Research Article

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Randomness in Nature and Divine Providence: An Open Theological Perspective

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Abstract: From a traditional theological perspective, the ontological randomness and apparent lack of purpose in the evolutionary process appear to conflict with God's providence, sovereignty, and wisdom. Many physicists confirm that there are forms of ontological (metaphysical) randomness in the world that are intrinsic and real, and cannot be reduced to a mere lack of knowledge. We then examine the traditional notions of divine sovereignty and providence, proposing how an open theology perspective can reconcile ontological randomness with divine providence and wisdom.

Keywords: random mutations, evolution, design, divine providence, open theology

1 Introduction

That mind and life in all its variety have come to be in [an] unguided fashion [as described by Daniel Dennett] is of course inconsistent with Christian belief, as well as other kinds of theistic belief. For, according to Christians and other theists, God has designed and created the world, intended that it takes a certain form, and then caused it to take that form.[1]

The conflict between evolutionary theory and religious doctrines has been a prominent topic of discussion in the broader debate surrounding the relationship between science and religion.[2] From an exegetical standpoint, several verses and narratives in sacred texts appear to be in clear conflict with the account provided by evolutionary theory regarding the existence of human beings in the natural world. For instance, the story of Adam and Eve as the supposed original parents of all humans is challenging to reconcile with evidence of Homo sapiens existing for several hundred thousand years.[3] Additionally, verses that refer to the direct

1 Plantinga, *Where the Conflict Really Lies?*, 35.

2 For recent debates in this regard, refer to the book edited by Clark and Koperski, *Abrahamic Reflections On Randomness and Providence*.

3 It has not yet been scientifically confirmed that all of the human race currently existing on Earth shares a common ancestor from around 10,000 years ago. After analyzing recent empirical data regarding the approximate time of the common ancestor between Homo sapiens and Neanderthals, Bermudez de Castro and Martinón-Torres conclude that "[t]he prevailing hypothesis among experts suggests that both the origin of our species and that of the LCA that gave rise to the genealogy of *H. sapiens* and *H. neanderthalensis* is to be found in the African continent. Indeed, the oldest populations with anatomically modern morphology are found in Africa and can be dated to at least about 230 ka, if we consider Omo Kibish 1 as the first evidence of *H. sapiens* in Africa, or about 300 ka if we include the Jebel Irhoud specimens within our species." Bermudez De Castro and Martinón-Torres, "The Origin of the Homo Sapiens Lineage," 9.

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creation of species by God support Creationism, further contributing to some sources of conflict between evolution and religion. While many of these conflicts may be seen as superficial, there remains a significant source of tension between science and religion. The source of this deep and serious conflict lies in the fact that, contrary to the religious viewpoint, the typical and mainstream reading of the evolutionary narrative lacks any teleology or purposefulness in the world, thereby denying any preplanned desired outcome of the evolutionary process. It is famously asserted that if the "tape of evolution" were to replay, there is no guarantee that human beings or any other self-conscious beings would result from the process.[4] However, from a theological perspective, the randomness and lack of purpose in the evolutionary process appear to conflict with God's power, sovereignty, and wisdom.[5]

To introduce the debate, it is crucial to distinguish between two types of randomness relevant to our discussion: epistemic randomness and ontological (metaphysical) randomness. Epistemic randomness refers to processes, events, or states that, due to our limited knowledge and the complexity of calculations, are beyond our ability to understand their patterns or exact causes. With sufficient knowledge, however, predicting such events may be possible in principle. In contrast, ontological randomness describes events or processes in the physical world that cannot, in principle, be reduced to a pattern or predicted due to ontological indeterminism. This type of ontological randomness appears to be in direct conflict with the purposefulness of the world and the notion of predetermined events from eternity.[6] Despite the apparent conflict between ontological randomness and the purposefulness of the world, we will argue in this article that divine providence is not only compatible with this type of randomness, but also essential for fulfilling God's special purposes for the world. As George Ellis says, "Randomness provides a basis for selection, enabling adaptation. Thus, randomness is indeed key to the existence of complex life forms and is important in molecular and developmental processes."[7]

One proposal that challenges the non-purposefulness character of evolutionary theory is the doctrine of Intelligent Design (ID), according to which the process of evolution as a fact, has been intentionally designed and guided toward the creation of diverse species and humankind. ID receives support not only from an exegetical perspective but also from a scientific standpoint.[8] Some proponents of ID challenge the non-purposefulness of evolutionary theory based on its inability to explain the existence of *irreducible complexities* present in various biological systems.[9] They claim that teleology offers a superior explanation for these complexities compared to a non-teleological evolutionary framework. Accordingly, evolutionary theory requires some modification: specifically, that a personal agent, possibly God, has guided, directed, orchestrated, or shaped the entire process of evolution. They argue that there are instances where the divine influences and interacts with the natural world to fulfill its purposes according to an eternal design plan, all while operating through the regular laws of nature.[10]

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4 For a criticism, refer to Orgogozo, "Replaying the Tape of Life in The Twenty-First Century."

5 Evolutionary biology and quantum mechanics are two main sources to look for ontological randomness in science. Koperski, "The Many Faces of Randomness."

6 Bradley, "Are Randomness and Divine Providence Inconsistent?."

7 Ellis, "Necessity, Purpose and Chance," 46. Ellis enumerates various conceptions of randomness in greater detail, and we shall mention them in due course.

8 While some proponents of ID view it as a philosophical rather than a scientific stance, more recent advocates contend that it is purely scientific. For further details, refer to Dembski, as a prominent advocate of intelligent design and has written extensively on the subject, like *The Design Inference*: *Eliminating Chance through Small Probabilities*. Also, Meyer: A philosopher of science and author of *Signature in the Cell* and *Darwin's Doubt*. Meyer argues that the complexity of biological information is best explained by an intelligent cause rather than undirected processes.

9 For example, Behe, *Darwin's Black Box*; and Plantinga, *Where the Conflict Really Lies?*

10 There is an important debate regarding theories of divine action in the natural world. Some accept that God occasionally intervenes, thereby miraculously breaking the laws of nature. Others believe that divine intervention should be viewed as an amendment to natural laws, suggesting that we should rewrite these laws to incorporate God's permission. A third perspective advocates for a non-interventionist account of divine action, positing that God acts through the indeterminacies that underlie the quantum level of the material world. One may ask how could God act without intervening. Non-interventionist replies that God acts in the world in an objective manner. God "acts with nature to bring about event in the word" and not just in a subjective manner that we human being suppose the action as miraculous. Russell's acronym for this concept is NIODA: noninterventionist objective

Nevertheless, Pro-ID philosophers claim that evolution is not an unguided, free, and purposeless process; rather, it is a guided, controlled, and purposeful teleological system. The consequence of this belief is that the randomness in evolution is epistemological rather than ontological, so that what appears to us to be indeterminate, unpredictable, or purposeless does not denote the reality of the world itself, but is merely our form of understanding the world because of lack of full epistemic access to the complex states of the world. This idea leads some ID advocates to accept the determinism in the world. For example, Sweetman contends that since the natural world is causally determined by the laws of nature, there cannot be any true metaphysical or real random events.[11] All events are predetermined and conform to the laws of nature. Due to the complexities of the world and our inability to know the initial states of all previous events leading to the current situation, we mistakenly label mutations as random, when in fact, there could be no true (ontological) randomness in the natural world.[12]

Neo-Darwinists challenge all of these attempts done by advocates of ID and rather argue that first, the conception of randomness in the theory of evolution determines the non-purposefulness of the process of evolution. Dawkins famously claims that "Natural selection, the blind, unconscious automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all."[13] They also argue that the guided evolutionary process is based on an unrequired and misleading assumption that there are some sort of non-physical causes active in the natural world.[14]

But can we identify a form of design beneath this non-purposeful and random process? In this article, we propose a third viewpoint. We acknowledge the randomness inherent in the mechanisms of evolution while simultaneously seeking to uncover a form of teleology within this overall randomness, without invoking theories of special divine action.[15] From an open-theistic perspective, we aim to reconcile the doctrines of divine sovereignty and wisdom with an interpretation of evolution in which random mutations introduce genetic variations that serve as the basis for natural selection. We will demonstrate that there is no significant conflict between the neo-Darwinian account of evolution and an open conception of God, provided that neo-Darwinists do not insist on reading the nonexistence of God into evolutionary theory.

2 Ontological Randomness

One of the fundamental principles of the theory of evolution is the assertion that a naturalistic mechanism drives the process of descent with modification from a common ancestor – specifically, the mechanism of natural selection acting on random genetic mutations. The random occurrence of these mutations, upon which natural selection operates, is a critical component of evolutionary theory that has shaped the worldview of

divine action. For an exploration of these distinctions and debates, refer to Russell, "What We've Learned from Quantum Mechanics about Noninterventionist Objective Divine Action in Nature – and Its Remaining Challenges." Also see Murphy and Ellis, *On the Moral Nature of the Universe*. For further readings in the landscape of special divine action, see the volume edited by Russell et al., *Scientific Perspectives on Divine Action*.

11 Sweetman, *Evolution, Chance and God*. Perhaps due to their views on divine providence and predestination, many traditional theologians support determinism. It seems that, for these theologians, when faced with the trade-off between human free will and divine control and sovereignty, the latter is often regarded as more essential. However, if we understand divine love as God's most fundamental attribute – one through which we interpret other divine attributes – and acknowledge that a loving relationship requires the freedom of choice for both parties, then it becomes challenging to uphold the traditional theological perspective. Basinger and Basinger, *Predestination and Free Will*.

12 Of course, this belief is shared also by some of the critics of ID, like Denis Alexander. Alexander, "Is Evolution a Chance Process?."

13 Dawkins, *Blind Watchmaker*, 5.

14 Dennett mentioned this in his famous debate with Plantinga. Dennett and Plantinga, *Science and Religion*.

15 Our idea here is highly indebted to Ellis, "Necessity, Purpose and Chance."

modern biology over the past two centuries. However, what do we mean by randomness? In what sense can genetic mutations be considered random?

Defining "randomness" is not straightforward; any attempt at definition often struggles to adequately encompass desired examples while excluding those that are not relevant.[16] However, the three most prominent definitions of "randomness" are given by von Mises,[17] Martin-Löf,[18] both based on the statistical non-identifiability of patterns, and Kolmogorov and Uspensky,[19] based on the incompressibility of random sequences. These three definitions can be shown to be equivalent. Roughly speaking, random sequences do not possess identifiable patterns suitable for predicting the consequence of the next trials to a given spot in the sequence. This lack of exploitable patterns also makes epitomizing random sequences impossible. As Eagle points out, a sequence **S** is random if the length of the shortest program **P** of some Turing machine **T** which produces **S** as an output is equal to or greater than the **S**'s length.[20] If so, there is no algorithmic way to shorten, or summarize, a random sequence. This latter understanding of randomness relies on the notion of "Turing machine" which in turn emphasizes the computational character of the notion of "randomness."

A more tangible approach to understanding the notion of "randomness," drawing more from physical sciences than from concepts used in computer science, is to define "randomness" in terms of chance, whereby "chance" we mean ontological probabilities, or more precisely, "whatever objective property in the world the formal concept [of objective probability] picks out."[21] There are two main interpretations of ontological probability: the frequency interpretation and the propensity interpretation. According to the frequency interpretation, associated with von Mises and Reichenbach, chance is nothing but the stable[22] frequency in sequences of outcomes in the long run.[23] In contrast, propensity interpretation, closely linked to Popper, views chance as a tendency within specific types of systems – namely, systems that can produce repeatable outcomes – to generate stable frequencies over time.[24]

Consider the outcomes of repeatedly tossing a fair coin. If the tossing setup is genuinely chancy, the probability of the coin landing on heads can be understood in two ways:

- According to the frequency interpretation, it is seen as the property of the coin or the tossing setup that corresponds to a measured probability of 1/2.
- According to the propensity interpretation, it is viewed as the dispositional property of the coin or the tossing setup, reflecting its tendency to produce heads with a frequency of 1/2 over many tosses.

Another philosophical analysis is to consider chance as a fundamental characteristic of certain objects or systems that cannot be reduced to anything else, neither to frequency nor to tendency.[25] Whichever one of these philosophical analyses we accept, the existence of chance in the world requires the existence of some kind of indeterminacy, arbitrariness, or degrees of freedom inherent in certain kinds of objects or systems.

The words chance and randomness usually get used synonymously in every day as well as scientific literature – the fact Eagle refers to as the "Commonplace Thesis."[26] However, there are differences. Mainly, "Chance" is used to describe the process or arrangement that leads to the production of random outcomes, while "random" is used to describe the product itself. The Commonplace approach, which equates chance with randomness, ignores the distinction between process and product. Eagle points out that "the easy slide

16 For a review on such problems, refer to Zuchowski, *From Randomness and Entropy to the Arrow of Time*, chap. 2.
17 von Mises, *Probability, Statistics, and Truth*.
18 Downey and Hirschfeldt, "Martin-Löf Randomness."
19 Kolmogorov and Uspensky, "Algorithms and Randomness."
20 Eagle, "Randomness Is Unpredictability."
21 Suárez, "Chance," 645.
22 By "stability" we mean that as the number of observations or experiments increases, fluctuations in the value of frequency become smaller and smaller.
23 Reichenbach, *The Theory of Probability*.
24 For a review of ontological interpretations of probability and their criticism, refer to Gillies, *Philosophical Theories of Probability*.
25 Sober, "Evolutionary Theory and the Reality of Macro Probabilities."
26 Eagle, "Chance versus Randomness."

between chance and randomness … is quite misleading".[27] But, the distinction between process and product fortunately plays no substantial role for our purposes; so, we can use "chance" and "randomness" interchangeably.[28]

In the context of evolutionary theory, probabilities can be considered objective.[29] So, chance plays an important role in the biological world, especially in genetic mutations. Mutations are random, or occur by chance, in the sense that there is no (statistical) correlation between the usefulness of a possible mutation and the likelihood of its occurrence; mutations do not occur because they benefit organisms. Ernest Mayr, says, "[w]hen it is said that mutation or variation is random, the statement simply means that there is no correlation between the production of new genotypes and the adaptational needs of an organism in a given environment."[30] Elliott Sober, also says, "There is no physical mechanism (either inside organisms or outside of them) that detects which mutations would be beneficial and causes those mutations to occur."[31]

Evolutionists often believe, or are highly inclined to believe, that this statement conveys the message that mutations are "unguided" and "non-purposeful." While one can dispute this account,[32] we grant this comprehension, at least, for the sake of the argument, to attribute to the evolutionists as strong a position as possible.

It is noteworthy that despite this mainstream conception of randomness, recent studies show that the random mutations are not fully undirected. They can be biased according to the environmental changes and perhaps accelerated or decreased in some biological and ecological contexts. Recent Nature authors claim "that epigenome-associated mutation bias reduces the occurrence of deleterious mutations in *Arabidopsis*, challenging the prevailing paradigm that mutation is a directionless force in evolution."[33] Nonetheless, this hardly alters the fact that, in terms of the experimental adequacy of evolutionary theory, mutations should be regarded as random. These studies are important because they demonstrate that the concept of "random mutations" is an idealization, similar to other constructs in scientific practice, such as the frictionless plane, the perfect vacuum, the point particle, and the ideal gas. In reality, the situation is more nuanced and complex. However, deviations from true randomness do not diminish the essential role that random mutations play in evolutionary theory.

Grey Monroe *et al.* explain the mainstream paradigm as follows:

> The random occurrence of mutations with respect to their consequences is an axiom upon which much of biology and evolutionary theory rests. This simple proposition has had profound effects on models of evolution developed since the modern synthesis, shaping how biologists have thought about and studied genetic diversity over the past century. From this view, for example, the common observation that genetic variants are found less often in functionally constrained regions of the genome is believed to be due solely to selection after random mutation. This paradigm has been defended with both theoretical and practical arguments: that selection on gene-level mutation rates cannot overcome genetic drift; that previous evidence of non-random mutational patterns relied on analyses in natural populations that were confounded by the effects of natural selection; and that past proposals of adaptive mutation bias have not been framed in the context of potential mechanisms that could underpin such non-random mutations.[34]

Nevertheless, they demonstrate that there are some regions "that nucleotide composition, epigenomic features and bias in DNA repair can influence the likelihood that mutations occur at different places across the genome."[35] However, these studies though important only show that adaptive and biased mutations could have been found only in constrained and distinct biological states. In other words, these limited areas of adaptive evolution do not undermine the thorough fact of natural selection being able to work on non-biased

27 Ibid.

28 For more discussion about different meanings of "chance" and "randomness," refer to Griffith and Naraghi, "Randomness and Providence." Also, refer to Guessoum, "Randomness in the Cosmos;" and Koperski, "The Many Faces of Randomness."

29 Sober, "Evolutionary Theory and the Reality of Macro Probabilities." See also Mills and John, "The Propensity Interpretation of Fitness."

30 Mayr, *Towards a new Philosophy of Biology*, 98.

31 Sober, "Evolution without Naturalism," 193.

32 For example, van Woudenberg, "Chance, Design, Defeat."

33 Monroe et al., "Mutation Bias Reflects Natural Selection in Arabidopsis Thaliana," 101.

34 Ibid., 101.

35 Ibid.

random mutations.[36] So even if the fact that mutations are not completely random means that the world is not entirely non-purposeful, still there would be enough non-purposeful mutations in the world that challenge the sovereignty of God.[37]

According to advocates of Intelligent Design (ID), the conception of randomness in the theory of evolution is primarily epistemic. By epistemic chance, we refer to our lack of knowledge about the causal systems that produce observable phenomena. This lack of knowledge encompasses three closely related dimensions.

First, the immense complexity of the parameters within a system makes it difficult to fully understand the relationship between causes and their effects, or the inputs and outputs of the system. For instance, predicting exactly how climate change will impact specific regions of the Earth, or when and with what magnitude an earthquake will occur, remains epistemically inaccessible. Social systems also fall into this category of complexity.

Second, we often lack complete knowledge about the sources and causes of a system's inputs. For example, while we know that a coin toss results in either heads or tails, we cannot determine why a specific toss results in one outcome or the other. The myriad physical causes influencing the coin's motion as it spins make precise prediction impossible.

Third, we may be uncertain about the effects and consequences of a system. A classic illustration of this is the butterfly effect, which suggests that a butterfly flapping its wings in Brazil could theoretically trigger a tornado in Texas. Thus, when we refer to the epistemic randomness of mutations in evolutionary systems, we mean our uncertainty regarding either the causes of these mutations or their effects – specifically, whether they will be detrimental or beneficial for the functional system as a whole.

What is common among these three conceptions of epistemic chance is the potential for attaining truth or a more accurate understanding through scientific methodology. Since God is omniscient and possesses complete knowledge of all truths, there is no possibility of uncertainty or inaccuracy in divine knowledge. Therefore, epistemic randomness cannot challenge the idea of God as the designer and controller of the world.

In contrast, the real challenge for the relationship between God and the world lies in the existence of ontological or metaphysical randomness, which suggests that chance is an inherent aspect of the world's structure and is inseparable from its dynamic nature. Ontological randomness cannot simply be viewed as a reflection of our inability to gain a certain understanding or a cognitive deficiency in comprehending the physical world.[38] In other words, ontological randomness suggests a type of randomness inherent in the fundamental indeterminacy of the natural world. When every explanation of cosmic, macroscopic, and even biological phenomena relies on the principles of particle physics – which itself is characterized by intrinsic indeterminacy and stochastic events – it appears that we are confronted with ontological randomness.

One can rationally ask whether there are metaphysical chances in the world. After all, defining a concept does not guarantee its existence. In the same way, defining chance as the referent of an ontologically interpreted probability does not guarantee its existence in the world. There should satisfactorily be evidence and an argument supporting the existence of chance. Are we provided with these? Van Inwagen considers human free will, natural indeterminism, and the initial state of things as the sources of chance in the world.[39] Bradley cites many examples of chance in the world, including the applicability of pseudorandom numbers, random sampling, radioactive decay, Poisson processes, diffusion, chaos, and quantum uncertainty. On these, and

36 Lynch et al. point out that "confronted with difficulties in reconciling observations with adaptive mutation-rate hypotheses, at both the whole-genome and single-gene levels, we argue that phylogenetic variation in mutation rates reflects underlying differences in the efficiency of selection to improve replication fidelity, which in turn results from variation in the power of random genetic drift. There is still considerable room for work on the cellular determinants of replication fidelity and how these vary across phylogenetic lineages, but achieving evolutionary understanding in this area is unlikely to be served by uncritical adherence to the idea that every aspect of genome stability is refined by adaptive processes." Lynch et al., "Genetic Drift, Selection and the Evolution of the Mutation Rate," 705.

37 Ellis, "Necessity, Purpose and Chance."

38 Malik and Kulieva, "Does Belief in Human Evolution Entail *Kufr* (Disbelief)? Evaluating The Concerns of a Muslim Theologian," 650.

39 van Inwagen, "The Place of Chance in a World Sustained by God."

other, examples, two important points should be noted: First, it is often thought that quantum probabilities are objective and, so, there are chances in the quantum world. Second, there also are chances in the deterministic, non-quantum world.[40] It is generally believed that chance is a kind of indeterminism and that chance cannot be found in a deterministic world. However, this is not the case. Emery speaks of *deterministic chance*.[41] She argues as follows:

- Non-trivial probabilities play role **R** in theory **T**.
- In order to play role **R**, the probabilities in question must be objective; so,
- There are chances in the world.

Where **R** is the role that probabilities play in prediction, explanation, confirmation of the theory, determining the truth (or assertability) conditions of counterfactuals, or/and underwriting laws. The more roles mentioned, the more convincing the argument is. (note that **T** can be deterministic or indeterministic.)

Also, Barrow points out that quantum indeterminacies in the very early universe could give rise to an observable property of the distribution of matter today.

> If the symmetry breaking that leads to the observed outcome is of quantum origin, then the outcome will be intrinsically random and unpredictable, like the decay of a single radioactive nucleus. One of the most striking things about cosmology is that such microscopic random symmetry breakings in the very early stages of the universe's history can determine its large-scale properties today.[42]

So, if one believes that those large-scale properties of the universe are real, using the above argument schema with the auxiliary premise that "only real causes have real effects," she should believe that chance is real.

Or, Bartholomew gives examples of orderly structures emerging from chancy arrangements as well as chance emerging from order. He concludes that chance and order sometimes are inseparable.[43] If so, then chance is as real as order within the world. Again, one who believes that there is order in the world, using the above argument schema, should believe that there are chances in the world too.[44]

The advocates of ID believe that since no one in the scientific community denies that every event in the natural world requires a natural cause so there is no option for ontological randomness which refers to an event without any physical cause. However, this is a common misunderstanding that deserves special attention. Being by chance may be considered as having no cause. According to this meaning of "chance," a chance event has no cause. Traces of this view can be found in Darwin's *On the Origin of Species*, for example, where he writes "I have hitherto sometimes spoken as if the variations … had been due to chance. This, of course, is a wholly incorrect expression, but it serves to acknowledge plainly our ignorance of the cause of each particular variation."[45] However, this meaning has not been so popular among philosophers and, also, scientists and rarely can be found in the literature.

Several evolutionists and philosophers take "chance" as coincidence, i.e., the intersection of two causal chains of events that occur independently of each other.[46] Dowe explains this well with an example:

> John and Mary bump into each other in a bar by chance. There may well be a completely deterministic chain of events that led to John's going to that bar, and a completely deterministic chain of events that led to Mary's going to that bar. The co-occurrence is still by chance in the sense that there is no causal explanation for why they are both there together: John is not there because Mary is there, Mary is not there because John is there, and there's no common cause for them both being there. Two co-occurring events constitute a coincidence, let's say, if the chain of causes leading to each are independent.[47]

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40 Bradley, "Are Randomness in Nature and Divine Providence Inconsistent?"
41 Emery, "Chance and Determinism."
42 Barrow, "Chance, Uncertainty, and Unknowability in the Universe and Beyond," 43.
43 Bartholomew, *God, Chance, and Purpose*.
44 Also, refer to Koperski, "The Many Faces of Randomness;" Guessoum, "Randomness in the Cosmos."
45 Darwin, *On the Origin of Species*, 131. Quoted from Ramsey and Pence, "Introduction."
46 Barr, "The Concept of Randomness in Science and Divine Providence."
47 Dowe, "Darwin, God, and Chance," 58.

The term "coincidence" refers to a scenario in which causation occurs but lacks a comprehensive explanation. A "complete explanation" goes beyond merely detailing causes, effects, and their sequences; it also accounts for the inherent indeterminacies, arbitrariness, and degrees of freedom in nature. To gain a deeper understanding of phenomena, one must consider the complexity of the situation and the various factors involved.

Coincidences can be unguided or non-purposeful; however, unguided does not imply uncaused. Unguided coincidences are akin to what Aristotle describes as "accidents": "If someone digging a hole for a plant discovers treasure, the finding of treasure is an accident for the digger; the two events do not follow necessarily from one another, nor is it typical for a planter to find treasure."[48] Accidents are undirected, unbiased, undesigned, unplanned, non-purposeful, and non-intentional. The mainstream evolutionary theorists, though believe that mutations have causes, consider them as accidents, without any rhyme.[49]

Plantinga claims that "God could have caused the right mutations to arise at the right time; he could have preserved populations from perils of various sorts, and so on; and in this way, he could have seen to it that there come to be creatures of the kind he intends."[50] However, this conception of randomness that may be used by the proponents of ID to develop the idea of guided evolution is widely denied by evolutionists. Dennett calls it "the truth that misses its mark." He thinks that this makes evolution an unscientific theory. He says, "when a physicist proves that a stone dropped from a height will fall with acceleration 9.8 meters/s, does this not tacitly assume that no person (e.g., God) will intervene to adjust the rate? Physicist don't routinely add an escape clause 'unless God chooses to intervene' because it is tacitly assumed that no such possibilities are taken seriously."[51] While we do not agree with Dennett's assertion that scientific practice is inherently atheistic, his critique of Plantinga can be reframed as a reference to the "God of the gaps" fallacy. Plantinga's appeal to God's direct guidance of the evolutionary process to explain the existence of irreducible complexities mirrors the tendency to fill gaps in our knowledge with divine intervention, especially since he interprets probabilities epistemologically rather than ontologically. This approach is problematic because if our cognitive abilities expand or if scientific and technological advancements allow us to understand the sources of mutations, we may ultimately find ourselves without a reason to invoke the God hypothesis.

Ontological randomness, in contrast, refers to events that cannot be predetermined in principle. Contrary to the views of proponents of ID, evolutionists argue that randomness is inherently non-purposeful. It is not merely a matter of attributing randomness to mutations due to our limited epistemic capacity to analyze the complex systems involved in the causal processes – similar to our inability to fully understand the causes of earthquakes or the movement of airborne particles. Rather, the fundamental indeterminacy of these processes means that no one can predict when they occur, much like our lack of access to the origins of nuclear emissions from Uranium-238.

The divergence between ID advocates and evolutionists lies in their differing interpretations of the concept of randomness. While ID proponents reject the notion of metaphysical randomness, evolutionists typically assert that the world contains genuine metaphysical random processes, the consequences of which are, in principle, non-determinable. Thus, while some mutations may exhibit biases, they are predominantly non-purposeful.

3 Reconciliation between Ontological Randomness and Divine Providence

Now the question is how this evolutionist claim that random mutations upon which the mechanism of natural selection functions is metaphysical rather than epistemological can be reconciled with a religious view that sees teleology in the world? Is this reconciliation possible anyway?

48 Aristotle, *Metaphysics*, Book 5, Part 6.

49 Also, see Koperski, "The Many Faces of Randomness."

50 Plantinga, *Where the Conflict Really Lies?* 11.

51 Dennett and Plantinga, *Science and Religion,* 48.

On the one hand, to support the claim of religions that the divine could have orchestrated the world to bring about the intended creatures, it is not necessary to adopt the methodology of Intelligent Design, which can lead to the "God of the gaps" problem. While we accept ID's central assertion that the world is designed and purposeful, we reject its approach to demonstrating this claim. Our preferred reconciliation does not view the relationship between God and the natural world as a dualistic one. Any dualistic perspective ultimately leads to the problem of interaction and, consequently, the "God of the gaps" fallacy. Instead, we embrace the open theistic view, which holds that the world exists within God. Although the divine transcends the natural world, it is also immanent within it; thus, the evolutionary process occurring in the world unfolds as a manifestation of God's self-expression and self-consciousness.

The world is progressing toward God's self-consciousness through the evolutionary process, which has culminated in human beings who exist within the natural world, are part of nature, and possess awareness of both their surroundings and of God Himself. In this perspective, the process of evolution becomes a revelation of God's nature. God reveals Himself in the universe by becoming increasingly self-conscious, and this self-consciousness fosters freedom; true freedom arises from autonomy rather than heteronomy, and autonomy is rooted in self-awareness. The divine is indeed the sovereign designer and intelligent architect of the world, but does not merely create from a position of supreme distance. As Carl Schmitt notes, "The sovereign, who in the deistic view of the world, even if conceived as residing outside the world, had remained the engineer of the great machine, has been radically pushed aside. The machine now runs by itself."[52]

According to our panentheistic and open-theistic view, God is the designer of the world, which serves as a revelation of the divine mind and nature. God does not reside outside the world; rather, the divine is immanent within it and transcendent of it. The world does not operate on autopilot. The randomness we observe in the world signifies divine sovereignty and omnipotence, granting the world the necessary freedom to reveal its nature, which simultaneously unveils the nature of God.

Advocates of ID mistakenly believe that ontological randomness conflicts with design. Their error lies in perceiving a fundamental conflict between sovereignty and freedom, whereas true power corresponds not with control, but with the granting of freedom. The more powerful agent is the one who grants greater freedom to others, and the omnipotent being is the one who bestows maximum freedom – not only to humans but to the entire universe – allowing it to reveal its nature, which reflects the divine beauty. Thus, beauty emerges from natural processes that manifest the essence of God's Goodness and Beauty.

The source of our view is based on contemporary thoughts in the philosophy of religion under the title of open theism.[53] Open theism asserts that God is open to the future actions of free creatures. This fundamental claim stems from a more critical doctrine that prioritizes God's love above other divine attributes. It is essential for any theological system to provide a reasonable account of how to prioritize divine attributes. For instance, the omnipotent God cannot ride a bicycle because God does not possess a human body. This limitation illustrates that God's omnipotence must be understood in light of God's other attributes, such as divine transcendence. Open theology fundamentally offers a conception of God as love, with whom we can develop a loving relationship and genuinely relate. A love relationship requires the freedom to choose love between two subjects; therefore, God grants freedom to humans, allowing them the possibility of entering into a loving relationship with God. This libertarian free will implies that a free person's will is not predetermined. However, a conflict arises between divine providence – based on God's foreknowledge – and human libertarian free will. If someone can reconcile these two doctrines, we believe that an open theist would not necessarily reject this resolution. Since open theists view libertarian free will as a necessary condition for a loving relationship and acknowledge that God's essential attribute is love, they prioritize human freedom in the context of the conflict between divine foreknowledge and human libertarian free will, ultimately favoring freedom.[54]

52 Schmitt, *Political Theology*, 48.

53 Pinnock et al., *The Openness of God*. See also Sanders, *The God Who Risks*.

54 Not only libertarian freewill but also ontological random events in the natural world is incompatible with divine simple foreknowledge. For an argument concerning this incompatibility, refer to Rohda's, "The Philosophical Case for Open Theism;"

Nevertheless, we do not need to delve into the details of this controversy in this article. Our focus is on the theistic doctrine grounded in free will and the importance of the love that God bestows. By understanding God's love as supremely significant among divine attributes, we can recognize how this love enables all creatures to experience freedom in as much as they have the capacity.[55]

The consequence of this theological viewpoint in ethical and political philosophy is to define power and sovereignty as fundamentally linked to the granting of freedom. Fredrich Neuhouser in explaining the idea of true sovereignty says:

> That is, true sovereignty is not the authority to make one's own arbitrary pronouncements into the law of the land; rather, to be sovereign with respect to the principles that bind one's actions is, first, to have a part in the collective project of determining those principles and, second, to comprehend the rational basis of the principles that come to be settled on through the just and inclusive exchange of reasons. On this view, each individual is capable of both discerning the good and grasping its rational basis, but only to the extent that he is open to a genuine exchange of reasons with fellow subjects, as carried out within the institutional framework provided by a rational social order.[56]

This conception of sovereignty is not based on full control of all facts but rather is based on the establishment of a medium for the rational and free development of fellow subjects.

The traditional view of divine sovereignty is often characterized by the notion of God having full control over every event, leading to the idea of eternal predetermination. This dominant perspective in the history of Abrahamic religions posits that the existence of ontological randomness implies that the entire system is not under God's control, allowing for procedures that operate without purpose under divine sovereignty. However, according to open theism, we should comprehend God's sovereignty in harmony with divine mercy. Thus, divine sovereignty does not imply a paternalistic control over all things; rather, it embodies the granting of freedom. The truly powerful agent bestows life and freedom, enabling others to flourish instead of confining and controlling them. The Almighty is not merely an omni-controller or authority but a liberator, allowing all creatures to choose their own paths according to their inherent potential and encouraging them to reveal their capabilities. This process of world disclosure is itself a manifestation of God and contributes to divine self-consciousness.

The traditional understanding of power that equates it with total control stems from the notion of God as a king, but this conception is fundamentally misleading. As Bradley explains an interesting example, he says:

> Imagine a father overseeing his young daughter in a sandbox. He provided the sandbox, the sand, and the toys to play with. If she leaves the sandbox, he protects her from running into the street. But he does not control how she uses the toys. In fact, he delights in watching the creative things she makes. In short, he gives her freedom within constraints and finds his joy in seeing how she exercises that freedom. In the metaphor, God is the father and all of creation is his daughter. God does not create a static, finished universe but one that is undetermined, and he enjoys watching it develop. Human parents experience this kind of joy; if humans are made in the divine image, why wouldn't we expect the same to be true of God?[57]

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and Steen's, "God et al. – World-Making as Collaborative Improvisation." We also cite Polkinghorne, *Reason and Reality*, who is not explicitly identified as an open theist but whose ideas align closely with them. Polkinghorne believes in true, objective becoming, which implies that "God knows the temporal in its temporality." Thus, "Divine knowledge of temporal events must be knowledge of them in their succession, not just that they are successive" (Polkinghorne, *Reason and Reality*, 156). Because the future is not yet realized and has not yet come into being, it is not inherently knowable, even to God. This does not imply a limitation on God's power or knowledge; rather, it reflects the fundamental nature of temporality itself – the future is not inherently knowable.

Thomas J. Oord also considers the implications of quantum mechanics for theological concepts. He argues that if the universe is truly indeterminate at a quantum level, then this indeterminacy affects God's foreknowledge, as it introduces elements that are not preordained and could unfold in various ways. Oord, *The Uncontrolling Love of God.*

55 One might claim that it is not too difficult to reconcile evolution with "a religious view that sees teleology in the world," especially if one is willing to stray far from traditional monotheistic conceptions of God. Our answer is that our goal is to demonstrate that ID faces some difficulties to reconcile scientific facts with intuitions that support metaphysical randomness, due to the theological framework it accepts. However, we are not distant from monotheistic conceptions of God. We believe that open theology offers a better understanding of the sacred texts within the monotheistic religions. Therefore, the aim of this article is to argue that, in order to reconcile the apparent randomness in the world, we must reevaluate our traditional views of divinity.

56 Neuhouser, *Foundations of Hegel's Social Theory*, 249.

57 Bradley, "Are Randomness in Nature and Divine Providence Inconsistent?," 128.

As Bradley eloquently explains, power, when understood in the context of mercy and love, does not necessitate complete control; rather, it signifies the full endowment of freedom and life. The omnipotent is the one who most effectively enables creatures to experience life freely, filled with love and happiness. Certainly, God has a distinct plan, a desired program, and a unique teleology for creation; however, this teleology unfolds through its manifestation in nature, as the natural world evolves through its history.[58]

From this perspective, the randomness present in mutations reflects the freedom that God grants to all creatures. Through the evolutionary process, the world progresses toward an outcome of self-consciousness. Consequently, human beings emerge as the result of this evolutionary journey, possessing the capacity to understand their place in the world and, as part of the natural order, becoming aware of the world itself.

Thomas Nagel argues that neither evolutionary naturalism nor ID theory adequately accounts for the complexities inherent in human beings, including our self-consciousness, cognition, and humane values. A comprehensive theory must explain the existence of conscious minds, their access to the evident truths of the natural world – encompassing mathematical, physical, chemical, and biological realities – and their capacity to evaluate actions as moral or immoral.[59] Nagel contends that evolutionary naturalism, which posits that human beings arise from mere random processes, lacks sufficient explanatory power. Instead, he seeks to reintroduce an Aristotelian conception of teleology, suggesting that teleology is embedded in the natural order universally. He presents the notion of a "non-purposive teleological system," which is governed at its deepest level by teleological norms and principles that guide the entire system toward universal flourishing rather than a singular goal. According to him, "natural teleology would mean that the universe is rationally governed in more than one way – not only through the universal quantitative laws of physics that underlie efficient causation but also through principles that imply that things happen because they are on a path that leads toward certain outcomes – notably, the existence of living and ultimately conscious organisms."[60] In other words, Nagel views nature as a self-sustaining system that evolves to manifest its inner tendency toward greater self-consciousness. However, he describes this teleological system as non-purposive to maintain his atheistic stance, thereby distancing himself from any notion of intentional design behind the natural order that develops teleologically. This insistence on non-purposiveness raises an apparent contradiction: how can a teleological system be non-purposive? He explains his idea as follows:

> I believe that teleology is a naturalistic alternative that is distinct from all three of the other candidate explanations: chance, creationism, and directionless physical law. To avoid the mistake that [one] finds in the hypothesis of non-intentional bias, teleology would have to be restrictive in what it makes likely, but without depending on intentions or motives. This would probably have to involve some conception of an increase in value through the expanded possibilities provided by the higher forms of organization toward which nature tends: not just any outcome could qualify as a *telos*. That would make value an explanatory end, but not one that is realized through the purposes or intentions of an agent. Teleology means that in addition to physical law of the familiar kind, there are other laws of nature that are "biased toward the marvelous.[61]

So, by non-purposeful teleology, he means a system that is internally going towards marvelous beauty and self-consciousness and life, without any purpose imposed upon it from an external designer's intention. But one can ask Nagel, how he can explain that the world contains the laws that are "biased toward the marvelous." What does explain this fact? We agree with Nagel that evolutionary naturalism and materialism cannot explain these astonishing marvelous facts and also ID advocates appealing to an external designer requires further explanation that "what kinds of things a designer might want to produce."[62] However, if we see God as

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58 One might ask how the process of evolution is the process of God's revelation? Given that the process of evolution brings with it extreme violence, suffering, extinction, etc., it's not entirely clear how this would be a fitting mode of revelation for God. Our response is that the God's creative act, particularly in the creation of sentient and living beings, serves as a manifestation of God, especially reflected in attributes such as the Creator, the giver of life, and the reviver. While the evolutionary process involves extinctions and violence, these moments represent opportunities for God to express mercy and empathy toward sentient beings. God reveals compassion through the interplay of life and suffering, where some sentient beings thrive while others endure hardship and receive mercy and sympathetic attention. Just as humans and other sentient beings experience suffering, God also experiences pain. However, this suffering reveals a profound sympathy and love.

59 Nagel, *Mind and Cosmos*.

60 Ibid., 67.

61 Ibid., 91–2.

immanent in the world and, so, in a panentheistic view according to which God is transcendent of the world but is not separated from nature, then we can explain why nature is biased toward the marvelous. The reason is that nature is manifesting God's marvelous beauty.

According to open theism, the essential theological idea is that God is love, and love inherently requires a loving relationship. This relationship stems from divine self-contemplation and self-manifestation. However, for a genuine love relationship to exist, freedom is a fundamental prerequisite. Both parties in the relationship must be free, and the manifested world must also have the autonomy to become God's beloved. This freedom, as previously discussed, is reflected in the randomness and indeterminacies inherent in nature. Such freedom allows the world to partake in a loving relationship with God, which can be understood as a form of divine self-love. Through this connection, the divine recognizes its own beauty as revealed in the natural world.

This process of self-contemplation and self-love constitutes the essence of divine manifestation and creation. The world, as God's beloved, must freely choose to enter into a loving relationship; otherwise, such a connection cannot be established. Thus, the apparent randomness we observe in the world may stem from this freedom, which is necessary for true relationship with God. This conception of the divine immanence in the world and the journey toward self-consciousness through the development of world history can help establish a metaphysical framework for the process of divine manifestation and the bestowal of freedom upon the world.

4 Conclusion

In the current climate dominated by naturalistic evolutionism, particularly Neo-Darwinism, which often stands in opposition to straw-man representations of religious teleological views, this paper seeks to demonstrate that there is no fundamental conflict between the theory of evolution and religion – even when accepting that natural selection operates on what are deemed random mutations, even if randomness is interpreted metaphysically.

We begin by distinguishing between epistemological and ontological (metaphysical) randomness, arguing that it is the latter that scientists and evolutionists typically attribute to the concept of random mutation. Epistemological randomness refers to our ignorance or inability to discern any potential structure within the natural selection process as it functions on mutations. In contrast, ontological randomness indicates that there is, in principle, no law-like structural correspondence between mutations and what is naturally selected.

The implications of ontological randomness suggest a free world, which may appear to conflict with the thesis of divine sovereignty that posits God's eternal control over all things. We contend that the divine sovereignty thesis must be contextualized within the framework of divine mercy and love – essential attributes of God that shape our understanding of other attributes. Consequently, divine sovereignty involves bestowing freedom upon all creation and exercising compassion toward every creature.

Ontological randomness, therefore, is indicative of the freedom inherent in nature at its deepest level. However, this freedom does not lead to disorder, as the world is ultimately a manifestation of God. The freedom observed in the theory of evolution represents the liberty that God grants to the creation, facilitating the ongoing process of self-consciousness and self-contemplation. "Ultimately, all that exists in heaven and on earth glorifies God – the sovereign, the holy, the Almighty, and the wise."[63]

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62 Ibid., 91.

63 The Qur'an 62:1.

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