

THE NEW PHILOSOPHY OF SUPERDETERMINISM AND THE ROLE OF SCIENCE

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The philosophy of superdeterminism is based on a single scientific fact about the universe, namely that cause and effect in physics are not real. In 2020, accomplished Swedish theoretical physicist, Dr. Johan Hansson published a physics proof using Albert Einstein's Theory of Special Relativity that our universe is superdeterministic meaning a predetermined static block universe without cause and effect in physics. Some believe that the lack of cause and effect in physics would cripple science, but this is an absurd notion given the fact that science has already been enormously successful in the absence of cause and effect in physics. Because the philosophy of superdeterminism is founded on a single scientific fact, then any of the implications of this philosophy are also rooted in science. The role of science under the philosophy of superdeterminism is the same as it has always been namely to understand the universe and offer technological solutions to the world's problems. The philosophy of superdeterminism offers a means of harmonizing the belief in God and science for over half the world's population by supporting the existence of God and the notion of bodily resurrection in the afterlife through inferences based on the science of physics.

The new philosophy of superdeterminism is based on a single scientific fact about the universe, namely that we live in a predetermined static block¹ universe without cause and effect

¹ Imagine a cosmic four-dimensional block, where the three familiar dimensions of space (length, width, and height) are combined with a fourth dimension of time. Every single moment in

in physics.² The role of science in the philosophy of superdeterminism is paramount, because the entire philosophy of superdeterminism rests on the foundational premise that cause and effect in physics³ are not real based on a scientific proof.⁴ Dr. Hansson's 2020 physics proof that we live in a predetermined static block universe without cause and effect in physics is a simple application of Albert Einstein's Theory of Special Relativity to what has already been scientifically verified about spin measurement correlations observed in entangled particle pairs.⁵

history would occupy a specific location within this block. From this perspective, there is no special "now" moment that separates the past from the future. They all exist equally.

² Hansson, Johan. "Bell's theorem and its tests: Proof that nature is superdeterministic – Not random." *Physics Essays* Vol. 33, No. 2 (2020). Dr. Johan Hansson, a professor at Luleå University of Technology in Sweden, has been awarded the "Honorable Mention Award" by the Gravity Research Foundation, a prestigious foundation aimed at advancing the understanding of gravity in fundamental physics. This recognition places him among a group of previous winners that includes Nobel laureates and world-renowned physicists. www.ltu.se/en/latest-news/news/news/2023-05-23-awarded-prestigious-prize-in-gravitational-research#:~:text=Johan%20Hansson%2C%20a%20professor%20at,of%20gravity%20in%20fundamental%20physics.

³ Physics is the fundamental science that studies matter, energy, motion, and force. Physics explores everything from the incredibly small (subatomic particles) to the unimaginably vast (the cosmos).

⁴ Dr. Hansson wrote that "[e]verything is predetermined, including the experimenters (non) free will, the 'random' orientation of the spin-analyzers at either end, and anything else you can think of. Each measurement does not create but merely uncovers what already is embedded in space-time. All events leading up to, and including, the 'act of measurement' itself are already there. . . . Bell's theorem and its many experimental tests thus are proof that nature at its fundamental level is superdeterministic – not random. A 'cause' cannot alter the 'effect.' The events in global space-time are predetermined and fixed, much like pebbles cast into a concrete block. . . . What an experimenter seemingly 'chooses' to do at either end A or B is the only thing she can do, and cannot 'cause' either the event at her own position or the event at the other end. All events in the global space-time 'block' we call the universe (past, present and future), observed or not, are superdetermined and unalterable." Hansson, Johan. "Bell's theorem and its tests: Proof that nature is superdeterministic – Not random." *Physics Essays* Vol. 33, No. 2, at 217 (2020).

⁵ Dr. Hansson's version of superdeterminism proves we live in a predetermined static block universe without cause and effect in physics. The other version of superdeterminism posits hidden causal variables responsible for the correlations observed in quantum entangled particles, and thus relies on cause and effect in physics. Indeed, Dr. Hansson's version of superdeterminism disproves any competing version of superdeterminism that relies on cause and effect in physics positing hidden causal variables.

Dr. Hansson demonstrated that the opposite spin measurements observed in entangled particle pairs cannot occur unless cause and effect in physics are not real. Experiments have shown that when the spin of the first entangled particle is measured, then the spin of the second entangled particle will always be the exact opposite spin regardless of how far apart you place the particles when measured.⁶ However, the spin of the first entangled particle measured for spin-1/2 particles, like electrons, will always be a purely random 50-50 result between Up or Down spin. This raises an inconsistency with Einstein's Special Relativity when observed from different inertial frames of reference.⁷

Observers in different frames of reference can observe a different entangled particle measured first due to the relativity of simultaneity.⁸ As a result, two different observers each observing a different entangled particle measured first can observe conflicting spin measurement results for the pair. If Observer 1 sees particle A measured first with an Up spin, then particle B

⁶ Aspect, A. et al. "Experimental Realization of Einstein-Podolsky-Rosen-Bohm *Gedankenexperiment*: A New Violation of Bell's Inequalities" *Physical Review Letters* Vol. 49, No. 2 (1982).

⁷ An inertial frame of reference is a frame of reference in which an object at rest remains at rest and an object in motion moves in a straight line at a constant speed unless acted upon by an external force. Essentially, it is a reference point that is not accelerating. Think of it like a smoothly moving train: if you're inside and not near the windows, you can't tell if the train is moving at a constant speed or stationary. This is because the train is an inertial frame of reference.

⁸ The relativity of simultaneity in Einstein's Theory of Special Relativity means that two events that occur at the same time for one observer may not occur at the same time for another observer who is moving relative to the first. This idea challenges our intuitive understanding of time. In our everyday lives, we tend to think of time as absolute, flowing uniformly for everyone, regardless of their motion. However, special relativity tells us this is not the case. This happens because the speed of light is constant being the same for all observers regardless of their motion. To visualize this, imagine two lightning strikes hitting opposite ends of a moving train simultaneously from the perspective of someone standing on the platform. To someone on the train, the lightning strikes might appear to happen at different times due to their motion relative to the platform. This concept might seem counterintuitive, but it is a cornerstone of modern physics and has been experimentally verified.

must show a Down spin for Observer 1. But, if Observer 2 sees particle B measured first with an Up spin, then particle A must show a Down spin for Observer 2. Observers 1 and 2 would see inconsistent spin measurement results for the pair of entangled particles. This potential conflict in spin measurement results occurs because of the random 50-50 chance of observing either an Up or Down spin on the first particle observed to be measured.

The only way to explain how the spin measurement results can be consistent for all observers regardless of inertial frames of reference is to say that the spin measurement results must be predetermined for all observers.⁹ If Observer 1 is predetermined to see particle A measured with an Up spin, and Observer 2 is predetermined to see particle B measured with a Down spin, then the spin measurement results between the two Observers can always match even though the spin measurements still appear to the Observers to be completely random results. This is an example of predetermined randomness and not caused randomness. If the random spin measurements were actually caused when the first entangled particle observed was measured, then there would be an inconsistency in spin measurement results which would violate the principle that there is no preferential frame of reference in Special Relativity or quantum mechanics. Consequently, Dr. Hansson proved that actual cause and effect in physics cannot be real using Einstein's Theory of Special Relativity, because eliminating cause and effect in physics is the only way to explain how the spin measurement results can be consistent when viewed from any inertial frame of reference.

⁹ Dr. Hansson concludes that “[t]here is no other possibility than that the outcomes at A and B both are predetermined.” Hansson, Johan. “Bell’s theorem and its tests: Proof that nature is superdeterministic – Not random.” *Physics Essays* Vol. 33, No. 2, at 217 (2020).

Causation is a fundamental principle in science and a core concept that scientists aim to establish in their research. However, Dr. Hansson proved using science that causation in physics is not real. This leads either to a paradox of science disproving itself, or science does not require causation in physics. Obviously, the latter explanation is preferable in order to avoid the paradox. As it turns out, science can get along quite well without causation in physics. Science has been enormously successful so far without causation in physics, so there is no reason to believe that scientific success will suddenly stop because of Dr. Hansson's proof. Moreover, science has never directly proven the existence of causation in physics and that lack of proof can now be explained by the fact that causation in physics does not actually exist. Indeed, there is no difference in physics between causation and a robust correlation meaning a correlation that consistently occurs in a variety of settings and across different observations. Without causation in physics, then what scientists would ordinarily describe as causation is actually a robust correlation observed in our predetermined static block universe. Every cause and effect can also be thought of as a robust correlation between an earlier and later event.

Traditionally, the concept of cause and effect is deeply intertwined with the notion of continuous time. The idea is that for event A to cause event B, there must be a temporal interval between them, and this interval is typically assumed to be continuous. The continuous nature of time during which event A leads to event B allows an inference that event A seamlessly transforms into event B through a continuous causal process in time. However, there is no scientific evidence to prove the independent existence of time outside of the context of events. Consequently, there is no good reason to believe in the independent existence of time given the

lack of any real continuous causal processes. Without such an understanding of time, there can be no inference of cause and effect in physics.¹⁰

In the absence of cause and effect in physics, we must live in a predetermined static block universe. Because past or present events cannot actually cause future events, then the future must be predetermined and already exist in a block universe. So, all events in the past, present and future already exist in our static block universe. Every event in our universe is predetermined, including every scientific thought. Because science has so far been predetermined for enormous success in our universe, then there is no reason to believe that cause and effect in physics are vital to the predetermined success of science.

Some might argue that without cause and effect in physics, science is unable to discover truths about our universe. But this view assumes that truth can only be discovered through causal processes. However, our universe being a static block reality must be organized based on static principles without cause and effect in physics. Perhaps, a principle of logical co-existence among common information sharing static hyperplanes of spacetime explains the ordering of our block universe. But, because our static block universe nonetheless displays the same organization which can be mathematically described by the same laws of physics previously believed to be the result of a continuous causal force of nature, then there is no reason to believe

¹⁰ Time in our static block universe is one of the four static dimensions of spacetime. If you imagine a frozen moment of three dimensional space (length, width and height), and then stack those frozen moments into an unseen fourth dimension of time much like a cosmic flipbook (that does not need to be flipped), you will get a better sense of the dimension of time. Time is not an invisible metaphysical backdrop for change in our universe, but rather an actual physical static dimension of our block universe. In this view, time is not a flowing river but rather a static dimension, similar to the three spatial dimensions. The past, present, and future all exist simultaneously within this block. Our perception of time passing is an illusory product of our conscious brains changing in static appearances through our block universe in the dimension of time experiencing different slices of the block sequentially.

that the discovery of truth in science necessarily requires cause and effect in physics given that the same laws of physics still apply. The only change is how we interpret those laws of physics away from causal processes toward predetermined static appearances in the four dimensions of spacetime.

The notion that the absence of cause and effect in physics would fundamentally cripple science is absurd. Science thrives on predictability. Some say that if events occurred randomly without any underlying cause, we could not anticipate or explain natural phenomena. However, our static block universe remains organized through static principles even in the absence of cause and effect in physics, which refutes the notion that our universe will suddenly turn into incomprehensible unpredictable random chaos.¹¹ Some argue that the scientific method relies on controlled experiments to isolate variables and establish cause and effect relationships without which experimentation would be pointless. But, because there is no substantial difference between a causal relationship and a robust correlation, then one can simply say that the scientific method is now based on establishing robust correlations without cause and effect in physics. Others may argue that our current understanding of the universe is built upon a foundation of cause and effect in physics. The absence of cause and effect would make our physics theories from Newton's laws of motion to quantum mechanics irrelevant. However, the behavior of our

¹¹ Purely random behavior at the quantum level without any observable cause is already known to exist referred to as acausal physics, such as the random timing of the decay of a radioactive atom. Quantum mechanics explains acausal physics as caused by quantum fluctuations of unobservable quantum fields. However, the belief that quantum fluctuations are real physical phenomena is based only on an inference from the mathematical framework of quantum field theory and phenomena like the Casimir effect and the Lamb shift. A static block universe without cause and effect in physics could be predetermined to exhibit purely random behavior alongside well-organized behavior. A static block universe without cause and effect in physics predetermined to exhibit purely random behavior at the quantum level does not need quantum fluctuations to cause such purely random quantum behavior. In a predetermined universe, even random events would be part of the overall static patterns.

block universe exhibits a static organization that can still be mathematically described by those same laws of physics, which preserves their relevance.

The role of science under the philosophy of superdeterminism is the same as it has always been, namely to understand the behavior of the universe and drive technological advancements that improve our lives. Indeed, because the philosophy of superdeterminism is founded on the science of physics, the implications of this philosophy are also rooted in science including religious implications, such as the existence of God. Superdeterminism is a philosophy born of science with religious overtones making it a uniquely perfect philosophy for harmonizing science and religion.¹² Under the philosophy of superdeterminism, one can believe in both God and science.¹³ Superdeterminism tells us that the universe is not caused by the universe, anything in the universe or any natural causal force of nature, because none of these things can create the universe without the power of cause and effect in physics. The role of science under the philosophy of superdeterminism is not to prove that nature is the cause of

¹² Under superdeterminism, scientific inquiry on the origins of the universe or life must be investigated in the context of a predetermined static block universe without cause and effect in physics. For example, the origin of our static block universe from nothingness under the zero energy universe theory would allow one to infer the existence of a Creator God, who created the universe outside of time and outside the laws of physics given the lack of any power of nothingness to create our universe in the absence of cause and effect in physics. One could also infer that such a Creator God has endorsed Christianity as His religion by making it predominant in terms of numbers of believers. This Creator God would also have predetermined life to emerge in our static block universe via static organization that gives the appearance of natural processes in the static dimension of time.

¹³ The philosophy of superdeterminism can be used to infer the existence of a single Creator God, who is capable of resurrecting our bodies and brains in another special universe, like Heaven or Hell. Over half of the world's population (55%) consists of Christians and Muslims who believe in such a Creator God who promises bodily resurrection in the afterlife. The philosophy of superdeterminism is therefore a natural fit for over half the people of the world.

itself,¹⁴ but to allow human beings to understand the universe and find technological solutions to our problems.

¹⁴ Scientific naturalism is a philosophical viewpoint that asserts that the natural world is all that exists. Essentially, scientific naturalism posits that the universe is a closed system governed by natural laws, and that supernatural explanations are unnecessary and unsupported by evidence. The philosophy of superdeterminism is at odds with scientific naturalism by denying that any natural laws or processes can account for the creation of the universe due to the absence of cause and effect in physics.