

## On the Existence of God and the Nature of Free Will

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### Abstract

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The tension between the ideas of determinism as opposed to free will is fully discussed. Evidence for the existence of God based on what is called the ultimate causation principle is put forward. The concept of infinity is explored. Finally, a test called the free will test instead of the Turing test for Artificial Intelligence (AI) is proposed. The idea of multiverses is considered based on the reasoning here presented. Also, the uncertainty principle as being the one that allows free will to occur in an otherwise discrete and finite universe, making continuity-ness the nature of free will is introduced. Finally, the practical reason for the existence of a belief in God is explored.

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**Keywords:** God, determinism, free will, infinity, artificial intelligence

### 1. Introduction

There is a conflict between the deterministic nature of the universe rooted in the idea of destiny and the idea of free will for which it is said that we are the architects of our own fate. This contradiction is solved in this paper. Also, evidence for the existence of God is presented in what is called the ultimate causation principle. The reasoning that leads into believing in a deterministic universe is presented, as well as the idea on which the concept of free will is rooted. The derivation to the need to have a free will test instead of a Turing test to prove the existence of consciousness and free decision making in a machine is introduced.

The multiverse idea is placed into consideration and the meaning of a concept such as infinity and the implications of an infinite God and infinite souls are carefully placed under scrutiny. The nature of free will, which is based on the uncertainty principle and quantum mechanics, is explained. Also, the practical need for believing in God is exemplified, as well as the reason for the existence of many different beliefs in different manifestations of God throughout the world, history and people in different times and places.

### 2. The Ultimate Causation Principle

The most commonly accepted theory of creation in science is the theory of the big bang. It simply says that space and time were created in a singularity approximately 13.7 thousand million years ago (Hawking, 1988; Hawking & Mlodinow, 2010; Penrose, 2014). The Bible has been saying that the universe had a beginning prior to science for about two millennia (Brooks, 2013). Despite all efforts by scientists to dismiss this issue, the fact that the universe has not always been there means there had to be something before the beginning of the universe. Saying such something is nothingness is not meaningful. It could equally be said that everythingness was before the big bang event. This is quite possibly the strongest argument in favor of the existence of God, because for the question: what was before the beginning of the universe?, the answer is: God (Brooks, 2013).

The beginning of our Universe could be summarized as follows: "A long time ago, actually never, and also now, nothing is nowhere, when..., never, makes sense, right? Like I said, it didn't happen. Nothing has never anywhere. That's why it's been everywhere. It's been so everywhere you don't need a where, you don't even need a when. That's how every it gets... Forget this, I wanna be something, go somewhere, do something. I want things to change. I want to invent time and space. And I know it's possible, because everything is here and it probably already happened. I just don't know when to start. And that's exactly where it started..." (YouTube, 2018).

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The previous quote summarizes the idea that everything everywhere is associated to God. The question, however, is whether or not God can be one single thing or if God needs to have at least two kinds of things. Remember the idea that for light to be appreciated, it requires the existence of darkness. Thus, comes the idea of Yin and Yang, the two opposing forces or natures in Chinese theology that give meaning to existence. Does God require duality in order to exist or can God be one single thing? The most common concept in this regard is to consider God as one thing, that is everything, occupying everywhere and existing forever. The Universe would be an occurrence in which at least duality happens. How it is possible for the occurrence of the Universe “outside” of an ever-existing and ever-present God is the subject of section 4 in this paper.

### 3. The Implications of a Finite and Discrete Universe

What is the nature of the universe? The universe (its matter and energy enclosed in space and time) began 13.7 thousand million years ago (Hawking, 1988; Hawking & Mlodinow, 2010; Penrose, 2014). Since the universe began it has been growing. It follows that the universe is finite. Also, in order to avoid paradoxes such as Zeno’s paradox (Malcolm, 2010), the universe both in space and time has to be discrete.

What does having a finite and discrete universe means? In order to answer such question, a mental experiment is due. Imagine for a moment that there is a universe with only two spaces for matter or energy to exist. Also, imagine that in such universe there is only one particle of matter or energy. At time one, just an instant after the creation of such universe, the particle of matter or energy could be in the up or down position. One instant after that, at time two, the particle could also be in the up or down position. How many possible evolutions for such universe could there be? The answer is 4 ( $2^2$ ), which is in positions up-up, up-down, down-up and down-down. At time three there are  $2^3 = 8$  possible evolutions. The number of evolutions grows exponentially as time goes by. Now, let extrapolate to the known universe. How much space for matter and energy exists in the known universe? The answer: a huge number of spaces. Also, how many particles of matter and energy are there in the universe? Once again, the answer is a huge number. However, these two numbers, no matter how large, are finite. Thus, the possible evolutions or combinations for the existence of the matter and energy in the universe through time is an even larger number, but nonetheless finite. This means that God could only choose one evolution out of a very large but nonetheless finite set of possibilities. That would be God’s plan. Clearly, God could not do anything God wanted, but was constrained by what could actually be chosen. God chose the best evolution, the one in which the minimum number of bad things happen. Nevertheless, some bad things will happen, regardless of what God might wish, because if God wants to avoid some bad thing from happening, even worse things would happen somewhere else. This is a very good explanation for the reason why bad things do happen. It also follows that the universe is deterministic in this way. The idea of destiny is clear, but as it turns out free will would be an illusion, since everything that happens, even our own decisions, were chosen by God at the moment of the creation of the universe. Clearly, the latter cannot be correct. God gave humanity the freedom to choose. How is that possible being the universe as it is?

### 4. Infinity and Free Will

Let first consider the idea of infinity. Are there infinities larger than others? The answer is no for countable infinities. To illustrate, let  $N = \{1, 2, 3, \dots\}$  be the set of natural numbers and  $E = \{2, 4, 6, \dots\}$  the set of even numbers. These sets continue to infinity. Although the set of even numbers is contained in the set of natural numbers, it cannot be said that the set of natural numbers is larger than the set of even numbers. Why is that so? That is because it is possible to arrange elements in a one-to-one correspondence. Consider the first element of the set of natural numbers: 1. If we multiply that number by two, results in  $1 \times 2 = 2$ , which is the first element of the set of even numbers. For the second element in the set of natural numbers, 2, multiplying it by 2 results in  $2 \times 2 = 4$ , which is the second element of the set of even numbers. And so on until infinity. Because each element in the set of natural numbers is in a one-to-one correspondence with each element in the set of even numbers, both sets are equally large.

What about free will? The soul of people needs to be infinite so that we can have the ability to choose anything, without being constrained by discreteness and finiteness. God is always portrayed as an infinite being (Broocks, 2013). God, which is spirit, is infinite. But how could an infinite being like God create even one infinite soul? Once again, a thought experiment is required. Consider the set  $R$  of all real numbers. This set goes from  $-\infty$  to  $+\infty$  and it has an infinite quantity of different numbers. Also, there is an infinite number of elements between any two boundaries  $[a, b]$ , where  $a < b$ ,  $a \in R$  and  $b \in R$ . If the nature of God’s spirit is thought to be like the set of real numbers, it is possible to assign the range  $[0, \dots, 1)$  to the soul of one human being, the set  $[1, \dots, 2)$  to another soul, and so on. Each of these sets also have an infinite number of elements.

“So God created man in his own image... male and female...” (Genesis 1:27). So although God cannot create an infinite soul, he can create a soul from (in) his own image in a manner similar to the assignments of ranges of numbers from real numbers. In this way, souls are not created, but rather being a part (image of) God.

## 5. The Language Bottleneck and the Nature of Thought

Thinking is considered to be the process by which human beings have thoughts. But, what is thought made of? What are ideas made of? If your answer is language, think again. It is clear that children think before they speak (between ages one and three to five). Thus, there is much more to thinking than language. Thinking has to be made of a mix of the things we perceive with our senses: images, sounds, touch, taste, smell (and perhaps even orientation). As we grow, we learn to entangle these perceptions and they come back and circle around our own mind in the form of ideas, that is, thought.

However, our ideas are trapped inside our minds. No matter how creative human beings have been, we have not been able to create a communication process able to transmit the whole range of human thought. Words (both spoken and written), pictures, sounds and music, movement and dancing, are not able to fully transmit our ideas at once. After taking considerable time writing a book or composing a poem or music or dancing, it may be possible to get a sense of what someone has been thinking about or feeling about a while ago. But we are forever prisoners to the walls of our minds. That is precisely the reason why we feel so alone, so cut off from each other, because we are. Nevertheless, silence also speaks, and through thoughtful sensing and understanding it is possible to acknowledge the presence of others. Clearly, not even making love can allow us to fully express what we feel inside. We are forever hungry for love and understanding.

But technology is advancing rapidly. It may come a day when people may be able to fully communicate their ideas using implanted hardware. Nevertheless, the challenges facing such idea are enormous. To begin with, are thoughts expressed in the same neuronal patterns in all individuals? Quite possibly not. Thus, technology would have to find a way to make the interpretation from individual to individual, perhaps after some software/hardware training with our own wetware patterns.

Going even further, science may one day be advanced enough to allow people to exist beyond their physical boundaries (being those biological or technological) and so people may find ways to exist as energy in this universe and beyond, existing as souls in heaven. If people can live in heaven, why stay in the universe? This could mean the beginning of the end of the universe.

## 6. Artificial Free Will

If for free will to exist requires an infinite soul, there is no way an artificial machine can be constructed that has free will. Or does it? Let us explore this idea. Most computer simulations are based on pseudo-random numbers (Coss Bu, 1991). These numbers are apparently random numbers with the exception that after  $N$  generations, the sequence starts to repeat itself.

In order to make a simple to understand example, consider the sequence:  $X_{i+1} = (X_i + 1) \text{ MOD } 10$ ; that is, the next number is the residual of dividing by ten the previous number plus one. If one starts with zero, the next number is the residual of zero plus one divided by ten, which is one. Then follows two, then three and so on until nine. After a maximum of ten numbers: 0, 1, ..., 9 (the size of the pseudo-random number generator) the next number is nine plus one divided by ten, which is ten divided by ten. The residual of this operation is once again zero, and thus the sequence repeats every ten numbers. The parameters can be changed, but the fact remains: after  $N=10$  pseudo-random number generations the sequence repeats itself.

Thus, if a machine bases its thinking on pseudo-random numbers (and normally it should), then a bigger machine could be constructed that fully predicts the behavior of this machine. In such case, such machine could not be said to have free will, because its decisions and actions are fully deterministic and predictable.

The Turing test (Turing, 1936, 1950) is very well known in Artificial Intelligence (AI) and, generally speaking, in computer science. Passing the Turing test requires an AI machine presumably intelligent and conscious to be able to make a human believe the machine is another human after a set of common sense questions. However, it is possible to build such machine able to fool people into thinking the machine is a human being. The real test is not the Turing test but what I call the free will test.

That is, does the machine have true free will, just like a human being? Such test is more complicated to perform. It requires knowing how the AI machine has been built to ascertain whether or not it does possess a soul.

How could a machine be given free will? Tying the pseudo-random number generator, so that the machine bases its thinking on parameters from the universe, is one possibility. That could be done by adjusting the parameters of the pseudo-random number generator to a quantity obtained from the physical world, such as the resistance measured from one of the machines transistors. However, that would not do the trick. This is because as was previously discussed, the universe is deterministic (when measured) because of its finiteness and discreteness. Although the machine necessary to predict the behavior of our presumably conscious AI may be required to be larger than the universe itself or a large portion of it, strictly speaking, the AI would still not have free will. It requires to be connected to a piece of God's spirit in order to have free will. Nevertheless, such can be implemented by tying the behavior of the AI machine to what is texted on the blog-sphere (on-line), for example. In this way, what people text, which is based on their own decisions, which are based on their free will, the latter presumably tied to God's spirit would be the basis for the AI's thinking (for an entertaining reference see the movie *Ex Machina*). In this way, the machine would have true free will and could pass the free will test.

## 7. Discussion and Conclusion

Hawking and Mlodinow (2010) do have a different point of view. They consider there are an infinite number of universes. Each time we make a decision, we choose to be in one particular universe. In this way, each particular and measured occurrence of any quantum of a particle or energy would exist in one such universe, leaving the infinite number of other universes for the infinite number of possibilities there can be. Although this point of view would explain the duality destiny (or determinism) versus free will, it requires a much more complicated elaboration for the nature of the universe and free will. According to the Ockham's razor principle (Ockham, 1990), the simplest explanation should be the correct one. Thus, to believe in one universe and one God is the simplest explanation.

Furthermore, the occurrence of a new universe is consummated when a measurement in a discrete and finite universe is made. Since such universe is considered to be discrete and finite (when measured), there would also be a finite occurrence of new universe "creations" or "realizations", which means there would not be an infinite but rather a finite number of multiverses.

Even more, the multiverse idea does not fully explain the cause for the big bang. Saying that there are an infinite number of universes existing on (and perhaps off) forever is not a real explanation, because even if there are an infinite number of universes, one still needs to explain how each of these universes were created.

There is a physical argument that explains the spiritual nature of free will. As was explained earlier, if we assume the universe to be discrete in nature (and also finite), it follows there is determinism governing the universe and as such free will would be an illusion. However, there is a fundamental limit to the precision with which certain pairs of physical properties of a particle, known as complementary variables, such as position  $x$  and momentum  $p$ , can be known. This is the uncertainty principle, and it states that the more precisely the position of some particle is determined, the less precisely its momentum can be known, and vice versa (Heisenberg, 1927). The formal inequality relating the standard deviation of position ( $\sigma_x$ ) and the standard deviation of momentum ( $\sigma_p$ ) is given by equation (1), derived by Earle Hesse Kennard (Kennard, 1927) later that year and by Hermann Weyl (1928), where  $\hbar$  is the reduced Planck constant or Dirac constant, given by equation (2).

$$\sigma_x \sigma_p \geq \frac{\hbar}{2} \quad (1)$$

$$\hbar = \frac{h}{2\pi} \quad (2)$$

The Planck constant ( $h$ ) equals to  $6.626070040(81) \times 10^{-34}$ Js, which equals  $4.135667662(25) \times 10^{-15}$  eVs. The numbers in parenthesis are where the estimates are not known with precision.

Although this limit is very small, it does become very important at the level of individual electrons, photons, protons, neutrons, molecules, and the like. It means that unless a given particle is fully measured ascertaining its position (thus giving it an unknown momentum) it can truly be anywhere. This is the reason why some parts of the universe with which we are not interacting with are not discrete, but rather being described by a continuous wavelength probability function. This is how the universe can have spirit in it and it is the reason why free will can coexist with destiny in our universe. Put simply, we are completely free to think anything as long as not any particular thought comes to mind, but when it does, we are no longer free to think anything else.

Also, we are free to make any decision until the moment in which we make such decision, at which point we are no longer free to decide anything else. Consequently, as long as the particles involved in our thinking process do not define themselves in a given and particular state, our mind (free will) is not discrete in nature but rather continuous. That is the nature of spirit, to be something not manifested until a thought or decision is made, that is, to be something continuous in nature until it becomes discrete.

Freeman (2011) makes the argument for the existence of God, but in a different way. The whole universe would be a simulation made by God. The fact that reality does not become manifested until it is observed coincides with what would be expected if Earth (and presumably, the universe) were a simulation. This idea places the belief in God in a whole new dimension. Nevertheless, it does confirm the existence of God as the supreme creator of everything we experience.

Besides the ultimate causation principle, there are ethical implications to the existence of God (Boocks, 2013). If we are not responsible to anyone for our actions, there is no need to be a good or ethical person. In such case, society would be in a complete disorder. People would do as they please. There would be no guiding principle, such as “love others as you love yourself” or “do unto others as you would like others do unto you”. In political terms: “individual freedom ends where the individual freedom of others begins”. Piazza and Bering (2011) demonstrate altruistic behavior and a tendency to follow societal norms in a very interesting experiment they do with children. In such experiment, groups of children are told they will receive a reward if they are successful at completing the task ahead. They do not know it, but they are being recorded. The other group is told there is the invisible “Princess Alice” in the room watching them. The experiment shows that children who believe in a supernatural being do not cheat as much as the other children do. Although this only demonstrates the usefulness of believing in God for societal cohesion and proper functioning, it clearly is an important point to be made. Thus, there are not only philosophical reasons to believe in God, but also practical reasons.

For sake of argument let us assume for a moment that God does indeed exist and is real. Also suppose heaven is real (Burpo, 2010). Where would heaven be? It follows that heaven would be beyond the end of the universe. Now, if you were God and you would have been following humankind history throughout the ages, what would you do? How would you manifest yourself to humanity? Clearly, it depends on the level of understanding, culture, history and particular technology some given people would have. Thus, the Aztecs had Quetzalcoatl, the Egyptians had Osiris, the ancient people of Stonehenge had their own Cosmo vision, the Jewish had Moses, Christians had Jesus Christ, Muslims had Muhammad, Buddhists had Buddha, and so on. Consequently, God has to choose how to manifest based on the particular conditions of the people God is to manifest to. Then, it is not possible to say who is right and who is wrong when it comes to the particular manifestations of God. Nevertheless, a trend can be seen towards going from believing in many Gods who demand sacrifices to believing in one God who is all-loving and all-caring, with infinite wisdom and unfathomable nature.

The real problem is the inevitability of the destiny – free will dichotomy. Like Neo discovers in the second movie of the Matrix trilogy: “choice, the problem is choice”. The fact that people is able to exercise their own free will, means that what God plans will not exactly match what really happens, because the nature of the universe is not ultimately deterministic. That means that God has to intervene in human affairs every now and then in order for God’s plans not to get completely out of order (known as the planning-control cycle in management). In the case of animals, they tend to follow their instincts rather than having free will, and so, they do not imply a “choice” problem.

As far as it is widely known, God intervened aiding Moses not only writing his ten commandments, but also (and spectacularly) by opening the Red Sea for the people of Israel to fled the Egyptians some four to five thousand years ago, with Jesus Christ some two thousand years ago, and with Muhammad some one thousand four hundred years ago. Maybe God intervenes even in the lives of ordinary people too.

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