

## **Extra credit 1**

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1. **Do all natural events need a necessary reason to happen?** I, most of the time, advocate that everything must have a reason to happen. However, I do think some events in nature feel random. For example, I remember watching a video from the YouTube channel Vsauce (“What is random?”) that coin flips technically, if you knew every possible initial condition, can be predicted to which side they’ll fall. This is only true if you use the PSR, trying to find sufficient reasons that would cause the coin to fall heads or tails. However, this implies that we must infer which reasons affect the coin; we are trying to make connections ourselves without truly ever knowing if those reasons are dependent/independent of flipping the coin.
2. **Can everything be explained by the PSR?** Sounds similar to the first question but what I mean is if all laws of nature can be explained by the PSR. For example, how can you explain the law of conservation of energy? Or as the fourth extra credit said (I read it but didn’t have the time to do it), how can you explain the medium where action happens at a distance? Maybe they are just truths of the universe we must accept. We know how they work, but not there reason to be.
3. **Is God really what can’t be explained?** It reminds me of Aristotle what Leibniz said about things that can’t be further explained are done by God. It really has to do if you are a deist or not (if you believe a God exists in the universe not necessarily Christ, Allah, or other religion), but I think that just hides the problem under the rug. I feel it just is an escape goat answer, stopping us for truly answering what are the real mechanics behind these “unexplainable” phenomena. Is like when you ask your mom why you can’t do something and replies: “because I am your mother.” That answer doesn’t take us anywhere.
4. **If everything can be known, can humans know it?** I don’t like thinking about it, but in the end, we are limited by our bodies to experience the true nature of the universe. For instance, we can only see visible light. Although we know other electromagnetic waves with another wavelengths/frequency exist, we can never truly “see” it on our own. Going back to the extra credit 4, can we ever be able to see or experience the medium where the action at a distance happens? Maybe it does exist, but we will never be able to see it.
5. **Do we have free will?** I remember talking about PSR with my philosophy professor back in high school, and PSR basically states that everything is predetermined. Every choice, thought, idea you had, was determined by the atoms that made up your neurons that experienced, for lack of a better word, experiences that led you to take those choices. This answer really depends on if you think absolutely everything has a reason to exist.
6. **Did God choose our universe?** This is getting very religious, but Leibniz said that if God can come up with infinite universes, and only exists one, then God had sufficient reason to have chosen this one. However, I think Leibniz is inferring only one universe can exist at a time, but he doesn’t really know, and that our universe is the only one with

sufficient reason to exist. He is inferring initial conditions that just might be independent of what really created our universe (just like the coin).

7. **If two objects have the same “necessary” characteristics, are they truly the same?** When this was mentioned, I couldn’t help but think about the “Theseus’ Paradox.” This paradox states that if all the original parts of a ship are replaced with “identical” pieces, is it still Theseus’ ship? This can go further by realizing that we humans constantly grow up and replace old cells with new ones, creating the question, are you really you? We have to infer which necessary conditions make both spheres (from the extra credit 1 reading) equal, which might never be. However, it is very useful to use these ideas of the PSR in symmetry, allowing us to solve problems such as the infinite wire and plane.
8. **Is space and time related?** I didn’t quite understand why Newton said any point in space is the same at any given time. I lean towards Leibniz, but not completely. Any point in space differs from time. For instance, why is Earth where it is and not further/closer to the sun? Objects and events are related by space and time. However, as we said, some reasons behind the movement of objects aren’t necessarily God or explainable.
9. **What’s the point of the PSR?** Although to the extreme it has many flaws, I think it is a good general rule of thumb in our daily lives. We get more out of a situation by always thinking about the cause behind it and not just assuming everything is random.
10. **What’s the future of PSR in science?** After all, PSR is what drives science to keep going further. To search for new meaning, unravel natural phenomena, find our place in the universe, to eventually try to get a hopefully theory of everything. I really don’t know if this will ever be possible, but I hope it does. I would like to be alive when that happens.