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How True is Causal Closure?

Materialism and naturalism are schools of thought that have become popular as of recently in the field of philosophy. A large reason for this is because such belief systems profess their truth to be backed up by the reliability and consistency of science. More specifically, those who are materialists and naturalists contend that we and the world around us are entirely physical. By this, they mean we as human beings are basically a large conglomeration of atoms that interact with other atoms. Things such as the immaterial mind and its purposes are nonexistent. Even if materialist philosophers allow for a mind to exist, they cannot allow it to do any explanatory work. Various arguments are put forward to justify these beliefs. However, I believe the principle of causal closure to be the most important. Within this paper, I argue that materialist philosophy depends entirely on the principle for its veracity. I will then move to assess the strength of the principle and tease out why materialists' confidence in it is mistaken.

Before moving on, I think it important to define what I will be discussing in this paper. Jaegwon Kim defines causal closure as "all physical states have pure physical causes." Now that we have a definition, we must ask what it means. Causality lies at the heart of the principle, meaning that it is concerned with the interactions of things. An example of an interaction would be a child hitting a baseball through a window. If we are to talk about the causative story in general terms, then one could say that the child caused the bat to move, which caused the ball to go airborne, which in turn caused the window to be broken when the ball impacted it. Thus, the child caused the window to be broken.

If we were to analyze the causative story even further, we would see how little of it the child hitting the ball example encompassed. We can reduce the causative story even more, saying that

the child's muscles caused him to swing the bat, which were in turn caused by impulses that were sent through the child's nervous system. As we reduce further and further, we eventually will hit a controversial part of the story: the mind. I pose this question to you the reader: does the immaterial mind have any explanatory role in the swinging of the bat? At any moment did the child swing the bat for a purpose? I can imagine that there are many answers that could be given. A common answer would be yes, in that at some point the child swung the bat for the purpose of hitting the ball. Materialists would respond and say that there was no purpose here, as the child's swinging the bat can be entirely explained by physics and the movement of atoms. By this, they mean that the brain and its communication with the nervous and muscular systems can be explained by interactions between chemicals, which can be then explained by the interactions of atoms, which can be explained by the spinning of quarks.

Here lies a major divide that is seen in the study of the philosophy of the mind. Those who support the first theory have put forward a story where the mind can be used to explain physical events. This means that the nonphysical can be involved in the causal story of the child hitting the ball, which in turn means that purposeful explanations such as "swinging so that he can hit the ball" are valid. This purpose has done explanatory work because it influenced the brain (and the parts of it) to then interact with the nervous and muscular systems, resulting in the swing. Thus, this story of the child swinging a bat would involve instances of mental to physical causation (the purpose causing the brain), physical to physical causation (the brain communicating with the body), and physical to mental causation (the body telling the mind the dimensions of the ball and its location).

Those who support the second view would be supporters of the principle of causal closure. This is because they believe that physical things the muscles and the brain can only have

physical causes. Therefore, the mind does nothing (if they even believe it to be there in the first place). This means that this baseball breaking a window story is only explained by physical to physical causation. There is no purpose of swinging the bat, all that has happened is that atoms have moved in specific ways, causing exponentially large amounts of interactions to occur, resulting in the anatomical mechanisms of our body to move in patterns that ended in a swing. The atoms of the swung bat then connected with the atoms of the ball, transferring force to it. This then means that our universe is causally closed, since causation can only occur at the physical level with no interference from factors such as minds or souls. All explanatory work has been done by the physical universe. Hitting the ball for a purpose has no place in the explanation, since the child's actions were entirely controlled by moving atoms. Hence, the physical things in this story have only physical causes.

I assert that materialist arguments depend entirely on the principle of causal closure for veracity. If we are to take many of the common arguments made by materialist philosophers, I contend that most will be able to be reduced to a point where causal closure is the justifying factor of their arguments. Granted, I cannot possibly hope to address every single materialist theory and thus, I will do my best to analyze materialist arguments that are the most commonly applied and accepted as sound.

In *The Atheist's Guide to Reality*, Alex Rosenberg gives a good example of a common materialist argument. Generally, Rosenberg is a supporter of not only the reliability of science but also its unshared claim to absolute truth. He believes that science is the only method by which truth is obtained and that all sciences are based in the laws of physics. According to Rosenberg, "when finished, it [physics] will leave nothing out as unexplained from physical first principles (besides those principles themselves)" (Rosenberg 24). In other words, if we

understand the entirety of physics, we will understand the whole story of how reality works. Rosenberg maintains that all events in the universe are completely material in nature. Moreover, physics completely excludes purposeful explanations of physical events. Consequently, my striking of the keys right now is for no purpose, but rather due to neurons firing in specific ways that communicate with my muscles that cause my fingers to move as such. These neurons are made up of numerous chemical compounds that follow the rules of chemistry. They can be reduced even further to the atoms that make up the compounds and eventually to the base molecules that run this universe. These molecules and everything above them are explained by the laws of physics.

Such a fact seems completely opposite to what many would commonly believe. Such people would respond to Rosenberg and say they do act for purposes. You as a reader may be sympathetic to this purposeful thinking. You would say “But when I type something on my computer, I do so with the purpose of writing a story or to argue a point. This purpose explains my striking of the keys.” When asked why you believe this, you would likely eventually get to an answer that sounds like “well just because I am aware of the purpose that explains my writing of a book or paper.” What this essentially boils down to is that you know that the explanation for your story coming about and your striking of the keys in specific patterns was purposeful because of an introspective observation of said purpose. Thus, I observe the reality of purposeful explanation through introspection. I believe that my mind works in purposeful ways because it is simply because I see it happening every day. For what reason should I distrust this very apparent notion that I have?

Rosenberg addresses this question by attempting to invalidate our own introspective skills through the physical processes which underlie our minds. Rosenberg tells us that we

should not trust common sense or our introspective notions of ourselves. His reasoning for this stems from the unreliability of experience. He uses the examples of vision and willpower to prove this point. Take for instance color. Rosenberg cites experiments in which people developed a kind of blindsight to color. He references an experiment where a patient whose primary visual cortex had been removed as the result of an accident was asked to identify the location of colored objects in front of him. For example, scientists would ask him to reach for something yellow amongst a collection of colored objects. It turned out that the patient was able to do this with startling amounts of accuracy, indicating that despite the fact he could not experience color, his body could still identify it in some way. The patient even believed that he was just guessing throughout the entire experiment. Rosenberg uses this example to point out that our own introspective experiences cannot be relied on, as “after all, what could have been more introspectively obvious than the notion that you need to have conscious experiences of colors to see colors” (Rosenberg 151).

He then moves on to use science to discredit the way we conceive of willpower. Introspection tells us that we have willpower, yet Rosenberg tells us that science says otherwise. To back this up, he cites an experiment done by Benjamin Libet where the brain and muscle activity of people choosing between buttons to push was analyzed. In this experiment, subjects were asked to push a button or flex their wrist within a time frame of their choosing. The scientists would then collect the data and ask when the subjects willed their hand to do whatever the action was. It was observed that cortical processes responsible for wrist flexing occur 300 milliseconds before the subjects reported a realization of willing. Therefore, our observation that purposeful willing of our body parts to move is wrong because the motor processes of the action occur before the realization processes do. Rosenberg uses this as evidence that our own

conceptions of the inner workings of our minds are wrong. In his own words, “the results pull the rug out from under introspection as a source of much knowledge about choice. They completely undercut the evidence introspective experience might give us for free choice” (Rosenberg 153). From this then, it is clear that Rosenberg believes that the scientific understandings of our brain invalidate our own conceptions of experience.

Through these examples, Rosenberg attempts to make his case against the possibility of us doing anything for a purpose. He believes that because we observe that we do things purposefully due to introspection, and because introspection is flawed, we therefore have to believe that such observations are flawed. Under such conditions, it is clear how this conclusion comes about. According to Rosenberg, the only reason we have these illusions is because it results from cognitive adaptations which gave us survival advantages. However, I believe that Rosenberg’s arguments for why purpose doesn’t exist rely almost entirely on causal closure. Therefore, I believe it to be possible to deconstruct these arguments to a point where Rosenberg will be forced to retreat to this principle in order to keep his theory afloat.

Before I go into my argument, I would like to set the parameters for it. I will grant that each and every one of the experiments that Rosenberg mentions have accurate results. This ranges from the experiments on blindness to those on pushing buttons. Each and every physical process described here is an accurate and true observation of how our brains work. However, I contend that despite these concessions purpose and its use in explanatory work are still reasonably sound.

To start, I believe Rosenberg’s argument against introspection to be self-refuting. It is important to note that his argument is entirely based on the accuracy of science. If for some

reason science is inaccurate, then all of Rosenberg's claims of reality and how it works lose the foundation on which they stand. Now, to what standard of accuracy will we be holding science? I will once again allow Rosenberg to lay out these guidelines. Luckily for us, he spells them out on page 24, saying that "Because Physics is so accurate, the methods that produced the description must be equally reliable." So, now that we have our standard that Physics' methods must be accurate in order for the practice to be so, we can begin. One of the methods that the practice of science does rely on is the scientific method. Within it lies the processes of scientific observation and inquiry. This is the crux of the problem that Rosenberg's argument encounters. The reason for this is because these methods rely on experience as well as common sense introspection. Rosenberg cannot even get away from common sense's role in science, as he states that "science is just common sense continually improving on itself" (Rosenberg 167). I fully agree with such a sentence, but if we concede that introspection is inaccurate, then how can we conclude that our conclusions about the outside world are accurate? All observation relies on a certain amount of introspection, so how then can we be sure of the existence of the outside world and the scientific experiments which justify it if we are unable to rely on our own ability to interpret said data.

Take for instance the willpower experiment that Rosenberg discussed. Yes, many fancy EEG machines were used in order to get readings of cortical activity. However, part of the experiment was based on a report from the introspective experience of the subjects. If this experiment does indeed disprove our ability to be accurately aware of our own introspective states, then how can this testimony be reliable? How can the scientists be sure that the information they receive is accurate, or that the subjects act with the purpose of being truthful? Interpreting this experiment to disprove introspection makes it implode, as the interpreter seeks to undermine a key piece of data that the experiment itself relies on. Yes, we can be mistaken about things, yet we also must

be able to be correct given the right information if science and reason are to stand firm. Science may show that neurons fire in particular patterns, but does that necessarily mean that I am typing these words with no purpose? Not in the slightest. This is because the same observational abilities which give me the capability to interpret these neurons also tell me that I just typed these words about Rosenberg's arguments so that I can express my lack of satisfaction with them. How can we then say that one is correct and the other mistaken if they both originate from the same process? The answer is that we cannot. Either we are unable to accurately interpret data we observe, or we are able to. Rosenberg says that the technological advancements of science prove its utter reliability, yet how can I be sure that it is reliable if I cannot properly say that my experience of myself is accurate? Thus, Rosenberg tries to remove the credibility of a method which science depends on. So, we must then either grant that science and our own observational experiences realized through introspection are accurate, or none of the discoveries which we have come to so far can be totally believed as true.

At this point, Rosenberg would have to tell me why purposes cannot do explanatory work despite the fact we have accurate observational skills which tell us they can. He is now unable to fall back on arguments based in the previously discussed experiments. I believe that I have an idea of where he would have to take his argument. He will have to claim that my argument is farcical, as all physical things must only have physical causes because science tells us so. Therefore, despite the fact we may observe purposes doing explanatory work, it cannot be true as it would violate the way we understand the universe to work. Thus, in order for this theory to hold true, our universe must be causally closed. All of his arguments stem from this one principle, and without it, there is nowhere to go when I pose my aforementioned critiques. We

can conclude then that materialist arguments like Rosenberg's are, at their core, not justified by science experiments, observational flaws, or aboutness, but instead by causal closure.

So, now that it has been established that the materialist philosophy depends on the acceptance of causal closure, I now move to assess the credibility of the latter. Why do materialists believe it to be so true about the universe? What justifies the belief that physical things must only have physical causes? I now seek to show that the materialist argument for causal closure is not as strong as it may seem. The main issue lies in how materialist philosophy misuses causal closure in its arguments.

Before moving into my take on causal closure's nature, I will lay out how materialists justify their use of the principle. Once we have hit the causal closure foundation in a discussion of materialist belief, the question of why causal closure is true is sure to surface. The first answer is that the principle just makes sense if you think about it. If say we are talking about the mind and its theoretical interactions with a material body, they would claim that the feasibility of something nonphysical interacting with something physical is dubious at best. By what mechanism can something such as a mind interact with something physical? The concept of how two atoms interact is both completely comprehensible and observable as we can give a rather complete and accurate casual account of the process. However, this interaction of substances of separate types is harder to imagine. Take for instance Descartes' argument for mind-body interaction. Descartes says that the mind is irreducible, thinking, and nonspatial. The body, on the other hand, is the opposite in all regards. How then can it be feasible that a thinking, immaterial substance can cause an event in a material spatial thing or vice versa? There is no real explanation for this mechanism as is, and the difference in substance makes it clear that logically

there is no way for any interaction to occur without breaking some rules of how we understand things to work.

Materialists also use the argument that causal closure is necessary for not only the doing of science but also its veracity to justify their belief in the principle. They claim that in order to do science, it is necessary to assume causal closure. When a scientist is studying a cell or a chemical, he or she must only focus on physical explanations. At no point can a scientist throw up his hands and say that something lacks an explanation or allow purposeful explanations into their research. Rather, their discipline mandates that they continue to delve deeper, conduct more experiments or wait for further discoveries that would allow them to continue their research should they find themselves at an impasse. From this, materialists conclude that if we are to say that our universe is not causally closed then we are unable to properly do science. This would be because suddenly these nonphysical explanations could do explanatory work, meaning that the scientific method itself would be compromised. Thus, because we believe science to be reliable, we must accept that causal closure is as well, since the precision and reputability of the discipline depends on it.

Another argument that is used to advocate for the truth of a causally closed universe is the comparison of the nature of physics and mental laws. In his book *Philosophy of Mind: A Contemporary Introduction*, John Heil lays out a nice description of how causal layering indicates that our universe is causally closed. He begins by making a distinction between what he calls higher and lower-level properties. He puts forward an idea where our universe is layered in causal explanations. This means that there is a sort of causal chain in our own studies, where a higher-level science such as biology can be reduced to chemistry and from chemistry down to the scientific bedrock of physics. The distinction here is that while biology and chemistry may

give us nice scientific explanations of how the physical world works, all causal explanations for these sciences can be explained by physics. Physics is then the sort of foundation on which the other sciences get to stand. It can be said then that higher-level studies like biology and chemistry are reducible to physics. Physics is thus considered irreducible. Hence what makes a study higher level is the fact it is reducible. Now we must ponder where the mental or psychological laws of the universe come into play. Heil addresses this, stating that the psychological is part of the higher levels of explanation, saying “as you descend from psychology, through neuropsychology, to neurobiology, to chemistry, you refine these approximations until you reach bedrock: fundamental physics” (Heil 124). So, since we know where materialists believe psychological laws fall in the big scheme of causal layering, we must now ask why it falls here. What logical proof is there that mental laws are reducible and therefore higher level? Materialists answer this by saying that psychology is hedged while physics is an exceptionless thing. To them, this is evidence of the psychological being a higher-level property, since genuine (lower level) properties must be exceptionless. Heil portrays this by using an example of a generic mental law, stating that “If an agent, S, wants x and believes y is needed to obtain x, then S wants y” (Heil 125). He then moves to show that such a rule has exceptions. For example, assume you wanted to ride a subway, and you need money to do so. However, it has been a bad day and you have no money on your person. What happens then is that you would amend your previous law, and not want to ride the subway anymore. The reason for this is because you have no money, which implies there is an exception to the original mental law. Thus, it must be a higher level of study that depends on a lower level study. This conditionality implies reducibility, which in turn means that mental things must be reducible in the same way as biology. This then is indicative of the fact that physics still does all of the

explanatory work. This in turn means that our universe is causally closed. Even if say the mental is epiphenomenal in nature (in that it is irreducible yet founded in the physical), then the universe remains causally closed as the mental still does no explanatory work in the physical universe.

Despite these arguments, I still believe the materialist application of causal closure to be shaky at best. I will first address the issue of reducibility. The main problem that arises from the argument that Heil puts forward is that he never substantiates why things like physics are exceptionless. Instead, he just accepts the premise and moves forward with the argument. I would contend that doing so is a large flaw within his theory. Based on the example Heil uses for what proves that the mental is hedged, I believe that physics can be thought of in the same way. If we take the iffy nature of the subway thought experiment, it becomes clear that physics has similar exceptions. Let us now think of a pool table with a cue ball and an eight ball. Physics would tell me that if I am to strike the cue ball at a specific angle with a certain amount of force, then the cue ball will strike the eight ball. I will state the rule as:

If a cue strikes a ball at angle x , with a force of y , then the ball will collide with the other ball.

However, if we are to introduce a different variable to this example (just as Heil adds the having-no-money variable), then suddenly physics has an exception to its above rule. Say that there is a divot in the table that will send the cue ball in a direction that misses the eight ball. No physical laws have been broken, yet there is clearly an exception to the rule given above. Thus, if we are to define hedged and exceptionless things by these iffy statements, it seems as if everything would have to be higher level, resulting in the layered view of reality falling apart. This means that the materialists would have to give a separate reason for why the psychological must be a higher-level property since hedged statements apply even to things that they say are genuine. On

top of this, now that physics has exceptions, what then is to stop someone from making the argument that purposeful explanations fall into this category. What if we were to now add the exception that the balls will collide “unless person A causally intervenes, sending the ball in a different direction for reason P?” What argument then can the materialist give that does not simply assume the principal that he or she is trying to prove [causal closure]? We see here that the materialist argument becomes circular, meaning that the iffy nature of mental laws has no basis for proving that they must be based in physics.

Now I seek to move to answer the objection involving a lack of a known mechanism for something like mental-to-physical causation. I would counter such a claim by asking why a mechanism must be provided for these types of explanations. Granted, if we were speaking of something such as an atom influencing another atom, then I could understand this criticism. However, when speaking of the mental and its ability to influence the physical, we are no longer dealing with physical substances. Instead, we have something nonphysical influencing something physical. Since the nonphysical is of a different nature than the physical, why do we hold it to the same standard of having to cause the physical in a mechanistic way? The study of science focuses on mechanisms as that is how physical things interact with other physical things, but something such as purpose would lie outside of this idea. Because of this, it seems logically sound that someone arguing for the existence of purposeful explanations has no need to provide a mechanism, as the interaction they are advocating for has none. Therefore, to require a physical mechanism of something that is nonphysical is nonsensical in nature. Mechanistic thinking also presents some interesting questions for the physical as well. To clarify, by mechanism I mean that when a mechanism occurs the parts of something will interact with parts of another thing to produce a physical state. Take for instance gears in a machine. These gears have parts (the wheel

and the cog) that interact with the wheels and cogs of other gears producing a physical event. If we are to now think about how this relates to things lower in the physical chain of existence, then the mechanistic view of reality may fall into question. I would ask materialists if they believe in any fundamental physical things. If they answer yes, then how would this fundamental physical thing interact with the physical things about it? It has no parts since it is fundamental, and thus must interact in a non-mechanistic way. The only alternative to this would be a system of infinite physical regress, but this in of itself is a weird idea as well (infinite regress has a variety of problems to it which I do not seek to discuss). Therefore, it seems that the nonphysical should not be held to the same mechanistic standard as the physical, and the mechanistic view of reality seems questionable in that we do not understand how it could work with fundamental things.

With this being said, the only argument left for causal closure is that if we invalidate its universal application then we will be unable to do science. I assert that this idea improperly uses the principle. I do agree that if we want to do science properly, then scientists must work under an assumption of causal closure. However, this does not necessarily mean that the universe itself is causally closed. Considering this, it is not very hard to imagine a universe where nonphysical things like purposes do explanatory work, yet scientists can still accurately and reliably do science. Scientists simply are unconcerned with the concepts of the nonphysical in their own research. Science focuses on the interactions of physical things alone. Thus, they must use causal closure when studying physical things, but this does not necessarily mean that causal closure is the answer to how our universe works. The belief that our universe is causally closed only seems to be asserted by materialists, not by science. Because of this, causal closure has been improperly applied. We need it to do science, but we do not need it to hold true on a universal level in order

for science to be accurate and correct. Rather, it is perfectly feasible that there exists an entirely different type of explanation that science simply has no concern for as it lies outside of their respective ballpark of research.

Together then, these points elucidate the flaws that underly the principle of causal closure. Arguments such as those presented in this paper should be worrying for the materialist philosophies, as it is the bedrock of their arguments. I believe that if materialists are to take this principle seriously, they should focus more on logically substantiating why causal closure is the way reality works rather than simply asserting that it is true. Until then, I see no reason to accept the principle as universal, but rather a practice that works well with scientific research. Not only does it seem to be misapplied, but its mechanistic and layering arguments seem to fall short when scrutinized. For a principle that is so widely accepted as true, it seems to have a shaky foundation to say the least. As we have also seen in this paper, any argument made by materialists for their philosophy needs causal closure. If this principle is false, then arguments similar to Rosenberg's just becomes smoke and mirrors. Causal Closure's apparent flaws also give the opportunity to open more discussions on the standing of so many key topics in the field of philosophy. With causal closure out of the way, we suddenly gain the ability to discuss the possibilities of an immaterial mind, a nondeterministic future, and the existence of a God. Therefore, with how important causal closure is in philosophy, I believe that it requires more scrutiny before it can be considered an accepted fact.

References

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