A Tale of Two Simples

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1. Introduction

Here on my desk there is a small statue of Charles Darnay. The statue seems to be unexceptional. It occupies a small composite region of space; it's mostly pale and gray, except for a tiny red stain that makes it appear as if there's a mark over Darnay's heart. But, the statue does have a remarkable feature. It is a mereological simple, a figure with no proper parts.

You might believe that I've described an impossible object. Perhaps you think such a statue is impossible because you think there cannot be extended merelogical simples. Or perhaps you think that, at the very least, there cannot be extended simples with the features just described. Here's one puzzle, which some have taken to show that the situation just described is impossible.

The First Inconsistent Triad

(1)   Statue Darnay is red in a particular way. (It's red in whatever way makes it appear as if there's a red spot just over Darnay's heart).

(2)   Necessarily, something's red in that way only if it has a proper part that's red simpliciter.

(3)   Statue Darnay is a mereological simple that occupies an extended, composite region of space.

These three statements are jointly inconsistent. They form a puzzle which is strikingly similar to one put forward by McDaniel (2003) and discussed by Hudson (2006).[1] McDaniel suggests that the second statement is true and that any extended mereological simple must be homogeneous. On this view, if Statue Darnay is truly stained, then it's not a mereological simple.

In this paper, I briefly canvass responses to the First Inconsistent Triad. I then present a new inconsistent triad which involves a simple that occupies an extended spatial region with no proper sub-regions. Although it may seem counterintuitive to think that space could have such a structure, it turns out that there are some interesting scientific reasons to think it could. I then show that none of the responses to the first triad can be used to successfully defuse the second triad. I go on to consider some novel responses to the second triad and argue that they too are unsuccessful. I conclude that the best response is to deny the possibility of an extended heterogeneous simple that occupies a region with no proper subregions. Finally, I present an argument against the possibility of extended heterogeneous simples of any kind.

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[1] An important difference between this argument and a more perfect analogue of the argument discussed by McDaniel and Hudson is that this argument does not spell out in detail the particular way in which the Statue Darnay is red whereas an analogue argument does. A more perfect analogue says that the statue, Darnay, is red *in some particular region*. The spatial aspect of this premise, along with the simplifying assumption that color properties are intrinsic, justifies the name given to this problem by McDaniel. That name is "The Problem of Spatial Intrinsics". It seems that the problem of spatial intrinsics is just a special case of the problem presented by this argument.

2. Responses to the First Inconsistent Triad

There are several responses that one might make to the first inconsistent triad in defense of the possibility of extended heterogeneous simples.[2] Each of the responses relies on a denial of the second claim. Some views connect color properties, or their exemplifications, to regions of space in some way. One such view says that color properties, like the property of being red, are in fact region indexed. Thus, the property of being red is actually something like the property of being-red-at-R. Another view says that color properties are in fact disguised relations. On this view an object is not red simpliciter but rather bears the being-red-at relation to some region. Finally, there's the view that the exemplification relation itself is region indexed. On this view, an object bears the having-at-R relation to color properties, like redness. To explain the situation above, an adherent of one of these views would say there is some region, R, and that Statue Darnay has red-at-R or bears the red-at relation to R or has-at-R the property of being red. Each of these provides a plausible metaphysical explanation of why Statue Darnay looks the way it does. On any of these approaches, one could deny the second claim of the triad and hold that extended heterogeneous simples are possible.

There are two other approaches advocated by friends of heterogeneous extended simples. Ned Markosian believes that there is a fundamental distinction between two kinds of spatial occupiers, things and stuff. He claims that extended simples are constituted by stuff, which itself has properties.[3] On this view, although there is no thing that is red simpliciter and a part of Statue Darnay, there is some stuff, occupying a

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[2] The views canvassed in this section are discussed at length in Hudson (2006). Hudson presents them as responses to the problem of spatial intrinsics, but they can be taken as responses to the argument presented above as well.
[3] See, for example, Markosian (1998), (2004a) and (2004b).

subregion of the region occupied by the statue and partially constituting the statue, which is red simpliciter.

Finally, Josh Parsons has claimed that there are distributional color properties that things can exemplify.[4] The exemplification of these properties does not require the exemplification of any of those region indexed properties or relations noted above. However, when something exemplifies such a property, it is guaranteed to have a certain distribution of colors. Arguably, one well known distributional property is the property of polka-dottedness. A shirt may be polka-dotted simpliciter and having that property will guarantee that there is a certain distribution of colors over the whole shirt. Extended simples can exemplify these distributional properties as well. Statue Darnay, for example, might exemplify some distributional color property that guarantees that it is a little red and mostly gray.

Each of these responses presents a plausible metaphysical view and allows for a denial of (2) in the Inconsistent Triad. Admittedly, these various responses have their various costs. But, friends of extended heterogeneous simples would probably be willing to pay some cost or other to remedy the predicament of their companion. Unfortunately, in the next section I will present a variant on the First Inconsistent Triad, a variant that seems to condemn a statue strikingly similar to the original.

3. A New Statue and a New Problem

Suppose that one night, someone replaced Statue Darnay with a replica; a replica that's exactly the same size as Statue Darnay and that is seemingly stained in the same

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[4] See Parsons (2000) and (2004).

way. This replica, which I shall call 'Statue Carton', looks to everyone like Statue Darnay. It's mostly pale and gray, except for a tiny red stain that makes it appear as if there is a mark over Carton's heart.   However, there is a slight difference between the two statues. The new statue always occupies an extended, atomic region of space. That is, it occupies a region that is extended and that has no proper subregions.

Here's a puzzle, similar to the one presented in the last section of this paper, which some might take to indicate that the situation just described is impossible.

The Second Inconsistent Triad

(4)   Statue Carton is red in a particular way. (It's red in whatever way

makes it appear as if there's a red spot just over Carton's heart).

(5)   Necessarily, something's red in that way only if it has a proper part that's

red simpliciter.

(6)   Statue Carton is a mereological simple that occupies an extended region of

space that has no proper subregions.

These three statements are jointly inconsistent.

Some people will take this puzzle to show that there cannot be extended simple like Statue Carton. Some of them might reject (6), claiming that it's impossible for a region to be extended and have no proper subregions. Perhaps it is impossible, but not obviously so. Philosophers and scientists have taken seriously the possibility of discrete space composed of extended, atomic regions.[5] Some people even go so far as to say that space is in fact that way. These people argue that talk about regions that are smaller than one Planck length squared makes no sense. In any case, it's at least possible that there

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[5] Amati, Ciafaloni and Veneziano (1989), Bradden-Mitchell and Krisie Miller (2006), Green (2004), Gross and Mende (1988), and Revelli and Smolin (1995).

are laws of nature that require the existence of regions of space.[6] And it's plausible to suppose that possibly, there are such laws and that the conjunction of those laws along with the hypothesis that there are regions smaller than some specific size and shape entails a contradiction. If this is a genuine possibility, then extended atomic regions of space are possible as well.

A simple instance of this argument will show that possibly, there is a Statue Carton shaped region of space with no proper subregions into which a simple which is the size and shape of Statue Carton may fit. That is, it is easy to show that (6) is possibly true. Suppose that it's possible that there are laws of nature that require the existence of regions of space. Moreover, suppose that possibly, there are such laws and that the conjunction of those laws with the hypothesis that there are regions of space smaller than Statue Carton entails a contradiction. If such laws are possible, then it's possible that space is composed of atomic, Statue Carton shaped regions. But, in such a situation there would be an atomic region into which Statue Carton could fit.[7] So, it seems that there's some reason to take (6) seriously.

It might appear as if friends of extended, heterogeneous simples have a good reason to reject (5). If that way in which Statue Darnay is red is the same as that way in which Statue Carton is red, then it seems that statement (5) is just the same statement as (2). But, friends of extended, heterogeneous simples already reject (2). So, they should

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[6] Such laws need not require that regions of space be substantival.

[7] Another plausible argument starts with the premise that possibly there are atomic regions no smaller than one Planck length. It also involves a premise that says there are no arbitrary cutoffs in modal space. If atomic regions of one Planck length are possible but atomic regions that are Statue Carton shaped are not, then there is an arbitrary cutoff in modal space. It follows from these premises that possibly, there are atomic regions that are Statue Carton shaped. For a defense of the kind of modal principles that bar arbitrary cutoffs in modal space see Bricker (1991).

reject (5) as well. Unfortunately, many of the approaches canvassed in the last section do not easily transfer as plausible metaphysical explanations of this new situation. Views that link a property, or the exemplification of a property, to a region will not provide a plausible explanation of why Statue Carton appears the way he does. We cannot say, for example, that Carton is red-at-R, where R is some proper subregion of the region occupied by Statue Carton. This is because, unlike Statue Darnay, Statue Carton occupies a region with no proper subregions. For the same reason, we cannot say that Statue Carton bears the red-at relation to some region nor can we say that Statue Carton has-at-R redness.

Markosian's distinction between things and stuff doesn't seem to help much either. In the original case we could say that there's some stuff that occupies a proper subregion of the region occupied by Statue Darnay and that stuff is red simpliciter. However, there is no proper subregion of the region occupied by Statue Carton in which we might find some red stuff.

If we were to appeal to stuff to explain how it is that Statue Carton is a little red, then we would have to say either that some red stuff fills the region occupied by Statue Carton or that some red stuff is somehow in that region but does not fill it. However, if we were to say that some red stuff fills the region occupied by Statue Carton, then we would have no explanation of why Statue Carton is only a little red. After all, if the red stuff is filling the region occupied by Statue Carton, then it seems that Statue Carton would be all red rather than a little red. If, on the other hand, we were to say that some red stuff is somehow in that region but does not fill it, then we would have quite a mystery on our hands. First, it seems that some stuff could only be in a region without

filling it by filling some proper subregion of that region. But this cannot be the case in our example. Second, if Statue Carton could be red in a way that makes it appear as if there is a red spot over his heart, then Statue Carton could be red in a way that makes it appear as if there is a red spot on his big toe. But then there would have to be multiple ways that some red stuff could be in a region without filling it. Each of these ways would correspond to each of the ways that Statue Carton could be a little red. But how these in-but-not-filling relations differ from one another would be a mystery. So, it seems that the distinction between things and stuff cannot help us to solve The Second Inconsistent Triad.

If connecting properties, or the exemplification of properties, to regions doesn't allow us to reject (5), while giving a plausible explanation of our troubling situation, and if the distinction between things and stuff doesn't help us either, then perhaps we should consider appealing to Parsons' distributional color properties. On the face of it, distributional color properties seem well suited for our purposes. They are non-relational and may be exemplified, simpliciter, by extended simples. Moreover, when they are exemplified by an object, we need not appeal to proper subregions of the regions occupied by those objects to explain distributions of colors. At least, it seems that way.

Of the solutions canvassed in the last section, I believe that Parsons' distributional color properties give the best explanation of our troubling situation while allowing for the denial of (5). However, there are some puzzling aspects of this solution that need to be investigated further. Consider the example of polka-dottedness. An object can be polka-dotted in many ways. It could be white with large red polka-dots or it could be white with small red polka-dots. Two objects that are exactly the same size and shape could

both be polka-dotted, yet have different distributions of colors. What this shows is that polka-dottedness is a distributional color property that is not fine-grained enough to explain why something has a particular red dot oriented in a certain way rather than in some other way. Unfortunately, in the troubling case, we need to explain why Statue Carton is stained in a way that makes it appears as if Carton has a red spot on his chest rather than on his big toe.[8] So, there must be a distributional color property exemplified by Carton that is more fine-grained than polka-dottedness.

But, what is this fine-grained distributional color property and how does it differ from other such properties that Statue Carton could have had? I have used phrases like the following to convey the kind of property that Statue Carton has: I have said, "Statue Carton is stained in a way that makes it appear as if there is a red spot over Carton's heart." And I could say, "Statue Carton is not stained in a way that makes it appear as if Carton has a red spot on his big toe." But these phrases are very roundabout ways of conveying the property that Statue Carton has. They rely on the facts that Statue Carton is a representation of Carton and that Carton himself is a fictional man and that men look a certain way when they have a red spots over their hearts. However, some shapes do not allow for such roundabout ways of conveying their particular color distributions. Consider an arbitrary, craggy lump that occupies an extended, atomic region. There are several ways that that lump could be stained. But, there is no way for me to convey each of these different ways to a reader.

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[8] For that matter, if there were a perfectly symmetrical spherical simple that occupied a region with no proper subregions, then it seems difficult to say what the difference is between being stained in a way that makes it appear as if there is a red spot on the north face versus on the south face. Thanks to Earl Conee for this example.

This, of course, does not show that there are not different distributional, color properties for each of the ways that Statue Carton could be stained. Our language may be limited while the metaphysical realm of properties is not. So, let's suppose that there is a distributional color property for every way that Statue Carton could be stained. There are various ways that we might fill out this view. However, I want to suggest that, on any of the most plausible ways to fill it out, there are complications that make it undesirable.

First, let's suppose that that there is a distributional color property for every way that Statue Carton could be stained and that these distributional color properties are wholly distinct from one another. There is a strong reason to believe that this view is false. Let's imagine that there is a factory where Statue Carton was manufactured and that they manufacture many statues of the same size and shape as Statue Carton, each one of which occupies an atomic region. However, the factory allows for some variation in the distribution of colors over their statues. Some statues are red in a way that makes it appear as if Carton has a right big toe that is red. Others in a way that makes it appear as if Carton has a left big toe that is red. Still others appear as if there is a red spot over Carton's heart and there are those that appear as if there is a red spot on Carton's nose. However, in addition to these color patterns, there are statues that are manufactured with any combination of those red spots and there are statues manufactured with no red spots at all. There are a total of 2^4, or sixteen different ways that a statue could turn out. But, as was suggested above, there seems to be a wholly distinct distributional, color property associated with each of the ways that a statue manufactured at this factory could turn out. Given that there are wholly distinct distributional, color properties for each of the ways that a statue could turn out, there doesn't seem to be an explanation for the fact that the

manufacturer's decision to make statues, which seem to have combinations of the initial color patterns described above, results in sixteen possible varieties of statues. That is, it looks like there is no explanation for why there are sixteen possible statue configurations rather than some other number. Moreover, there is no explanation for the fact that for any number of initial configurations, n, a manufacturer's decision to create statues that seem to have combinations of these initial color configurations results in exactly 2^n varieties of statues.[9]

The defender of distributional color properties might simply deny that there are *wholly distinct* distributional color properties for every way that Statue Carton could be stained. He might, rather, say that there are some *fundamental* distributional color properties and that the exemplification of one of these fundamental properties is compatible with the exemplification of another fundamental property. More complex distributions of colors are a result of exemplifying multiple fundamental distributional, color properties.[10] If this were his view, then the defender of the distributional, color property approach might explain why there are sixteen different varieties of statues

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[9] The arguments in this paragraph are variations on arguments found in Sider (2007).

[10] Here is a nice image that might help to make the view clear. Consider an overhead projector with an outline of Statue Carton drawn on a transparency that is being projected. Now, imagine several other transparencies that are partially colored and can be stacked on the original outline of Statue Carton. Some of these have red spots in oriented so that when they are stacked on the outline, a red spot appears to be over Carton's heart. Others have red spots that are oriented so that when they are stacked on the outline, a red spot will appear on Carton's bit toe and so on. Since the transparencies are only partially colored, we can stack several of them on top of the original outline. Thus, if we stack both the heart oriented transparency and the toe oriented transparency on our Statue Carton outline, then it will look as if Carton has a spot over his heart and on his big toe. These transparencies are like the fundamental distributional color properties several of which are exemplified by Statue Carton when they are "stacked" on the statue. Thanks to Kris McDaniel for this nice image of the situation.

manufactured in the aforementioned factory by stating that there are sixteen different combinations of four fundamental distributional, color properties.

Unfortunately, this strategy will not save the distributional, color properties approach. It seems plausible to suppose that if Statue Carton could have been stained in a way that makes it appear as if he has a red spot of some size over his heart, then it could have been stained in a way that makes it appear as if there's a red spot of some smaller size over his heart. Moreover, this is true for any size one might choose. So, there are a wide variety of distributional color properties each of which results in the appearance of a patch of some particular size over Carton's heart. Moreover, for each of these properties there is one that results in the appearance of a smaller patch of red over Carton's heart. But if that is the case, then it is not true that there is some fundamental distributional, color property amongst all of these properties. After all, a distributional, color property cannot be fundamental if the color distribution it guarantees can be guaranteed by the exemplification of some other distributional, color properties.[11, 12]

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[11] The argument here is not quite right. What we need to say is something like the following. If Statue Carton could be stained in a way that makes it appear as if there is a red spot over Carton's heart, then it could be stained in a way that makes it appear as if there is a red spot over the right half of Carton's heart and it could be stained in a way that makes it appear as if there is a red spot over the left half of Carton's heart. Let's say that an object that is possibly stained in either of these says is possibly half stained with respect to a way, w, of being stained. What we need to say to get the argument going is that for every way that Statue Carton could be stained, it is also possibly half stained. What we need is something that looks like stain gunk and that obeys a kind of remainder principle for each way that it is possibly stained. Unfortunately, I have not yet worked out how to say this precisely.

[12] There is one more move that the defender of distributional, color properties can make. He can say that for every way that Statue Carton could be stained, there is a fundamental distributional, color property and that when an object is stained in a way that can be built out of some fundamental, distributional color properties it is exemplifying a non-fundamental distributional, color property alongside a fundamental one. This move, however, both multiplies entities beyond necessity and does not explain why there are

There is one more way that a friend of the distributional color properties approach can hope to save his view. One might think that distributional, color properties come in two varieties. The first variety is fully determinate. If an object exemplifies a fully determinate distributional color property, then it is guaranteed to be colored all over. However, there are also non-fully determinate distributional properties which are simply disjunctive properties; they are disjunctions of the fully determinate color properties. With this view, the defender of distributional color properties can explain the fact that the manufacturer's decision to make statues, which seem to have combinations of the initial color patterns described above, results in sixteen possible varieties of statues. He can explain this fact by saying that the initial configurations chosen by the manufacturer are simply disjunctive properties and the various kinds of statues that are manufactured are determined by the fact that when two disjunctive properties are exemplified, a property composed of one or more of the disjuncts shared by those two properties is guaranteed to be exemplified. The various kinds of statues are simply statues that exemplify various increasingly determinate distributional color properties as a result of the manufacturer's decision.[13]

Unfortunately, this view seems to have an inverted picture of metaphysical explanation. This view implies that various color distributions are exemplified in virtue of the exemplifications of more fully determinate color distributions. Thus, for example,

sixteen basic distributive, color properties that can be exemplified by the statues manufactured at the factory when there are four basic designs.

[13] Josh Parsons suggested this view to me in conversation. It is also suggested in Parsons (2000). One nice thing about this suggestion is that it is not subjected to the objections based on the claim that a distributional, color property cannot be fundamental if the color distribution it guarantees can be guaranteed by the exemplification of some other distributional, color properties.

Statue Carton is stained in a way that makes it seem as if he has a red spot over his heart in virtue of the colors that Statue Carton has all over. But this seems wrong. It seems, rather, that if Statue Carton has a certain distribution of colors, then this distribution is exemplified in virtue of the various bits of colors that Statue Carton exemplifies. That is, Statue Carton is not somewhat red because it is red and gray throughout. Rather, Statue Carton is red and gray throughout because it is somewhat red and somewhat gray. Since, the suggested view has an inverted picture of metaphysical explanation, we have a good reason to reject it.

So, none of the views canvassed in the last section can both be combined with a denial of (5) and provide a metaphysical explanation for the situation described in our new puzzle. Many of the views fail because they require the existence of proper subregions of the region occupied by Statue Carton in order to provide an appropriate metaphysical explanation. Other views seem to leave a substantial amount of mystery to the situation. In the next section I will consider alternatives that have not been discussed in the literature and determine whether or not they can be combined with a denial of (5) and provide the kind of explanation that friends of heterogeneous simples are seeking.

4. Alternative Approaches

There are at least two alternative metaphysical views that allow their respective adherents to plausibly deny (5). The first view requires certain distance properties. It might be that, although there are some extended regions with no proper subregions, it is still sensible to say that there are certain distances between the exemplifications of color properties by an object that occupies such regions and the boundaries of those objects.

For example, it might be sensible to say that redness is exemplified by Statue Carton three centimeters from its boundary when measuring along some specific straight line. If this kind of claim makes sense and Statue Carton has boundaries, then we might be able to map the relative positions of any colors exemplified by Statue Carton.

This view, unfortunately, requires that Statue Carton has boundaries of a certain kind. However, it's possible that there's only one region of space and that Statue Carton occupies that region. If that is the case, then Statue Carton will have no boundaries. If it is possible that Statue Carton is stained in a way that makes it a little red and mostly gray while it has no boundaries, then the solution noted above will be unsuccessful.

It is easy, though, to amend the view and avoid the worries just noted. Instead of talking about distances between exemplifications of colors and the boundaries of certain objects, we could talk about the distances between exemplifications of various colors by an object. We might say of Statue Carton, for example, that redness is exemplified three centimeters from grayness when measuring along some specific straight line. With enough such relations, we might be able to fully map the relative positions of any colors exemplified by Statue Carton.

There are many things that could be said about this view the most obvious of which is that it would be extremely complicated and vague. It is unclear whether we would ever be able to describe an object as simple as Statue Carton. But, in addition to that fact, it seems that this view would be susceptible to the same kinds of problems that plagued Parsons' distributional color properties view. It is unclear how we could explain why the factory mentioned in the last section produces sixteen varieties of statues given that there appear to be four basic features that are combined in various ways. Given its

complicatedness, vagueness and the fact that it seems to be subject to the same kinds of problems as a previous view, we seem to have good reason to reject this as a solution to our puzzle.[14]

The second alternative that I wish to consider seems more promising. It could be that redness, as exemplified by Statue Carton, is a kind of dispositional feature. Consider an ordinary mirror. An ordinary mirror allows for the production of two dimensional images of objects. However, mirrors of higher dimensions may be possible. Some higher dimensional mirrors could produce three dimensional images and some could even produce images of the inside and outside of three dimensional objects. Call a mirror that produces such images a 'hyper-mirror'. If we were to place a hyper-mirror before Statue Carton, then there would be an image produced on the mirror's surface. The image would have a red spot much like the one on Statue Carton. Let's call this image 'Evremonde'.[15]

We might wonder whether or not Evremonde is a simple.[16] More generally, we might wonder whether the mirror images of simples are themselves simple. These are interesting questions, but they need not concern us here. What is important is that the

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[14] In a previous footnote, I introduced an example of a perfectly symmetrical spherical simple that occupied a region with no proper subregions. If such a simple were possible, given the views introduced above, there would be no difference between being stained in a way that makes it appear as if there is a red spot on the north face versus on the south face. Thanks, again, to Earl Conee for this example.

[15] It is important that Evremond is an image in a hyper-mirror rather than any ordinary mirror. This is because the images in hyper-mirrors will reflect seeming distributions of properties that are internal to Statue Carton as well as those that are on the surface.

[16] You might think that the name I have given to the image of Statue Carton implicitly conveys a thesis concerning the images of simples. But I honestly have not come to any conclusions about whether or not the image of Statue Carton is a simple.

mirror could be an object that occupies a continuous region of space.[17] If that is the case and mirror images occupy subregions of the surfaces of mirrors, then it follows that Evremonde occupies a continuous region of space. But, if that is true, then there is a subregion of the region occupied by Evremonde which is occupied by something that is red simpliciter. If Evremonde is not a simple, then this red thing might be a part of Evremonde. Otherwise, it is probably just a part of the mirror's surface.

It seems, then, that Statue Carton has a certain dispositional property. It is disposed to have reflections with certain red parts. Or, at the very least, it is disposed to have reflections that occupy regions, which have certain proper subregions that are occupied by red objects. Perhaps the color property that Statue Carton exemplifies can be identified with some such dispositional property. More generally, we might say that the color properties that mereological simples, like Statue Carton, exemplify are dispositional properties. They are dispositions to have images with certain color properties.

This view seems promising, but it does have some problems. One problem is that dispositions to have certain colored reflections seem too strongly wedded to laws of nature. For example, Statue Carton might exist in a world where mirrors, or the physical properties that give rise to mirror images, are physically impossible. But if Statue Carton exists in such a world and has the troublesome red stain, then it's not the case that having that red stain is the same thing as having a certain disposition.

One might think that this problem can be solved by analyzing the dispositional property in terms of some very complex counterfactual conditional. If enough

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[17] Or, perhaps a bit more carefully, it could be that the closure of the region occupied by the hyper-mirror is continuous.

information is packed into the antecedent of a counterfactual conditional, then perhaps we could get around the problem suggested in the last section. Suppose, for example, that Statue Carton is in a world where the laws of nature do not allow mirror images. Even if this is the case, it might be that in the nearest world where the laws of nature allow for mirror images, and where Statue Carton is appropriately placed in front of a hyper-mirror, is a world in which a reflection is produced that is appropriately red.

Unfortunately, packing a lot of information in the antecedent of a counterfactual does not completely solve the problem. This is because there are many conditions that could prevent Statue Carton from being appropriately placed in front of a mirror or from producing the right kind of image. Moreover, these conditions could obtain even if Statue Carton is stained slightly red. For example, Statue Carton could exist in a strange world that has laws of nature that allow for mirror images, but do not allow objects to be moved without changing their color properties. If Statue Carton is in such a world with that red stain but is not sitting in front of a hyper-mirror, then the relevant counterfactual will be false. But, this shows that having that kind of red stain cannot be identified with having the disposition expressed by that particular counterfactual. Moreover, since there are probably an infinite number of possible conditions that could prevent Statue Carton from being appropriately placed in front of a mirror or from producing the right kind of image, it looks like we cannot simply pack the antecedent of the counterfactual to get the results that we want. We cannot, that is, unless we allow for a counterfactual with an infinitely long antecedent. But a view that relies on counterfactuals with infinitely long antecedents looks rather mysterious and probably should be rejected if there is a more favorable option.

5. A Far Better View

The Second Inconsistent Triad has provided quite a puzzle for the friend of extended, heterogeneous simples. We have seen that there is good reason to believe that (6) is true, or at the very least, that possibly, there are extended simples that occupy regions with no proper subregions. But, we have also seen that none of the traditional metaphysical views allows for a denial of (5) along with a plausible explanation of why Statue Carton is slightly red. Moreover, none of the slightly promising views that have not yet been discussed in the literature provide a plausible picture of the situation in our puzzling case. So, it seems that (5) is strong.

But given that (5) is strong and that (6) has been well defended, it looks like the only option is to deny (4). However, a denial of (4) suggests that any extended simple that occupies a region with no proper subregions must be homogeneous. So, The Second Inconsistent Triad, along with the discussions of (5) and (6), seems to provide enough evidence to condemn certain heterogeneous extended simples to the realm of impossibility. Thus we have reason to believe that extended simples that occupy non-composite regions, like Statue Carton, cannot be stained in the way that I have suggested.

This, of course, does not provide us with enough evidence to reject the possibility of every kind heterogeneous simple. We have yet to find a reason to reject extended simples that occupy extended regions of space that *do* have proper subregions. After all, it seems that there are still several viable responses to the First Inconsistent Triad. Thus, it seems that we might allow for the possibility of mereological simples that occupy extended composite regions of space. Remember that Statue Darnay is supposed to be

such a simple. So, we might accept objects like Statue Darnay even though we condemn those like Statue Carton.

However, now that we have seen that extended heterogeneous simples that occupy atomic spatial regions are impossible, we can see that extended heterogeneous simples that occupy ordinary composite regions are impossible as well. The argument is simple and can be formulated as follows:

Argument against the Possibility of Extended Heterogeneous Simples

(7)   If it is possible that there is a heterogeneous simple that occupies an extended composite region of space, then it is possible that there is a heterogeneous simple that occupied an extended atomic region of space.

(8)   It is not possible that there is a heterogeneous simple that occupies an extended atomic region of space.

(9)   So, it is not possible that there is a heterogeneous simple that occupies an extended composite region of space.

Premise (8) in this argument has been defended throughout this paper. So, the crucially yet-to-be-defended premise is (7). In the remainder of this paper, I present an argument in favor of premise (7). If my arguments, from the previous sections and from this section, are successful, then we have a good reason to reject the possibility of extended heterogeneous simples.

The first step in arguing for (7) involves showing that possibly, space is such that some subregions are continuous and some are discrete and extended with no proper subregions. I argued earlier that it's possible that space is composed of extended and yet atomic regions. It might, for example, be composed of Statue Darnay shaped regions.

But, it's also possible that space is composed of regions that are much smaller than Statue Darnay. Perhaps it's even possible that space is composed of point sized regions that are dense and continuous. Given plausible principles of recombination, it follows that possibly, space is such that some subregions are continuous and some are discrete and statue Darany shaped.[18] In fact, plausible principles of recombination should get us that possibly, it is always the case that every region, except some region just above my desk, is continuous and it is always the case that some region just above my desk is Statue Darnay shaped.[19, 20]

Now, suppose, for a conditional proof, that a heterogeneous simple that occupies a composite region of space is possible. For simplicity, let's just assume that Statue Darnay is possible.[21] It is clear that if Statue Darnay is possible, then it might be sitting on my desk in an ordinary composite region of space and at the opposite end of the desk there is an extended, Statue Darnay shaped region with no proper subregions. But, surely

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[18] Lewis (1986), Sider (1999) and Saucedo (Forthcoming) discuss principles of recombination. Such principles are quite popular and quite useful. If some principle of recombination is true, then certain epistemological puzzles concerning modality would be solved with some ease. This is just one benefit of such principles.

[19] It is important that the embedded claims are quantificational. I do not wish to make a de re claim about some region of space just above my table. I do not wish to do so because I do not wish to suggest that spacetime lacks certain structure. For example, if spacetime is Newtonian, then any region of space which is just above my table at one time would not remain there for a very long. Similar constraints are imposed by Galilean spacetime and Minkowski spacetime.

[20] If you do not like principles of recombination, then here is another argument for the desired conclusion. It is possible that (1) there are laws of nature that require regions of space and (2) those laws in conjunction with the claim that there is at some time a region, oriented a certain way, that is smaller than Darnay shaped entail a contradiction and (3) the conjunction of those laws with the claim that there are no point sized regions in any other orientation entails a contradiction. If that is possible, then it is possible that there is an atomic region into which Statue Darnay can fit and that all other regions are composed of points.

[21] But, Statue Darnay is just an example that makes the argument very vivid. We could choose any arbitrary, putatively heterogeneous simple as our example.

if this were the case, then it would be possible for me to push Statue Darnay toward the Statue Darnay shaped region of space at the opposite end of the desk. Moreover, it doesn't seem that anything would prevent Statue Darnay from fitting into that space. Statue Darnay and the region of space are the same size and shape in this scenario. Moreover, Statue Darnay has just the right number of parts to fit snugly into that region of space. That is, there is a correspondence between the mereological structure of Statue Darnay and the mereological structure of the Darnay-shaped region of space. So, it seems possible for me to move Statue Darnay into a region with no proper subregions. That is, Statue Darnay could come to occupy that Statue Darnay shaped region of space.

But, it's also possible to move Statue Darnay into that region without changing its color in any way. As long as there are no strange laws of nature, the color of an object cannot be changed by mere motion alone. But, that suggests that if Statue Darnay were to come to occupy that Statue Darnay shaped region of space, then Statue Darnay would become a heterogeneous simple that occupies an extended atomic region. So, possibly, there is a heterogeneous simple that occupies an extended atomic region.

All of this follows from the supposition that a heterogeneous simple that occupies a composite region of space is possible. So, we may conclude by conditional proof that if a heterogeneous simple that occupies a composite region of space is possible, then possibly, there is a simple that occupies an extended atomic region. That claim, though, is equivalent to (7). Moreover, as I mentioned before, I have argued throughout this essay that (8) is true. If both (7) and (8) are true, then the argument presented above is sound. Thus, extended heterogeneous simples that occupy extended composite regions are impossible. It is clear, though, that every extended simple occupies some region or

other and every region is either composite or atomic. The arguments of the previous sections seem to establish that extended heterogeneous simples in atomic regions are impossible. So, it seems that we have a significant reason to reject the possibility of extended heterogeneous simples of any kind.[22]

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