European Journal of Science and Theology, *August 2018, Vol.14, No.4, 35-48*

SIMULATION THEORY
A PRELIMINARY REVIEW

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(Received 21 January 2018, revised 4 March 2018)

Abstract

The so-called 'simulation hypothesis' claims that there is the possibility that we live in a computer simulation. Nick Bostrom's 'simulation argument' presents a probabilistic analysis of such possibility. In this article, I discuss both the simulation hypothesis and Bostrom's argument (understood in combination as the simulation theory), focusing on their ontological assumptions. I argue that the simulation theory emphasizes volition and, as such, is a form of voluntarism.

Keywords: hypothesis, argument, ontology, theology, technology

Wollen ist Ursein (Willing is primordial Being).
Friedrich Wilhelm Joseph von Shelling

1. Introduction

Philosophers, computer scientists, transhumanists, singularitarians, and futurists are the authors of works on digitalism, an emerging area of research at the intersection of the formal sciences and Philosophy of religion. Digitalism is the reflection on old religious topics in purely computational terms. These authors such as Eric C. Steinhart, Hans Moravec, Frank Tipler, and Ray Kurzweil have developed a growing system of scientific and philosophical concepts based on the technologies of computation (especially artificial intelligence, robotics, digital networks, and virtual reality) and with intriguing religious implications [1-6]. One of these concepts is the 'simulation hypothesis', the possibility that we live in a simulation; another concept is related University of Oxford philosopher Nick Bostrom's simulation argument, a probabilistic analysis of the possibility that our reality is in fact a simulation [7-10].

This article engages some scientific and philosophical characters of both the simulation hypothesis and Bostrom's argument (understood in combination as the 'simulation theory'), focusing on their ontological assumptions in theological terms. I address the simulation theory and some elements of their conceptual structure, including these points: (1) the simulation is part of a finite cosmos; (2)

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the simulators are not part of the simulation; and, (3) the simulated people depend upon the simulators' will. I argue that the simulation theory is a form of voluntarism and emphasizes indeterminacy.

A note on the terms used in this article: 'multiverse' (the theory that our universe could in fact be just one of an infinite number of universes), is understood here in terms of virtual universes. Multiverse is also used synonymously with simulations. Cosmos stands for 'physical reality,' what is real and, as a matter of fact, contains the multiverse (multiverse is an artificial component of the Cosmos). Also, 'virtual,' 'artificial,' and 'synthetic' are considered synonymous, as are the terms 'real, 'physical,' and 'material.' The terms 'biological', 'organic', and 'natural' are also used as synonymously with each other. Finally, 'voluntarism' stands for 'will' as opposed to 'pure intellect.' Will is the principle of the contingent and the particular. Voluntarism, therefore, chooses that there be anything rather than nothing.

2. Virtual Worlds

Most of us are familiar with the notion of virtual universe: it is a software environment created by human beings through a computer system. Usually the virtual universe simulates the natural environment although there are degrees of approximation and room for variation. Virtual universes such as Second Life and World of Warcraft contain avatars which may or may not resemble humans, animals, and other components of the earthly ecosystem like trees and rivers. (For a scholarly study of Second Life see [11, 12]; for a scholarly analysis of World of Warcraft see [13, 14].) However, in this article 'virtual universe' is more precisely understood as "a software environment for human habitation" [15]. This definition also works for 'simulation'. A virtual universe is an approximate replication of Earth; it looks like more Google Earth than SmallWorlds. The degree of approximation depends on the level of technology: the artificial universe can host frames of human bodies and trees, images of animals, sky, and sun; alternatively, the virtual universe can be exhaustively accurate, to the point that it contains the sky, including stars and planets, as well as atmosphere, oceans, and land. Life can be simulated in its different forms: human, animal, and plants. The realistic copy of earth and biological forms of life require inclusion of the entire earthly ecosystem at the level of biomolecular detail. The dynamics of day and night, the movement of stars and planets in the sky, and gravity and earth rotation around the sun all must be included to make the simulation more accurate.

The human body can be simulated poorly, i.e., the animates of the early rudimental software (like Space Invaders and Pac-Man), or in great detail (like the higher-resolution avatars) and in richer and more detailed environments of sophisticated technology. Finally, the human body – as suggested by philosopher Steinhart – can be scanned. A body scanner produces a virtual copy of the biological body. In case of high performing scanners, Steinhart argues, "the virtual counterparts …function in exactly the same biological ways as their

organic originals". This digital replication includes the physiological side: "when an avatar replicates some organic body, then the mind of the avatar replicates the mind of that body". The digital replication brings not only organs and mind, but also diseases and tastes and inclinations of the biological human original into the virtual universe, with a level of accuracy allowed by the software. If the software is sophisticated and powerful enough, the virtual universe hosts the exact digital replication of the biological original. In this case, as Steinhart notes, human bodies are basically "uploaded" [1, p. 55-56].

The replication of Earth as a virtual universe does not exclude the possibility of improvements. The virtual law of gravity can be replicated perfectly or with variations, the virtual sky can be populated with several satellites, and the virtual ocean can contain more species of fish and mammals. The oxygen cycle can be changed and so can the dynamics of weather and seasons. Earth can contain more or less life, more or fewer trees, and maintain or change the inclination of earth on its axis. Natural resources such as gas and water can be sensibly increased, in quantity and easy access. The same can be said of human bodies: senses of taste and other faculties can be improved (like in the movie *Avatar*), the body can react better to drugs and meds, and new features and qualities can be added to the biological original. Because a synthetic universe is 'a software environment for human *habitation*' (emphasis added), some kind of positive, working relationship must operate between the synthetic world and the digital replication of the human. If synthetic humans have to inhabit a synthetic world, a virtual form of biological laws maintains the synthetic world as a fit environment for synthetic humans. More generally, an improved virtual world functions as a fit environment for all forms of improved synthetic life.

A brief note about the super-computers, machines, and softwares that are responsible for the virtual universes. The level of detail of synthetic worlds, including the synthetic human and non-human forms of life, organic and inorganic artificial reproductions of the originals, depends on the power of computing machines and softwares. Some authors imagine a computer able to simulate the entire surface of the earth at the atomic level [2, p. 122-124], an infinite computer able to simulate any finite physical system [4, p. 248-249], or super computers with the capacity to sustain accurate artificial worlds [16]. The Millennium Simulation, or Millennium Run, is a computer simulation used to study the evolution of our whole universe from the Big Bang to the far future at the level of galactic detail. It is used by scientists working in physical cosmology [17]. It is easy to imagine more precise simulations – simulations that run our whole Universe at the level of stars, molecule, atoms, and particles. Some simulationist authors claim that these super-computers, machines, and softwares used as virtual worlds can have minds and be aware and self-aware [3, p. 72-88; 6, p. 55-63, 376-382; 18].

Implicit in the concept of universes that grow more complex, it is not only the notion that they contain increasingly complex things, like living beings. The idea of progress is implicit, too: superior synthetic worlds take the place of inferior synthetic worlds. Each version of artificial universes is surpassed by a

better version of itself, and so on; to put it differently, the universes evolve from simple to complex, onward and upward. Virtual worlds can change over time *and* be multiple. A virtual world is a universe designed by engineers and programmers, and engineers and programmers are driven in their creative enterprises by competence, interests, and passions. Engineers can build synthetic entertainment or business environments, utopian or dystopian artificial universes, realistic or fantastic synthetic worlds. Programmers can design hundreds if not thousands of alternative worlds, each with a slightly different take on what 'human habitation' means, and all of them collectively improving, challenging, or replacing the basic assumptions of the real world. This multitude of worlds can run in parallel, one side-by-side with the others, or in temporal sequence, one after the other.

Virtual worlds take place in a physical space. Of course, the ontological structure of virtual universes is artificial; however, simulation runs on machines, and machines take up some physical space. The same can be said of the engineers who create and manage the machines and the simulations. If the simulator is a Great Computer, this machine maintains a certain degree of materiality. The artificial and the real cohabitate and develop a complicated and yet recognizable pattern of relations. More precisely, the relationship between virtual worlds and physical reality is based on the dependence of the former to the latter. With regard to games and entertaining synthetic worlds, for example, Castronova notes that the icons in the synthetic worlds are not real, but the human interactions are as real as any we have outside synthetic worlds [http://press.uchicago.edu/Misc/Chicago/096262in.html, accessed 23 April 2017]. The biological human in the real world compenetrates and governs the artificial human in the synthetic world.

To a first approximation, the digital representation of the biological original does not imply the death or replacement of the latter with the former. The same can be said of the rest of the synthetic world. The digital reproduction of the river in the artificial landscape does not challenge the existence and dynamics of the real river. Imagine scanning in great detail a biological body and uploading it: in uploading, the biological body is replicated digitally, but the biological body still survives. A question does arise on the destiny of one's own subjective consciousness: does personal identity split into two, or remain with the biological body, or transfers to the digital one? Philosopher Steinhart proposes an interesting analogy in *Star Trek*'s teleportation system [1, p. 223]. In teleportation, the body is obliterated, while instantaneously generating an identical duplicate of the same body elsewhere. Uploading and teleportation seem quite similar in principle; uploading, however, is vague with regard to psychological continuity. In uploading, does one's own subjective consciousness continue to exist? If the digital body is a continuation of the physical body (flesh and blood), the subjective consciousness that is embedded in the physical body travels into the digital body, with no modification or interruption of the subjective conscience. If the digital body is not a continuation of the physical body but is instead a mere replica, then there may be identity between the biological body and the digital body, but there is still no identity between the flesh and blood me and the digital

me. In this later case, the identity of the original person continues to survive alongside its digital replication, or eventually one's own subjective consciousness will be 'split', that is, one's own subjective consciousness continues, merely doubled.

The entire issue of the continuity of one's own subjective consciousness through universes remains a matter of discussion. In the teleporter case and in some body uploading thought experiments it is assumed that there is only ever one person at any time. After teleportation or body uploading, the biological original is considered dead or otherwise lost. In the famous movie *Matrix*, however, a case of mind uploading is matched with psychological continuity: continuity in the sense that one's own subjective consciousness continues without cessation as a single entity after the uploading. In the movie it is suggested that if my mind is uploaded into a virtual universe while my own mindless body is kept alive in a physical reality, my personal identity would be with my mind, not with my body, in a classic case of ontological dualism. Scientists are already operating on the notion of scanning. For example, Craig Venter and his team of scientists are working on a machine called the 'digitized life sending unit' that would robotically sequence a genome from a sample and generate a digital DNA file that is then sent to a Digital Biological Converter to recreate the original life in a new location [*Craig Venter's 'Biological Teleportation' Device*, Kurzweil Network Accelerating Intelligence News, October 22, 2013, http://www.kurzweilai.net/craig-venters-biological-teleportation-device, accessed 23 April 2017].

3. Simulation theory

Some writers have argued that our physical world is in fact an artificial world [2, 4, 19]. (The simulation hypothesis was debated at length at the American Museum of Natural History in 2017 [https://www.scientificamerican.com/article/are-we-living-in-a-computer-simulation/, accessed 23 April 2017].) The idea that our universe is a software process running on some deeper computational substrate is quite complex. First, this idea assumes that our physical universe is only finitely complex: it is finite and has a size. If our physical universe is only finitely complex, then it can easily be running as a virtual machine on some deeper computer [16, 20-23]. Second, if our physical world is in fact an artificial world, that is, if we live in a simulation, these deeper computers not only may have enough computing power to create a simulation; they also need to remain hidden to the population (simulated human participants) of the simulation. Third, these computers must be able to simulate the entire world in sufficient detail, to the point that the population of the simulation is incapable of determining that they were in a simulation. In a nutshell, the simulation hypothesis advances an ontological statement — that our reality, including human beings, is an illusion. An important point to remember is that the simulation hypothesis (i.e., that we are in a simulation) makes a distinction

between our Universe and the Universe as a whole. Our Universe may be a simulation, but simulators are outside the simulation, in the physical world.

A distinction can be also made between the simulation hypothesis and Nick Bostrom's simulation argument, a probabilistic analysis of the possibility that the simulation hypothesis is true. Although Bostrom uses some formal probability theory to make his argument, it is unnecessary to reproduce it verbatim in order to understand the general argument that he makes. A general form of his argument in prose would go as follows: based on projections of the advancement of current technology as well as on current theoretical designs of possible computing machines, it seems likely that hypothetical simulators are technologically advanced to create detailed simulations. These simulations are powerful enough to prevent populations from recognizing their simulation status. Bostrom goes to great lengths to explain how this could be done: artificial minds are fed with enough detail of the artificial world that the artificial minds are incapable of determining that they were in a simulation. Moreover, simulations can be hosted by simulated simulators. We live in a virtual machine, a machine running on a deeper machine and so on: the series of simulated simulators bottoms out at some unsimulated simulator. As Bostrom writes, "virtual machines can be stacked: it is possible to simulate one machine simulating another machine, and so on, in arbitrarily many steps of iteration" [7, p. 253]. Thus, the entire argument is based on two premises: first, artificial minds can be created that are indiscernible from a mind made of flesh. Second, these hypothetical simulators have access to enormous computing power, which allows them to run many simulations.

Bostrom frames his argument elegantly. These hypothetical simulators, members of an advanced civilization with access to enormous computing power, run many simulations *of their ancestors*. Bostrom speculates, for example, that thousands of years from now, an advanced civilization might use that computing power to run an 'ancestor simulation', focused on their evolutionary history. Bostrom figures that thousands or even millions of ancestor simulations could in the future be run by a single computer. Because the number of simulations run by a civilization capable of running them would be large, if simulations are done, then the number of people that are simulated would be much greater than the number of people who are not simulated, which would mean that the probability that we are living in a simulated universe sums to almost unity. (Unity means 1, so 'unity' means the sum of all possibilities.) So, it becomes clear that one of two things must be the case: either the probability that simulations are run is small (practically null), or it is almost certain that we ourselves are living in a simulation. In summary, the possibility of a simulation becomes the possibility of an almost infinite number of simulations; this creates the possibility that simulated human minds vastly outnumber non-simulated minds. In this case, simple statistics suggests it is much more likely that the vast majority of minds, including ours, are actually artificial ones within such simulations, rather than the original biological ones. The main part of Bostrom's argument is not simply that "we cannot be certain that we are not living in a simulation". In fact, the simulation argument bears only superficial resemblance to the one made by René

Descartes, in the seventeenth century, that there could be an undetectable 'evil demon' shaping our perceptions. But where Descartes's argument was essentially about scepticism — an epistemological argument — the simulation argument is rather an ontological argument. Bostrom clarifies on this point: the simulation argument "aims to tell us something about the world rather than to advise us that we know less about the world than we thought we did". Simple statistics suggest we have to "increase our credence in one particular disjunction [that we may live in a simulation] (and decrease our credence in its negation)" [9, p. 95-96].

In a research paper written when he was an undergraduate systems analysis student at Stanford University, Brian Eggleston identifies the treatment of probabilities as certainties, including the probability that a fraction of all people in existence is actually simulated people, as the main assumption of the simulation argument [Brian Eggleston, *Review of Bostrom's Simulation Argument,* Stanford, 2003, https://web.stanford.edu/class/symbsys205/BostromReview.html, accessed 23 April 2017]. Since there are potentially countless simulations, the vast majority of people are actually simulated people and not 'real' people. To put it differently, since there is only one 'real' universe, and countless simulated ones, the odds that we are living in one of the simulations instead of the one actual reality are overwhelming. Yet, the entire argument remains a possibility. In fact, the entire simulation argument is based on an ontological priority of the possible over the actual. It is one thing to discuss what is insofar as it is, and another to discuss what is insofar as it is possible. The simulationist thought is based on a precise cosmological assumption, that is, the Cosmos (the creation, in Christian terms), is the locus of possibilities; the Cosmos, that is, the finite, is the locus of infinite possibilities.

4. Interlude

Surprisingly, there is an initial philosophical common ground between simulationist thought and Christianity on this specific point. Since the Middle Ages, Christianity has been accepting that creation is the realm of the possible [24]. What is at stake in the doctrine of creation is what is not conditionally possible – i.e., what is absolutely possible – in the radical possibility of creation's own impossibility. The Creator is this absolute possibility, i.e., the only actuality. The Creator is responsible for the distinction between what is actual and what is possible in a world of His creation. In other words, Christianity accepts the ontological priority of the possible over the actual as far as this world is concerned. However, this world is not self-grounding. This world is itself contingent on conditions outside its control. Outside (or above) this world there is the eternal, absolute possibility of God. In Christianity a dialectic subsists between the eternal "actuality of the possible", to quote Kierkegaard, the locus of infinite possibilities, which is God, and His creation – the Cosmos, or the set of possible worlds [25].

In the simulationist thought, the simulators inherit the role of creators; they are the 'actuality of the possible', the absolute possibility that operates as metapossibility; as such, the absolute possibility governs all possibilities. Unlike God, however, the simulators are not the *eternal* absolute possibility. The dialectic so important in Christianity, between Creator and creation, between God and his cosmos, is replaced in simulationism with another form of dialectics: the dialectics between creators and creature within a finite - in space and time - Cosmos. This must be understood in two different respects. On the one hand, Cosmos (creation) is temporally finite and will come to an end as an ontological structure. It does not matter if uploading provides humans a posthuman, digital existence. Never mind if the Engineer achieves ethical and technological maturity and perfect simulation technology. It is all right if a vast number of nested simulations eventually become an infinite, digital version of the Neoplatonic 'great chain of being'. By the time the cosmos comes to an end, all ends. The afterlife in the cosmos cannot turn out to be an infinite journey into ever-higher levels of simulation. In his original paper, Bostrom envisioned the possibility that the simulation ends when the simulators click 'quit'. The end of the simulation, however, is not the end of the simulators. Yet, the simulators will end when the cosmos as ontological structure will come to an end. The multiverse, no matter how conceived, is thus utterly determined by the cosmological finitude. There is multiverse only insofar as the Cosmos is, and as long as it is. This is an implication of the naturalist, i.e., not eternal, ontological character of the simulation hypothesis.

On the other hand, the simulationist thought attempts to avoid the special implications of this monistic and closed understanding of the Cosmos. Heidegger claims that "higher than actuality stands possibility" [26]. For Heidegger, Dasein is the potentiality of being. The possibility at stake is "the most primordial and the ultimate positive ontological determination of Da-sein" [26, p. 144]. In the simulationist way of thinking, however, the possibility at stake is *logical* possibility. In other words, in the case of the simulation hypothesis, the Cosmos is the locus of infinite *logical* possibilities. The simulationist thought has no reflective resources to allow a potentiality of being. This monistic view of the ontological structure does not allow for the possibility of either another 'real' world or an eschatological world, but only for another logical way of being. Clearly the problem of infinite logical possibilities, rather than temporal or physical possibilities, is what leaves the cosmos as it is. The distinction between unsimulated and simulated universes is an abstract conceptual proposition of different aspects of a multidimensional cosmos which is singular and finite. The singularity of the Cosmos remains in place independent of any reference to virtual worlds, since these virtual worlds operate merely at the level of logical possibility.

5. A theological reading

The simulation argument has potentially two points of departure: the simulation and the simulators. Bostrom took the first road and to quote Robert Frost, that has made all the difference. So far, this article has taken the same road as well. However, it is time to examine the second road; as a matter of fact, all cosmologies start with the creator, not the creature. It is a question of investigating the relationship between the simulators and the ontological structure of multiverse, or in theological terms, the relationship between the doctrine of creation and the philosophical theory of the world. The simulation hypothesis claims that the Engineer, or some Engineers, or eventually the Great Computer (collectively named 'simulators'), are responsible for the simulation. They are, from the simulated people's viewpoint, the gods-engineers. The opening sentences of Bostrom's argument, which work as a primordial source of the argument, simply note that: "Many works of science fiction as well as some forecasts by serious technologists and futurologists predict that enormous amounts of computing power will be available in the future. Let us suppose for a moment that these predictions are correct. One thing that later generations might do with their super-powerful computers is run detailed simulations of their forebears or of people like their forebears. Because their computers would be so powerful, they could run a great many such simulations." [7]

Immediately after these words, the focus moves to the simulated people. This cosmological beginning means production of reality, although an *artificial* reality. Open to question, however, remains the issue about whether these Engineers or Great Computer create the multiverse because they can or because they want. In Bostrom's argument, the two assumptions are vaguely combined.

The issue regarding whether these Engineers or Great Computer create the multiverse because they can or because they want is theologically as well as philosophically relevant. Let us turn first to why the issue is *theologically* relevant. A special kind of relation between God and possibility is articulated in the Gospel of Luke. Jesus states that "what is impossible for human beings is possible for God" (*Quae impossibilia sunt apud homi nes, possibilia sunt apud Deum*). Yet, Jesus' statement leaves open the question whether what is possible is so because God wills it or whether God wills it because it is possible. According to Thomas Aquinas, "God is called omnipotent because he can do, all things that are possible absolutely, which is the second way of saying a thing is possible" (*Deus dicitur omnipotens, quia potest omnia possibilia absolute, quod est alter modus dicendi possibile*) [Thomas Aquinas, *Summa Theologiae*, Ia, q.25, a. 3]. In other words, God is omnipotent because it is said that 'God can do all things'. Modern metaphysics confirms this assumption. Descartes' thesis, although being summoned as a hypothesis to the introduction of hyperbolic doubt and not necessarily leading to the real existence of God, says the same: "It is a long time that I have in my spirit a certain opinion that there is a God who can all" (*…infixa quaedam est meae menti vetus opinio, Deum esse qui potest omnia*) [Rene Descartes, *Meditationes*, I**,** A.T. VII, p. 21, 1-2]. This latter assertion is an

analytical judgment: a *Deus qui non potest omnia, non est Deus*, so when it is said that God can do everything, it is said God. But Thomas clarifies that his sentence - God is omnipotent because it is said that "God can do all things" - means that "God can do all things *that are possible* (emphasis added)" [Thomas Aquinas, *Summa Theologiae*, Ia, q.25, a. 3]. In turn, this means that God is not restricted to the possibilities of the actual world; He is, at least in a certain way, restricted by His good will and His love for humanity. In Christianity, this form of divine self-restriction is illustrated in terms of 'rational nature of the Christian faith'. It means that God is bound by His word and cannot therefore act completely arbitrarily. Therefore, what is possible is not only in the possibility of God, but also such that its actuality is compatible with the good will and love of God, as He states in the Scripture. Christians cannot demonstrate their faith, but they can at least show that it is a reasonable faith. Any argument for a plurality of possible worlds which God may create must show that for God is not contradictory, i.e., He does not act arbitrarily to create a new world.

Let us philosophically address the issue of whether these Engineers or Great Computer create the multiverse because they can or because they want to. In Plato's *Euthyphro*, Socrates asks the question whether 'the holy' is holy because it is pleasing to the gods, or whether it is pleasing to the gods because it is holy. His answer, that 'the holy' is pleasing to the gods because it is holy, established the essentialist tradition in Western philosophy. The implication is that there is a realm of essence – what is right or wrong, what is good or evil -- that remains outside the realm of the gods' will. In the simulationist thought, however, nothing remains outside the realm of gods-engineers' will: the simulators are clearly free from constraints. Sure, the simulators are restricted to the possibilities of the actual cosmos – computer power, technological progress, age of the physical universe – but they seem to share the voluntarism of Duns Scoto, according to whom God (in this case, the Engineer) can act completely arbitrarily. To put it differently, the simulators are cosmological entities with no extraordinary power over the rest of the Cosmos, yet they are 'gods' as far as the multiverse is concerned. Thus, at least within the limits of the simulation, the Engineer is not bound by any *natural* law. The sceptic import of this argument is clear: in a remarkable replication of Humean thought, the simulation thinkers accept that the connection between the simulators and the simulations is not *rationally* necessary. This indeed renders impossible a 'science of simulation', which is a science of causes.

Unlikely Thomas Aquinas's rational limitation to God's will, Bostrom imposes no constraint to simulators. 'This fact will reveal a distinct doctrine of simulators' attributes: simulators are not bound by natural laws *or by morality*. Choice is a matter of will, and therefore any multiverse is dependent upon simulators' will. This captures the utter extrinsic morality, if any, of the simulation. And so simulationist thinkers, having reversed the essentialist tradition and established the order by which no natural laws or morality restrains Engineers or the Great Computer's will, must conclude that the simulation is right and good because Engineers or the Great Computer will it. This train of reasoning

on simulators' will is potentially explosive for the simulationist *ontology* because will is not only the principle of the particular, but also of the contingent. The fact and structure of multiverse is not self-explicatory or self-grounding: multiverse is not necessary, it is contingent. The simulation is rooted in the simulators' will; in Scotisque fashion, the simulation receives its being as understandable in the simulators' will. Everything they do could well be different than it actually is. Simulators' will choose for being what could also not be; their will chooses this simulation rather than another, and it chooses, in the first place, that there is to be a simulation at all. No answer can be offered to why the simulators created *this* multiverse rather than any other multiverse. This multiverse actually represents a choice among all the possible alternatives, although from a finite range of possibilities.

Also of importance is the connection established here between will and power. In the simulation hypothesis, the number of Engineers of Great Computers matter. Given the many simulators, and their absolute power, and the possibility of disagreement among them, the situation that what is right for some simulators can be wrong for others derives a simulation contingent to the accidents of Engineers' will. Some form of monotheism, such as a one Great Computer, can somewhat alter the condition of the question. In this case, however, the entire multiverse is under the absolute power of an indecipherable creator. This will, the simulators' will, is objectively risky for humans because it is autonomous from any natural or moral law. In Christianity, God's will is self-constrained and open to human inquiry through the combined effort of faith and reason: *fides quaerit, intellectus inventi*. The immortal destiny of humanity is still in safe hands which humanity can trust. The opposite is true in the simulation argument: the Engineer or the Great Computer's will are the sole available ground, and they are inscrutable. What the Engineer or the Great Computer will is has not been revealed. The simulators inherit the role of creator and of guardian of humanity, but no light is offered to humanity to help decipher their choices. This is a profoundly paradoxical outcome of what has begun as an innovative form of immortality. Humanity is left to depend upon the arbitrary will of unknown gods-engineers. Their will is free in radical indeterminacy. Is this the soteriological alternative to Christianity, an alternative rooted in the arbitrary indeterminacy of simulators' will that simulationism offers to humankind?

It is beyond the scope of this article to trace all the implications of this voluntaristic tendency of the simulation argument. But it is worth pointing out that the primacy of the will on the simulators' plane means that will exercises domination over the intellect not only of the simulators themselves but also of the simulated ones. Will determines for intellect its task, causes it to act, employs it for its end. This is evident in the simulation argument with regards to the so-called substrate-independence. The idea is that the simulators are able to simulate the entire world in sufficient detail, and feed this world into the artificial minds they have created in the form of sensory inputs. In this case, the artificial minds would be incapable of determining that they are in a simulation, unless they are given explicit knowledge of it by the creators of the simulation. This hypothesis

has been framed in terms of technological capacity, when it instead is a matter of simulators' will. Simulationist thinkers, having reversed the essentialist tradition and established the order by which the human mind is subordinated to Engineers or to the Great Computer's will, conclude that the simulators' will is the active element and the human's mind is the passive one. The entire simulation is a responsive organization, i.e., an organization whose character and existence depend on elements of the Engineers, the Great Computer, and the rest of the ontological structure. This condition of contingency brings a negative rather than a positive feature to the simulation in the absence of that rational necessity that is implied in the Christian doctrine of creation. It appears that multiverse implies a certain devaluation of the human in both his/her biological and artificial forms: the biological form needs an artificial form for permanence; the artificial form is contingent upon the Engineer's will. The epigraph at the beginning of this article summarizes what the simulation is about: Willing is the Being of both nature and reason, or, in Friedrich Shelling's terms, "Willing is primordial Being" [27].

The simulation argument is appealing in part because it gives naturalist thinkers a way to talk about the metaphysical. The idea that people are living in an artificial part of reality, for example, with the 'real' part permanently beyond their reach, sounds familiar. One can ask the same questions about the simulators, the Engineers, and the Great Computer that he asks about God, and the same questions about the genesis of the cosmos, i.e., the non-simulated universe populated by the Engineers: where did the original, non-simulated world come from?

6. Conclusions

In the simulation theory, uploaded humans with software bodies inhabit virtual worlds designed by natural gods, or engineers. Other questions remain unanswered: for example, when placed in the setting of the larger history of Philosophy or Philosophy of religions, in which Western philosophical tradition can the simulationist thought be placed? Is voluntarism, as suggested in this article, a conclusive answer to this question? Indeed, the relationship between the simulation hypothesis and Christianity requires more work. For example, in what sense, if any, can simulationist and Christian elements be separated in the context of Western tradition? As a matter of fact, Steinhart recognizes that "digital theology has emerged within a Christian cultural context" and "it should not be surprising that it inherits much content from the Christian tradition" [28]. One final question is this: in what sense can the simulationist thought be considered as falling inside the *theological* tradition?

Christian theology cannot avoid a fateful engagement with simulationism and, more generally, digitalism. Since technology is an extremely powerful cultural force in the West, it is imperative for Christian theology to engage carefully with simulationist thought. A serious study of the simulation theory, Bostrom's simulation argument, and digitalism can help ensure that engagement and will prove rewarding to both communities**.** It is my hope that this preliminary

review of the subject will stimulate others toward a more detailed and stringent theological study of the entire subject.

Acknowledgement

A previous version of this article was presented as a paper at the European Academy of Religion Conference 2017. Thanks to the chair, panelists, and members of the audience for their observations and comments.

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