

# THE PHILOSOPHY OF SUPERDETERMINISM ON THE LOGOS

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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. The unity of our universe originates from its creation from the same nothingness under the zero energy universe theory. However, nothingness cannot actually cause a universe to exist on its own under superdeterminism due to the absence of cause and effect in physics. Moreover, nothingness is the absence of anything real and cannot logically be the reality underlying our universe. Consequently, our universe must exist from the reality of the logic or Logos underlying our physical reality resulting from the origination of our universe from the same nothingness or common creation.

The philosophy of superdeterminism is based on a single scientific fact about the universe, namely that we live in a predetermined static block<sup>1</sup> universe without cause and effect in physics.<sup>2</sup> In 2020, accomplished Swedish theoretical physicist, Dr. Johan Hansson proved by

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<sup>1</sup> 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 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.

<sup>2</sup> 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

applying Albert Einstein's Theory of Special Relativity to what has already been scientifically verified about spin measurement correlations observed in entangled particle pairs<sup>3</sup> that cause and effect<sup>4</sup> in physics<sup>5</sup> are not real. 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.<sup>6</sup> However, the spin of the first entangled particle

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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](http://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).

<sup>3</sup> Dr. Hansson's version of superdeterminism proves that 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 to posit hidden causal variables.

<sup>4</sup> 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).

<sup>5</sup> 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).

<sup>6</sup> 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).

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.<sup>7</sup>

Observers in different frames of reference can observe a different entangled particle measured first due to the relativity of simultaneity.<sup>8</sup> 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 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.

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<sup>7</sup> 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.

<sup>8</sup> 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.

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.<sup>9</sup> 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<sup>10</sup> 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.

The word "Logos" is a Greek term that represents the underlying principle of order and rationality that governs the cosmos. In the Gospel of John, the Logos is identified with Jesus Christ, seen as the divine reason and creative force behind the universe.<sup>11</sup> The reality of the

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<sup>9</sup> 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).

<sup>10</sup> The idea of "predetermined randomness" simply means an initial encounter with pre-existing pure randomness. So, in our static block universe where all purely random events exist equally whether in the past, present or future, one can encounter pre-existing purely random events for the first time as one enters future portions of the static dimension of time.

<sup>11</sup> "In the beginning was the Word, and the Word was with God, and the Word was God." John 1:1. The original text of the Gospel of John uses the Greek word "logos" or λόγος to refer to the "Word".

Logos is supported by the philosophy of superdeterminism. In the absence of cause and effect in physics, the laws of physics cannot actually cause the existence of the universe. However, under the zero energy universe theory,<sup>12</sup> the universe is comprised of positive matter energy<sup>13</sup> and negative gravitational energy<sup>14</sup> that perfectly cancel out to the same nothingness as verified by the flatness of spacetime.<sup>15</sup> The unity of our universe derives from this common origination from the same nothingness. However, nothingness is not a substance, but rather the lack of anything real. The lack of anything real cannot logically be the reality of our universe.<sup>16</sup> Rather,

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<sup>12</sup> The zero energy universe theory says that the positive matter energy is exactly balanced by the negative gravitational energy, so that the total energy of the universe is zero. The idea is that "positive matter energy" encompasses the various forms of energy associated with the existence and interactions of matter, while "negative energy" represents a counterbalancing force, such as the gravitational potential energy.

<sup>13</sup> Positive matter energy encompasses the energy associated with the existence and interactions of the particles and fields that constitute the universe. It includes the energy equivalent of the mass of particles namely Mass Energy ( $E=mc^2$ ); the energy of the motion of particles namely kinetic energy; the energy carried by electromagnetic waves such as light and radio waves; and the energy stored within the nucleus of atoms namely nuclear energy.

<sup>14</sup> Negative gravitational energy encompasses energy associated with the attractive force of gravity between masses. Physicist, Lawrence Krauss believes that dark energy contributes to the negative energy balance within the zero-energy universe theory. Krauss believes that the effects of dark energy, particularly its influence on the expansion of the universe, can be interpreted in a way that contributes to the overall negative energy balance.

<sup>15</sup> In General Relativity, the theory of gravity, massive objects can curve spacetime. However, the cumulative curvature of spacetime in our universe from all the matter, energy, dark matter and dark energy results in a perfectly flat universe meaning that light rays travel in straight lines, and parallel lines remain parallel forever. This happens because our universe possesses zero net total energy. If the universe possessed a net positive energy, our universe would curve negatively in a saddle shape. If our universe possessed a net negative energy (gravity), then our universe would curve positively into a sphere shape. Because the positive and negative (gravity) energies of our universe perfectly cancel each other out, then our universe has zero curvature meaning the universe is flat.

<sup>16</sup> Because nothingness being the lack of anything real cannot be the reality of the universe, then our notion of the universe being made of a substance cannot be correct because nothingness cannot be a substance. Rather, our notion of substance is an idea in our minds resulting from the underlying logic of the universe or Logos. Under superdeterminism, ideas or concepts in the mind are an aspect of the physical reality in our brains. So, the logic underlying the universe or Logos is responsible for our perception that the universe is made of a substance. But, in truth, we are actually present in a created exhibition of the logic or Logos of our universe. Because

our universe is unified because of the logic of the positive matter energy and negative gravitational energy sharing the same origination. Our universe must therefore exist on the basis of the reality of the logic underlying the cosmos or Logos.

The logic or Logos underlying physical reality is the reason for our universe exhibiting mathematical laws of physics.<sup>17</sup> The logic of the origination of our universe from the same nothingness is what leads to its separation into positive matter energy and negative gravitational energy. Nothingness itself does not have an actual presence being the lack of anything real, so the sameness of the nothingness from which our universe derived its positive matter energy and negative gravitational energy is actually the presence of logic or Logos. The beginning of physical existence always starts with randomness, because with no prior state governing the emergence of its existence, the beginning state of physical existence would have to be random. And because pure randomness is itself logically possible<sup>18</sup> and an aspect of the Logos given the

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there is no actual moving substances in nothingness, then our universe is not a mechanism or something in motion. Moreover, all aspects of the logic or Logos of mechanisms need not be displayed in our universe in order for the mechanisms to appear to work. For example, the entire logic or Logos of a quantum computer need not be exhibited in our universe in order for the qubits to appear to work, because a quantum computer does not actually consist of moving parts that must exist in order for this mechanism to appear to work.

<sup>17</sup> The laws of physics are described by mathematical equations, which often operate with continuous quantities like real numbers, where there are infinite values between any two points. However, under superdeterminism in the absence of cause and effect in physics, the laws of physics described by continuous mathematical operations cannot actually cause the existence of the universe. Consequently, the universe need not exhibit everything these mathematical operations allow for, nor must the universe exhibit infinite continuity or values. Traditional logic generally operates on discrete values, so there is no reason that the logic of the universe or Logos must exhibit infinite continuity or values.

<sup>18</sup> Pure randomness is logically possible, because an existing point can logically act as a beginning or cutoff despite any means of determining that point as the beginning or cutoff.

pure randomness occasionally called for by our laws of physics, then God can begin physical realities, like our universe, with a random quantum fluctuation.<sup>19</sup>

So, it is not surprising that our universe would begin with a random quantum fluctuation. Indeed, the fact that our universe exhibits behavior consistent with mathematical laws of physics with the occasional purely random quantum leap demonstrates the presence of logic or Logos in our universe. Our static block universe without cause and effect in physics is also consistent with logic being a static framework.<sup>20</sup> The actual existence of cause and effect in physics would argue against the beginning of our universe as a random quantum fluctuation, because pure randomness cannot have a discernable cause. But actual cause and effect in physics implies that our universe has always existed due to an infinite regression of prior causes. And God, like Atlas, would be spending eternity conserving the existence of our universe. So, as between an eternally burdened God conserving our universe forever and a God who creates our universe as one and done, the philosophy of superdeterminism supports the existence of a God relieved of the unnecessary burden of maintaining cause and effect in physics for eternity.<sup>21</sup>

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<sup>19</sup> Although quantum fluctuations are fleeting events, the early universe underwent a period of incredibly rapid expansion like cosmic inflation. This rapid expansion could have stretched a small quantum fluctuation to enormous size essentially locking in the existence of the universe. This stretching effectively amplifies the initial fluctuation preventing it from simply collapsing back into nothingness.

<sup>20</sup> In the absence of cause and effect in physics under superdeterminism, physical reality cannot be caused to exist in time. Physical reality is therefore timeless. Logic is also timeless. So, the notion that physical reality is a display of logic or Logos is consistent with the timelessness of physical reality under the philosophy of superdeterminism.

<sup>21</sup> Cause and effect in physics requires time for the cause to lead to the effect. By conserving the existence of our universe where cause and effect in physics are real, God would have to act in time because God would have to act to conserve time. Every act of God conserving each moment of time would be an act corresponding with that moment of time. Consequently, conserving a duration of time would involve a series of acts of conservation by God all corresponding with the moments of time that pass in that duration of time. This correspondence between each moment of time and an act of conservation by God would mean that God acts in a

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series corresponding to each passing moment of time, which is the equivalent of God acting in time. In other words, if God must act continuously to conserve each moment of time, then God becomes subject to the constraints of time, essentially existing within the flow of time. Anything acting in time is limited by the amount of time. If something acts within the framework of time, it means its actions are subject to the constraints of time's passage. The amount of time available limits the extent of action. For example, a runner has a limited amount of time to complete a race. If God is subject to time, then God is limited by time. How God uses the amount of time available to Him creates a burden on the use of His time. But, an omnipotent God possesses unlimited power and resources, and therefore, God cannot be burdened by any task or responsibility. This creates a time paradox for an omnipotent God subject to time.