An Argument Against Causal Eliminativism of Ordinary Objects

by

Róbert Mátyási

Submitted to
Central European University
Department of Philosophy

In partial fulfilment of the requirements for the degree of Masters of Arts

Supervisor: Ferenc Huoranszki

Budapest, Hungary

2014

Abstract

This thesis builds up and defends an argument against ordinary object eliminativism, a metaphysical position which adheres to the idea of eliminating ordinary objects from our ontology. I directly attack a version of the causal exclusion argument—often referred as "the Overdetermination Argument"—fitted for ordinary objects by Trenton Merricks to support eliminativism. The overdetermination argument attempts to show that ordinary objects cannot cause, since if they could cause they would overdetermine their effects with their parts. This argument supports the elimination of ordinary objects because we have good reason to deny the existence of overdeterminers. In this thesis I argue that this good reason is often the tacit assumption of a minimal counterfactual account of causation. I show that if we accept a minimal counterfactualist account of causation, then ordinary objects are not overdeterminers (at least not in a harmful way). This seriously undermines the overdetermination argument as a reason to eliminate ordinary objects from our ontology.

Acknowledgements

I am especially grateful to my supervisor, Ferenc Huoranszki, for his philosophical guidance, insightful critique and suggestions. I would also like to thank Mike Griffin, Daniel Kodaj, David Mark Kovacs, Gergely Kertesz, Andrea Komlosi, Laszlo Kocsis and Zsolt Kapelner for their many helpful and valuable comments about earlier versions of this work. I am indebted to Thomas Rooney for his advices and suggestions which helped me to write down my thoughts and formulate my thesis in the best way possible. Last but not least, I would like to thank the members of CEU's "What is to be human?" research group for the fruitful conversations and the inspiring philosophical environment they created.

Contents

Introduction

In *Objects and Persons*, Trenton Merricks (2001) argues that there are no ordinary objects such as statues, baseballs, chairs, rocks or any artifacts and composite non-living natural objects of any kind.[1] Although our pre-theoretical conceptions of reality are admittedly committed to the existence of non-living composite objects, eliminativism about ordinary objects attacks these folk-beliefs by arguing that no non-living composite object does any causal work. This position, *mereological eliminativism*, is based on the so-called *Overdetermination Argument*. The upshot of the argument is this: even if there were chairs, tables, rocks or baseballs they could only cause redundantly, since their microphysical particles (their atomic parts) arranged appropriately cause everything ordinary objects supposedly cause. In this thesis I will defend ordinary objects against eliminativism by arguing that the causal work done by composites is different from the causal work done by particles, hence there is no redundancy.

I will start with a detailed presentation of the overdetermination argument for eliminativism in chapter 1. In chapter 2 I introduce overdetermination in general. In section 2.1 I distinguish different textbook cases of overdetermination and I differentiate these cases from the one mentioned in the overdetermination argument. After that I explicate important necessary conditions which has to be satisfied by overdetermination arguments in section 2.2. Then I argue in section 2.3 that adopting a minimal counterfactual theory of causation—namely the difference-making account—is helpful in explicating the problem of causal overdetermination. This account claims that it is a necessary condition for causes that they make a difference for the occurrence of their effects. I show that genuine overdeterminers don't make a difference to the occurrence of their effects, and therefore they are not causes according to the difference making account. From

[1] Merricks argues that there are conscious organisms, but he also leaves it open whether there are non-conscious living organisms Merricks (2001, 114).

this I conclude that for those who hold the difference making account, this is a strong reason to eliminate one of the overdeterminers—but only if we pair it with a certain causal criterion of existence about the entities in question. Then I evaluate different strategies to evaluate relevant counterfactuals avoid systematic overdetermination. In chapter 3 I present my argument for the claim that ordinary objects and their microphysical parts (collectively and arranged appropriately) never compete for make a difference to the occurrence of the same effect, thus ordinary objects are not causally redundant.

Before I move on I want to clarify the scope of the thesis. Perhaps those who already made an effort to dive in the contemporary debates concerning material objects could skip to chapter 1, nonetheless I think there are some related puzzles and other motivations which are important to explicate to make clear what are—and what aren't—my goals in the present thesis. I start with some remarks about the pre-theoretical conception which is attacked by eliminativism. Is it endorsed by most persons on the planet or it is some sort of philosophical common sense? What makes philosophers think that this conception has any bearing contrasted to a scientifically informed worldview? Unfortunately most of these questions are left open in the present thesis, but this shouldn't mean that its problems collapse into an obscure debate about an incorrect picture of what the man on the street should think. At least people are inclined to think that most things around them are concrete material objects. I have three coins in my pocket and normally I think the answer to the question "how many things do you have in your pocket?" is three. I can put these coins on my desk next to my laptop and my glass of water. Then I will think that there are five things on the table: three coins, a computer, my glass, and perhaps nothing else. I also think that these things can interact in many ways, for example, I can play penny football with the coins. Of course, it seems that we can only give a rough characterization of ordinary objects, but this is not the problem I want to focus on in the current thesis. I suggest readers suppose that ordinary objects—if they exist at all—are full-blooded concrete objects capable of interacting with each other and with us by, for example, playing an important role in forming our perceptual beliefs about our environment.

It is also an interesting question whether ordinary objects are mind-dependent or not. If ordinary objects are mind-dependent then we have two options. It might be the case that the

concepts of ordinary objects (e.g. coins and tables etc.) are mind-dependent, but at least these concepts are somehow about concrete composite spatiotemporal objects which we take to be something more (e.g. instruments accepted to pay for goods or types of furniture). This option is still compatible with the claim that ordinary objects can interact causally, though we will miss a lot of important aspects about them if we only concentrate on their existence as composite, causally active spatiotemporal beings. I certainly don't want to suggest that all important aspects of ordinary objects must be their mechanistic causal powers. But let's consider the other option, according to which these objects are *entirely* mind-dependent. It is the topic for a different thesis to answer what is the nature of entirely mind-dependent things or whether mind-dependent objects can cause at all, so let's assume the standard position that mind-dependent things aren't real. This option might be compatible with eliminativism in general, but if we assume this then there's no need for an argument to show that these objects cannot cause, since we already assumed that somehow these objects are not suited to interact with each other causally in the same way as concrete entities do.

In case we do reach agreement that ordinary objects are concrete spatiotemporal entities suited to causally interact with their environment, then it is perfectly legitimate to ask what other reasons and motivations remain to doubt our beliefs in their existence. But in fact many philosophical puzzles remain in the literature to motivate our suspicion about these entities, and Merricks's overdetermination argument presents just one unique puzzle among many others. These puzzles are also compatible: taken together these puzzles can motivate eliminativism, even though they provide motivations to a different degree.[2]

Korman (2014) introduces various puzzles about ordinary objects present in the contemporary literature. Let's take a look at one:

> Reflection on Michelangelo's David and the piece of marble of which it is made threatens to lead to the surprising conclusion that these would have to be two different objects occupying the same location and sharing all of their parts. (Korman 2014)

This is the well-known problem of *colocation* and *material constitution*. The statue of David and the piece of marble appear to be non-identical if we consider their modal properties. For

[2] See also Merricks (2001, 30–55) for a more or less comprehensive list of puzzles other than the overdetermination argument which can motivate our denial of the existence of ordinary objects.

example, David can survive the miraculous annihilation of its arms, but the piece of marble constituting David in this case wouldn't be the same anymore. However, currently David and the piece of marble share all of their parts and inhabit exactly the same spatial location. This problem challenges our intuitions concerning the identity conditions of concrete spatiotemporal entities, which are very likely based on spatial location and parthood relations. There are many strategies to answer the puzzle and eliminativism is perhaps the most simple: if we deny the existence of ordinary objects, we could end up with relaxing our intuitions about individuating concrete entities since we can restrict our focus to more simple entities like, for example, microphysical particles.

Korman (2014) continues with another puzzle:

> [R]eflection on the possibility of alternative conceptual schemes, which "carve up the world" in radically different ways, makes our own conception of which objects there are seem intolerably arbitrary.

This puzzle exploits the *arbitrariness* of demarcating ontologically between ordinary objects and other *strange kinds* and extraordinary objects. The common examples for extraordinary objects are trout-turkeys—individuals composed of two undetached parts: a front of a currently existing trout and the undetached back-half of a turkey somewhere else (Lewis 1991, 7–8). The problem is that if we cannot find any ontological difference between ordinary and extraordinary objects, then the same reasons apply to reject or permit the existence of ordinary and extraordinary objects in our ontology. This puzzle can also strengthen the appeal of eliminativism—leaving out some important nuances for the sake of simplicity—since to be eliminativist is to believe in a non-permissive but non-arbitrary conception of what concrete entities exist.

The whole debate about these individual puzzles are too huge to include in the present thesis, so I will only focus on another puzzle mentioned by Korman (2014):

> Reflection on the availability of microphysical explanations for events that we take to be caused by ordinary objects threatens to lead to the conclusion that ordinary objects—if they do exist—never themselves cause anything to happen.

I ask the reader to keep in mind that even if we can explain away the problems which came up with the other two puzzles in this passage, the problem of overdetermination in itself could provide us enough reason to chose eliminativism.

Finally, it is also worth mentioning that the causal version of eliminativism closely resembles many other metaphysical positions as far as the theories' ontological commitments go, most notably *mereological nihilism*[3] and even more so Peter Van Inwagen's *mereological organicism* (1990). I cannot contrast causal eliminativism to these positions in detail because even though the ontologies are similar, the reasons for holding these positions are different. For example Inwagen denies the existence of ordinary objects because his position only accepts living objects (organisms) and particles as mereological wholes (Inwagen 1990, 81). Causal eliminativism is different since it denies the existence of ordinary objects because "were they to exist, their causal powers would be at best redundant" (Merricks 2001, viii). The most important difference is that while life provides an ultimate principle of composition in Inwagen's ontology—at least as far as macro-sized objects are concerned—causal eliminativism would dispose of organisms if they turned out to be overdeterminers.

[3] See e.g. Dorr (2001), Rosen and Dorr (2002), or lately Sider (2013).

Chapter 1

The overdetermination argument for eliminativism

The overdetermination argument is stated in the spirit of Alexander's dictum, according to which "[t]o be real is to have causal powers" (Kim 1993, 355). However, Merricks's proposal is weaker in scope than the general clause, because it only focuses on concrete entities (mereological eliminativism is not concerned with abstract entities). Furthermore, in contrast to this formulation of Alexander's dictum, Merricks doesn't suggest a criterion of existence, but a criterion of justified belief in the existence of a concrete entity. There might be epistemically hostile possible worlds in which some objects are causally inert, but we have no reason to think that we inhabit such a world. Thus eliminativism is based on the modest claim that for us to have reason to believe in a concrete object, it would need to have causal powers.

As Merricks puts it: "[m]acrophysical objects are exactly the sort of things about which this kind of causal requirement seems to be true. There should be no controversy on this point" (2001, 81). But it still needs more clarification how objects can cause, regardless that they are not commonly taken as causal relata in the contemporary literature. Eliminativism is not based on the claim that we are only justified to believe in the existence of events (of all types of concrete entities). In his original setup Merricks bridges object causation with event causation in the following way: what it is for an object (or a plurality of objects) to cause is to participate in an event which is a cause (Merricks 2001, 67). If we consider events as concrete entities

(thus entities which are causes or which are caused), then we can explicate Merricks's causal requirement:

Merricks's dictum: For us to have reason to believe in the existence of concrete objects, they have to participate in events.

With Merricks, I will assume that this causal requirement is true.

Nevertheless, the eliminativist has the following problem: even if we can show that ordinary objects are suited to cause, if they are overdeterminers then our reasons to believe in them are hindered. So the claim is not that there is something about baseballs which make them inherently incapable of causing anything.[1] Consider an everyday situation in which somebody throws a baseball towards a window which causes the window to shatter. Merricks's overdetermination argument is the following:

(1) The baseball—if it exists—is causally irrelevant to whether its constituent atoms, acting in concert, cause the shattering of the window.

(2) The shattering of the window is caused by those atoms, acting in concert.

(3) The shattering of the window is not overdetermined.

(4) Thus if the baseball exists, it does not cause the shattering of the window.

(5) There is no baseball. (Merricks 2001, 56)

This argument is easily generalizable to show that there are no non-living composite objects, since everything a non-living object could cause is caused by its atoms. These atoms might be the atoms of physics (if they have causal powers), but are more likely mereologically simple beings, the things on the lowest level of the composite objects' supposed parthood structure.[2]

[1] Bennett (2003, 471) makes a similar observation about the problem of mental overdetermination: the problem is not that minds are *ex hypothesi* unable to cause, but that they are overdeterminers.

[2] It is an interesting question whether Merricks's eliminativism is compatible with the denial of mereological atoms. It is an open possibility that the world is made of 'atomless gunk', i.e. no object has atoms as parts (Sider 1993; Lewis 1991, 21). Schaffer argues against eliminativism (*inter alia*) by claiming that it is incompatible the possibility of every object having proper parts further down (Schaffer 2003a). However, Merricks's argument only rests on the allegedly plausible claim that the atoms of physics, or mereological atoms, or something at the microphysical level might be sufficient for everything that happens in the actual world. As Merricks puts it: "there is no need to build a commitment to (or, for that matter, against) simples into eliminativism […] there is no need to build in a commitment to the atoms of physics either. So consider my claims about the atoms of physics to be useful but expendable. Such claims are really placeholders for claims about whatever microscopic entities are actually down there" (Merricks 2001, 3).

Hence the overdetermination argument attempts to show that if there were ordinary objects, then any causal situation involving those objects would be a case of systematic causal overdetermination, since the effects of the objects are caused by their atoms. Supposing that there is no systematic overdetermination, the eliminativist concludes that ordinary objects don't cause anything. With these considerations in hand, the overdetermination argument gives us a good reason to claim that there are no ordinary objects.

In premise (1) there is a notion of 'causal irrelevance', which is a technical term for the following (for any object *O* and objects *x*s and any event *E*):

> ***O* is causally irrelevant to whether the *x*s cause *E*:** (i) *O* is not one of the *x*s (ii) *O* is not a partial cause of *E* alongside the *x*s, (iii) none of the *x*s cause *O* to cause *E*, and (iv) *O* does not cause any of the *x*s to cause *E*. (Merricks 2001, 57)

In other words, if the *x*s cause *E*, and there is no reference to *O* in the complete explanation about the *x*s causing *E*, then *O* is causally irrelevant.

I want to emphasize that the word choice here shouldn't lead us astray: the causal irrelevance of the baseball to whether some other things cause an event is compatible with the claim that baseballs are objects which are suited to cause. Also, as I mentioned in the introduction, the problem is not that the concept of a baseball is entirely mind-dependent, therefore irrelevant to whatever is going on causally in the spatiotemporal world. The object's baseballness might not contribute to its power to break windows, since being a baseball is mostly about being an artifact normally used in a contemporary bat and ball game. I rather suggest to concentrate on the following claims: It is widely held that if baseballs exist, then they are composite objects. Since the baseball is not identical with any of its proper parts, it is not one of its atoms. Furthermore, the baseball is not a partial cause of the shattering of the window alongside the atoms, because the window shatters independently of whether the atoms compose a baseball or not. It is also plausible that if the atoms cause the shattering of the window, then the atoms don't cause an intermediate event in which a baseball participates in order to break the window. Furthermore, it is also plausible that the atoms are not caused by the baseball to break the window.[3] Hence if

[3]Merricks argues that the denial of the last two cases also lead us to accept systematic overdetermination (2001, 60–61).

the atoms break the window, we need not refer to the baseball (composed by the atoms) in the complete causal explanation of this situation.

The overdetermination argument could fail in an obvious way. If the baseball is identical to the atoms taken collectively, and the atoms have causal powers, then the baseball has the same causal powers without being redundant. This claim could be supported by accepting composition as identity, the thesis that mereological wholes are identical to all their parts taken together. This is not to be confused with the far less controversial claim that composite objects are identical to the sum of their parts. Also, it is not the obviously false claim that mereological wholes are identical to *any* of their single parts: the left half of the baseball is certainly not identical with the baseball.[4] I will assume with the eliminativist that composition is not identity, since if composition is identity, then eliminating the baseball will result in eliminating the atoms as well.

In what follows, I will defend non-living composite objects by attacking premise (2), which claims that the shattering of the window is caused by the atoms. The upshot of my argument is that the overdetermination argument doesn't show that there are no baseballs, since baseballs and their atoms cause different events. I will support this claim in the next sections by explicating the metaphysical worries about causal overdetermination and I will explicate the problem of systematic overdetermination with the help of the difference making account of causation.[5]

[4]For a more detailed discussion, see Wallace (2011).

[5]It's worth noting that Merricks does not propose a specific theory of causation besides the principle of causal irrelevance and the denial of systematic overdetermination.

Chapter 2

Overdetermination

2.1 Overdetermination and realization

One can attack the overdetermination argument as Sider (2003) does by claiming that there is nothing harmful or peculiar about overdetermination. According to him, puzzles about overdetermination can be easily treated with an appropriate theory of causation. Schaffer also claims that "[t]here is nothing […] secretly contradictory or otherwise suspicious about overdetermination—in fact, overdetermination is *everywhere*" (2003, 26). Conversely, according to Merricks "we always have a reason to resist systematic causal overdetermination" (2001, 67). Whether overdetermination is considered problematic or innocuous might depend on the particular examples. Probably there is nothing puzzling about overdetermined effects in cases like someone throwing two rocks through the window, but it is a problem that our ontology implies that every causal situation with ordinary objects is overdetermined in a systematic manner.

There is an important difference between the overdetermination the eliminativist objects to and the common text-book cases of overdetermination: ordinary object overdetermination—if the overdetermination argument is sound—should be widespread. There seems to be nothing important or unique about the mechanistic examples of baseballs breaking windows besides that they represent a somewhat straightforward causal interaction between two objects. If ordinary objects are overdeterminers, they overdetermine their effects in every causal situation, including guitars making sounds, coffee helping us stay refreshed or a wedge of pecorino romano having a distinctive scent. Textbook cases of firing squads with multiple members shooting a victim

at the exact same time in the exact same way are somewhat exceptional, even if we grant that these situations are possible.[1]

Note that there are other important differences: it is not the case that baseballs and atoms overdetermine the shattering of the window in the same manner as each member of the firing squad overdetermines the victim's death by hitting the victim at the same time (Funkhouser 2002, 337). While baseballs and their atoms are in part-whole relations, the bullets are wholly independent causes.

Also, it is not the case that *being a baseball* and *being atoms* are different, but related properties of the same thing. So the situation is different from another textbook example of overdetermination. In this example we have a sleeping pill *being dormitive* and also *having some chemical property P*, and both properties cause someone to sleep at the same time (Funkhouser 2002, 346). The eliminativist claims that baseballs and their atoms (taken collectively) should be non-identical concrete objects, even though they are not mereologically distinct.[2]

Hence, in addition to the fact that baseballs and their atoms are not wholly independent, they are not identical and they seem to cause the very same shattering of the window. Now I want to introduce a third option which suggests a more plausible way of thinking about the baseball's relevant properties and the baseball's atoms' relevant properties by which they supposed to cause the shattering of the window. According to this option, the weight, the direction and the velocity of the baseball is *realized* by the atoms' relevant properties.

Since realization is used in the literature in many distinct senses I will restrict my use to only the causal sense of the term, according to which a property's causal powers could give rise to another property's causal powers (directly or indirectly through participating in a state of affairs, I will come back to this below).[3] Some philosophers claim that the realization relation is flat or, in other words, that there is only same-subject property realization. According to this option re-

[1] Bennett (2003, 474–475) made a similar observation about mental overdetermination.

[2] Lewis (1987, 259) also discussed this option in the case of the spatiotemporal mereology of events, but he remained silent about whether *all* of the parts of an event taken collectively can be non-identical to that event (given that they are non-distinct because of the mereological relations between them). For now, I leave it open whether we can say that the event of writing 'Larry' is identical to the collection of events consisting of writing the particular letters of the name individually. However, if this is so, then we have a case for composition as identity, which immediately cancels eliminativism.

[3] This realization relation can be the superset of constitution, supervenience and other similar relations used to bridge entities and other entities incorporated by the former to cause something.

alization is restricted to the properties of only one entity, as it might be the case with the sleeping pill's chemical property *P* realizing its dormitivity, or something's being red realizes its scarlet color. However, I will use realization in a different, broader sense which is also common in the literature: I will allow it to hold between the properties of multiple, non-identical entities, so the realizer might be the property of a different thing (or a state of affairs constituted by many other things) than the thing which has the realized property, similarly as Gillett (2002, 2003) and—recently—Shoemaker (2007, 2010) does.[4] In these cases the macroscopic property of a macro-entity is realized by a state of affairs which is constituted by the micro-level properties of the macroscopic entity's parts (later, for the sake of simplicity, I won't refer to the state of affairs as realizers, just its constituent properties). A baseball's ability to break windows is realized by the state of affairs constituted by its atoms' velocity, location, weight, direction and whatever relevant properties the atoms might have. It is a matter of fact that the baseball's relevant properties are realized by its atoms' relevant properties in this sense, but this is enough to raise the worry that whenever a baseball causes something it is systematically overdetermined by whatever the baseball's relevant properties are realized by. I will call these situations *incorporating overdetermination*.

According to Funkhouser, the paradigm cases of incorporating overdetermination usually include macro causes which incorporate micro causes in a way that the macro properties are not defined by the micro-level properties, but realized by their instances (2002, 340). This characterization is also agreeable to the eliminativist for several reasons. I showed in section 1 that eliminativism is false in an obvious way if the baseball is identical to the atoms. If all of the baseball's properties are its atoms' properties, then it is not an option for the eliminativist to defend the non-identity of parts and wholes. For all we know, the baseball's flight toward the window could occur via many different underlying microphysical arrangements, thus we also cannot reduce (or define) the baseball's properties to a specific appropriate arrangement of the atoms. In contrast, the realization clause will not immediately commit the eliminativist to the existence of baseballs: it only claims that whenever there is a baseball, its properties are realized by the atoms' properties. I will use realization also as relating objects, but note that I use it as

[4]For a broad discussion about the realization relation see also Polger (2004).

a shorthand for that the properties of one object are realized by a state of affairs constituted by the properties of another (or the same) object or collections of objects.

Thus, I think there are grounds to show that if the shattering of the window is a case of overdetermination, then it is a case of incorporating overdetermination. I think there are also good grounds to show that these cases are unproblematic cases of overdetermination. After some preliminary inquiries in the next two sections, I will present and defend an argument to show that it is not a sufficient reason to eliminate ordinary objects if they only overdetermine their causes by incorporating their atoms. However, I also acknowledge that the eliminativist should not be impressed only by the mere fact that the example of the baseball shattering the window can be characterized as incorporating overdetermination. For example, the eliminativist could retort that the baseball is realized by the atoms only if we already have reason to believe in the existence of the baseball. I will come back to this issue in chapter 3.

2.2 Some necessary conditions for overdetermination

To set aside problems about 'pseudo-overdetermination' (in which the two overdeterminers are in different ontological categories, e.g. an event and an object cause the same thing), I will accept Merricks's distinction between object causation and event causation (i.e. an object has causal powers if it participates in events). The following criteria explicate some useful necessary conditions for overdetermination:

Non-identity: for any events c_1 and c_2, if c_1 and c_2 overdetermine an effect e, then $c_1 \neq c_2$.

Causal efficacy: for any events c_1 and c_2, if c_1 and c_2 overdetermine an effect e, then c_1 is causally efficient to cause e and c_2 is causally efficient to cause e.[5]

The non-identity condition is applicable because I already assumed with the eliminativist that composition is not identity. So the fact that baseballs—if they exist—and their atoms are not mereologically distinct wouldn't rule out that these are different concrete entities. The causal efficacy criterion is a plausible way to make sure that the alleged overdeterminers cause the same

[5] Other necessary conditions might be needed for genuine overdetermination. For example the overdeterminers should be causally irrelevant to whether the other overdeterminer causes the effect. See Merricks (2001, 58) and Korman (2014).

effect. It is safe to assume that it is not given before the conclusion of the overdetermination argument that ordinary objects are sheer *epiphenomena*. Initially, these objects might be capable of bringing about events like the window's shattering, but—according to the conclusion of the eliminativist's overdetermination argument—we can find out that in fact they are not, given that their atoms did all the causal work already. However, it is still an open question whether this window-breaking case also could fulfill the causal efficacy criterion, which is crucial for the plausibility of the overdetermination argument.

I want to emphasize another thing about causal efficacy. It should be clear that if we do not worry about overdetermination, then it is not problematic to assume that an effect has two causes with the required efficacy to bring it about. As I mentioned in the introduction, the problem is not that ordinary objects are unsuited to play causal roles. It would have beneficial effects on eliminativism if objects turn out to be unfitted to cause anything, but then there's no need for any causal exclusion argument after all. So the best strategy to justify the use of the overdetermination argument is to maintain that (i) initially objects aren't causally inert, (ii) objects are not identical to the collection of their parts, (iii) overdetermination is impermissible in our causal theory, and (iv) the parts of objects bring about the same effects as the objects. I already discussed (i) and (ii), but there's a lot more to be said about (iii) and (iv) in the subsequent sections.

2.3 Difference making and overdetermination

According to Lewis, one of our most basic intuitions about causation is that "[w]e think of a cause as something that makes a difference" (1973, 557). Many contemporary views of causation—counterfactual, probabilistic, interventionist and contrastive ones—are under the banner of this dictum, so one can remain (relatively) neutral about the metaphysics of causation, while relying on the independently plausible test of difference-making to distinguish cases of genuine causation from events that occur together without any interesting connection (List and Menzies 2010). Since the defense of the difference making account of causation is outside of the scope of the present thesis, I will only assume it to explicate the problem of genuine systematic

overdetermination.[6]

For simplicity's sake, I will demonstrate the workings of the difference making account by using Lewis's standard possible world semantics to get the truth conditions of counterfactuals (Lewis 1973b). In this framework the truth conditions of counterfactuals are determined in terms of comparative similarity relations between possible worlds. I will use the expression 'close worlds to world *w*' to refer to worlds which are objectively similar to another world *w*. I will use the counterfactual conditional '$P \boxdot\!\!\rightarrow Q$', and accept '$P \boxdot\!\!\rightarrow Q$' is true in world *w* if and only if in the *P*-worlds close to *w*, *Q* is true. With these assumptions in hand, I will formulate difference making in the following way:[7]

Difference making(DM): *C* makes a difference to the occurrence of an event *E* iff

(i) $C \boxdot\!\!\rightarrow E$

(ii) $\sim C \boxdot\!\!\rightarrow \sim E$

Since I will also use plurals in the later sections, I also explicate the difference making principle with many events:

Difference making(plural): $c_1 \ldots c_n$ makes a difference to the occurrence of events $e_1 \ldots e_n$ iff

(i) $c_1 \ldots c_n \boxdot\!\!\rightarrow e_1 \ldots e_n$

(ii) $\sim(c_1 \ldots c_n) \boxdot\!\!\rightarrow \sim(e_1 \ldots e_n)$

It is important that for a plurality of events to be absent, it is sufficient that any individual event in the plurality is absent. This claim seems to be uncontroversial considering the nature of collective plural terms. For example, it is obvious that the whole crew of the starship Enterprise (the referents of a plural shorthand for Kirk, Spock, McCoy, *et al.*) couldn't be at the bridge without Kirk being there too. This means that if the *c*s make a difference to the occurrence of the *e*s, then (ii) is fulfilled even if in the close worlds in which only one of the cs is absent and some of the es are also absent.[8]

[6]For a sweeping defense of overdeterminers as individual causes see Schaffer (2003b). He claims that the difference making principle is only a necessary condition for the restricted set of non-overdetermined causal situations.

[7]I will use the '~' to indicate the absence of an event e.g. '~*C*' means '*C* did not happen'.

[8]Keep in mind that there are mixed situations: for example, a plurality of events make a difference to a single event, or a single event makes a difference to a plurality of events. Since the smallest plurality is one, this is covered by the definition above.

The difference making account simply serves as a proportionality test for causes: it ensures that the causes are not too specific, but specific enough to bring about their effects. To illustrate how the DM works, consider Yablo's example of a pigeon trained to peck at all and only red objects (1992). The target's being red makes a difference to the pigeon's peck because condition (i) is met—the pigeon pecks at the red thing in any close worlds, because it is trained to do so—and also condition (ii) is met—if the pigeon is presented with an object which is not red, or isn't presented with anything, it won't peck. Also the target's being crimson doesn't make a difference to whether the pigeon pecks, because condition (ii) is not met: there are close worlds in which the target is not crimson, but the pigeon pecks, because the target could have been colored a different shade of red. With the help of the difference-making test, we can find out whether the target is being crimson is in a sense overly specific or not a proportional criterion to cause the pigeon to peck.[9]

There is a strong motivation for the difference making theorist to rule out systematic overdetermination. The motivation is that overdetermining causes don't make a difference to the occurrence of their effects, since there are close possible worlds in which only one of the overdeterminers occur together with the effect. For those who accept the difference making account, overdetermination is a counterpossibility including two non-identical events—whether or not related in some non-causal way—which are individually efficient to cause the very same effect. This is a counterpossibility because the difference making account cannot acknowledge things which don't make a difference to their effects as causally efficient, since according to this account, the difference making criterion is a necessary condition of causation. Initially, a genuine case of overdetermination should fulfill the following necessary conditions:

(O1) $C_1 \boxdot\!\!\rightarrow E$

(O2) $C_2 \boxdot\!\!\rightarrow E$

(O3) It is not the case that $\sim C_1 \boxdot\!\!\rightarrow \sim E$, since $(\sim C_1 \& C_2) \boxdot\!\!\rightarrow E$, or it is not the case that $\sim C_2 \boxdot\!\!\rightarrow \sim E$, since $(\sim C_2 \& C_1) \boxdot\!\!\rightarrow E$.[10]

[9] A similar account was employed by List and Menzies (2010) to argue against Kim's overdetermination argument for reductive physicalism in the philosophy of mind. Menzies and List employed a different version of the difference making account which had property instantiations as causal relata, but the difference making account can be formulated equally well with event causation.

[10] For a slightly different formulation of the same test, see Bennett (2003, 476).

The conditions (O1) and (O2) are straightforward if we accept the difference making account. Condition (O3) is a disjunction of two conditions, in which if one of the events didn't occur, the other would still occur together with the effect. This could be the difference making theorists' formulation of the causal efficacy criterion I presented in section 2.2.

In most cases of overdetermination, both disjuncts are true. For example, it can be easily seen that this simple account works with the firing squad cases. Let's suppose that there are two shooters in the actual world both firing (successfully) at the victim's heart. In all the close worlds in which at least one shooter shoots, the victim dies as well. There is no close world in which a shooter doesn't shoot and the victim doesn't die. There are no close worlds in which no shooter shoots and the victim doesn't die. This is because in all close worlds where one shooter doesn't shoot, the other shoots the victim to death. At first sight, the shooters' case is problematic for the difference making account, since the shooters indeed cause the victim's death, but they don't make a difference.

To resolve this issue, it is a common move to fine-tune events in the following way: the shooters made a difference to the victim's death in a specific way (e.g. having two bullets in the heart). In this case, the shooters are not overdetermining the victim's death, because the shooters individually are not causally efficacious to shoot the victim in the same way as it happens when they shoot together.[11] However, I need not be concerned with the particular attempts to explain away overdetermination to defend the difference making account. What I have shown is that the difference making theorist is motivated to explain away cases where both disjuncts of (O3) are true.

But what if only one of the disjuncts of (O3) is true? I hold that cases of incorporating overdetermination are not in principle problematic if we accept the difference making account and we can show that one disjunct of (O3) is false. Here's a case for the difference making theorist to show that if only one of the disjuncts of (O3) is true, it is not a problematic case of overdetermination:

(1) $C_1 \mathrel{\Box\!\!\rightarrow} E$

[11] For other possibilities and problems of the counterfactualist account concerning overdetermination, see Hall (2004) and Schaffer (2003a).

(2) $C_2 \Box\!\!\rightarrow E$

(3) If only one of the disjuncts of (O3) is true, then either $\sim C_2 \Box\!\!\rightarrow \sim E$, or $\sim C_1 \Box\!\!\rightarrow \sim E$ is the case, but not both.

(4) If (3), and only $\sim C_2 \Box\!\!\rightarrow \sim E$ is the case, then by the definition of difference making, C_2 makes a difference to E, and C_1 doesn't.

(5) If (3), and only $\sim C_1 \Box\!\!\rightarrow \sim E$ is the case, then by the definition of difference making, C_1 makes a difference to E, and C_2 doesn't.

The conclusion of this argument should be that there is no problem of overdetermination for the difference making theorist if only one disjunct of (O3) is true, since in these cases there is an event which fulfills the necessary condition of difference making to cause the effect, and the other overdeterminer in fact doesn't fulfill this necessary condition to cause the event. From now on I will hold that cases of incorporating overdetermination in themselves are not cases of genuine overdetermination unless we could find a way to establish that both disjuncts of (O3) turn out to be true.[12]

Now I want to highlight two controversial strategies to arrange the counterfactuals in a way that only one of (O3) is true. I think we should and can avoid these strategies while we discuss the problem of this thesis. I don't want to claim that these strategies are always damaging but somehow turned out to be particularly deceptive in overdetermination cases. After that I will introduce a strategy which I think is legitimate to acknowledge the existence of ordinary objects and avoid problematic cases of overdetermination.

2.4 A strategy with backtracking

Consider the following example with our familiar firing squad:

> Suppose that the first gunman is quite serious about his work, and would only fail to fire his gun if some terribly traumatic event occurred just before he was to do so—

[12] In the present thesis it is not relevant to settle whether incorporating overdetermination involving mental (or emergent higher-level) properties is problematic for the difference making account. There might be further stipulations which can render some cases of incorporating overdetermination problematic, but it is safe to assume that baseballs, which are material objects, are secure from these issues.

> the sudden collapse of a beloved commanding officer, for example. But that kind of event would leave the second gunman shaken up as well, and would throw off her aim. Consequently, it looks as though the victim would *not* have died if the second gunman had fired without the first—the second gunman would have missed. Yet despite the apparent falsity of that overdetermination counterfactual, the death is clearly overdetermined; the victim actually got hit with two bullets. (Bennett 2003, 477–478)

A similar reasoning could apply to the window-breaking case: If the baseball didn't break the window, then it must have been because our unruly thrower had thrown it—and its atoms—differently. So, were the window left in one piece by the baseball, it wouldn't get shattered by the atoms of the baseball, since what matters is the accuracy of the throwing. Contrary to this, the shattering of the window might be overdetermined by the baseball *and* its atoms in the current circumstances: the overdetermination argument still tells us that the baseball at best is only a redundant cause alongside the atoms. Nevertheless, (O3) turns out to be false for both the case of the unlucky firing squad and for the case with the blundering rascal throwing the baseball. Does this mean that (O3) is not a necessary condition for overdetermination or that we don't have overdetermination in the window breaking case? My answer is: neither of the two.

Bennett's original upshot is rather this: This line of reasoning involves what Lewis (1979) and Bennett (2003) calls backtracking, and we probably should avoid backtracking in the current context since it helps to deceptively conclude that there's no overdetermination in genuine cases of overdetermination. Let me explicate the form of reasoning:

(i) If C_1 had not happened, that must have been because X happened.

(ii) If X had happened, C_2 would have happened in such a way that it would have failed to cause E. (Bennett 2003, 478)

The first step involves backtracking, but the inapplicability of backtracking here doesn't mean that it is a bad strategy in all contexts of enquiry. Also these examples might be problematic for some other reason than backtracking, so I ask the reader to focus on the line of reasoning instead of the labelling Bennett chose for it: its striking feature is that there's backtracking in one step, but it might be irrelevant.

I think Bennett is right that this line of reasoning is misleading, but I don't think that the backtracking part in (i) is responsible for it. Nevertheless, while we evaluate the relevant coun-

terfactuals, we should acknowledge that the overdeterminers could occur without the other, and are individually capable of bringing about their effects. With this kind of argument we simply fail to do so. It's not because there is backtracking in (i), but because we focus on something that is considered as the common cause of the overdeterminers, but also could be the cause of the effect. So if we use this strategy, we neglect the idea that C_1 and C_2 are overdetermining E, and we simply suggest that there is an X, which makes a difference to the occurrence of E. If we consider Bennett's example, the sudden collapse of the beloved officer seem to make a difference whether the victim dies or survives. But regardless of X, E could be still clearly overdetermined—the fact that there is a common cause for two bullets in the heart won't make these bulletts less deadly. If we do not allow this strategy, (O3) remains a good necessary condition for overdetermination: If it turns out in similar cases that the common cause X makes a difference to E while either C_1 or C_2 does not if we evaluate them independently of X, then we don't have a genuine case of overdetermination. If C_1 could cause E in the absence of C_2 and C_2 could cause E in the absence of C_1, then the common cause of them, X, is simply irrelevant.

In addition, one might wonder how should this line of reasoning with backtracking answer the overdetermination argument. The reason for the eliminativist to conclude that the baseball is a redundant cause is not that nothing was thrown towards the window. Instead, the very motivation behind eliminativism is to acknowledge that in the place of what we normally take to be baseballs might be just collections of atoms, and these atoms collectively are capable of breaking windows in themselves when thrown towards them with the right aim and velocity.

2.5 A strategy with replacement

Consider the possibility that C_1 is realized by C_2, but could have been realized by something else, for example the baseball's causally relevant properties could have been realized by the properties of a different collection of atoms, and if the same collection of incorporated atoms are not present in a close world, the baseball still shatters the window by incorporating the properties of other realizers.[13]

Bennett (2003, 482) argues that we should be careful also with this line of argument because

[13] Lepore and Loewer (1987, 639–640) argued very similarly against mental eliminativism.

it might be compatible with epiphenomenalism about the upper-level phenomena (the ones realized by the atoms or something else). What is relevant for us here is the observation that if an upper-level entity is multiply realizable, then any kind of realizer sufficient to realize this upper-level phenomena might be in itself sufficient to make a difference to whatever is going on causally. I share Bennett's presumption that the replacement of the base cannot in itself show that the upper-level phenomena is causally relevant.

I should make it more transparent what is exactly the worry with allowing the base to be replaced by something sufficiently similar. Bennett sums up the problem in the following example:

> [C]onsider a version of the firing squad case in which the first gunman has a line of back-up gunmen behind him, waiting to fire if for some reason he does not. By the above pattern of reasoning, it comes out true that if the second gunman had fired without the first, the victim would still have died—even if the second gunman actually missed completely, or was firing blanks. (2003, 482)

The counterfactual mentioned will come out true because at least one gunman in the back-up line will hit the target.

But why does this example work similarly as the replacement of the base? To make my point sharper I modify a familiar example with Billie and Suzie throwing rocks at a bottle (Lewis 2000, 184). We have two major modifications: Let's assume that Billie is terribly bad in throwing rocks at a bottle, and that we have one back-up shooter for Suzie, Bertha, and she never misses the bottle. Billie and Suzie are throwing rocks at at the bottle and one rock hits the bottle. We assumed that whenever Suzie misses, Bertha hits the bottle anyway. The problematic counterfactual will turn out to be true: if Billie had thrown without Suzie, the bottle would still have shattered, since Bertha—using her excellent skills—would hit the bottle anyway. But we know that Billie is not particularly good in this game and thus not an efficacious bottle-breaker in this situation since it is possible that he always misses the bottle. It is also true that the outcomes won't change if Billie had been throwing feathers all time instead of rocks. To make it clear: Billie could be utterly irrelevant whether the bottle breaks or not, but replacement arguments could work even in this case. It is true that if Billie had thrown without Suzie, the bottle would still have shattered. Therefore, the truth of our problematic counterfactual is even compatible with

Billie having no causal powers at all to hit the bottle, so replacement arguments in themselves are simply inconclusive in this context.

Now it is perhaps easier to see why replacement arguments are dubious in other cases as well: if the baseball's atoms are not present, but the baseball is realized by something else, then it might be the case that the shattering of the window has nothing to do with the baseball, since only the lower-level realizers do the causal work. Of course there are many interesting differences between the two examples which I cannot discuss at this point, but the importance of these differences will be perhaps more clear later in the thesis: In the example above the throwing of Billie, Bertha and Suzy are perfectly independent events, while the baseball's relevant properties are realized by their bases. Also in the example with the baseball the different realizers probably don't occur together in a world while Bertha and Suzy don't cancel out each others existence. And most importantly, even if Billie is completely irrelevant to whether the bottle shatters in the above example it doesn't mean that the throwing of Billie couldn't cause something else. The eliminativist has to show that the example with the baseball generalizes in the way that it is irrelevant to whether anything occurrs whatsoever. But we can acknowledge that it seems that the multiple realizability of the upper-level objects is indeed compatible with them being sheer epiphenomena, so this strategy is at best inconclusive about whether the realized entity is causally active.

2.6 Necessitation

The previous two strategies look dubious enough to have good reason to avoid them. In what follows I will rather focus on a more promising strategy which apparently turns up if we try to illuminate the yet unclear details about how to show that the realizers are by themselves sufficient to cause their alleged effects.

It is sometimes relevant to assume that the alleged overdeterminers somehow necessitate each other—or even just one necessitates the other—in order to alleviate the harmful results of permitting overdeterminers. As Bennett puts it "you cannot quite ask what would happen if the one occurred without the other if it just can't occur without the other" (2003, 480).[14] The relevant

[14]See also Yablo (1997, 258) while discussing a similar case in which a certain brain state necessitates his feeling

necessitation could be just a contextual matter: there's no need to posit necessary connections between distinct entities to suppose that two entities always occur together in a given context. In our case—assuming that we want to explain away overdetermination with the necessitation strategy—this given context should be wider or equal to the set of close worlds we evaluate to figure out whether some event makes a difference to another.

Here I cannot consider all options in which an entity can necessitate the existence of another, so let me focus on the easiest relevant option for the sake of example, namely, composition as identity, which would imply strict metaphyisical necessity i.e. necessitation in every context.[15] If the baseball is identical to the collection of its atoms—and probably the structure in which they are arranged—then there is no sense in assuming that the atoms could occur without the baseball. I already discussed in chapter 1 that composition as identity—in the sense that ordinary objects are identical to the plurality of the atoms that compose them—is out of the question for the eliminativist: it is *prima facie* plausible that everything in the actual world might be just pluralities of atoms, and even if we grant that there are ordinary objects in the actual world, it doesn't mean that it is impossible to have the same atoms—or counterparts of atoms—arranged baseballwise but not composing anything. Therefore it is safer to seek out more weaker—objectively contingent but contextually necessitated—options than the strict metaphysical necessitation standardly taken to be implied by identity. For example it can turn out that there are no close worlds with the same atoms without the baseball occurring as well. Hereafter, I will argue that we have good reason to think that this kind of necessitation is apparent in the ordinary object cases of incorporating overdetermination.

of pain: "the issue of how I would have behaved had the brain state occurred in the pain's absence cannot even be raised, because the brain state includes the pain".

[15] Entity *a* necessitates *b* one entity always occurs in worlds which is inhabited by another. For example, if there are facts, then the fact that 'David exists' occurs together with David in every possible world in which there is David and *vice versa* (but note that this doesn't mean that David exists in all possible worlds). There are other cases of strict metaphysical necessitation, for example it seems that there are no worlds with water without hydrogen. However, *prima facie* it seems that no baseball necessitates its parts in this way either: as I mentioned in chapter 1, baseballs could be made of gunk instead of atoms, or even baseballs could be macroscopic simples in some far removed possible world. I also assumed with the eliminativist that collections of atoms arranged baseballwise don't necessarily compose a macroscopic object.

Chapter 3

The argument against eliminativism

In the previous sections I showed how to explicate the problem of systematic overdetermination with the difference making account. Also, I have argued that cases of incorporating overdetermination are not problematic for the difference making account. In this section I present and defend an argument to justify that it is an open theoretical possibility concerning the window shattering case that the baseball makes a difference and not the atoms.

In my argument I consider three relevant ways to characterize an event. There are several reasons for this move. I will argue that if we use Merricks's original hint which suggests that the shattering of the window is only a microphysical event (2001, 69), then the eliminativist has reasons to hold that the baseball is rather merely epiphenomenal concerning the shattering of the window. However, in this case we can find out without the overdetermination argument that the baseball is not efficacious to bring about anything. Furthermore, I will argue that this choice is especially problematic for the eliminativist, since in this case we can argue that the atoms overdetermine the many scatterings with different collections of atoms. This presses the eliminativist to consider the shattering of the window to be a macro-level event.

To characterize the shattering of the window as a macro-level event, I use 'fine-grained' and 'coarse-grained' in the standard and straightforward way to refer to the events' modal fragility. I deliberately leave out time; while it might be an interesting factor, and it might do some theoretical work in non-symmetric overdetermination cases (especially in the case of "late preemptive causation"), these nuances appear to be useless if we consider the problem of ordinary objects

discussed in this thesis.[1] If ordinary objects overdetermine an effect with their atoms, they are supposed to do their causal work right at the same time as their atoms, so the overdetermining events would happen in the same time. What is important here is the *way* an event happened, and I will assume that if an event would happen in a different way, it would happen so because there would be something different in its microstructure. Thus I call an event fine-grained when relatively similar events are only the ones with matching microstructure (at least at some level of their mereological structure). I call events coarse-grained when the individuation is more permissive about the microstructural differences between the similar events. I also assume that there are no other relevant options to individualize an event. And finally, there's no need to give extra weight to that I postulate that baseballs exist, since I leave open the possibility to eliminate them if it turns out that they are genuine overdeterminers—keep in mind that the overdetermination argument does the same tihng.

3.1 The argument

My argument against eliminativism is the following:

(1) If the shattering of the window is a micro-level event of many scatterings of atoms, then the baseball and its atoms are not overdetermining the shattering of the window. [MICRO]

(2) If the shattering of the window is a fine-grained macro-level event, then the baseball and its atoms are not overdetermining the shattering of the window. [FINE]

(3) If the shattering of the window is a coarse-grained macro-level event, then the baseball and its atoms are not overdetermining the shattering of the window. [COARSE]

(4) The shattering of the window is either a micro-level event, or a coarse-grained macro-level event, or a fine-grained macro-level event.

(5) Therefore the baseball and its atoms don't overdetermine the shattering of the window.

[1] See L.A. Paul's proposal for emending Lewis's counterfactual analysis by including time-relations such as 'later-than' (1998), and Lewis's advice why we should avoid the general idea—including Paul's—of counting times to fragility to solve problematic cases for the counterfactual analysis (2000, 186–188)).

If my argument is sound then it undermines the Overdetermination Argument because the eliminativist cannot provide all necessary conditions for overdetermination regarding the window-breaking case.[2] I also provide reasons in sections 3.4 and 3.5 to believe in the existence of baseballs since the baseballs can serve as proportional causes and their atoms cannot. I will conclude that according to Merricks's dictum, we have good reasons to believe in the existence of ordinary objects.

Now I examine premises MICRO, COARSE, and FINE according to the difference making account. In each case, the goal for the eliminativist is to prove that these cases are genuine cases of overdetermination, but I will demonstrate that it cannot be done.

3.2 A possible case against MICRO

Against MICRO, a proponent of eliminativism could refer to Merricks's own stipulation, which is the following:

> I use 'the shattering of a window' as a plural referring expression, shorthand for many scatterings. I am not identifying the many scatterings with some single event, a shattering; that would imply that identity holds one-many. Nor do I claim that 'the shattering of a window' normally means many scatterings. (2001, 69)

Supposedly we won't find any problems to apply the difference making test to our example in this sense. Let's recall the plural version of difference making (the *a*s represent the events in which the atoms participate, while the *s*s represent the many scatterings):

(i) $a_1 \ldots a_n \boxdot\!\!\rightarrow s_1 \ldots s_n$

(ii) $\sim(a_1 \ldots a_n) \boxdot\!\!\rightarrow \sim(s_1 \ldots s_n)$

If (i) and (ii) are satisfied, then atoms make a difference to the many scatterings. This is plausible according to the plural difference making principle. It is tempting to claim that on the microscopic level every atom matters: for $a_1 \ldots a_n$ to cause events $s_1 \ldots s_n$, it is necessary that any a_i of the *a*s to occur, because if some a_i were absent, then there would be no atoms to scatter in

[2] Yang (2012) developed a similar argument, but he used the interventionist account of causation instead of the more general difference making account.

some s_i (hence the whole series of effects wouldn't happen but only some of it). This means that the atoms might make a difference to the shattering of the window (taken as many scatterings), since in the close possible worlds without any of the atoms slightly different scatterings occur.

But if the atoms make a difference, then the baseball is not causally efficacious in this case. Consider the following:

(i) $B \mathrel{\Box\!\!\rightarrow} s_1 \ldots s_n$

For this to be true, in all close worlds in which there is a baseball, the same scatterings should happen. Consider a close possible world in which the baseball is composed of the same atoms except one. Since, as we saw, each individual atom makes a difference to the scatterings, the same series of micro-scatterings won't happen in this world. So the baseball occurs in close worlds together with different scatterings, which means that the baseball is not efficacious to bring about the *same* scatterings.

This is a surprising result, since in this case eliminativism is supported on the grounds that baseballs are sheer epiphenomena (since they don't have any independent causal powers), and not on the grounds that if there were baseballs they would have been overdeterminers. This might render the overdetermination argument unnecessary to show that there are no non-living macrophysical objects. However, this is still an amenable option for the eliminativist, since in this case the existence of ordinary objects can be denied on the grounds of Merricks's dictum. Furthermore, in this case the eliminativist can also argue that the baseball's relevant properties are not realized by the atoms' relevant properties, because we don't have reason to believe in the baseball.

What matters is that MICRO is compatible with this result: the shattering of the window as a micro-level event is not overdetermined by the baseball and its atoms, since it was only caused by the atoms.

3.3 A similar case against FINE

A very similar argument can be made for the premise FINE. If the shattering of the window is a fine-grained macro-level event, then the way it happened is very significant for the individuation

of the event. Arguably, we think about a shattering of a window as an event which can happen in many ways, so little differences don't have much significance on whether the window breaks or not. But sometimes we have reasons to treat events as fine-grained, mostly when it matters how an event happens.[3]

Another possible reason to consider a fine-grained event alongside the micro-level events is that the relevant properties of a window (which participates in the event of its shattering) might be realized by different microphysical entities. There might be cases when a window breaks in two worlds in the same way on the macro-level, but these worlds are significantly different on the micro-level. For example, imagine a world with mereological atoms, and another gunky world in which all entities have proper parts all the way down. The question is whether these worlds are objectively similar, so they can be as close as the difference making account requires. One option is that these worlds significantly differ in their natural properties, and since natural properties are responsible for objective similarities, there are no close worlds which differ significantly on the micro-level (regardless of how similar they might look on the level of macrophysical objects).[4] Another option might be that the most natural properties of these worlds don't differ at all.[5]

According to the first option, the situation is the same in MICRO and FINE, since all the close worlds of FINE are the same worlds on the micro-level as the worlds in the case of MICRO. Therefore, since in this case every atom matters, the baseball is sheer epiphenomenon (and its relevant properties are not realized by the atoms' properties), since only the atoms make a difference to whether the window shatters or not. According to the second option, there might be close worlds without the atoms in which the window shatters in the same manner; therefore the atoms don't make a difference to the shattering of the window, but rather those things break the window which exemplify the relevant properties. The eliminativist can still claim that macro-sized objects don't have causal powers, but their parts at some level do, since (as I explicated it in chapter 1) we don't need to build any commitment to mereological atoms into eliminativism, or as I explicated in 2.5, the multiple realizability is no guarantee to have genuine causal powers.

[3] As I have mentioned in section 2.3, this strategy might be in accord with our theoretical interest to explain away some problematic cases of overdetermination.

[4] See Sider (1995, 365–367) for a defense that different complexities on the micro-level bear a significance on what are the natural properties.

[5] Schaffer (2004) argues against the idea that most natural properties are the most fundamental properties.

This will still be very similar to the scenario presented in the section above: we don't have reason to believe in the existence of the baseball because they don't cause anything.

However, these two options are also compatible with FINE: there is no problem of overdetermination if we initially rule out the baseball as causally inert.

3.4 A problem for eliminativism accepting MICRO and FINE

I have shown that the eliminativist can accept MICRO and FINE because the cases described in these premises suggest a way to rule out baseballs as causally inert entities. I will now show that we can undermine the amenable consequences for the eliminativist of accepting MICRO and FINE. I will argue that as a result the eliminativist can only maintain the denial of systematic overdetermination if she accepts baseballs as suitable causes of the shattering of the window.

Bennett and Hudson show that the atoms of the baseball in themselves overdetermine the shattering of the window (Hudson 2003, 178–180; Bennett 2009, 68–69). Consider two overlapping collections of some atoms which break the window. I have to press the point that these atoms are not overlapping in the sense that they share some mereological parts, but overlapping in the sense that—to give a very simplified example—one collection of atoms include *a*, *b*, and *c*, while the other includes *b*, *c*, and *d*. Let's say that in the window-breaking case these two pluralities of atoms mostly overlap in this sense, but each has only a very small number of atoms which are not included in the other. I will refer to these two collections as the *a*s and the *b*s. Bennett and Hudson claim that we can define these *a*s and *b*s in a way that their intersection is not sufficient to cause the shattering of the window, but the *a*s and the *b*s alone can cause the shattering of the window. I will show that their argument holds even when the shattering of the window is considered as many scatterings of microphysical atoms.

We can explicate their assumptions for their argument in terms of the difference making account. These assumptions hold that (i)-(iii) are compatible:

(i) In the actual world @ the events with the *a*s, the events with the *b*s, and the event with the *s*s (the many scatterings of atoms) occur together.

(ii) Among the close worlds to @ there are ones in which only the events with the *a*s and the

*s*s occur together, and there are ones in which only the events with *b*s and the *s*s occur together.

(iii) There are no close worlds to @ in which the events with only the intersection of the *a*s and the *b*s occur together with the *s*s.

As it is apparent, (ii) is based on the claim that minimally different collections of atoms can occur together with the very same scatterings in close possible worlds. I wrote in section 3.2 that it might be a plausible way to think that every atom matters on the microphysical level, so the same scatterings of atoms cannot occur together with a different collection of atoms. Based on this claim I showed how to argue that the atoms make a difference to the shattering of the window but the baseball not. However, I think the argument of Bennett and Hudson can undermine this reasoning. If (i)-(iii) can be justified, then neither the *a*s and the *b*s together, nor each of these pluralities individually make a difference to the shattering of the window (if we characterize it as many scatterings of atoms).[6]

Similarly, if the eliminativist claims that what causes the shattering of the window is whatever has the relevant properties in the presumed mereological structure of the baseball, then we can also argue in a similar way that minimally different collections of these things compete to bring about the shattering of the window. In this case the eliminativist has to acknowledge that there is systematic overdetermination even on the microphysical level. According to the eliminativist's requirement of non-redundancy, even the atoms (or the things which are presumed to have causal powers) aren't causally efficacious to bring about the many scatterings.

Bennett suggests that the eliminativist can retort by explicating some notion of "minimal causal sufficiency" (2009, 69, fn.33). One candidate can be the difference-making account which might help to determine the sufficient proportion of atoms which can cause the many scatterings. Nevertheless, the burden of proof is on the eliminativist to show that the actual collection of atoms is a proportional cause to shatter the window in the case of MICRO and FINE.

The important consequence of the argument by Bennett and Hudson is that in this case the

[6]See Hudson (2003, 179) for a defense of why the two overlapping collections of atoms are also causally irrelevant to whether the other causes the shattering of the window.

following claims about the baseball can be justified:

(i) $B \boxdot\!\!\rightarrow s_1 \ldots s_n$

(ii) $\sim B \boxdot\!\!\rightarrow \sim(s_1 \ldots s_n)$

Since minimally different collections of atoms can occur together with the *s*s, it is not the case that every atom matters on the microphysical level. Moreover, in all close worlds in which the baseball is composed of a minimally different set of atoms, the event involving the baseball occur together with the same *s*s. This is what (i) states. Furthermore, in all close worlds where the atoms don't compose a baseball, they are arranged so differently that very different atoms scatter in that world (if there are scatterings at all). This is what (ii) states. If (i) and (ii), then the baseball makes a difference to the shattering of the window even if it is considered as many scatterings of atoms.[7]

3.5 The defense of COARSE

The argument of Bennett and Hudson opened up a way to undermine the amenable consequences for the eliminativist if she accepts MICRO and FINE. One option is left for the eliminativist, that is to individuate the shattering of the window as in premise COARSE, a coarse-grained macro-level event. In this case a window participates in the effect—an ordinary object stipulated for the argument just to be dropped out of the eliminativist's ontology if the overdetermination argument succeeds.

Now I will show that a coarse-grained macro-level shattering of the window is an unproblematic case of incorporating overdetermination. A coarse-grained event is individuated in a way that if it's slightly different, it could still take the same causal roles. According to these considerations, both (i) and (ii) of the following are true:

(i) $B \boxdot\!\!\rightarrow S$

(ii) $\sim B \boxdot\!\!\rightarrow \sim S$

[7] A very similar argument can justify (i) and (ii) if we consider the shattering of the window a fine-grained macro-event.

In any close world, if there's a baseball the window breaks. If there is no baseball the window doesn't break, since there are no relevantly similar worlds in which the atoms don't compose a baseball, and there are no close worlds in which different macrophysical objects fly towards the window. Thus, the baseball makes a difference in the occurrence of the window-breaking event. This might mean that the atoms don't fulfill the causal efficacy criteria of overdetermination according to the stipulated coarse-grained nature of the effect.

The problem is that there is still some room left for the eliminativist to hold that the atoms might be sufficient in themselves to break the window. Consider the following:

(i) $a_1 \ldots a_n \; \Box\!\!\rightarrow S$

This first condition is met, since the set of close worlds in which the atoms shatter the window is the subset of those worlds in which these atoms compose the baseball.

(ii) $\sim(a_1 \ldots a_n) \; \Box\!\!\rightarrow S$

But we can see that the second condition for causal efficacy is not met by the atoms since (ii) is true. The coarse-grained window-breaking will happen in close worlds in which an atom is absent, since if one pair of atoms didn't scatter, the window would break anyway, and these close worlds are also the subset of worlds in which there is a baseball.

It might be the case that we have a different collection of atoms present, but this doesn't mean that we got mislead by a replacement argument: rather we show that all collections of atoms which could come across in the close worlds necessitate the baseball which causes the shattering of the window. We don't need metaphysical plugs to fill in the gaps by replacing the atoms. The same collection of atoms is not present in these worlds, period. What is more, we have already seen that the shattering cannot happen if the baseball is not present. Therefore this is an innocuous case of incorporating overdetermination, about which the difference making theorist need not be concerned, since the proportional cause is the baseball, not the atoms. This doesn't mean that the atoms are not sufficient causes in princple, but they are certainly not sufficient *in the circumstances*. These considerations suggest that COARSE is correct.

Concluding remarks

In this thesis I have shown that Merricks's overdetermination argument is inconclusive if we try to motivate its premises by the difference-making account. Nevertheless, there may remain other options to support eliminativism. For example, one can endorse an utterly different and non-standard theory of causation to motivate eliminativism, one which doesn't include the difference-making principle (neither implicitly, nor explicitly). Still, the burden of proof is on the eliminativist whether this different theory explicates the reasons to steer clear of the permission of systematic overdetermination, while it also shows that at best ordinary objects systematically overdetermine their effects with their parts.

I could not discuss other ways to have a case for eliminativism. One might be able to show that the problem about ordinary objects is not that they are overdeterminers, but rather that they are sheer epiphenomena, entirely mind-dependent, or problematic for some other reason. I think these are important puzzles, but—as I mentioned in the introduction—these problems are separable from the causal exclusion argument. Thus my conclusion is fairly modest: eliminativists should look elsewhere to find reasons to deny the existence of ordinary objects, since they don't seem to be overdeterminers according to our best theory.

For those who defend ordinary objects, there are two options. I intentionally diverted the focus of this thesis from the more obvious option: one can argue that baseballs and atoms are identical, so one can hold some version of composition as identity by arguing that the baseball is nothing over and above its parts.[8] If composition as identity is true, then events in which baseballs break windows cannot be cases of systematic overdetermination, because we already know that wholes and the collection of its parts are the same thing. I argued for what I consider a more amenable option for the non-believers in composition as identity. I have shown a way

[8] As it is argued by Thomasson (2007) and Wallace (2011), however they argued for identity on different grounds.

to maintain the non-identity of the wholes and their parts through explicating the counterfactual intuitions behind the worries of permitting systematic overdetermination in our ontology. My contribution to the debate is that this can be done without accepting the conclusion of the overdetermination argument against ordinary objects.

Bibliography

Bennett, Karen. 2003. "Why the Exclusion Problem Seems Intractable, and How, Just Maybe, to Tract It." *Nous* 37 (3): 471–497.

— . 2009. "Composition, Colocation and Metaontology." In *Metametaphysics*, ed. by David Chalmers, David Manley, and Ryan Wasserman, 38–76. Oxford: Clarendon Press.

Dorr, Cian. 2001. "The Simplicity of Everything an Dorr." Dissertation, Princeton University.

Funkhouser, Eric. 2002. "Three varieties of causal overdetermination." *Pacific philosophical quarterly* 83:335–351.

Gillett, Carl. 2002. "The dimensions of realization: a critique of the Standard view." *Analysis* 62 (4): 316–323.

— . 2003. "The Metaphysics of Realization, Multiple Realizability, and the Special Sciences." *The Journal of Philosophy* 100 (11): 591–603.

Hall, Ned. 2004. "Two Concepts of Causation." In *Causation and Counterfactuals*, ed. by John Collins, Ned Hall, and L A Paul, 225–276. Cambridge, MA: A Bradford Book.

Hudson, Hud. 2003. "Alexander's Dicta and Merricks' Dictum." *Topoi* 22:173–182.

Inwagen, Peter Van. 1990. *Material beings*. Ithaca: Cornell University Press.

Kim, Jaegwon. 1993. *Supervenience and mind: Selected philosophical essays*. Cambridge: Cambridge University Press.

Korman, Daniel Z. 2014. "Ordinary Objects." In *The Stanford Encyclopedia of Philosophy*, Spring 2014, ed. by Edward N. Zalta. http://plato.stanford.edu/archives/spr2014/entries/ordinary-objects/.

Lepore, Ernest, and Barry Loewer. 1987. "Mind Matters." *The Journal of Philosophy* 84 (11): 630–642.

Lewis, David. 1973a. "Causation." *The Journal of Philosophy* (Oxford) 70 (17): 556–567.

— . 1973b. *Counterfactuals*. Oxford: Blackwell.

— . 1979. "Counterfactual dependence and time's arrow." *Noûs* 13 (4): 455–476.

— . 1987. "Events." In *Philosophical Papers Volume II*, II:241–270. April 2014. New York: Oxford University Press.

— . 1991. *Parts of Classes*. Cambridge: Blackwell.

— . 2000. "Causation as Influence." *The Journal of Philosophy* 97 (4): 182–197.

List, Christian, and Peter Menzies. 2010. "Nonreductive Physicalism and the Limits of the Exclusion Principle." *The Journal of Philosophy* 106 (9): 475–502.

Merricks, Trenton. 2001. *Objects and persons*. Oxford: Oxford University Press.

Paul, L. A. 1998. “Keeping track of the time: emending the counterfactual analysis of causation.” *Analysis* 58.3 (July): 191–198.

Polger, Thomas W. 2004. *Natural Minds*. Vol. 2. 1. Cambridge, MA: MIT Press.

Rosen, Gideon, and Cian Dorr. 2002. “Composition as fiction.” In *The Blackwell guide to metaphysics*, ed. by Richard M. Gale, 151–174. September. Oxford: Blackwell.

Schaffer, Jonathan. 2003a. “Is there a fundamental level?” *Noûs* 37 (3): 498–517.

— . 2003b. “Overdetermining causes.” *Philosophical Studies* 114:23–45.

— . 2004. “Two Conceptions of Sparse Properties.” *Pacific Philosophical Quarterly* 85:92–102.

Shoemaker, Sydney. 2007. *Physical realization*. Oxford: Oxford University Press.

— . 2010. “Reply to my critics.” *Philosophical Studies* 148:125–132.

Sider, Theodore. 1993. “Van Inwagen and the possibility of gunk.” *Analysis* 53:285–9.

— . 1995. “Sparseness, immanence, and naturalness.” *Noûs* 29 (3): 360–377.

— . 2003. “What’s so Bad about Overdetermination?” *Philosophy and Phenomenological Research* 67:719–726.

— . 2013. “Against Parthood.” In *Oxford Studies in Metaphysics*, volume 8, ed. by Karen Bennett and Dean W. Zimmerman, 237–293. Oxford: Oxford University Press.

Thomasson, Amie L. 2007. *Ordinary objects*. Oxford: Oxford University Press.

Wallace, Megan. 2011. “Composition as Identity: Part 1.” *Philosophy Compass* 6 (11): 804–816.

Yablo, Stephen. 1992. “Mental causation.” *Philosophical Review* 101 (2): 245–280.

— . 1997. “Wide causation.” *Noûs* 31 (Supplement: Philosophical Perspectives, 11): 251–281.

Yang, Eric. 2012. “Eliminativism, interventionism and the Overdetermination Argument.” *Philosophical Studies* 164 (2): 321–340.