. So I will leave the reader in a dilemma, both horns of which are the result of premises of our common sense ontology.

## II Individuating Spatially Coincident Entities

What is so metaphysically troubling about spatially coincident entities of the *same* kind? In particular, what problems plague them that don't likewise make trouble for the believer in spatially coincident entities of *different* kinds? Unfortunately, Locke doesn't say much about this other than if two things of the same kind are in the same place, then the concepts of identity and diversity would be 'in vain.' I take it that the problem is that we couldn't distinguish such objects or know how many we have. For instance, how would we know if one had been destroyed by God and the other preserved? Or perhaps part of the problem is that even God couldn't destroy the one and not the other. And where two spatially coincident entities of the same kind are posited, what is to prevent someone from claiming instead that there are three or four or an infinite number of coincident entities of the same type in that space? And if there are two spatially coincident entities, X and Y, which later separate, how would we know whether the one that emerges on the left of the other was X rather than Y? We could stipulate which of the

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<sup>7</sup> An anonymous reviewer brought to my attention that Kit Fine has offered a very different argument against Locke's thesis in his 'A Counter-Example to Locke's Thesis,' *Monist* 83 (2000) 357-61.

previously spatially coincident entities is the one on the left and the other previously spatially coincident entity is the one on the right. But genuine individuation isn't accomplished via stipulation. It is important to stress that the recourse to stipulation isn't a result of our epistemological limits. Rather, there doesn't appear to be a fact of the matter that could individuate the alleged entities. Thus there would appear to be little reason to believe that there could be spatially coincident entities of the same kind.

In David Oderberg's work, it is this last problem of individuation that motivates the skepticism of same kind coincidence.<sup>8</sup> He illustrates the problem with puddles of equal size that are sliding down opposing inclines into a shared valley area. After reaching the valley floor, the puddles merge, and then, moments later, there emerge two puddles of equal size that come to rest a short distance from where the two puddles from the inclines had earlier merged. Would one of the now motionless puddles (call it 'Lief') be identical to the puddle from the left incline, and would the other puddle (call it 'Rick') be identical to the puddle from the right incline? Readers may be tempted to assert such an identity if Lief is composed of the same aggregate of water molecules as was the puddle on the left incline, and Rick is composed of the same aggregate of water molecules that composed the puddle on the right incline. But in that case, Oderberg asks, 'Why think the puddles were ever spatially coincident?' If readers are assuming that Lief and Rick had (respectively) the same molecules throughout their histories, then they never were in the same place. The water molecules may have become intertwined in a sense, but this just means that they were adjacent and the puddles thus were in close proximity to each other. The puddles would be genuine instances of spatial coincidence if they came to share the same molecules. That is, only if, when the two puddles came into contact, they each doubled in size.

Moreover, puddles are the types of things that can change size. Mereological essentialism is not true of puddles, for they can be made smaller by a process of evaporation. And puddles can become larger when *some* water is added.<sup>9</sup> Therefore, if the puddles from the right and left incline merged, isn't the correct description that they then formed one larger puddle, rather than two spatially coincident puddles, each

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8 Oderberg, 'Coincidence Under a Sortal,' 157-9

9 A puddle can't become so small that it survives as a drop, nor can it become so large that it persists as a pond. Nathan Salmon has expressed doubts whether our intuitions really exclude a puddle becoming a pond.

much larger than it was moments before the merging of molecules? If readers insist that there are two larger spatially coincident puddles, *each* composed of the molecules that earlier composed the puddle on the left *and* right inclines, Oderberg's response is that there is no reason to claim that when Lief emerges it is identical to the puddle that was on the left incline.<sup>10</sup> If puddles can gain and lose molecules, Lief could just as well be the puddle from the right incline. The puddle from the right incline could have doubled in size when it merged with the puddle from the left incline, then lost all of its original (pre-merger) water molecules, i.e., one-half of its (post-merger) total, when it emerged as Lief.<sup>11</sup> Oderberg's conclusion is that there is no way to individuate such alleged spatially coincident puddles. And if there is no way *in principle* to individuate such puddles, there is no reason to believe that there were two spatially coincident entities before the halving.

If there are spatially coincident entities of *different* kinds, they must avoid the problems of individuation that confront the puddles. How does the believer in the nonidentity but spatial coincidence of statues and lumps of clay, or persons and organisms, distinguish them? Instead of asserting coincidence, why not claim that the lump is the statue, and the organism is the person? One strategy for doubting the identity of the lump and the statue is to point out that the lump preexisted the statue. We wouldn't say that the statue existed as an unmolded lump before the sculptor went to work. But one can't just appeal to the fact that the lump predated the statue to distinguish true from false claims of spatial coincidence because one of the puddles could have existed before the other. However, a lump differs from a statue not just in its historical properties, but also in its dispositional and modal properties. The statue can be destroyed in such a way that the spatially coincident lump of clay survives and can be identified as the same lump that was coincident with the statue. It can be traced through space and time by its lumpish and clayish properties. This possibility appears to distinguish the lump from the puddle. There is no way to individuate the puddles in order for us, or any other creature, to tell if one puddle, rather than another puddle with which it was spatially coincident, was destroyed. Furthermore, the statue could survive a piece of it being replaced by, say, a marble hand. While the lump of clay would have become smaller, the statue wouldn't. But we can't make sense of only one of two spatially coincident puddles becoming smaller.

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10 Oderberg, 'Coincidence Under a Sortal,' 158

11 Oderberg, 'Coincidence Under a Sortal,' 161-2

The same lessons can be obtained from alleged organism/person coincidence. The organism is considered distinct from the person not only because it exists before the onset of sentience or whatever other psychological traits are needed for personhood. The organism can survive the destruction of the person that comes about with the permanent loss of consciousness. And the person cannot be considered a mere phase or stage of the organism because it appears that the person could be transplanted if its upper brain is, but the organism would stay behind in a cerebrum-less condition that is akin to being in a permanent vegetative state — no consciousness but a functioning lower brain and brainstem. The two puddles that emerge from a fissioning of sorts, create problems of individuation that do not occur when the cerebrum is removed and the organism is left behind. The biological features of the cerebrum-less organism leave us believing that it is the same organism that earlier had a mind that was before spatially coincident with the person. And the psychological features subserved by the transplanted cerebrum lead us to believe that the same person has switched bodies.

Contrast the above accounts of person destruction and person separation with the possibility of *two* spatially coincident persons. How could one spatially coincident person survive a physical assault that another spatially coincident person, atom for atom the same, does not? Also, how could two spatially coincident persons be separated from each other and be individuated through such an event? Assuming that two persons emerge from some sort of fission, we would be forced to just *stipulate* that one of the previously spatially coincident entities is now the person on the right. Genuine individuation is not accomplished via stipulation.

### III Hughes's Alleged Counterexample to Locke's Thesis

Let's turn now to the case that Hughes touts as a counterexample to Locke's Thesis that there can't be two spatially coincident entities of the same kind. Readers will find Hughes's account plausible only if they share two assumptions. The first is that a boat can survive the complete replacement of its parts. Hughes mentions a Ship of Theseus scenario where over time a functioning boat has all of its planks replaced with qualitatively identical parts and the removed ones are destroyed. Let's call this boat 'Sea-Ship.' One of the reasons that I am wary of Hughes's example is that many people will not grant this premise about complete part replacement. In fact, I shall argue later that the only object that is virtually universally acknowledged to be able to survive part replacement, an organism, provides a good counterexample to Hughes's type of argument in favor of spatially coincident entities of the same type.

Hughes's second and less controversial premise is that an object such as a boat can be disassembled and reassembled. The same boat that existed in dry dock before disassembly will be the boat reassembled in the shipyard. Let's call this boat 'Land-Ship.' This process does not involve any part replacement. The very same planks of wood removed in the disassembly of the boat are the ones reassembled. To accept this second premise, one only has to grant either the possibility of intermittent existence — that is, the boat existed, ceased to exist, and then existed again — or that the boat existed throughout, though for a time as a scattered object.

Hughes then combines the two premises and presents the result as a counterexample to Locke's Thesis. He insists that if we have agreed that Sea-Ship can survive having its parts replaced with qualitatively identical parts, and if we have accepted the claim that Land-Ship can be disassembled and reassembled, then we should allow that the boat on land could become spatially coincident with a boat at sea if the parts of the former replace the parts of the latter.

If readers don't find this counterintuitive, they should consider that the argument would allow millions of spatially coincident boats. I don't mean millions of *pairs* of spatially coincident boats, but millions of boats where to the 'unphilosophical eye' there appears to be just one boat. To see this, consider the following scenario. After Land-Ship has become spatially coincident with the boat at sea, the old replaced parts of Sea-Ship can be reassembled somewhere else. These planks will form a new boat. This new boat can then be disassembled piece by piece and reassembled piece by piece in the location where Land-Ship and Sea-Ship are spatially coincident, each of its planks replacing one shared by the two spatially coincident boats. The replaced planks of the two boats that become spatially coincident with a third, could then be reassembled elsewhere to form a fourth boat. This fourth boat could, by repeating the above process, eventually come to exist in the same place, at the same time, with the same matter as the other three boats. This process can then go on as long as the wooden planks don't wear out or there remains an ample supply of new wood.

Perhaps if readers are willing to tolerate two spatially coincident entities of the same kind, then thousands more wouldn't bother them. I would think that the possibility of thousands more should make them more suspicious of even two such entities. Anyway, there is a pair of other reasons why Hughes's conclusion is problematic. The first has already been mentioned: many people don't believe that an artifact can survive complete part replacement. This situation is clearest with artworks and historically significant entities like documents. But it is also evident in the responses of many to the part replacement of everyday objects like tables and desks. A good number of people don't believe that

artifacts can survive complete part replacement. But the mereological judgments made of functioning artifacts should be the same as those rendered of artworks and historically significant objects. This is because any functioning artifact can become a historically significant object and vice versa. An object can't undergo a different part-whole relationship just because of a decision to display rather than use it. And functional artifacts can become artworks if displayed in museums. If so-called 'found art' is art, then any object can become an artwork if the proper intentions lead to it being displayed as art. And an object initially created as an artwork can be put to some use. It can't acquire the ability to survive full part replacement just because it was taken out of the museum.

Perhaps the different mereological intuitions that many people have that distinguish boats from desks, tables, and artworks can be explained by their just being accustomed to old boats appearing to have all, or nearly all, of their parts replaced, while they are not familiar with this happening to desks, tables, and artworks. Anyway, what might further weaken the belief that Hughes's boat can survive full part replacement is our skepticism of one boat moored at sea surviving its parts being replaced by the parts of a qualitatively different type of boat that had been in dry dock. Imagine that after a schooner undergoes complete part replacement there is to be found a clipper at the same mooring.<sup>12</sup> In such a case, most of us would assume that the boat on land had just moved rather than conclude that the original sea located ship survived part replacement. Of course, Hughes only needs one example to work in order to make his point. So if what is not true of art works and most artifacts is true of qualitatively identical boats, then Hughes has been successful. Nevertheless, I would think that the preexisting skepticism many readers harbor toward desks and tables surviving full part replacement, as well as a boat surviving the replacement of all of its parts with qualitatively very different ones, will weaken any intuitions that make them sympathetic to Hughes's account.

Even if Hughes's first premise is acceptable, there is a second problem that has to do with the introduction of new parts. I believe this to be the stronger objection of the two. When an object has parts gradually replaced, the replacement parts may get exclusively appropriated and thus are no longer the parts of the object that they previously composed. So it may be the case that the boat that the pieces of wood once constituted does not get reassembled when the latter do. Hughes recognizes this

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12 This is a modification of Judith Thomson's car example in her 'Statue and the Clay,' *Nous* 32 (1998) 149-73.

threat but reports that he has an intuition to the contrary.<sup>13</sup> He illustrates it with a story about smuggling the Ship of Theseus to a distant port. Theseus's Ship could have *each* one of its planks removed and placed in a *different* ship where a like-sized plank has been. The smuggling could be accomplished by a fleet of boats, each with one plank of the Ship of Theseus. Upon arrival at their destination, each ship could have its one plank that originated with the Ship of Theseus removed and then the Ship of Theseus could be reassembled. Hughes claims that it is just as plausible to smuggle the Ship of Theseus to a distant port by using its planks to replace those of a *single* boat and then sailing it to the desired destination. He concludes that when the boat with replaced planks arrives at its destination, so has the smuggled Ship of Theseus. There isn't any need to replace and then reassemble the removed planks to restore the illicitly transported Ship of Theseus.

To support an intuition that is opposed to Hughes's own, I will use an example of two organisms. Organisms, as mentioned before, are instances of the only type of entity that can *uncontroversially* replace all of their constituent matter and survive. I think it is quite revealing that when we use an example that clearly can fulfill Hughes's first premise, we get a conclusion contrary to his and thus one that also fails to provide a counterexample to Locke's Thesis.

Many people believe that they could survive teletransportation from Earth to Mars if their original Earth atoms were reassembled on Mars.<sup>14</sup> This is somewhat akin to Hughes's second premise regarding the disassembly and reassembly of Land-Ship. But most of these same people are less likely to believe that they would survive if all of their disassembled parts were, while on the way to Mars, removed one by one from the teletransportation beam and replaced sequentially with small, qualitatively identical but numerically distinct parts, and these new parts were reassembled on Mars when the beam arrived here. And this lack of survival is even clearer if the configuration of the replacement atoms is altered so that the being which ends up materializing on the teletransportation platform on Mars has a qualitatively different body, brain, and psychology from that of the person whose parts were the original ones

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13 Hughes, 'Same Kind Coincidence and the Ship of Theseus,' 59-60. Hughes mentions that E.J. Lowe advances an account of assumptions similar to the Unger-inspired one that I present later in this paper.

14 Perhaps this belief is false and its attraction the result of merely watching too many science fiction shows in our youth. But even if that is that case, the thought experiment will still help elicit some revealing facts about our attitudes towards part assimilation.

in the beam. But the very same qualitative changes in body, brain, and personality that result from the part replacement wouldn't threaten the reader's persistence through time if they were to occur slowly outside the beam in the normal course of life. We can imagine such changes *roughly* paralleling the ordinary physiological and psychological growth and development of any person from middle to old age.

Why do we have this intuition that we couldn't survive even qualitatively identical part replacement in the teletransportation beam, but could survive even greater qualitative and quantitative changes outside the beam over a longer period? The answer is that the new parts inserted into the beam containing us in scattered form did not gradually become caught up and involved in the same life functions and psychology. This process is what I mean by 'assimilation.'<sup>15</sup> Standardly, the new parts of one's body and mind only become parts of the old body and mind when they become involved and integrated into the same biology and psychology. For instance, a 'foreign body' is something that doesn't become caught up in the life processes of an organism. And no potential atom of a body part can be assimilated by a body when the latter is scattered in a teletransportation beam.

To hammer this point home, consider the possibility that my parts are replaced with those of my Twin Earth doppelganger. Let us assume that by some amazing chance, through normal breathing, eating, and drinking, I gradually acquire the matter of my doppelganger who died a while ago on Twin Earth, with the matter arranged within me in the exact same way it was arranged within my Twin Earth doppelganger before his death. To make this more plausible, imagine that the Twin Earth is a planet a number of years older than our Earth, so that my twin did everything I am now doing and thinking right before his death some years ago. Now surely this slow incorporation of my twin's matter hasn't been a death sentence for me. Nor have my twin and I come to be spatially coincident. Each of my thoughts is not thought by a person spatially coincident with me. But that would be the case if the twin was spatially coincident with me and thus sharing my brain. So my twin has not come back to life.<sup>16</sup>

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15 My discussion of assimilation is indebted to Peter Unger's *Identity, Consciousness, and Value* (Oxford: Oxford University Press 1991), 147-56.

16 Perhaps it will help if the reader imagines a scenario in which he is in the situation of a twin on an older planet. If an explosion blows his body into millions of microscopic parts and by chance his matter, piece by piece, *slowly* ends up identically arranged in an already existing twin on a distant planet who finally has the exact same psychology and physiology as the reader did at the time of his death,

I think that it is clear that there can't be two spatially coincident persons or organisms because of the nature of assimilation. I tend to think the same is true for ships. My contention is that either the new parts of Land-Ship have been gradually assimilated or Sea-Ship ceases to exist, having been replaced by a boat that is a duplicate of it. Which outcome is the case depends upon the size and speed of part replacement. If when the parts of Land-Ship are gradually incorporated into Sea-Ship, then at some time in that process, Land-Ship ceases to exist, just as my twin's body would cease to exist in even a scattered form if his atoms were over the years incorporated into my body.<sup>17</sup> The various parts are caught up in the 'life' of Sea-Ship, assimilated into its functioning whole and thus they no longer constitute Land-Ship. The parts now work together to keep Sea-Ship afloat: the interlocking pieces of wood supporting each other and the weight of the men, sails, and ropes above. These parts together harness the currents and the winds to carry a crew and cargo, leaving behind a wake that is a product of their combined weight and shape.<sup>18</sup>

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has the reader been resurrected? On the contrary, it seems more plausible to say his parts have been assimilated into the body of his twin, rather than that he has been restored to life.

- 17 The result would be different if we imagine that the constitutive matter of Sea-Ship was replaced in its entirety by two large sections of boat from a cut up Land-Ship. This thought experiment may be more effective if the first of the two sections constituted more than half, say three-fourths of Land-Ship, the second section containing the rest. This event of large part replacement doesn't seem much different from Sea-Ship being destroyed and then a qualitatively identical boat made out of numerically distinct matter. In both cases we would most likely assert that a new and distinct boat had taken the place of Sea-Ship. We may have the same reaction if Sea-Ship's matter were replaced in its entirety by small parts in a matter of seconds. But when the exchange of parts is a gradual one involving small pieces, which is more like what happens in the actual repair of boats while at sea, one is most confident that a boat has survived the replacement of its parts.
- 18 Some readers may share a worry of an anonymous reviewer that something like biological assimilation is needed in boats to show why additional planks will be absorbed into the existing boat rather than lead to the relocation of the boat the additional planks had composed or the creation of a new boat. While a boat is not responsible for replacing its parts as is an organism — the latter, as Aristotle famously observed, having such power within it — the parts of a boat do work together in a manner somewhat analogous to how the parts of an organism work together in order that the whole can perform its function. The ship's crew or others replace worn out parts much as an organism does. Perhaps due to the fact that the cause of this change is external to the boat, or because any more than half of the parts being removed gives rise potentially to another object with that greater than 50% having a claim to be the original boat, readers may not be sure whether a boat

## IV Spatially Coincident Roads

If my account of part assimilation is correct, no object can both survive having its parts replaced and come to share its new parts with a spatially coincident entity of the same kind. Either the object is destroyed by the replacement of parts that are too large or too quickly taken in to be assimilated, or the object survives by appropriating the new parts which no longer constitute the object that it had earlier. If the reader wasn't skeptical of Hughes's conclusion from the outset, perhaps she has come to share my doubts about his alleged counterexample to Locke's Thesis. However, I think a better example of spatially coincident entities of the same kind can be offered, for it does not involve part replacement and thus isn't susceptible to the claim that artifacts can't have all their parts replaced or that entities assimilate parts rather than come to merely share parts with another entity. It also avoids the problems that Oderberg found in claims about puddles that had their parts in common. The counterexample involves two roads.

Imagine that the Southern California coastal cities of Santa Barbara and Los Angeles are both planning to build separate highways from their respective cities to Las Vegas. These highways will be made of expensive brick placed upon a bed of gravel.<sup>19</sup> After some consideration of costs,

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can undergo full part replacement. However, there are some commonalities between boats and organisms. The importance of new parts being caught up with old parts in a functioning whole is perhaps the reason for our greater reluctance to admit the boat survives large or quick changes of most of its parts. And the importance of functioning to assimilation may also account for the reluctance some readers may harbor towards allowing a non-functioning boat stored in dry dock or kept in a museum to survive the same degree of changes that a working boat can. To reinforce this line of thought, imagine that a boat on shore is disassembled and the planks stacked in a warehouse. Its stored planks are destroyed one by one and replaced with new planks. Then the planks are reassembled. The reader may be more reluctant to admit it is the same boat in this case than if the same changes occurred in an intact and functioning boat at sea. This may be because the new planks on land didn't contribute to the functioning of a boat, and thus they don't appear to be assimilated. So the original boat, which perhaps could survive in a scattered form when its boards were stacked, cannot survive much part replacement while in scattered form. Thus there is something remotely similar between part assimilation in *functioning* boats and part assimilation in functioning organisms.

19 An anonymous reviewer brought to my attention the need to make the destroyed section of road out of a material that could be reused when the road was rebuilt; otherwise, the original road would be an artifact that could survive complete part replacement. Since this assumption of total part replacement is controversial, my thesis of spatially coincident entities is better served if it can be avoided.

the two cities decide to merge their roads at the half way mark that is located at the Central California town of Barstow. This way they can save money constructing the remaining miles of road to Las Vegas. Let's name the road from Los Angeles to Las Vegas 'Route 2' and let's call the road from Santa Barbara to Las Vegas 'Route 4.' Now roads overlap quite often. In fact, every intersection is a brief overlap. But these overlaps aren't cases of spatially coincident roads, rather they are just sections of bricks (and gravel) shared by two separate roads. Likewise, Routes 2 and 4 share a lengthy stretch of bricks from Barstow to Las Vegas. But they don't share any bricks from Barstow to their respective coastal destinations.

California is known for its earthquakes. Sometimes an earthquake destroys part of a road but leaves the rest intact. If the California Coastal Highway, a.k.a. Route 1, loses a few miles in an earthquake, we describe this not as a case of Route 1 going out of existence but as an instance of Route 1 becoming somewhat smaller. Now imagine that a big earthquake occurs and the portions of Route 2 and Route 4 stretching from Barstow to Los Angeles and from Barstow to Santa Barbara are destroyed. The bricks and gravel are so dispersed that we would then say that no road existed there, rather than claim that there existed a non-functioning or impassable stretch of road.<sup>20</sup> So only the parts of the highways that were shared remain. How are we to describe this scenario? One possibility is that there are two spatially coincident roads made out of the same brick and gravel; another possibility is that there is one road with two names. If readers think the latter is the case, they should ask themselves which road is it that continues to exist? Why should it be Route 2 rather than Route 4 that survives the earthquake? Could it then be that neither road survives and we have a new road? This is odd since we already admitted in our discussion of Route 1 that a road can become smaller when part of it is destroyed. It is hard to believe that a new entity can come into existence merely by becoming a smaller version of the same type of entity that preceded it. So why don't we just say that Routes 2 and 4 become smaller? If that is the best description, then we have two spatially coincident entities of the same type. And we have grounds for saying they are not the same entity.

And our grounds for saying that the roads are not the same entity are similar to those given for believing the organism and the person are spatially coincident entities rather than identical. Most philosophers claim that the organism and the person are nonidentical entities existing

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20 Nathan Salmon brought to my attention this distinction between impassable, non-functioning but existing roads and nonexisting roads.

in the same time and space for three reasons. First, the organism existed as a mindless embryo *before* the person originated. Second, the organism could *survive the destruction* of the person. Third, the original person could become *separated* if the person's upper brain and the consciousness it supports were transplanted into the body of a different organism. A foe of spatially coincident entities of the same kind might protest that while the transplanted person can be *fully* detached and separated from the organism, the two roads are not likewise separated and thus are not really distinct entities. The same reader might object that the alleged coincidence of roads comes after they existed separately, while it comes before with the person and the organism. I don't see why any of this should matter since we are merely in need of an example of entities not sharing all their parts at one time and doing so at another. Anyway, these objections are not obstacles. I will deal with the temporal order of coincidence and separateness when I take on the challenge of the four-dimensionalist. Regarding full separation, an example can be obtained by imagining just one of the two highways having its destroyed parts rebuilt. For example, it can be the case that the part of Route 2 from Barstow to Los Angeles is rebuilt with the *original* brick and gravel but the destroyed part of Route 4 is left in ruins. Then another earthquake destroys the stretch of highway from Barstow to Las Vegas. The result would be that there isn't any part of Route 4 remaining but Route 2 would have just undergone a size reduction similar to that which it survived before. This would give us a case of one road surviving fully separated from the other which it was previously spatially coincident with, just as we have cases of the person surviving fully separated from the organism, the latter perhaps being destroyed after the person's brain is removed and transplanted into a new skull cavity. If the reader wants *both* formerly spatially coincident entities continuing to exist fully separated from each other, she just has to imagine the two roads being rebuilt from Barstow to the respective coastal cities, and then another earthquake destroying the shared stretch of road from Barstow to Las Vegas.

Since the two roads scenario doesn't involve fissioning, unlike the case with the allegedly spatially coincident puddles, there isn't any problem of deciding which molecules of brick and gravel belong to which road. Instead, we begin with an uncontroversial stretch of brick on top of gravel that is already recognized as a shared part of two overlapping roads. And when road repair and construction takes place after the earthquake has brought about the spatial coincidence, there is no problem individuating the two entities that emerge from the spatial coincidence — unlike the case of the puddles. We easily can determine which road emerges from the spatially coincident roads as a fork in one direction, and which road forks off in the other direction. This is because the forked parts existed before the earthquake caused the spatial coincidence

of the roads to arise. The roads are being rebuilt in the same place and with the same bricks and gravel. We aren't forced to just stipulate which road is which, as believers in spatially coincident puddles must do when Lief and Rick emerge.

However, some readers may contend that my roads example avoids the fate of Oderberg's puddles only by relying upon a very controversial essentialism about the direction/location of roads.<sup>21</sup> It is more plausible to claim that a slight change in the location of part (or even all) of a road is not a threat to its identity. I agree. Roads are often widened; they may be moved a bit when erosion makes the edge of a cliff perilously close to the shoulder; they can be rerouted slightly if the local residents complain about the noise; and when a stretch of road is damaged, the same road can acquire a rebuilt part that is not exactly where the earlier section was. Readers will object that if I admit that the exact location of a road is not essential to it, then I must confront the possibility that Route 4 could be rebuilt where part of Route 2 had been, and Route 2 where a section of Route 4 had been. This possibility would mean that my roads would be no better individuated than Oderberg's puddles. We would just have to stipulate which road is which and such stipulation is ontologically suspect.

My response is that I can admit that the exact location of a road is not essential to it, and yet maintain that Routes 2 and 4 are each rebuilt where their destroyed parts were. I think that it is safe to assume that most readers will accept that there is a limit to how far a road can be moved and be the same road. The same east-west road in California cannot be rebuilt in India or transformed into a north/south road heading to Canada. We wouldn't assert this even if the original bricks and gravel were to become spread out in the direction of Canada or were all shipped to India and used there to compose a road. Roads are not as independent of their locations as say houses are. (Houses can be dug up and moved halfway around the world.) So to defend my thesis, all I need is for the reader to grant me that there is a limit to changes in location that a road could undergo. I don't need the reader to believe that a road can't be moved at all. This will remove the worry that Route 2 is being rebuilt after the earthquake where Route 4 was before. If the reader thinks the Las Vegas-Los Angeles road is too close to the Las Vegas-Santa Barbara road and thus susceptible to being switched during the rebuilding (the roads would be 90 miles apart at the greatest distance), the example can be changed to where the diverging roads are so far apart it is very

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21 Two anonymous reviewers expressed this concern.

implausible to believe that the destroyed part of one could be rebuilt where the destroyed part of the other was.

It is worth pointing out that Oderberg does allow one scenario in which the original puddles could exist again after merging. This admission can bolster my position that the destroyed parts of the roads can be rebuilt in a manner that enables us to easily determine which construction is Route 2 and which is Route 4. (Of course, a difference between my example and Oderberg's puddles is that he does not believe the latter were ever spatially coincident. Instead, he appeals to the possibility of intermittent existence, maintaining that the two puddles existed, ceased to exist when their constituent molecules merged, and then existed again.) Oderberg writes:

Consider puddles A and B, where B flows into A.... Suppose all and only all the water belonging to B then miraculously flowed out of A and returned to B's original location: there would be good grounds for saying that it was indeed B in its prior location again. This does not involve countenancing mereological essentialism; rather, the presence of B's original water in *conjunction* with the return to B's original spatial context appear to provide a sufficient condition for B's having ceased to exist for a time and then returned to existence.<sup>22</sup>

My contention is that just as the two earlier puddles can be restored to their earlier location, the same is true for the roads. However, it is not just because the same matter (bricks and gravel) is used to rebuild the destroyed stretch of roads at their earlier location that we should accept that the same highways show up where they were before. Intentions play a role in the individuation of artifacts that they don't in the case of puddles. Thus the charge of stipulation doesn't have the same force in the former case as it does in the latter. The same kind of reason we have for believing someone is building one particular artifact rather than another, can also ground our belief that it is Route 2 and not Route 4 being rebuilt from Barstow to Los Angeles. Readers can see this if they imagine that a small town is planning to build one and only one road. The town officials are considering building either a road from the front of the courthouse to a park on the outskirts of the town, or a road from the front of the courthouse to the town's high school. The park and school are in different directions. The town doesn't have the money to build both. This is not a situation in which construction on both roads starts but the involved parties run out of money. Assume that the town finally makes a decision to build only the road from the courthouse to the school. When they start building the one road from the front of the

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22 Oderberg, 'Coincidence Under a Sortal,' 162-3

courthouse, which is exactly where they would have started to build the other road, why should we believe that they have started building the road to the school rather than the park? The reason is that we know what their intentions were. The municipality had decided to build one road and not the other. Can not intentions likewise play a role in determining whether it is Route 2 or 4 that is built after the earthquake? I think so.

Consider another example in which intentions have a crucial role in individuating manmade objects. The same town has the money to build only one statue. They want to build the statue of a famous resident of their town. He had an identical twin brother. Why should we believe that they built a statue of the one brother rather than his physically indistinguishable twin? Again, it is intentions that are decisive. The artist intended to build a sculpture of one of the two physically indistinguishable brothers. It is an intention which determines which of the two physically indistinguishable twin brothers the statue represents, and it is an intention which distinguishes a statue of one of the brothers from a weathered and eroded naturally occurring lump that looks like him but neither is identical to nor constitutes a sculpture. Intentions play a similar role in determining in my earlier example which road is rebuilt after the earthquake. The individuating power of intentions should be no more controversial in my two roads scenario than in the small town scenarios. So we see again that some of the reasons we have for believing in commonplace spatially coincident entities like the statue and the lump, likewise justify a belief in spatially coincident entities of the same kind such as the two roads.

When facts such as the relevant parties intent to rebuild Route 2, aim to place the road where it was before, and plan to use the same matter that earlier composed Route 2, are combined with the limitations that the nature of roads places on the ability of roads to persist through major changes in location, they together make a very strong case for believing it is Route 2 and not Route 4 that is extended from Barstow to Las Angeles.

The four-dimensionalist might try to avoid the problem of spatial coincidence by arguing that the two roads are not spatially coincident but only share temporal parts.<sup>23</sup> But this strategy won't work. Imagine that the cities of Los Angeles and Santa Barbara decide to start building their overlapping highways in Las Vegas rather than beginning the road construction in their respective cities. When the road crews reach Barstow

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23 Richard Cartwright is the locus classicus for this type of response. See his 'Scattered Objects' in *Analysis and Metaphysics*, K. Lehrer, ed. (Dordrecht: D. Reidel 1975) 153-71.

where the plan is to have the two roads fork off from each other, both cities run out of money and cease the construction. Have they not built two spatially coincident roads from Las Vegas to Barstow? If we are willing to accept that the two roads built in the other direction (west to east) could after the earthquake come to share their parts for a period, then it would seem that they can share all their temporal parts if the road construction instead goes east to west. But in the latter scenario, the cities' financial problems mean that there are not any temporal parts the two roads don't *ever* share. And if they share all their temporal parts but are distinct entities because of their modal properties, e.g., the possibility that they could have branched off, then it would seem that there we can find two spatially coincident entities of the same kind. So the four-dimensionalist approach fails to prevent the counterexample to Locke's Thesis.

Can it be plausibly argued that only one road beginning in Las Vegas was built and thus what we had thought was going to be a fork in the two overlapping roads would really have been the emergence of two new roads each beginning at Barstow? This would be a welcome move because we are plagued not just by the possibility of two roads from Las Vegas to Barstow, but many more. All that is needed for the multiplication of roads otherwise is that the right people each intend, or collectively have an intention, to build a great number of roads that fork off at Barstow and continue to San Francisco, San Diego, San Jose, Sacramento, etc. There will then be a proliferation of roads just as there was a proliferation of boats in Hughes's ontology. But avoiding this proliferation without denying the existence of any roads will not be easy. Recall that in our earlier example we allowed the two roads beginning respectively in Los Angeles and Santa Barbara to overlap from Las Vegas to Barstow, only diverging at the later town. So how can we not allow that a part of each of the two roads could be built from the other direction? If roads can overlap for a stretch, which nearly everyone believes, why can't the overlapped parts be built first and in operation before the diverging parts are constructed? To insist that the overlapping roads in our example can only be built west to east, but not east to west because the latter will involve there being spatially coincident roads seems to be an ad hoc move designed just to avoid spatially coincident entities of the same kind.

Moreover, if one insists that only one road has been built, which road is it, Route 2 or Route 4? If it is a different road altogether and routes 2 and 4 are never built for they would have each begun at Barstow and ended in the respective coastal city, would this mean that every time any two roads merge we have a new road rather than overlapping roads? And likewise, a fork in the road would signal the erection of two new roads rather than the splitting of two previous roads. And what about intersections? Does every road that comes to an intersection end? Is an intersection really a very small road surrounded by four other roads that

end at it (or begin at it, depending upon the direction you are traveling)? If there are such entities as roads, it seems unlikely that every intersection results in new roads.

So if there do exist such entities as roads, and they can become smaller or larger, as well as overlap for a stretch, it is difficult to see why they can't eventually come to share all their parts in common. We, of course, can avoid this by claiming that there are no such entities as roads.<sup>24</sup> Perhaps roads are suspect because they depend too much upon our intentions. That is, if people had not intended to build roads going to Barstow, then the loss of funding wouldn't leave us with two spatially coincident roads from Las Vegas to Barstow. But we saw earlier that such intentions play a role in determining the existence of creations other than the roads. And we could easily extend this list. For example, it is the artisan's intentions that distinguish whether it is an anvil or a physically indistinguishable barn door jamb that has been made.<sup>25</sup>

One alternative available to readers, though this is perhaps as counterintuitive as denying the existence of any roads, is to claim that a new road comes into existence when the two divergent parts of Routes 2 and 4 are destroyed. But we have already established that a road like Route 1 could survive an equally long stretch of road being destroyed. Thus it won't be easy to maintain that the sections of Route 2 and 4 not destroyed by the earthquake can cease to be parts of Routes 2 and 4 and that the undamaged stretch of brick comes to constitute a brand new road despite not having undergone any physical change. Nor can we deny that there are two spatially coincident roads by appealing to the account of assimilation that prevented us from having to recognize Hughes's example as a counterexample to Locke's Thesis. And it is utterly arbitrary to avoid the spatial coincidence of Routes 2 and 4 after the earthquake by having one road cease to exist rather than the other. Furthermore, the earthquake scenario is not the type of merger case one commonly finds in the literature which elicits the judgment that a new individual has been fused. When two psychologies merge in a Parfit-like scenario or when two puddles merge in an Oderberg-like scenario, there are two entities merging which didn't share any parts before.<sup>26</sup> This makes it more

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24 Van Inwagen does just this in his *Material Beings*. I happen to be sympathetic to his extremist ontology. But that is the matter for another essay.

25 An appeal can't be made to usage to determine whether it is an anvil or a barn door jamb that has been made. This is because the entity may sit on a shelf for a year after being made. Surely, its sortal identity cannot be in limbo.

26 Derek Parfit, *Reasons and Persons* (Oxford: Oxford University Press 1983), 298-9

plausible that a new object arises from the merger rather than that both pre-merger objects survive as spatially coincident. This is not true of the overlapping roads whose non-overlapping parts are destroyed by the earthquake. These overlapping parts were able to cohabit before the disaster, so it is less of a leap to imagine them being shared afterwards by two spatially coincident roads. Moreover, puddles cannot share *any* water molecules without merging, while roads can share considerable matter and yet remain distinct. For example, imagine that water molecules at the tip of one puddle merge with the molecules at the tip of another puddle. The intuition of most people would be that there is now just one much larger puddle despite the fact that most of the molecules of the two previously distinct puddles have not intermingled. However, unlike puddles, roads can overlap for a stretch without forming one new entity. Since there is no merging of previously separated parts after the earthquake, there is more reason to believe that the parts of both roads survive the earthquake as spatially coincident entities.

## V Conclusion

The existence of spatially coincident entities of the same kind is admittedly counterintuitive. But to deny the existence of spatially coincident roads, we would have to accept one of the above accounts of roads which are themselves quite counterintuitive. We are quite reluctant to claim that roads can't become smaller or are unable to overlap for a stretch, or can overlap only if built in one direction and not the other. And complicating matters is that it appears that the grounds philosophers have for accepting spatially coincident entities of different kinds also apply in the two roads scenario. It would seem that the spatially coincident roads have different historical properties as well as different dispositional or modal properties, for it is possible that each could survive the destruction of the other or become partially or fully separated from the other road with which it was spatially coincident. And intentions play a role in individuating the roads as they do with other artifacts which are spatially coincident with the material objects that constitute them. Unfortunately, a consequence of such plausible premises is that if there can be two spatially coincident roads of the same kind, then there can be thousands in the very same place at the very same time if their non-overlapped sections were destroyed.

Readers may think the multiplication problem facing spatially coincident entities of the same kind is worse than having to drastically alter what we understood to be the persistence conditions of roads. However, there are good reasons why they should not be so hasty to transform their conception of roads. Spatially coincident entities of different kinds

may have a multiplication problem similar to that which plagues spatial coincidence of the same kind. An argument can be made that the lump of clay is at least contingently a statue. And thus there are present two entities that are both statues, one essentially a statue and the other contingently so. The lump would seem to meet the criteria for being a statue. Its shape is the result of the hands of the artist who made the sculpture. The same intention and hand movements that brought the sculpture into existence also gave the lump its appearance. Of course, the lump is not essentially a statue of, say, Abraham Lincoln; it could survive being transformed into a likeness of George Washington's horse, but it would seem to qualify as being a statue contingently. Likewise, why aren't there two persons wherever an organism is spatially coincident with a person? If a person is defined as a thinking being capable of self-consciousness or some other mental traits, then the organism would be a person. Surely a human organism can think for it shares every molecule with a person. If the person has a brain that functions well enough to qualify as a person, then so does the organism.<sup>27</sup> Of course, the organism is not essentially a person, it preexisted the person, once being a mindless embryo, and it could survive the destruction of the person if a blow to the head destroys the brain's capability to subserve consciousness but doesn't prevent the processes necessary for life.

A similar unwelcome multiplication of entities may arise if one believes that there is only road in a space. (This duplication will arise even if one is not considering a scenario involving overlapping roads that earlier diverged or will later diverge.) That single road in question will be spatially coincident with an object that constitutes it. So conterminous with every road will be a collection of bricks, or a slab of asphalt, or portion of cement, etc. Roads and the entities that constitute them have different modal properties and thus are distinct entities. For instance, the bricks could still exist without constituting the *same* road. They may have been moved to India and come to constitute a different road, or they may have been scattered in a way that they don't compose any road. Perhaps the road can even persist through complete replacement of the bricks. So the collection of bricks is not identical to a road. But when the bricks are arranged 'roadwise' and thus spatially coincident with a road, why do they not compose a road? They wouldn't be essentially a road,

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27 Baker offers a constitution solution to the problem of spatially coincident thinking beings in her *Persons and Bodies*. Shoemaker offers a different constitution solution to the same problem in his 'Self, Body and Coincidence,' *Aristotelian Society Supplement* (1999) 287-306.

nonetheless they would still be arranged in a road-like manner and thus could be considered contingently a road.

This multiplication of entities makes it harder to distinguish allegedly legitimate cases of spatial coincidence (a lump and a statue, a person and an organism, a road and its bricks) from the allegedly unacceptable (two entities of the same kind). Since both kinds of spatially coincident entities share a duplication problem, readers should perhaps be even more wary than they were before of trying to avoid two spatially coincident roads by transforming their views about how roads come into and go out of existence. They may still end up with a duplication problem where they thought there was just one road. If they are unwilling to accept such duplication, they may have to abandon their belief in all artifacts as well as any other entity that constitutes or is constituted by a material being. However, some readers may think the duplication problem facing spatially coincident entities of different kinds is a pseudo-problem, easily resolved or evaded by the proper account of the 'is' of constitution, unlike that facing spatially coincident entities that are essentially the same kind.<sup>28</sup> Such philosophers may also believe the latter problem is so unwelcome that it should be avoided even at the cost of reconceptualizing the persistence conditions of roads. Whatever their leanings, my conclusion is that readers will be confronted with a dilemma that arises because of plausible and widespread intuitions about the existence of artifacts that are spatially coincident with the material objects that constitute them. So we are left in a place familiar to most metaphysicians, having to pick our ontological poison, for each alternative is rather counterintuitive.<sup>29</sup>

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28 Baker thinks the problem of the lump being contingently a statue, or the organism contingently a person is such a pseudo-problem. See her account of constitution in her *Persons and Bodies*, 170-4.

29 I would like to thank Nathan Salmon, Frances Dauer and especially two anonymous reviewers for very helpful comments.