Can Matter Be Separated from the Laws of Nature?

If there are such things as miracles, then the debate arises of whether or not they violate the laws of nature. Those on the side of miracles being violations of the laws of nature turn to the distinction between matter and the laws of nature for support, while those on the opposing side claim that matter in itself is defined through the laws of nature. It seems that to engage in the debate, first the question of matter and whether or not it is separable from the laws of nature needs to be asked. After such a question is dealt with, only then can one turn to asking if miracles are violations of the laws of nature. In this paper, I will be examining the views on both sides of the debate, and I will try to prove that miracles do violate the laws of nature. In this paper, I will first explain the discourse around miracles and whether or not they are violations of the laws of nature while referencing other philosophers' thoughts on the matter. Robert A. Larmer argues that miracles do not involve violations of the laws of nature, because God could create or annihilate matter, resulting in a sufficient enough change to the world to cause a miracle, while leaving the laws of nature untouched. To this, Neil W. MacGill raises the objection that a change in the amount of matter will result in a change to the laws of nature. To this, Larmer essentially replies that a universe with more or less mass would have the same laws of nature. This essay will dive deeper into Larmer's reply to MacGill, and I will put forth the case for why Larmer's reply is rather unsatisfactory. I argue that what Larmer needed to do to put to rest MacGill's objection was to show how the laws of nature are not dependent on matter. I will put forth my attempt to provide a satisfactory reply to MacGill's objection. Regardless, such a reply will bring with it flaws of its own, which I will address. Without my counterpoint, MacGill's objection still holds, which means that Larmer has yet to show how miracles do

not violate the laws of nature. Insofar MacGill's objection holds, Larmer has yet to prove that miracles do not violate the laws of nature. With this lack of sufficient explanation for the phenomenon, it can be concluded that miracles do in fact violate the laws of nature.

If there are such things as miracles, then the debate arises of whether or not they violate the laws of nature. Those on the side of miracles being violations turn to the distinction between matter and the laws of nature for support, while those on the opposing side claim that matter in itself is defined through the laws of nature. It seems that to engage in the debate, first the question of matter and whether or not it is separable from the laws of nature needs to be asked. After such a question is dealt with, only then can one turn to asking if miracles are violations of the laws of nature. In this paper, I will be examining the views on both sides of the debate. I will try to prove that miracles do violate the laws of nature.

This essay will have six parts. Parts one to three will set up the stage for the discussion for this paper. In the first part, I will go over *Miracles and the Laws of Nature* by Robert A. Larmer, in which Larmer argues that miracles do not involve the violations of the laws of nature. In the second part, I will go over *Miracles and Conservation Laws* by Neil W. MacGill, which is an objection to the previous paper. In the third part, I will go over *Miracles and Conservation Laws: A Reply to Professor MacGill* by Larmer, which is Larmer's reply to MacGill. Then, in part four, I will present a problem with Larmer's reply to MacGill. In part five, referencing *It Is False That Overnight Everything Has Doubled in Size* by Schlesinger, and *Is a Universal Nocturnal Expansion Falsifiable or Physically Vacuous?* by Grünbaum, I will present a reply a critic could have with the problem I presented in part four. In part six, I will show why the critic's argument is flawed.

All of this will help prove my position as to why miracles do involve violations of the laws of nature.

Miracles and the Laws of Nature:

In *Miracles and the Laws of Nature,* Larmer presents a definition of "miracle", and "laws of nature". By "miracle", Larmer means "an event which nature would not have produced had not God intervened and acted in such a way as to bring about it" (Larmer 227). By "laws of nature", Larmer means them to be such things that are "logically equivalent to a scientific law (i.e., theoretical laws or principles which serve to explain the experimental laws discovered by scientists)" (Larmer 227). These definitions will be what both the words mean for the entirety of this paper.

Larmer argues that miracles do not involve violations of the laws of nature. He supports his claim by referring to the "stuff" of nature (i.e., matter, more specifically mass/energy). For Larmer, in order to explain why event X took place, one need not only look at the laws of nature, but also its stuff. The laws of nature cannot be used alone to explain the occurrence of XYZ events due to them being mere conditions for an event to take place. This does not make the laws of nature sufficient to explain why event X took place, which is why Larmer turns to matter. Larmer's argument for miracles not involving violations of the laws of nature rests on the distinction between the laws of nature and the stuff of nature. God, as Larmer asserts, could create or annihilate matter as he chooses, all while not breaking any laws of nature. This results in a miracle, because by creating new matter or annihilating already present matter, the relationship the laws of nature have to said matter changes, creating an event that would not have occurred otherwise had God not intervened. Larmer uses the example of billiard balls to illustrate this

(Larmer 229). Say if one were to add an extra billiard ball on the billiard table, the new ball joins the other balls that were in motion. Such an addition of the billiard ball does not violate any laws of motion that belong to the other billiard balls. What the addition of the new billiard ball does is alter the matter that the laws of motion apply to, which changes the result of what otherwise would have happened had there not been an addition of another billiard ball. Such is the same case with miracles. God could create or annihilate matter, resulting in a sufficient enough change to the world to cause a miracle, while leaving the laws of nature untouched.

Furthermore, it should be noted that Larmer clarifies how this creation or annihilation of matter does violate the first law of thermodynamics. Nevertheless, he gets around this difficulty by claiming that there are two forms of the law: the strong/metaphysical form: "energy can neither be created nor destroyed", and the weak/scientific form: "in an isolated system the total amount of energy remains constant" (Larmer 232). He brings about these two forms by deriving them from the first law of thermodynamics itself (i.e., energy cannot be created nor destroyed). Larmer asserts that the annihilation or creation of matter only violates the strong form, not the weak form of the law. For the strong form could not be held by a theist, due to it denying the possibility of there being the creation of energy out of nothing, which theism needs (Larmer 232). Theism needs such a thing, for it asserts that God created the world out of nothing. Nonetheless, a theist is free to assert the weak form of the law, for all the weak form implies is that the universe is an isolated system. The theist would deny that the universe is an isolated system, and nevertheless, assert the weak form of the principle without any problem. This is how the creation or annihilation of

matter does not violate the first law of thermodynamics. Thus, with this worry out of the way, Larmer concludes that miracles do not involve violations of the laws of nature.

Miracles and Conservation Laws:

Miracles and Conservation Laws is MacGill's reply to Larmer. MacGill argues that Larmer has not proven that miracles do not violate the laws of nature and suggests that Larmer needs to prove how, with regards to science, if miracles were to occur, they occurred due to the creation or annihilation of matter (MacGill 80). Though Larmer differentiates the two forms of the first law of thermodynamics, and shows how annihilation and creation of matter does not violate its weak form, MacGill asserts that the first law of thermodynamics is much more fundamental to the laws of nature than Larmer takes it to be. MacGill claims that "...a constant quantity of 'stuff' is an essential component of any acceptable system of laws of nature..." (MacGill 84). What MacGill means by this is that a change in the amount of matter will result in a change to the laws of nature. This is because matter can only be understood through its role in scientific laws (MacGill 82). For, how would one go about naming or describing matter, if not through the laws of nature? Even if one were to imagine a lump of matter, in order to speak on said lump, the laws of nature would need to be referenced. The two are not as separate as Larmer takes them to be. Furthermore, MacGill asserts, the truthfulness of the laws of nature is only testable if the amount of matter stays the same, which means that the laws of nature must serve some sort of conservation law (MacGill 82). This causes a problem for Larmer's argument, because Larmer claims that by changing the amount of matter, God creates miracles, all while not violating the laws of nature. However,

MacGill is claiming that even by just altering the matter, God would still be violating the laws of nature.

In other words, MacGill is saying that matter can only be understood in virtue of its relation with the laws of nature, for the role that the conservation laws play is much more fundamental than Larmer takes it. MacGill asserts that a crucial thing that needs to stay the same for the truth of the laws of nature to exist is for matter to stay the same (i.e. the laws of nature are dependent on matter staying the same). If matter were to change, then the laws of nature themselves would be affected- and in order to understand matter, one needs to turn to the laws of nature. Thus, MacGill asserts, by God altering the amount of matter alone, the laws of nature would still be violated. This is why he claims that Larmer has not proven how miracles do not violate the laws of nature.

Miracles and Conservation Laws: A Reply to Professor MacGill

In *Miracles and Conservation Laws: A Reply to Professor MacGill*, Larmer replies to MacGill's claim. What can be understood from Larmer's reply is that such a connection between matter and the laws of nature, as MacGill argues, cannot be (i.e., that the conservation laws are not as essential as MacGill takes them to be). Larmer's argument for this claim goes as follows: if the laws of nature were to be other than they are, such as if matter increased or decreased, then that would imply that scientists could not speak on universes that had more or less matter than our universe, due to the laws of nature supposedly being different, resulting in "no basis for a prediction" (Larmer 90). Since scientists tend to speak on matters of other universes with different matter than ours, MacGill's claim cannot be confirmed with scientific practice (Larmer 91). In other words,

what Larmer is saying is that a universe with more or less matter would still have the same laws of nature. This is shown by the scientific practice that takes place. Furthermore, Larmer acknowledges how if there were a different amount of matter, then the world would be different. However, this difference would be due to the way that matter interacts with other matter, not due to the laws of nature differing. Thus, Larmer concludes that it is not necessary for the conservation laws to be essential, for the laws of nature to be true.

Problem with Larmer's Reply:

I find Larmer's reply to MacGill to be rather unsatisfactory. For, what MacGill had argued was that the laws of nature would be affected by the amount of matter. Larmer replied to MacGill by saying that since scientists behave in such and such manner, MacGill's claim does not reconcile with the practice of science—completely neglecting MacGill's claim about how a stable amount of matter is required by the laws of nature. Larmer tries to dodge MacGill's objection by questioning its soundness through the lens of scientific practice. Such a move is not a satisfactory way to go about refuting MacGill's objection, because MacGill's objection still holds. It need not matter what scientific practice is in the way Larmer goes about it. This is because MacGill's objection is about how matter and scientific laws are, not how scientists use them. When it comes to speaking on universes that we do not know anything about, scientists could use the scientific law X any way they would like to come up with different hypotheses. This does not mean that if scientific law X is used in such a manner, it is excused from its proper relation to things. More specifically, even if scientists were to neglect the fact that a same quantity of matter is needed for the laws of nature to remain constant when speaking on a

universe with a different amount of matter, the act of doing such is justified. This is because they are trying to come up with hypotheses based on what they know, which are the Earth's laws of nature. Larmer cannot use this fact in claiming that the laws of nature are not dependent on matter. For example, one can see the similarities between cherries and apples, for they are both fruits. However, when one has a milkshake, usually a cherry is put on the top, not an apple. Where it is appropriate to neglect milkshakes with apples, it is perhaps not appropriate to neglect it with cherries. This is because if had with fruit, milkshakes are traditionally had with cherries, not apples. When it is appropriate to neglect the fact that the laws of nature are dependent on the amount of matter, scientists conduct hypotheses about other universes with a different amount of matter. In this case, these universes would be apples, while our universe would be like cherries, and the laws of nature like milkshakes. This does not mean that the laws of nature are not dependent on matter, all it means is that it is appropriate to drop this need that the laws of nature have for matter to stay the same, in said context. This is why MacGill's objection still holds, since Larmer hasn't adequately replied to it.

In order for Larmer to give a successful refutation to MacGill's objection, he needs to address the issue at hand, which is that of whether or not matter is separate from the laws of nature. In other words, the potential problem with Larmer's reply to MacGill is that Larmer does not prove how matter and the laws of nature are separate, or even suggest how changes to matter would not result in changes to the laws of nature. Due to this, MacGill's objection still holds.

Critic:

Taking the potential problem that Larmer's reply to MacGill could have, a proponent of Larmer's view could assert that the laws of nature and matter are separate. This could be done through two steps: (1) first showing how there is an invariance over doubling when it comes to size, and (2) then illustrating how there is a similar kind of invariance over doubling of mass. Regarding (1), to first show how a doubling of size is conceivable with the laws of nature remaining the same, the critic could use Schlesinger's take on how the laws of nature would be affected if everything were to double in size, and Grünbaum's reply to it, with emphasis given to the latter.

In *It Is False That Overnight Everything Has Doubled in Size* by Schlesinger, he argues that if overnight everything were to double in size, it is logically verifiable from the change that would result in the laws of nature. In the paper, Schlesinger argues that, as a result of everything doubling in size, the day would become longer, the velocity of light would change, and some other quantifiable laws would also change (Schlesinger 66-68). Nevertheless, by utilizing Grünbaum's reply to Schlesinger, it becomes apparent why the laws of nature aren't affected by doubling of size.

Grünbaum speaks on description 1 and 2 (Grünbaum 76). The former is essentially that if everything were to double in size, the laws of nature would be left unchanged, whereas the latter is that following the doubling of size, there would be a change to the laws of nature. Such a change being one of unitary for all the laws involving length. What once was measured to be "1" unit in size, after the doubling becomes "1⁄2" units in size. The critic would argue that description 1 is the case. For, if everything and anything were to double in the universe, it would not be the case

that length criteria, such as meters sticks or other numerical constant laws of nature, which had the length value of n, would have the new length of n/2 (i.e., "n" and "n/2" are logically equivalent). For, take fractions, 1/2 and 2/4, are different numerical measurements, in that the latter has more parts than the former, but logically they are the same. Nothing has changed about them, for they mean the same thing, which is half. If the universe were to double, there would be no changes to the laws of nature logically, the only changes that would arise would be analogous to that of "having more parts" such as shown by the fractions, and such a change is no change at all. This is invariance over doubling.

To reiterate, the nature of the doubling that the critic is referring to is not one of size. Rather, size was only mentioned to illustrate how invariance over doubling could be used to justify the laws of nature not being affected by a certain kind of doubling. As seen with the prior paragraph, the increase in size was a difference that in the end made no difference, it was invariance over doubling. Such is the same case with mass.

Note that in order for the laws of nature to remain the same, mass alone cannot be doubled- rather, the doubling of mass, size, constants of nature, and the distance objects have with each other needs to occur. For, if only mass were to double, that would result in an obvious change to the laws of nature. Take for example, the force of gravity (i.e., F=(m*M)/D^2). If only mass were to double, then the force of gravity would be changed. Hence, this is why for a doubling of mass to not affect the laws of nature, a doubling of the distance between objects needs to change as well. What the critic wants to say is that if size, constants of nature, and the distance objects have with each other were to double along with mass, then it would result in no

change to the laws of nature. For example, if the mass of object one was 1mg, the mass of object two was 2mg, and the distance between them was 4 cm, the force of gravity would be 1.48317778e-19N. If the mass (along with size, constants of nature, and distance) were to double, the force would change its number, because it doubled, since the mass, distance, and gravitational constant doubled. Nevertheless, this change in the force of gravity at the result of the doubling, is not necessarily an *actual* change. This is not *actual* change because much like in the meter stick example, where if the meter stick size were to double, along with everything, it would not result in an *actual* change, the doubling in the force would not result in *actual* change. The critic would assert that such is the case if mass (if size, constants of nature, and the distance) were to double as well. This is because, the relation that the doubled force of gravity has to everything in a universe that has everything doubled, is no change. Here again is an invariance over doubling.

Thus, the critic would conclude that this shows how change to matter does not result in change to the laws of nature, which means that the two are separate. This would be sufficient enough to rid Larmer's reply to MacGill of the potential problem I proposed that it might have had. Hence, the critic would assert, since the laws of nature are separate from matter, miracles do not involve violations of the laws of nature. For, Larmer's reply to MacGill, which asserts such a thing, is now rid of its potential problem.

Reply to Critic:

Even if it is given to the critic that the doubling of mass would not result in a change to the force of gravity, this doesn't show how a doubling would still hold for other things. For, even if there was an invariance over doubling in the case with the

force of gravity, such will not be the same for things that have a critical mass. There are some radioactive elements that aggregate in such a way where you cannot have a sphere of them bigger than a certain size. This is because such a thing would then explode, since it is not stable. If a radioactive chemical, such as plutonium, exceeds a certain critical mass, it would trigger a chain reaction, resulting in an explosion. Critical mass shows how there isn't an invariance over the kind of doubling that the critic argued for. Chemicals with critical masses cannot be doubled, if they were, it would result in an explosion. This suggests that the laws of nature and matter aren't linear. That the doubling of one does not result in a linear change of the other. Perhaps the relationship between the laws of nature and matter is much more complicated. It could be that the relationship between the laws of nature and matter is of the same kind that is present between cake and the number of eggs to put in it. If it takes two eggs to make a cake for two people, if their relationship was linear, it would take four eggs to make a cake for four people. Nevertheless, such is not the case. The four eggs would be too much for a cake for four people, instead it would need three eggs or something of that sort. In order for a cake to come out how a cake should be (i.e., the texture, hardness, and etc. that is attributed to a perfect cake), it requires exact ratios between eggs, butter, flour, and etc. Too many or too few eggs change the ratio resulting in something that is not a cake, but rather a failed version of it. This "perfect ratio" also exists in our universe. For example, if we have too much or too little of element X (where X can be any element), things will go terribly wrong. The case with the laws of nature and matter is very much like the case of eggs and cake. This, and as illustrated by the critical mass, shows how there are certain kinds of intricacies that are present in the way that the laws of nature are set up. All of this goes back to

MacGill's objection to Larmer, in which MacGill argued that the laws of nature are dependent on the amount of matter, just as the size of the cake is dependent on the number of eggs put into it. This means that MacGill's objection still holds. Since matter cannot be separated from the laws of nature, it follows that miracles are violations of the laws of nature.

In conclusion, miracles do violate the laws of nature. Larmer suggests the opposite. This is because he argues that God is able to create miracles through creating or annihilating matter, which results in a different outcome of events than previous to the creation/annihilation of said matter, all while the laws of nature supposedly do not get touched. MacGill replies to Larmer's account, by arguing that the conservation laws play a much more fundamental role with regards to the laws of nature than Larmer allows. Larmer's reply to MacGill's objection is that a universe that were to have more or less mass than ours, would still have the same laws of nature, as this is shown by scientific practice. I argue that what Larmer needed to do to put to rest MacGill's objection was to show how the laws of nature are not dependent on matter. This is the problem with Larmer's reply, as he does not address the issue that MacGill raises in his objection. Nevertheless, a proponent of Larmer's view, given what needs to be addressed, could assert that the laws of nature are separate from matter. The proponent goes about showing this through how if the mass of everything (along with size, constants of nature, and the distance objects have with each other) doubled, the laws of nature would remain the same. This is essentially because there is an invariance over doubling. Regardless, with the doubling of mass, the critic neglects the fact that the laws of nature are not linear, which they need to be to make a claim that the critic had made. Since, neither Larmer, nor

the critic have shown successfully how matter and the laws of nature can be separated, MacGill's objection still holds. Insofar MacGill's objection holds, it means that Larmer has yet to show how miracles do not violate the laws of nature. With this lack of explanation for the phenomenon, it can be concluded that miracles do in fact violate the laws of nature.

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