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A CAUSAL ELIMINATION OF ORDINARY OBJECTS:

DO BASEBALLS SHATTER WINDOWS?

A Thesis

Presented to

The Faculty of the Department of Philosophy

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Masters of Arts

by

Zachary C. Callaghan

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Zachary C. Callaghan
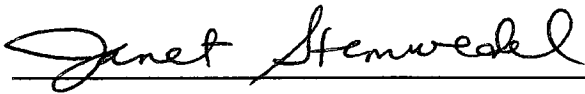
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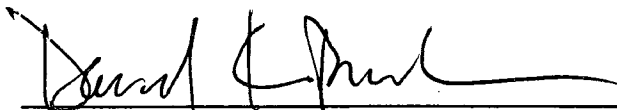
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ABSTRACT

A CAUSAL ELIMINATION OF ORDINARY OBJECTS:
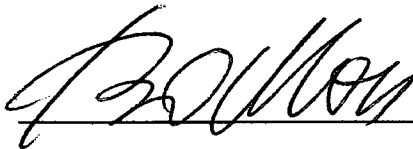
DO BASEBALLS SHATTER WINDOWS?

by Zachary C. Callaghan

Are there ordinary objects like baseballs, rocks, cars or gloves? Trenton Merricks

(2001) has argued that there are not because ordinary objects cause nothing over and

above the atoms that compose them. A baseball that cannot cause cannot exist, so he

argues. Merricks thereby concludes that we abolish them, accepting eliminitivism with

regards to ordinary objects. In direct response, Amie Thomasson (2007) argues that

Merricks makes a semantic mistake. "Baseball", she holds, is analytically entailed by a

set of conditions, one of which is that it be composed of some set of atoms. In this sense,

ordinary objects possess the requisite causal efficacy because their atoms do. Presented

first is a concise explication of their arguments. After presenting these, a

counterargument to Thomasson is provided by the present author. It is argued there that if

and only if all parts of an ordinary object cause an event does the object exist. They do

not, so baseballs do not exist.

ACKNOWLEDGEMENTS

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1. INTRODUCTION

The number of problems within metaphysics in which causation plays a major role is, perhaps, too great to name, but none would deny its importance in some of our greatest philosophical questions. Some ask whether two simultaneous causes can produce a single effect. Others focus on more grandiose problems, such as if there is a first cause to the universe. Even today, those who study philosophy of mind consider causation when discussing the relation between body and mind. I make no claim that what follows is as central as freewill and god(s). However, there is something to be said for the simplicity of the problem's starting point, one that needs not to consider neurology or phenomenology, nor ancient texts and cosmology. We just need a baseball and a window. On the other hand, the consequence of the discussion is quite grand, even if its examples are mundane. Consider whether a baseball shatters a window if it was thrown at the window and the window broke. Most would likely say the baseball broke the window and that any explanation to the contrary would be forged by philosophical nonsense. My contention is that a baseball did not shatter the window because baseballs do not exist and that this is not mere sophistry. In fact, I hold that at best only half the baseball causes the window to shatter. The daring consequence that follows from establishing the nonexistence of baseballs is: *no* such objects of its kind exist. In short, if baseballs do not exist, ordinary objects also do not exist, though it is left open whether organisms should be held to the same ontological standard as inanimate matter.[1] The

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[1] Both Peter Van Inwagen (1981) and Trenton Merricks (2001) believe that some objects may be composite, but that ordinary ones do not exist. Van Inwagen holds that any organism, due to its particular organization, unlike that of supposed ordinary objects, is a

philosophers who hold this view are generally called "eliminitivists" and my own

arguments are in favor of it.

To further introduce our example, bring yourself back to childhood and days of

tossing around baseballs. Playing catch with a baseball in a neighborhood was an

entertaining pastime but could be tricky with so many windows. It is common to hear of

several people throwing a ball to each other, some error occurs, and a window breaks.

The participants might blame the player who missed the catch or the one who threw the

ball wildly as the cause of the window's breaking. However, the object most directly

responsible for the shattering was not a player, but the baseball. Considerations about the

baseball require no attribution blame but merely whether certain things exist. The

relevant features to consider are the material constitution of the baseball and its causal

powers. One way to argue that the baseball does not cause the window to shatter is that

baseballs are nothing over and above their constituent parts. If a baseball can do nothing

more than its parts can, then the ball has no causal powers. But is not there something

odd about a physical object that exists, but nothing could causally interact with it?

Normally, we would say that such an object could not exist. Following the simple

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whole. He could cite things like regeneration, adaptation, or reproduction as features of
this organization and as pointing to the organism's parts as being connected in such a
way that they compose that organism. Merricks holds that Van Inwagen may be correct
that all organisms are genuine composites, but to now we can only say humans are
composite. Because we have consciousness, he holds, our parts must be united to form a
composite object. Consciousness unifies the object and represents an "emergent causal
power" (to be discussed below). So we say this power comes online if atoms are
arranged in some particular way. However, because this power is additional to that of
just the atoms (because none of the atoms alone is causing consciousness), the power
only exists because the atoms are organized *in just that way*. We then say humans are
composite objects, and if other organisms have consciousness, they are composite too.

argument, if the baseball behaves this way, it does not exist. Notice that if baseballs do not exist, neither do any kind of ordinary objects.

I do not underestimate that holding no cars, shoes, or even rocks exist may appear absurd. It would be a fair assessment to say that a "common sense" or "ordinary" ontology is the view most philosophers and likely anyone else would hold. Though there are surely several ways one might argue to dispense with ordinary objects from our ontology, for example, by making them mental constructions, it seems more appropriate to take a line that questions their composition and causal powers. In fact, what neither position can deny is that baseballs, if they exist, must be composed of some form of matter, possess causal powers, and function in an appropriate manner to be called baseballs at all. Trenton Merricks is an author who advocates the elimination of ordinary objects from our ontology, and we will use him to show a clear, though debatable, argument for eliminitivism. Amie Thomasson allows us a critical reading of Merricks and provides a positive proof for the existence of ordinary objects, thus upholding an ordinary ontology. Though both offer arguments that seem to invite admission to their own side, Merricks' argument turns out to be trivial or false, whereas I believe Thomasson's argument to be simply false.

2. PARTS AND CAUSAL EFFICACY

In order for any genuine debate to take place, the sides participating must agree upon some facts. Obviously, if this cannot happen, then one or more sides of the discussion are not talking at all about the same thing and are just uttering nonsense to

each other. And so in this section, we will lay out what is accepted as necessary to discuss the issue of eliminitivism. Just about any object we meet in life has parts. If you have held a bottle of water, then it is easy to distinguish some of its parts: a bottle, a cap, and some liquid. Perhaps one would break these down further still, stating that the bottle also has as parts a label and a safety devise, so that one knows whether it has been tampered with. For this discussion, however, these parts are far too large for us. Suppose we took just the bottle itself, not considering those other parts, and we ask successively, does some part, x, have any other parts, until finally we answer "no." What we should arrive at from our initial object are *atomic objects*, or parts that have no parts themselves. Asking this chain of questions establishes the mereology of the object, or what its parts are. What one should notice here is that any ordinary object on which we perform this task on should end with some, probably very large, set of atomic objects. We then say that these atomic objects make up or compose that ordinary object. Therefore, for any composite object X, there is some set of atomic objects $A_1 \ldots A_n$ that compose it, or n atoms. Here we have our first line of agreement between the eliminitivist and their opponents.

It is crucial to understand that, by "atomic," we do not mean the atoms of physics and that neither side interpret the word in that way. In our case it is strictly given a mereological interpretation through the logical definition of a part that has no parts itself. It is interesting to note that, for the eliminitivist, this definition can be used only during a *reductio*, since to admit that the atomic objects are parts is to admit that they are parts of some composite, maybe ordinary, object. In that case, "atomic" may best be translated as "simple." Last, if any link were made between our use here and the physicists' use, we

would say that our atoms are the final simples of a complete physics. It seems that even using the mereological definition of "atom" is not to offend physics, but merely refers to theoretical entities which physics has not yet found empirically, but by logical definition exist.

Next, we must agree on what an ordinary object is. To define one explicitly proves to be difficult, though all ordinary objects are composite and inanimate. Typically, if we are referring to something as an "ordinary object," we are specifying something with boundaries that structurally forms some whole object. Lastly, ordinary objects are generally macro-level objects, though a computer chip would count. For example, a car is an ordinary object. Cars are certainly considered objects, and because they are composed of parts (e.g., engine, frame, wheels), they are composites. However, the car is unable, of its own accord, to start, which exhibits its inanimate nature. Another example would be a rock. Composed of minerals and other elements, rocks are also composites, though they function as a unit. Like the car, they to can do nothing on their own because they are inanimate. Most objects we come into contact with in life, other than other organisms, are ordinary objects. Hence, sofas, cups, stereos, envelopes, computers, manhole covers, and so many other objects, are all ordinary objects. It should now be apparent what the stakes are in this debate. Should it be possible to deny the existence of ordinary objects, a very large portion of our current conceptual scheme of the world around us would be deemed illusion.

Now one way an eliminitivist such as Merricks tries to argue against ordinary objects is simply to ask what the relationship between X and its n atoms is. For example, they may ask if X posits more than n, and if not, whether we should accept X any longer.

Merricks makes the simple claim that admitting of ordinary objects is to admit of $n+1$ objects, and that the admission of this additional object to the atoms is unwarranted. Though I will reserve most of my discussion of his views for the next section, it is elucidating to briefly give an example of why he makes this claim. Consider a bathtub filled with water. Merricks will ask whether or not the water is a genuine object. Granting there may be some that say "yes," one must admit that this water is composed of n atoms, and that, therefore, the two exist at the same time (e.g. $n+1$ objects are in the tub). This brings on a worry that we double-speak every time we posit this water, admitting the water and atoms simultaneously in each mention (Merricks 30-32). One way to perhaps make this clearer is to imagine the tub filled with tennis balls instead of water, and then ask whether the balls compose an object. Calling the balls in this case an object seems to commit one to an arbitrary object-type. If we analogously consider the water again, and treat its atoms as tennis balls, then the water becomes an arbitrary object-type as well. By accepting this line of reasoning, it should be less obscure to say that "baseball" denotes an arbitrary object-type as well, and so objects of that type do not exist. Of course, though these arguments are far too simple to be conclusive, they at least acquaint the reader with some of the motivation for accepting eliminitivism.

As briefly glossed above, no object that cannot interact causally with other objects can be said to have physical existence. Assume that such an object did exist, say some very special kind of baseball. Now what kind of sense could we possibly make of this object if a pitcher could never throw it, a batter hit it, or a catcher catch it? It would be an odd kind of baseball indeed! A precious autographed baseball may never see a game, but there is nothing preventing it, *necessarily*, from ever being used in one. Even if it is

resting in a case, it is interacting with other objects (i.e., whatever holds it in the case). If we extend our assumption to any type of object we choose, it should seem just as absurd to call these odd objects anything other than pseudo-objects. For these reasons it is crucial that if ordinary objects are to exist, they cannot end up lacking causal powers. Any object that is absolutely causally inefficacious cannot be said to exist (Merricks 65).

One might object here by saying that some objects lack causal powers, yet do exist. Here, I suspect one is thinking of abstract objects like numbers or individual words or concepts. Numbers such as "3" do not causally change anything in the world, yet we admit them, at least conditionally, as objects. Of course only a realist about numbers admits 3 as a genuine object on par with baseballs, but nevertheless, it should be easily admitted that it does not causally interact with any physical object. Saying that being in possession of three dollars allows one to purchase certain products is not to be equated with a baseball being able to break a window. Here, the "three" merely counts the dollars, and causal efficacy, if any is to be attributed at all, belongs to the dollars themselves, not the number. Likewise, the word "abstract" lacks causal efficacy because it cannot produce genuine physical changes in the world. Vibrations made when uttering the word cause genuine changes in the world, and one might then hold that "abstract" has causal powers in this sense. However, this is not what we mean by the word itself having causal powers. One is rather talking about sound vibrations caused by vocal chords, and "abstract" just happens to be the phonological correlate of those vibrations. Writing the word down also produces no other change in the world beyond the simple etching of it into paper or on some other surface. What we can take from this discussion of abstract objects is that any object lacking causal powers is an abstract object at best. One might

paraphrase these objects as "conceptual," or more pejoratively (and appropriately), "pseudo-objects." Our investigation is, then, to determine whether ordinary objects are pseudo-objects.

A simple strategy for determining this status is to see if on analysis the admission of an ordinary object to a causal story commits one to causal overdetermination. Neither Merricks nor Thomasson offer a clear definition of overdetermination, and so I provide a definition that should accommodate both authors. On Merricks' account, we should take it straightforwardly in the sense that more is being posited than needed for the effect (Merricks 58). Thomasson holds the moral is that if overdetermination occurs in some purported causal story, we have two or more competing causal stories for a single effect, which should not occur. In either case, to admit of such stories implies distinct realities corresponding to a single reality, the effect (Thomasson 15). Coming back to our main topic, the eliminitivist worries that positing a baseball admits of two stories, the one where atoms $A_1...A_n$ cause the window to shatter and one where the baseball does. Eliminitivists agree that only one causal story will do, so by Occam's razor the story that mentions just the atoms is the parsimonious one. But picking the atoms eliminates the causal power of the baseball, since not doing otherwise produces overdetermination. Yet, if the baseball can't cause the window to shatter, it must not exist. As I will be offering formal versions of Merricks' and Thomasson's arguments, as well as my own, I provide this definition of overdetermination for the authors: No event z is overdetermined if all x is causally irrelevant to z and any cause y causes z. "Irrelevant" is to be taken to mean neither necessary nor sufficient for the cause of event z. To make the case obvious, if turning a key starts a car, then positing both a passenger and the key as causing the

engine to start would be to overdetermine the effect. Passengers, though perhaps the reason for being in a car at all, have little to do with whether the engine starts. They are causally irrelevant.

Overdetermination and irrelevance are the essential threat to the existence of ordinary objects: if we admit them, but find they are truly irrelevant to any given effect, we should not say they exist. If it can be shown that they never overdetermine their effects, they do exist. Both Merricks and I hold the former position and Thomasson holds the latter. It is the view of the present author that Merricks' argument is trivially valid, although, barring my criticisms, I also believe that Thomasson's counterargument to him is sufficient to invalidate Merricks' conclusion. For this reason, I only rouse suspicion and continue my own argument for eliminitivism based on Thomasson's positive proof (and refutation of Merricks) in favor of ordinary objects. Her strategy is to draw an analytic equivalence between the set of atoms $A_1...A_n$ and the baseball itself, so that any mention of the baseball automatically entails that set of atoms. This equivalence, I hold, will be the Achilles heel of ordinary objects.

3. MERRICKS' OVERDETERMINATION ARGUMENT

Merricks begins his discussion of the relationship between causation and ordinary objects by offering the argument below and defending each of its premises individually. While space does not permit us to outline each of these defenses, I have selected those that aid us in our subsequent discussion of Thomasson's objections and my own arguments. Each premise is defended against counterarguments, whereby Merricks

hopes to establish the soundness of his entire argument. After presenting this defense, I will analyze the argument formally and offer criticism of it. There may be a slight unease already felt in the mention of baseballs in our discussion to here. Mentioning ordinary objects amidst refutation of them invites a charge of circularity, since we cannot refute their existence without invoking them all along. However, this worry is unwarranted as all eliminitivist arguments given here will be in the form of a *reductio*. We only assume them at the outset in order to subsequently abolish them. With this worry allayed, let us begin with Merricks' argument.

(1) If a baseball exists, it is causally irrelevant to whether its constituent

　　atoms act in concert to shatter a window.

(2) Those atoms acting in concert shatter the window.

(3) The window's shattering is not overdetermined.

Therefore,

(4) The baseball does not shatter the window[2] (Merricks 56).

An easy way to defeat (1) would be to deny that the atoms actually cause the window to shatter, that it was only the baseball that causes the effect. However, if we wish to continue our assumption that an eventual physics would have to accept some set

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[2] Though we will not consider this objection in the main body of this essay, it is important to note Merricks' curious use of the phrase "acting in concert." It is not far fetched to ask why this very acting in concert is not what determines the baseball's existence. Merricks never quite explains why he uses those words, so the reader should be aware that he has not given any argument that says acting in concert does not determine compositeness. He assumes that atoms are wholly distinct from an ordinary object if they exist. However, one could argue that "in concert" just means that the atoms act in a *unified* manner, and if they do this, they compose an object. It is this unity that grants the baseball existence. The present author and Thomasson view the matter as being more like this, though I hope to show that ordinary objects nevertheless cannot exist.

of atoms for a complete physical description of the world, then to refuse their causal efficacy would be to deny them altogether. Consequently, one would wonder what could be composing the baseball if not some set of atoms. Rejecting atoms in our causal description would be to deny bottom-up causation, where the atoms cause upwards, through the levels of part-hood, the macro-level object to behave in some way. As will be discussed below, if one were to persist in denying atoms any efficacy (and so existence), baseballs would be rendered simples, and this has rather odd consequences. Momentarily accepting that the ball must be composed of something, it turns out that the atoms are sufficient to cause the window to shatter on their own. They are also necessary to include if we mention the baseball at all, since they compose the object. Causation begins at these simples and at least allows the baseball on its level to shatter the window. What is contended here is that mentioning just these atoms explains the effect sufficiently. No mention of the baseball is needed. We then arrive at a defense of premise (1), and so the baseball is irrelevant to the effect (Merricks 59-60).

Maybe this premise may be defeated if, although we accept bottom-up causation, we also accept top-down causation. In this sense, while the atoms may cause changes in the baseball, the latter can also cause its parts to behave in some way as well. Put more formally, a baseball at t' could cause $A_1...A_n$ to cause another effect at t''. However, we additionally require that $A_1...A_n$ at t'' have their own complete microphysical description in which no reference is made to the macrophysical object, the baseball. Giving up this requirement robs the baseball and atoms of their appropriate causal powers because if the atoms and baseball cannot be mentioned separately, then the baseball could not cause the atoms to change, nor could the atoms cause the baseball to change. They would both,

then, have to be the same thing, and as Merricks later claims in defense of (2), this has

consequences. On the other hand, Thomasson will argue that this is in fact the case and

no problems arise from it (Merricks 60).

Top-down causation does pose problems, though, by making baseballs appear a

middle domino. One could imagine that even with our causal story, there is likely a t'-1

in which $A_1...A_n$ cause the baseball at t' to cause $A_1...A_n$ at t'' to shatter the window. The

problem here is one of simplicity: Why mention the baseball if in the end the atoms were

the original cause of whatever effect takes place at t''? It appears redundant to do so, and

allowing such causal stories threatens us with overdetermination. A causal story that

reads "$A_1...A_n$ at t' cause a window to shatter at t'''" gives a complete description of the

series of events. To allow the baseball would overdetermine the effect. If we wish to

guard against overdetermination, positing top-down causation seems only to make

matters worse (Merricks 60-61).

Another attempt to repair this account may hold that the baseball *merely*

overdetermines its effect, and in this sense there is no damage done to our causal story by

admitting it. It is held that we mention the baseball perhaps for reasons of utility, or

maybe even believe it makes the account more accurate. Such a supposedly harmless

repair in fact causes great problems if we allow it a place in the story. Looming behind

the disclaimer "*merely* overdetermines" is systematic causal overdetermination. Coming

up with a satisfactory account of which overderminate causes to allow would be terribly

difficult, not to mention untidy. There would be little to disallow us from mentioning the

passenger as relevant to the starting of an automobile, or in our immediate case, a

spectator who watches the toss-around as causing the window to shatter. Because we

wish not to have such outlandish causal stories, allowing top-down causality into our metaphysics would provide us with an abundance of pseudo-causal accounts. Our world would then be one where anything, or better *everything*, causes everything else. Hence, we call it *systematic* overdetermination. One last save could be made by granting the baseball emergent causal powers. That is, given the special composition of a baseball by its constituent atoms, it gains powers of its own at the macro-level. Merricks argues against this type of save in his defense of (2), and so for the moment we will accept (1) conditionally upon his defeating claims of emergent causal powers for baseballs (Merricks 61).

For (2) to be false, it must be established that the baseball, as an object over and above its atoms, has causal powers that none of the atoms themselves possess. Should it turn out that the atoms possess all of the purported causal powers that the alleged baseball has, then we must reject the latter's having emergent casual powers. With a more formal approach we can put it thus: Given some object X and its constituent atoms $A_1...A_n$, if all causal powers possessed by $A_1...A_n$ are not those possessed by X, such that X possess n additional powers to those of $A_1...A_n$, then X has emergent causal powers; if not, there are no such powers for X. In other words, if the baseball has such n additional powers, and without these the window would not have broken, then the atoms themselves are insufficient for the effect. This situation entails that the atoms themselves do not cause the window to shatter, since without the additional work of the composed baseball, the window would not have broken. Baseballs, if this account holds true, surely would exist due to their causal efficacy in the story (Merricks 62).

Causal stories involving emergent causal powers of some ordinary object eliminates, however, a crucial part of our initial assumptions—the atoms themselves. At the time the baseball supposedly shatters the window, on the view of emergent causal powers, the baseball is the only sufficient object for the effect. The atoms are viewed as causally irrelevant to this effect and all power belongs only to the baseball. Given our explanation of causal powers, our baseball has the powers of the atoms plus whatever additional powers it gains as a result of its composition by those atoms. Remember, though, that if existence depends on possessing causal powers, then if the atoms have none in relation to this event, at that instant they cannot be said to exist. But this cannot be the result we desire, since without any atoms to compose the baseball, there cannot be a baseball. By this account, the baseball should be completely unable to cause the window to shatter since in that instant the atoms would cease to exist, and thereby the baseball as well. Something that doesn't exist cannot cause something that does to change. And so, Merricks rejects emergent causal powers[3] on account of this absurdity.

An implausible repair to this problem would be to take the baseball as a simple. A view that takes ordinary objects as simples is undesirable because (a) it obliterates any talk of atoms and (b) any change in the object creates a new object. With regard to (a), atoms seem only to exist if somehow a piece of the simple is removed, and we then arbitrarily, so it would seem, designate it as an atom. Holding this view of atoms is

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[3] Neither Merricks nor myself argue that emergent causal properties are impossible. For Merricks, certain organisms may possess emergent causal properties, namely if they are conscious. The present author would concede more to the domain of inanimate objects. Molecules, for example, provide a clear example of a composite object that possesses emergent causal powers. H_2O is capable of producing effects that neither two hydrogen atoms alone nor a single atom of oxygen alone can produce. For reasons such as these, I would concede emergent causal powers to objects of this kind. However, molecules are not ordinary objects.

question-begging because one would be left to wonder how an atom could be removed from an object if that object never had atoms as parts to begin with. This is why any such "atoms" would be only arbitrarily called so, perhaps due solely to their size. Maybe this is why breaking a piece off the baseball produces an atom, though here "atom" becomes a superfluous term, as everything would then be an atom if it were also a simple. The result stated in (b) is equally unpalatable because one would wonder what "baseball" would ever to refer to if in nearly every instant it became an entirely new object. Complications would arise for an ordinary ontology due to difficulties in providing conditions for calling any object by some general concept-word. Because one cannot account for a change in some object by simply noting the loss or addition of a part, or by noting relevant features of required parts, one would be left to re-naming the objects arbitrarily in each instant. As we desire as neat an ontology as possible, this strategy for keeping baseballs around is too confused to be acceptable. We should never take it as a simple[4]. The only option is to admit that the atoms of our baseball were a sufficient cause for the window shattering, thus securing both Merricks' (1) and (2) (Merricks 63).

It should be clear that if we grant Merricks his first two premises, the baseball's atoms are the genuine cause of the window's shattering, since no other actors are necessary for the given effect. He claims to have shown that if (i) the atoms do cause the effect and (ii) the baseball has no (emergent) causal powers, then premise (3) should hold true. The absence of any irrelevant causes from the story, therefore, shows that the effect

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[4] Various common problems arise by taking ordinary objects are simples. One example derives from the Sorites problem, whereby if we take a piece of some ordinary object away, say a thread in the stitching of our baseball, then if it is a simple, with each removal of some part, the original object has been annihilated. For further reading, see Merricks (2001) and Rea (1997).

is not overdetermined. Just like each of his other premises, he offers a few objections to this final premise as well, though we mention just one of those. Consider labeling the overdetermination brought by admitting the baseball as *pseudo-overdetermination*. To guard against another case of systematic overdetermination we have to ensure that no double-speak is invited by bringing the baseball into the picture. Suppose we make an ontological division between two types of causation, part- and composite-causation. The atoms would then possess their own distinct type of causation, one that does not interfere with the powers possessed by the baseball. Likewise, the baseball would be in possession of composite-type causal powers and would not interfere with the causal powers of its parts. Our story, including the truth of (2), would then run: Atoms $A_1...A_n$ part-cause the window to shatter and the baseball composite-causes it to shatter as well. Ergo, if any overdetermination is to arise from allowing a composite-cause, it is only of a pseudo-type. Granting the baseball this power blocks the charge that it does not possess causal powers and, therefore, it exists (Merricks 66-67).

This counter-argument rests on unstable ground though through granting this questionable type of casual ontological division. What goes awry in this repair is what we noted earlier as impermissible, the occurrence of two causes for a single effect. Premise (2) established that the atoms were sufficient to cause the window to shatter, a single effect. By saying the baseball composite-causes the window to shatter we imply that to this single effect there are two causes, the atoms and the ball. However, if part- and composite-causes are ontologically distinct, shouldn't we assume that to these there correspond ontologically distinct effects? Dividing the causal power this way means that there is a part-effect and a composite-effect, perhaps noting it as window shatter-1 and

window shatter-2. —But there was never any question that two windows shattered, just the one. This is obviously not the case here, and so to admit of this suspect ontological division is to invite another absurdity. It turns out that pseudo-overdetermination is only genuine overdetermination in disguise, which we do not want to allow. Eliminate the baseball and premise (3) is secure; the conclusion follows. Thus we say that the baseball does not cause the window to shatter and, because of this, it does not exist (Merricks 67).

Showing that the baseball does not cause the window to shatter implies much more, however, than just the consequential non-existence of the baseball—it applies to all ordinary objects. Baseballs, if they existed, would be irrelevant to whatever activity their atoms cause, as shown by premise (1). The atoms alone are sufficient for the effect [premise (2)]. Also, we know the effect is not overdetermined by our settling of premise (3). All that need be done to secure Merricks' grander conclusion is to generalize these steps to refer to any ordinary object whatever. So, our mundane baseball example is provided merely as a pneumonic devise and concrete case.

Merricks provides us with such a generalized case by removing any speak of particular types of objects or entities, and replacing them with general terms. Doing this concludes his argument against ordinary objects and, he feels, settles the case in favor of eliminitivism. He generalizes his baseball example through an argument similar to this:

(1*) Object O is causally irrelevant to whether its constituent parts, $P_1...P_n$, cause some effect E.

(2*) E is caused by $P_1...P_n$.

(3*) E is not overdetermined.

Therefore,

(4*) E is not caused by O.

No great leap of logic is made by giving this generalization, and only a brief gloss will suffice to explain it. I will offer a symbolic version of Merricks argument in the next section, but first let's review this form.

Previously, premise (1) noted that if the baseball exists, it would be at best irrelevant to the effect caused in the window. Baseballs are a type of ordinary object, and if we replace its position in the argument with some other object—a rock, car, shoe, etc.—then we arrive at (1*); no objections should arise then. Some set of atoms, if the baseball exists, are parts of the ball as well. Changing out "constituent atoms" for "parts" leads us straight to (2*), and again no complications arise from our altering the original argument in this way. Our translation so far should grant us the move to (3*) because if some ordinary object is irrelevant to an effect and $P_1...P_n$ are the cause, we arrive at this premise. As the line goes, if the premises are true, and the argument valid (we will test this next), then the conclusion should be true: Ordinary objects do not cause any effects. Though the conclusion does not plainly state that baseballs do not exist, remembering our arguments against objects existing that lack causal powers, this surely is the true conclusion of the argument. Therefore, listing it in the conclusion is not necessary, but follows as corollary of the conclusion deduced (Merricks 79-80). We mentioned that Merricks has several arguments in favor of eliminitivism, but this is perhaps his strongest. Here ends our presentation of his position, and I will follow with a formal analysis of his generalized argument briefly in the next section. Again, I will not use my own criticisms of Merricks as the springboard to my own eliminitivist argument. I

reserve the ultimate refutation for Thomasson, who, on her own, offers a counter-argument that I believe Merricks cannot recover from.

4. A FORMAL ANALYSIS OF MERRICKS' ARGUMENT

Presenting Merricks' arguments in a generally affirmative tone has been meant to pay credit to his attempt, but also that the reader may have considered eliminitivism with an open mind. Hereafter, both Thomasson and myself will present arguments that refute, or render suspect, his. We will begin with the latter, my criticisms. I will give the formal argument I see as Merricks' underlying logic by offering it first in somewhat ordinary language, then symbolized, and I explain the reasoning for my symbolic interpretation. Once the form is clear, I will proceed to show why several of the premises he offers are unnecessary, ending with a simple syllogism employing material implication. Even if we use Merricks' more elaborate rendering of a remaining premise, the result ends the same as my simpler offering. Last to note is that without adding any assumptions, or rather definitions, Merricks' Overdetermination Argument cannot be completed as he provides it. For this reason, the symbolic version I offer is provided with some definitions as premises.

I read Merricks to be giving the following argument:

$P_1(def._1)$: No x that is causally irrelevant to any event z causes z.

$P_2(def._2)$: No z is overdetermined if all x is causally irrelevant to any z and any y causes z.

P_3: Some x is causally irrelevant to z.

P_4: Some y causes z.

P_5: z is not overdetermined.

C: *x* does not cause *z*.

And symbolically:

$$\forall x \forall z (Ixz \supset \neg Cxz)$$

$$\forall x \forall y \forall z [(Ixz \ \& \ Cyz) \supset \neg Oz]$$

$$\exists x \exists z (Ixz)$$

$$\exists y \exists z (Cyz)$$

$$\exists z (\neg Oz)$$

$$\forall x \forall z (\neg Cxz)$$

Both the first and second premise are definitions we offered above in §1, only now "causally irrelevant" has been put logically. We showed that it makes no sense to add certain kinds of objects into our causal story if they play no acting part in that story. For this reason if any object is irrelevant, then in any such situation it causes no event. Using this definition, we can likewise distinguish between cases of causal overdetermination by saying if for any event all cause has been given, and all other objects are irrelevant (since none could be irrelevant), then all such events are not overdetermined. Keeping to an account that considers each ordinary object individually, only later applying the result to the whole, we say there is an object *x*, and it is causally irrelevant. Or in our example, if there is a baseball, it is causally irrelevant to whether any window shattered. It sounds simple, yet we see that if we do begin quantifying over Merricks' argument, it turns out this is all that it amounts to. Moving on, we know that the baseball's atoms, if it exists, are genuine causal actors. Hence, we say that there is some *y* that cause *z*. Then, since we want not to invite systematic overdetermination, we say that event *z* is not

overdetermined. Finally, the conclusion, no object such as x causes z. This should

suffice to explain both the choice of words and symbolism, and I hope is agreeable.

The argument turns out valid in this form. However, I maintain that it is

completely trivial that it does so. First, Merricks appears worried that the baseball must

not overdetermine the effect. To secure this he provides a definition of causal

irrelevance, and thereby, overdetermination, and adds in a cause to show that some

causing was done. What ruins the strength of the argument is given through the use of

causal irrelevance, our P_1. All that need be done is to provide some cause as irrelevant

and we conclude it could not be the cause. Hence, once we add P_3, the argument runs a

terribly short (and perhaps unconvincing) course. Choosing to say only that the baseball

is irrelevant materially implies that it is not the cause. For this reason it is clear we just

need our first definition and Merrick's first premise (our P_3) to validly conclude that the

baseball did not shatter the window. There is no need for any speak of atoms or

overdetermination it appears, which should seem odd given the amount of argumentation

in favor of those premises. If one were to say anything about P_4 and P_5 it would be that

these are the necessary conclusions one would draw given P_1 and P_3. In other words,

because one is starting, through material implication, by already telling us the baseball is

not the cause, certain other propositions will follow. First, that something else was the

cause, since no events are caused that do not have a cause. And second, no events have

causes that overdetermine them; this event was caused, so it should not be

overdetermined. Consequently, Merricks may have fallen short in his attempt. Perhaps it

should appear elegant that it could be written as a simple syllogism:

If something is causally irrelevant it does not cause something.

Something is causally irrelevant.

∴ *That something does not cause anything.*

Though there is nothing quite wrong with a syllogism, they are not always the most convincing of forms if we realize our syllogism's first premise was not derivable from any of the premises of his actual overdetermination argument, and removing it does not allow for any valid conclusion to be derived. Therefore, one must at least include the definition of causal irrelevance in order to make the argument run through. If we just keep the definition though, we again no longer need the final two premises, or even the definition of causal overdetermination. Merricks is indeed committed to this very simple syllogism. It is important to note that Merricks cannot offer, for this argument to truly work, any talk of overdetermination or atoms, since neither contribute to the underlying proof for his conclusion. Perhaps Merricks' argument would be better called his "Causal Irrelevance" argument, since overdetermination has not got so much to do with the genuine conclusion.

When Merricks begins the discussion of his argument, he notes a more specialized definition of causal irrelevance, one that makes P_4 a more viable addition to the argument he wishes to present. It is specified thus: "the *x*s are causally irrelevant to whether the *y*s have an effect only if none of the *x*s are any of the *y*s" (Merricks 57). This appears important to the argument because the above has no talk of parts or atoms, yet speaks of them in its informal presentation. That this stipulation be allowed is made plausible when we consider the baseball and its atoms: Merricks holds their relationship is such that the two are not identical. So we say a baseball is not an atom, nor is the latter the former. Having this among our premise set gives something for Merricks' (2) to

make sense of. For if we want to show that an effect was caused, we might as well state that too. Our definition of overdetermination also makes use of parts, and perhaps this warrants any speak of whether the effect was overdetermined. In this way, we could allow Merricks to put the argument how he presented it since all the premises would bear genuine relationships to all the others. Connected they would be, but it remains true that the only premises necessary for the conclusion to follow are our P_1 and P_3. Because the two premises produce a valid argument by themselves, none of the remaining premises are needed to secure the conclusion. We then say they are unnecessary. In fact, if all Merricks wants to show is that the baseball does not cause anything, we cannot help but use these two premises in our employment of the argument, since that is just what they conclude. So, it seems there is no escape from the syllogism. Again there is nothing wrong with this argument form. It just appears brief and at times over-simplified. Since, Merricks' leaves many of his premises stale when we analyze the argument further, it generates suspicion as to its soundness. Remember that when Merricks argues for the truth of (1), he leaves its truth as dependent upon the truth of the arguments provided in favor of (2). But if (2) is unnecessary for the argument to run, we should not accept it as evidence for the truth of (1). And still Merricks seems on shaky ground.

But there is a greater weakness than my pointing out some inconsistencies in Merrick's presentation. I do not pretend to have offered a refutation. However, I do believe Thomasson has an argument that is not merely a criticism, but a defeat of Merricks, which is achieved through consideration of his definitions. If Merricks does not accept that atoms and baseballs are identical to each other, then, if some other

relationship can be provided between them, one that does not mean identity, perhaps we can say that ordinary objects exist. This is what Thomasson sets out to do.

5. THOMASSON'S PROOF OF ORDINARY OBJECTS

Hopefully, I roused some suspicion about Merricks' argument, at least that its ability to establish its conclusion convincingly is not satisfactory. Admitting that showing an argument to be a syllogism is not to defeat it, I have merely shown that much of Merricks' argument was unnecessary as presented. However, Amie Thomasson, I believe, has an objection to Merricks that he cannot quite cope with. Since her position is in favor of preserving ordinary objects in our ontology, her counter-argument is also a positive one in favor of ordinary objects, bringing back causal power to them. She agrees to worry about overdetermination in her account, yet maintains there must be a set of atoms that compose any ordinary object. In order to bring the baseball back into the picture without inviting overdetermination, Thomasson draws on the notion of analyticity by creating a set of conditions under which any talk of atoms implies a baseball *iff* the baseball implies the atoms. To make this a plausible move, she offers a couple of examples to illustrate how to understand "analyticity" in this case, and how it relates to ordinary objects. Once the analytic entailment is provided, I do not believe Merricks' argument can be seen as surviving. Simply put, if we know (2*) and have established that atoms imply an ordinary object, then (1*) cannot be true, since (2*) also entails that the ordinary object causes something. Following a summary of her argument, I will

again offer a formalization of it and offer some criticism, the bulk of which will lay the ground for my eliminitivist argument against ordinary objects.

We have already granted that if a baseball exists, it will be composed of some set of atoms, they will be causally related to one another, and cause events, like the shattering of a window. This is granted *if* it exists, but never was it argued that somehow a baseball also did these things since the atoms were sufficient for the effect. A baseball cannot cause. Thomasson asks: "Why not?" There is no reason why we cannot translate the talk about atoms in such a way that to speak of them *is* to speak of the baseball. In other words, we hold that mentioning certain sets of atoms will analytically entail some composite object exists, perhaps a baseball. The set of atoms, therefore, entails the object, again maybe a baseball, and by substituting "baseball" for "$A_1...A_n$" we preserve the truth-value of statements where the baseball causes events. No longer, if this holds, can Merricks bring the charge of double-speak or overdetermination against ordinary objects. Baseballs imply atoms, some atoms imply baseballs, and these two co-refer, rather than refer to numerically distinct entities.

Thomasson notes that an eliminitivist might try to argue no such analytic entailments exist, and that, even if they could be drawn, other redundancies occur. We could argue from this entailment that "baseball" also entails a lump of matter in addition to the set of atoms that compose both lump and ball. Now it appears we triple-speak rather than double, and that is untidy considering we could just stop at atoms. There seems little to stop quadruple-speak, by claiming smaller and smaller types of lumps, such that we close in on infinity-speak, which is absurd. Therefore, it is up to Thomasson

to show how any entailment can be drawn, and avoid a mouth-full of nonsense, so that

we do not imply multiple entities in talking about ordinary objects (Thomasson 20-21).

Thomasson's rebuttal attacks from two directions, and are two examples of kinds

of analytic entailment. The first represents a version of analyticity that cannot be used to

attack Merricks' eliminitivism (it assumes composite objects already exist). The second

can foil eliminitivism only by meeting where Merricks started us, taking him on his own

grounds. "Top-down" analyticity begins, in our case, by saying, "Any talk of a baseball

entails that there is some matter that composes it." It argues, one could say from

composite to parts, such that whenever we talk of some ordinary object, we also know

that this just means that it is composed of some set of atoms. If the one exists, then so do

the others. Our look at the causal story changes in light of this entailment because if

"baseball" just means "$A_1...A_n$," then if $A_1...A_n$ shatter a window, then so does the

baseball. Nor is the charge valid on grounds of overdetermination because no additional

object is truly posited in this case. The entailment is one of a mutual implication and no

genuine positing of any object in addition to the atoms occurs. Thomasson remarks that

anyone who knows what a baseball is also knows that if it exists, there is also some

matter that composes it. Neither do they think more than one object is implied in

shattering a window if a baseball hit it. And since no double-speak is really occurring,

we have no reason to deny the baseball's existence. It can have causal powers because

this is implied by the set of atoms, and they have causal powers. However, it is important

to realize about top-down analyticity that it only helps someone already positing ordinary

objects (Thomasson 21-22).

It is rather "bottom-up" analytic entailment that we need to establish to save ordinary objects. As the name suggests, we start at the bottom of our mereological map of composite objects, the atoms, and show that a certain number of them organized in some way imply an ordinary object above. We simply start with what eliminitivists do on this account, admitting along with them that any composite object must have some set of atoms composing it. With top-down analyticity we only give a single claim ("ordinary objects imply atoms"), but with the second type, we give a set of claims, all of which must obtain for the entailment to hold. An entailment of this type has the following form: Ψ is analytically entailed by a minimal set of claims Φ if conditions $\varphi_1...\varphi_n$ of Φ hold. The set $\varphi_1...\varphi_n$ are to be taken as conjunctive, such that if any one is false, then Φ does not hold, nor the entailment of Ψ does not follow. For us, a valid entailment of Ψ means some ordinary object exists. The claims comprising Φ are, then, conditions for the existence of some type of ordinary object. If we want to posit the existence of baseballs, we need a set of claims that must hold for there to be a baseball (Thomasson 22).

Thomasson gives one possible set of claims to guarantee this, and she holds the three of them entail a baseball if they hold. Her first condition is that the baseball must be composed of some set of atoms or material, and that these must possess causal powers (φ_1). Of course, Merricks agrees to this condition as well, but her other two conditions are quite unlike anything Merricks mentioned. She gives as her second criterion, φ_2, a historical condition: if we are to consider something a baseball, an approved manufacturer must have made it. Thus, a lump of matter can only be a baseball if construction was with intent to make a baseball. This is to ensure not just any lump of matter is a baseball. Her last criterion, φ_3, is a functional one, and operates much like the

second by making sure that cars are not baseballs, since they are made of atoms too. So, if some lump of matter does not function like a baseball, perhaps it's shaped like a cube, or is some other completely different kind of object, it cannot be a baseball. Thus, Thomasson holds that if φ_1, φ_2, and φ_3 all hold, then the set of claims Φ which contains them analytically entails Ψ, where "Ψ" means "baseball." As with top-down analytic entailment, no systematic overdetermination is invited by this account of ordinary objects. Merricks can no longer maintain that $n+1$ objects are being admitted because we have merely shown, in a sense, that the set of atoms means the same thing as "baseball." Thomasson's urging is that any competent speaker of English (or any other language with a cognate of "baseball") never intends more than the material composing the ball. If you asked them to paraphrase "baseball" as "atoms stacked baseball-wise," as Merricks would have it, they would remark that there is no real difference in meaning between the two. Perhaps with some philosophical acumen we just say it is a matter of which sortal you apply to the composite object. If you want to note the atoms, Merricks' version is fine, but again, by using "baseball" we mean nothing too different from him (Thomasson 22).

To make this clear, consider the perennial example of these two terms: "bachelor" and "unmarried man." If there is a vacancy in a residence near you, but you hear it has recently been filled by a bachelor, to refer to him as an "unmarried man" would not imply that two men now lived there. Suppose he even comes to greet you. The knocking on your door does not imply, because two different terms have been used to described him, that two people have come by introduce themselves. This situation would imply causal overdetermination, perhaps even systematic, as it surely requires but one person to cause

the door to produce knocking sounds. We do not make this mistake though. Therefore, there is little reason to believe two people are greeting you. By analogy, we do not intend two objects if we mention a baseball in a causal description about a window shattering, it and its atoms. And this makes good use of top-down analyticity because we say the term "bachelor" implies some composed object and nothing more (Thomasson 23).

A similar example Thomasson provides explains how she understands bottom-up analyticity to work. If we claim to have pair of gloves, we thereby claim that there is also a left and right-handed glove. Call the condition that there be a left-handed glove "φ_1," that there be a right handed one "φ_2," and that the two of these must be composed of some set of atoms "φ_3." Thus if φ_1... φ_3 all hold, this set of conditions of Φ entails Ψ, the pair of gloves. Again we make no presumptions that every time we mention a pair of gloves we imply three objects, the pair and the gloves for each hand. If that were the case we should say it implies five objects, the pair, the two hands, and the two that make up the pair. Of course that is absurd—but this is Thomasson's point about Merricks claims that $n+1$ objects cause something in the case of ordinary objects. We never intend anything more by our admission of ordinary objects, but merely substitute terms for the complexes we originally posit. In other words, no charge of overdetermination really threatens ontologies that include ordinary objects, and so Merricks' eliminitivism is blocked by Thomasson's analyticity argument (Thomasson 23).

The strength of Thomasson's argument comes from her accepting much of what Merricks required, that it be composed of n atoms and possess causal powers. Included in the minimal set of claims Φ is φ_1, which is the existence of some set of atoms. Because these possess causal powers (no one is disputing that), by extension, so too

would the baseball possess causal powers. Thomasson also makes sure not to render the baseball as identical to its parts, since an atom is not a baseball, nor the baseball an atom. The use of analyticity is what blocks this charge, and also provides a positive proof for the existence of ordinary objects. Though I believe Merricks to be defeated in this respect, I do not see the sun setting for eliminitivism just yet. In fact, by keeping just the atoms in φ_1, my own eliminitivist argument can run, and I hope to show that this follows directly from needing this claim in any description of ordinary objects. Thus, I do not believe φ_2 or φ_3 are necessary to consider. Before presenting my argument, I will formalize Thomasson's argument, since my own follows from a slight change in hers.

I put her argument in this way:

P₁: For any x, if any y is part of x and y causes any z, then x causes z.

P₂: Some y is a part of x and y causes z.

C: x causes z.

Symbolically:

$$\forall x \forall y \forall z[(Pyx \ \& \ Cyz) \supset Cxz]$$

$$\exists x \exists y \exists z(Pyx \ \& \ Cyz)$$

$$\exists x \exists z(Cxz)$$

The first premise says that so long as any atom is a part of some object, and it or they cause any event, then the object also causes the event. Since Thomasson's φ_1 calls for a set of atoms to imply a baseball, and any mention of a baseball (or object) entails some set of atoms, then if any atom causes something, the object does too. We then instantiate an instance of an object possessing some part and assert that that part causes an event, giving us the second premise. Last, because we know that any part of an object that

causes something also causes the same thing, then because we have a part that causes something, the object of which it is a part thereby causes something.

As it goes, this is how I take Thomasson to show that ordinary objects have causal powers. Though, one could add a premise that indicated that the atoms themselves imply some ordinary object, I rather tacitly assume it. For this reason we use P_1 to show that whenever a part causes something, we can rephrase our statement using the ordinary object's name instead. Considering some examples make this clear. If a car runs over some wood in the road, the car causes it to crack if its tires cause it to crack. When you sweep up dust, the broom-head is most responsible for the collection of dirt and grime, yet the broom still does this as well. Hence, if a part causes something, what is composes also causes[5]. We then secure causal power for ordinary objects, since, so long as their parts possess causal powers, the object is causally efficacious.

Some final things to note about Thomasson's account is that no mention of sociological conditions need be brought in to grant ordinary objects any causal powers. We just have to say that if something is a part, its object will cause things if it does. I feel that, unlike Merricks, the loss of these conditions does not render Thomasson suspect. If part-hood necessitates causal efficacy for ordinary objects, then so be it for now. Importantly, this shows that the issue of eliminitivism is likely not one that considers historical or functional definitions or conditions for ordinary objects. We could as easily speak just of discrete lumps of matter and consider whether any kind could ever be like,

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[5] Ludwig Wittgenstein, while arguing against logical atomism, remarks similarly that if I ask someone to bring me a broom, she makes no mistake that I mean the entire broom. That is she knows I do not mean just the handle, or simply the brush-head, but rather I want the entire object. If I have asked you for the broom, Wittgenstein concludes, I ask you to bring me all of its parts too. "Broom" refers to those parts just fine (Wittgenstein §60).

say, our baseball. Of course we approach our conception of baseballs from historical and functional viewpoints, but if always implied is some set of atoms, the prior question is whether the lumps of matter that exist always imply the baseball. It is from this angle that I lead my attack on Thomasson's argument.

5. AN ARGUMENT FOR ELIMITIVISM

Agreeing with both Merricks and Thomasson that if a baseball exists, it must be composed of some set of atoms and possess causal powers, we will try to show that if the former holds, the latter most likely does not. One of Thomasson's Φ conditions said that whenever we have some particular set of atoms, they entail, the whole of them, an object. We could use our convention from Merricks and hold that any ordinary object will be composed of $A_1...A_n$ atoms; let's say the baseball is $A_1...A_{20}$. This means that whenever we speak of this set, we mean the baseball; and when we mention the baseball, we intend this set. Now consider each of these atoms and whether all of them contributed to the effect we posit. It seems plausible that perhaps just a few, maybe one, did not participate in the shattering. If the example lacks force, consider whether the tip of a single thread of its stitching actually matters for the effect. Now if what causes the effect is not $A_1...A_{20}$, but a subset, say $A_1...A_{19}$, then this cannot entail that the baseball causes the effect, since only $A_1...A_{20}$ imply that. For simplicity sake, if this may all be granted, let us say that only half the ball acts in the event, that is $A_1...A_{10}$ causally interact with the window. We will call this object "baseball-half." Thus, if baseball-half is posited in this case and our condition Φ does not hold on account of the difference in sets of atoms, then we

overdetermine the effect by noting too many atoms. Also, because the baseball's causal powers would have to be implied by the set of atoms that composes it, and some atoms are not active, then the baseball lacks causal powers. It cannot exist. The result is that we no longer speak of complexes, but merely mention just the atoms that act ($A_1...A_{10}$).

In order to proceed, it is crucial to explain precisely why this dangling atom or bisected baseball does not contribute to the effect. Again, we only grant baseball-half for the sake of illustration. Because debates exist on whether or not the causal relationship is a sufficient or necessary one, I will attempt to show that these parts of the baseball fulfill neither condition. First, take a different ordinary object, a car. If we cut of the tip of the car's antenna, the car can still drive. Thus, this "part" of the car is neither sufficient nor necessary for the car to produce a certain effect. In a sense, the tip is expendable in the case of the car's engine and wheels rolling down the road. And so, in our case, we dispense of an atom, or half a baseball. Therefore, we show that some alleged part of a baseball, with respect to an effect, does nothing to produce that effect. From here, counter-arguments will be offered on the basis of an atom, or some collection of them, being neither sufficient nor necessary for a given effect.

Reversing the polarity of this situation invites a view of causation reminiscent of Ducasse. Suppose that when the baseball is thrown towards the window, a bird is flying near the glass. On Ducasse's view, this bird is to be included in our causal description just as one would suppose the whole baseball should. To be fair, Ducasse is arguing that just as one may suppose that all the baseball's atom were required for the effect, so too was the wind outside the baseball. Perhaps the wind is directed by trees, and so too, these would also be included in our causal story. Eventually, we arrive at a bird, and are forced

to accept it in the description as well. In a word, Ducasse's view is organic in nature. The entire baseball, then, surely becomes part of the causal story if this view holds (Ducasse 1926).

My objection to this view of causation is simple. Accepting Ducasse's view would lead to taking reality as a simple. There seems to be nothing to say that my body's location influences events that involve a book in Berlin. Each object in the world would thereby interact with any other object, no matter how distant to each other at every given moment. Hence, the causal relation between any two atoms is one-to-one. In other words, each object is causally related to every other object in the world. Given previous arguments regarding change and the causal efficacy of simples, it should be clear why we do not want this.

Now, someone who defends ordinary objects might object to the foregoing by claiming that although $A_{11}...A_{20}$ were not causally relevant to the effect, they bore causal relationships with $A_1...A_{10}$. If all of the object's atoms are causally related in this way, the composing atoms that do not participate are still otherwise active. Through this causal relatedness, the object remains causally efficacious and does exist. It matters not if only baseball-half causes the effect because the other atoms are still a part of the baseball. Thus, the baseball shatters the window.

At any rate, we do know that $A_{11}...A_{20}$ are causally irrelevant to the effect, since baseball-half is all we need for the window to shatter. Thus, to include the baseball in our causal story, we must imply the whole set, not only baseball-half. But as noted a moment ago, this invites overdetermination, which we do not desire. We would have to note the object minus the atoms that were ineffective to avoid this result. Consider the

following case in light of these remarks. Before the shattering of the window, time t', let us call the baseball composed of $A_1...A_{20}$ "B." At the time the window shatters, t'', we posit B* (our baseball-half), which is composed of $A_1...A_{10}$, as the cause. At t'' both B and B* are co-located, yet it is only B* that causes the effect at this time. But if we know that the object possessing causal powers at t'' was B*, then at this time B lacks causal powers, for only B* is active. Thus, if lacking causal powers entails non-existence, B does not exist. Additionally, if we want to say that B* is not equivalent to B, we can't claim that B* implies B. We may hold that B implies B*, but nothing about B*, with respect to its causal activity, implies $A_{11}...A_{20}$. No uniting causal relationship is shown to hold between these atom sets.

An ordinary ontologist might object, saying that I have misunderstood their argument above. What they intended is that if the efficacy of a composite object depends on that of its parts, then we are to take parts as "causal-parts." Thus, all parts $A_1...A_{20}$ of B are causal parts. The only difference, then, is that B has causal parts that B* doesn't, which just means different parts participated in some event. Even if B* is such an object, B still possess $A_1...A_{10}$ as causal-parts, as well as the parts that don't interact, in virtue of their being causal-parts of the object. Further, they could note that these individual atoms must have causal powers because if they did not, they would not exist. Clearly they do exist, so they must also have powers. Hence, the notion of "causal-parts" fixes any lack of causal power.

To counter this, it seems that if something is to be a causal-part, it must be active with respect to some event, and only if this holds does an object possess it as a causal part. Thus even if $A_{11}...A_{20}$ at t' are causal-parts, by t'' it lacks those parts. Since an

object cannot be composed of parts that aren't causal, B cannot be an object, in the least only B* is. So, it would appear that B could not exist at t'', only B* and some object(s), which are the remainder of the loss of $A_1...A_{10}$ do. We conclude here that if an ordinary object is to exist, all of its parts must be causally active with respect to any event. Thus, whenever we posit an object composed of some set of atoms $A_1...A_n$, if some number of these are not causally active with respect to an event, then that object overdetermines the event. Lack of causal powers means non-existence for us, so ordinary objects cannot exist. It turns out that trying to save ordinary objects by introducing causal-parts only makes the case worse. I formalize this argument through the following statements.

P_1: For all x, x causes z *iff* all parts of x, y, cause z.

P_2: For any x there is some part of x, y, that causes no event, z.

C: No x causes any z.

$$\forall x \forall y \forall z[Cxz \equiv (Pyx \ \& \ Cyz)]$$

$$\forall x \exists y \forall z(Pyx \ \& \ \neg Cyz)$$

$$\forall x \forall z(\neg Cxz)$$

The first premise merely states what the final paragraph concluded: An object only causes something if all of its parts do. Or in another way, the object only causes what its parts do. Next we posit an object by saying that there is some x possessing some definite group of parts. As this section began, we noted that it remains likely that there is at least one (if not half) of its parts that does not cause anything. So, we say some y do not cause z. Now if x possesses some definite group of parts, then only if all those parts cause z can we conclude no x causes z. The opposite holds, so x does not cause z. The

argument is valid, and our condition that causality entails existence means the baseball cannot cause, so it does not exist.

Perhaps, though, a save can still be made. What if although only baseball-half causes the window to shatter with respect to some event, $A_{11}...A_{20}$ are active with respect to some other event. We then say that so long as every part of the baseball participates in some event, the baseball is causally active. Thus, like a light-board, if all the lights are lit, the board is lit up. If the atoms are all acting, the baseball is active too. I would maintain, much like the number of atoms active with respect to any given event, only at times does this ever occur for the baseball. At best only B^* and B^{**} exist, but these are not B, so the object should not be implied. It appears that for all $A_1...A_{20}$ to be active requires that in any event this is the case. Otherwise, our B is implied by B^*, B^{**}, B^{***}, etc., until all causally active sets of atoms are given. This seems implausible because it still remains true that none of these subsets of B's parts will imply just B and its parts. One could simply say that the conjunction of these parts, which are just objects also composed of atoms, is what implies B. However, we could object that conjunction is arbitrary in this case because no causal connection between B^* and B^{**} takes place. There would be little to stop us from saying that objects composed of O_2 outside the baseball are also a part of the baseball. But then the ball would not cause the window to shatter, ball-window would shatter. But none of those odd objects are a baseball. If conjunction is an inappropriate connective for implying a baseball, then $A_1...A_{20}$ cannot count in our causal story.

For very similar reasons, it does nothing to save ordinary objects if we say that in some event, say at $t'-1$, all the relevant atoms were active such that the set of active atoms

was the implied by B. This leads to our precise conclusion: adding causally active parts with respect to any event to gain an equivalent of B's set of atoms *and* positing B without respect to one event leads to a Zeno-like paradox in the first case, and Heraclitian view of ordinary objects in the second. In the first case, the object is made of different sets of objects at different times, yet maintains the same numerical identity all the same. At all times B entails some set of parts, but the set of parts is never the same. Hence, we say the object both changes and does not change, which is a contradiction. I call this "Zeno-like"[6] because change can never start, yet nor can change ever stop. Look at this way. If at t' B exists, and is composed of $A_1...A_{20}$, and at t'' B also exists, composed of the same atoms, we ask: What are the causal relationships that persist between any part and the others? Supposing that at t' B was composed of $A_1...A_{20}$, we ask, with respect to some event, which atoms act. Repeat this for t'' and it turns out that which atoms are active with respect to some event will change. Say at t' B is composed of $A_1...A_{20}$, but the causal activity is such that B* acts in some event, and the remaining atoms, say B**, act with respect to another event. For example, say $A_1...A_{10}$ support $A_{11}...A_{20}$ in a case, rather than shattering the window. If we grant that these two still compose the baseball, it is plausible that at t'', $A_1...A_9$ are acting in an event and $A_{10}...A_{20}$ are acting in another. In this case, the baseball's composition is always different between times, yet it is maintained that it is the exact same baseball. However, because we assert that atoms just are causal parts, this implies that B both is and isn't the same object between the two

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[6] One of Zeno's paradoxes of movement states that if we must move half the distance to a destination before we reach it, and if we must take half of that distance before we go halfway, then we will never reach our destination. Likewise, Zeno argues that with similar reasoning, we can show that neither can one ever start moving. For this reason, Zeno holds the universe to be static. What makes these claims paradoxical is that the conclusion follows from the premises he provides yet plainly contradicts our actual experience of the world. In our case, the ball can never change (it always entails the same set of atoms), yet is obviously changing (in its causal mereology).

different times. The main constitutive component of the baseball is its material composition, and one can imagine something akin to the Ship of Theseus arising from this. Then we begin to bicker over how atoms may be lost until the baseball is no longer a baseball, just as we do over the boards that make up Theseus' ship. And so, we say that the ball both changes and does not change. Even if it turned out that between two times the causal parts remain the same, at either some time prior to t' or some time after t'' the ball is supposedly made of the same atoms, yet its causal parts would change. However, atoms just are causal parts, and so we end with a Zeno-like paradox. It would be as though the object was made with new objects in every second.

The second case implies that only at some disparate times would the baseball actually exist, depending on whether all its parts actually were active at some time with respect to some event. Put colorfully, the object would flicker in and out of existence like a broken light bulb. If we want the object that causes some event to be the baseball, B, then only if the object that causes the event implies B does B actually cause an event. Hence, if B* is what causes the window to shatter, then this set does not imply B because some parts of B aren't parts of B*. Perhaps B at least causes some events, so that at times all entailed parts of B actually do cause a single event; in this case B exists. However, if in the next moment this does not hold, the baseball no longer exits. This is why I say the object would be like a dying light-bulb: At the times the light turns on, the object exists; if the light goes out, so does the object. If a Heraclitian world is one of constant change, then our second case leads directly to this view of reality. It seems that any mention of parts of an object and the requirement of causal efficacy commits one to

one this second view. I do not see how the Zeno-like paradox is preferential over the second view, though both lead to the rejection of ordinary objects.

The only objects that surely exist are atoms. We can have no doubt that if any composite object exists, it must be essentially composed of some number of them. A decision needs to be made though: Do any composite objects exist? I hold that the only ones that do are those that cause effects. Thus our B*, B**, B***, and so forth are the kinds of composite objects that exist. However, these are nothing like baseballs, since we showed that only at times would a lump actually be a baseball. At best we have lumps of matter that momentarily exist, depending upon merely what they are doing at any given time. And so, if any composite exists, it cannot be one of the kind that we have been investigating. Remember that the objective is not so much to save composite objects, but rather ordinary ones like baseballs, rocks, or cars. It seems clear that this kind of object never in fact exists, a lump of matter is not so much an ordinary object. I only add, lastly, that if it is true that we can mention just the atoms for a causal description, then, not even admitting of these lumps of causal matter is the better route. To speak, then, of just atoms is to provide only what can be ontologically said to exist. B* may cause something by our discussion, however, if our assumption still be granted about explaining causal activity in terms of atoms alone, we could just as easily say $A_1 \ldots A_{10}$ cause the event and never mention the lump. Nothing would be lost in our causal description if we posited it that way. Thus, never could a baseball shatter a window—baseballs do not exist.

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