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Indeterminacy, Divine Action and Human Freedom

This article examines the idea that God created the world to be inherently indeterministic. It is argued that ontological indeterminism is scientifically unwarranted, philosophically objectionable and theologically inconsistent with a strong view of divine sovereignty and providence. Quantum mechanics does not require indeterminism. Neither do human freedom or moral responsibility, both of which are more plausibly viewed in compatibilist, rather than libertarian, terms.

Keywords: indeterminacy; God; quantum mechanics; human freedom

Has God created the physical world so that it is inherently non-deterministic? A number of prominent writers at the science/religion interface think this is the case. For example, Arthur Peacocke asserts that God creates through law and chance. Consequently, the future of the physical world is not fully determined but, rather, open, so that not even God knows the future fully.¹ According to Peacocke, God has so made the world that there are certain areas over which he has chosen not to have control. By using chance God has self-limited his omnipotence and omniscience. God takes risks. He did this so that the world would produce beings fit for fellowship with him.² Chance, Peacocke asserts, manifests itself mainly through quantum uncertainty and human free will.³ In a similar vein, Keith Ward argues that only through non-deterministic laws can there be room for creative freedom to come to exist and to operate.⁴

The object of this paper is to examine some of the implications of this idea and to explore a deterministic alternative.

1. Quantum Choices and Chance

Quantum mechanics is often cited as the prime example of physical indeterminism. According to quantum mechanics, a particle has both wave and particle properties. One consequence of this is that, at any instant, we can measure accurately either the position or the velocity of a particle but not both at once (i.e., the Heisenberg Uncertainty Principle). Another consequence is that we

1 Peacocke, Arthur *Theology for a Scientific Age* (Enlarged ed.), London: SCM Press (1993), p.121.

2 *ibid.*, p.157.

3 *ibid.*, p.122.

4 Ward, Keith 'Why God Must Exist', *Science & Christian Belief* (1999) 11: 5-13 (p.12).

can't predict exactly where an individual photon, after passing through a slit, will hit a photographic plate. Nor can we tell exactly when a particular radium atom will decay. All we can calculate are probabilities, so that, in the long run, we can predict precise patterns for large numbers of events.

A fundamental question is whether such quantum uncertainties are merely human, epistemological artefacts, due to our inability to measure micro-events accurately, or whether nature is inherently indeterministic. Many physicists and theologians take the view that quantum events are inherently indeterministic. For example, theologian Greg Boyd claims that quantum mechanics confirms that the future is partly open.⁵

Such an interpretation of quantum mechanics raises deep questions. Consider a radium atom, about to decay. In any given instant it will either decay or not. What makes the choice? In a deterministic universe the choice fully depends – although perhaps in a very complicated way – on the present state of the universe. But what makes the choice in an indeterministic universe?

Often it said that the choice is made by 'chance'. This raises the question: What is 'chance'? Generally, *chance* is meant here in the sense of *indeterminism*, where there is more than one possible outcome for an event and it cannot in principle be predicted, with certainty, which outcome will occur.⁶ Chance, thus defined, is not itself a *cause* but, rather, indicates the *absence* of a *sufficient* cause for an event. There is *no* reason why a particular outcome occurs. Thus Keith Ward asserts that no reason can be given why a particular radium atom decays at a particular time, rather than at some other time.⁷ He argues that physical events are not sufficiently determined by their physical antecedents.

To such views Henry Stapp comments, 'Many physicists of today claim to believe that it is perfectly possible, and also satisfactory, for there to be choices that simply come out of nowhere at all...The claim that the choice comes out of nowhere at all should be regarded as an admission of contemporary ignorance, not as a satisfactory final word.'⁸ Elsewhere he remarks, 'Chance is an idea useful for dealing with a world partly unknown to us. But it has no rational place among ultimate constituents of nature.'⁹

Indeed, a basic principle of rational enquiry is that everything has a sufficient reason. This Principle of Sufficient Reason implies the Principle of Causality, which affirms that every event has a sufficient cause. To say that a

5 Boyd, Greg. *God of the Possible: A Biblical Introduction to the Open View of God*. Grand Rapids: Baker (2000), p.111.

6 This is the definition of chance given by Bartholomew, D.J. *God of Chance*. London: SCM Press (1984), p.67.

7 Ward, Keith *God, Chance & Necessity*, Oxford: One World (1996), p.21.

8 Stapp, Henry P. *Mind, Matter, and Quantum Mechanics*, Berlin: Springer-Verlag (1993), p.216.

9 *ibid.*, p.91.

quantum choice is made by chance is to say that *nothing* makes and actuates the choice. This contradicts the Principle of Sufficient Reason. To say that an event has no cause is to give up on science and to invoke magic, in this case magic without even a magician.

Stanley Jaki notes that the great philosophers, including Plato, Aristotle, Aquinas, and even Hume, asserted that there was no such thing as ‘chance’.¹⁰ David Hume, for example, commented, ‘It is universally allowed that nothing exists without a cause of its existence, and that chance, when strictly examined, is a mere negative word, and means not any real power which has anywhere a being in nature.’¹¹ Rather, they considered that what we call ‘chance’ is just a name for our ignorance of the actual cause.

How well established is the claim that quantum events have no sufficient cause? First, can we be certain that there is no sufficient *physical* cause? To eliminate all possible physical causes one must demonstrate that a quantum event is not fully determined by the present state of the universe and/or the internal state of the quantum particle. But neither of these is completely known – or even knowable – to human investigation. How, then, can we be sure that there exists no inherent determinism at a deeper physical level, as yet hidden from the human observer? We cannot definitely rule out the possibility that all quantum events have sufficient physical causes.

Suppose, for the sake of the argument, that one *could* establish the definite absence of a *physical* cause in quantum events. This still leaves open the possibility of *non-physical* causes. These might be human minds, spiritual beings such as angels or demons, or even the direct action of God himself. Such non-physical causes are, by definition, beyond scientific enquiry. Thus it is scientifically unwarranted to assert that the absence of *physical* cause entails the absence of *any* cause. That conclusion requires the *metaphysical* assumption that there are no non-physical causes. We note in passing that the absence of a sufficient physical cause for quantum events implies the falsity of physicalism, the notion that the universe is entirely explicable in terms of physical causes.

Applying the Principle of Sufficient Reason, it seems rational that *any* causal explanation of an event, no matter how unlikely or implausible, is preferable to postulating *no* cause at all. Hence, the belief that quantum events are fully caused – whether by some (as yet) unknown physical mechanism or by some non-physical force – seems rationally superior to the hypothesis that they have no cause at all.

10 Jaki, Stanley L. *God and the Cosmologists*. Washington, DC: Regnery Gateway: (1989), pp. 142-145.

11 Hume, David *An Enquiry Concerning Human Understanding*, La Salle: Open Court (1958 reprint of 1777 edition), p.104.

2. Interpreting Quantum Mechanics

Could one interpret quantum mechanics so as to avoid physical indeterminacy? Certainly. One possibility is simply to refrain from making any speculative ontological assertions about the quantum realm. Bohr's Copenhagen Interpretation, which still seems to be the dominant view of quantum mechanics, is based on the notion that, as humans, we cannot know the quantum world in itself. We can only probe it via various classical experiments. On this view, science does not describe nature as it is, but how it responds to our methods of observation. This interpretation is essentially positivistic in that it is concerned primarily with human observations, leaving open whatever may happen beyond these. It stresses our human epistemic limitations.

Alternatively, if one insists on building a hypothetical model of the quantum world, some quantum theorists have thought it possible to construct models along deterministic lines. Such a theory involves 'hidden variables' – quantities that do away with quantum uncertainty, but which cannot be measured directly. Albert Einstein, in opposition to Niels Bohr, believed that quantum mechanics should be explicable in terms of hidden variables.

Favouring hidden variables is the fact that quantum choices are in practice constrained to be within a very limited range, following a well-defined probability function. This suggests that the choice is perhaps not genuinely random but determined by definite laws at some deeper, sub-quantum level. Consider, for example, a roulette wheel, where any individual event seems to be due to chance, although the outcomes are similarly limited and predictable when averaged over a long time. Yet, in actuality, any individual outcome is precisely fixed by the initial conditions. That the outcome of the roulette wheel has the appearance of chance is due only to our ignorance of the initial conditions and our inability to deduce the end result from the initial conditions. Might the situation not be exactly the same for quantum effects? It thus seems prudent to allow for possible deterministic sub-quantum mechanisms.

Nevertheless, recent Bell-type experiments^{12,13} have put significant constraints on hidden-variable theories. Most importantly, it has been shown that hidden-variable theories must violate 'locality' (i.e., the property of classical physical theories that forbids distant causes to have instantaneous nearby effects). A viable hidden-variable theory must thus be non-local.

Non-locality is in fact a prime feature of David Bohm's pilot-wave model, which interprets quantum mechanics in terms of well-defined deterministic laws. In Bohm's model a particle always has both a precise position and velocity. The force on each particle depends on the precise locations, at that instant,

12 Weihs, G., Jennewein, T., Simon, Ch., Weinfurter, H., Zeilinger, A. 'Violation of Bell's inequality under strict Einstein locality conditions', *Phys. Rev. Lett.* 81 (1998): 5039-5043.

13 Tittel, W., Brendel, J., Gisin, N. & Zbinden, H. 'Long-distance Bell-type tests using energy-time entangled photons', *Phys. Rev. A*, 59(6) (1999): 4150-4163.

of all other particles in the universe. The actual calculation of these is in practice limited by our inability to measure precisely the initial conditions of the particle, as well as by our lack of knowledge of the present configuration of the rest of the universe and how this influences the particle. Hence, although Bohm's model posits an *ontological* physical determinism, our human ignorance of initial conditions results in an *epistemological* indeterminism.

John Polkinghorne notes that the work of David Bohm and his colleagues shows that quantum mechanics *can* be interpreted within an objective, deterministic ontology.¹⁴ Yet only a small minority of modern quantum theorists support hidden-variable models such as Bohm's. Most dismiss hidden variables, due to the strange features (e.g., non-locality and mysterious pilot-waves) they entail.

However, alternative interpretations of quantum mechanics are no less counter-intuitive. Quantum mechanics is unavoidably non-classical. The question is which feature, if any, of the classical realm an interpretation should retain. Physicist Nick Herbert cites eight different views of quantum reality. How is one to choose among these? Herbert writes:

The quantum reality problem is, strictly speaking, not a physics question at all, but a problem in metaphysics, concerned as it is not with explaining phenomena but with speculating about what kind of reality lies behind and supports the phenomena...Each of these eight realities from Bohm's neo-realist particle-plus-wave model to von Neumann's consciousness-created world is perfectly compatible with the same quantum facts. We cannot use experiments – or at least experiments of the usual kind – to decide among these conflicting pictures of what lies behind the phenomenal world.¹⁵

It seems prudent to concur with Bohr that quantum mechanics puts a limit on *human* knowledge about the sub-quantum world. Asserting anything beyond that is speculative. Here we must be guided by our basic philosophical convictions.

What philosophical guidelines should we appeal to? John Polkinghorne justifies an indeterminist view of quantum mechanics on the grounds that we should try to maximise the correlation between our knowledge and ontological belief.¹⁶ Epistemology, he asserts, should be the guide of ontological conjecture. He suggests that the cumulative success of science provides the necessary support for the pursuit of this strategy.

It seems strange, however, that our ontology should be governed by human ignorance. Why should objective reality be limited to what humans can physically

¹⁴ Polkinghorne, John *Belief in God in an Age of Science*, New Haven: Yale University Press (1998), p.53.

¹⁵ Herbert, Nick *Elemental Mind: Humans Consciousness and the New Physics*, New York: Penguin, p.160.

¹⁶ Polkinghorne, op.cit.[14], p.53.

measure? Such an ontology is unduly anthropocentric. Any serious theist must surely repudiate such a truncated ontology; theistic ontology must not be driven by limitations of human measurement.

I conclude that quantum mechanics, by itself, does not require physical indeterminism. One may prefer an indeterminist *interpretation* of quantum mechanics, but such interpretations, like other interpretations, are motivated largely by prior philosophical and theological commitments.

3. Divine Action in the Physical World

There are further difficulties associated with physical indeterminism. What implications would this have for how God relates to the physical world?

Consider God's providence. The traditional Christian position is that all things came into being through Christ ('all things were created by him' Col.1: 16 KJV). God not only brought all things that exist into being, but he – the Father acting through Christ – also upholds them ('by him all things consist' (Col.1: 17 KJV); 'upholding all things by the word of his power' (Heb.1: 3 KJV). The universe is at all times entirely dependent on God's sustaining power. Without God's continual upholding the universe would instantly cease to exist.

God's continuing action in the created world can be understood as consisting of not only God's *preservation* of the world, but also his *governance*, whereby he directs and rules over creation. The governance has to do with that continued activity of God whereby he rules all things teleologically so as to secure the accomplishment of the divine purpose. God is the *primary* cause of all events. He is the necessary and sufficient cause of all events. Everything occurs for a purpose, in accordance with God's comprehensive plan.

Although God is the *primary* cause of everything, He usually works through *secondary* causes. In sustaining the universe from one moment to the next God generally does so in accordance with the properties he has assigned to his creatures. God usually permits his creatures to act according to their natures. In particular, he normally allows humans to do what they want, making their own decisions. Yet these human choices cannot be put into action without God's *concurrence* or cooperation. Thus every normal natural event has two causes: a primary, divine cause and a secondary, natural cause. Miracles occur in those extraordinary cases when God withholds his concurrence and substitutes some other effect.

3.1 Providence and Chance

As noted above, many modern authors believe that God creates through chance, so that not even God knows the future outcome of all events. They consider chance events to be an inherent part of creation, necessary for creatures to have creative freedom.

How is such a view of chance to be reconciled with the traditional Christian view of God? Is it conceivable that God could create an entity whose actions are unpredictable even by God, its omniscient Creator? This seems implausible. If a quantum event were fully determined then, no matter how complicated the chain of causes leading to the event, an omniscient God would know the outcome. On the other hand, if a quantum event is not fully determined then it must be partly attributed to no cause. But, if God is the primary cause of *all* that happens, this can mean only that quantum events have no *secondary* cause and that God is here acting *directly*, in which case God must again know the outcome.

Authors who postulate that God works through chance rarely pause to consider *how* God could create chance events. D. J. Bartholomew is a notable exception. He writes:

It is difficult to conceive of how God could be ‘responsible’ in some sense for pure chance without having designed the mechanism giving rise to it. Speaking personally, I find it impossible to frame any statement about God’s action in generating random events which avoids the notion of design on his part and so justifies us in saying that chance events are without any explanation whatsoever. It is more congenial to both faith and reason to suppose that God generates the requisite degree of randomness much as we do, by deterministic means.¹⁷

This implies that ‘chance’ events are actually fully deterministic. Nevertheless, Bartholomew continues, ‘this does not imply or require foreknowledge of the consequences at the micro-level on God’s part’.¹⁸ He argues that, at bottom, chance is bound up with the notion of *independence* rather than lack of cause. Bartholomew asserts:

To allow the existence of pure chance in any sense is rather like saying that God can choose to act so that his left hand does not know what his right is doing. Or to put it more formally: that there must be independent sources of independent action within the one Godhead. There seems to be nothing logically impossible in such a suggestion but whether or not it can be usefully developed is not clear.¹⁹

The notion that ‘God’s left hand doesn’t know what his right and is doing’ entails a significant limitation of God’s self-knowledge of the *present* instant. Such a limitation of God’s self-knowledge still seems to leave the universe inherently deterministic and, thus, offers no explanation of chance events. It just hampers God’s ability to make predictions. Further, Bartholomew’s suggestion contradicts the omniscience, unity and simplicity generally attributed

¹⁷ Bartholomew, op. cit. [6], p.102.

¹⁸ *ibid.*

¹⁹ *ibid.*, pp.102-103.

to the God of the Bible. Appeals to the multi-personhood of God do not help, since the orthodox notion of the Trinity asserts an essential unity to God, particularly as it relates to knowledge: each Person is essentially and equally omniscient (Father, 1 John 3:20; Son, Matt. 11:27; Holy Spirit, I Cor.2: 11).²⁰ Hence, the orthodox conception of the biblical God seems to leave little room for the notion that he could generate chance.

This conclusion is further strengthened when we consider God's concurrence. At each instant, if God is to actuate the universe at the next instant, he must have prior knowledge of all intended actions of all his creatures. Such knowledge is needed for God to decide whether or not he will concur. However, if God can fully predict the next state of the universe then, again, chance seems to be ruled out. As it is written, 'the lot is cast into the lap; but the whole disposing thereof is of the Lord' (Prov.16:33 KJV). God determines the outcome of the lot, which to us may seem random.

Arthur Peacocke tries to make room for chance by suggesting that God has self-limited his omnipotence and omniscience.²¹ He suggests that God has so made the world that there are certain areas over which he has chosen not to have power, so that there are certain systems whose future states are in principle unknowable, even to God. In a similar vein, William Alston goes so far as to assert, 'To deny that God can voluntarily limit Godself in this way would itself be to deny God's omnipotence.'²²

However, God's omnipotence means that he can do all things *logically possible* and consistent with his character. For a *rational*, omniscient, omnipotent God to construct a purely *random*, indeterministic mechanism seems logically *impossible*, since it entails that God causes an effect (i.e., a quantum event) that has no cause. Furthermore, as stressed by Keith Ward, God's omnipotence and omniscience are *necessary* properties of God.²³ This means, contrary to what Alston affirms, that God cannot give up his omnipotence without thereby ceasing to be God. God, as *God*, necessarily must retain his full omnipotence and omniscience at all times.

According to Peacocke, God's omniscience has to be construed as God's knowing at any time whatever it is logically *possible* for him to know,²⁴ which does not include as yet uncertain future quantum events.²⁵ Nevertheless, even this

20 For elaboration, see Reymond, Robert L. *A New Systematic Theology of the Christian Faith*, Nashville: Thomas Nelson (1998), p.322. As to Jesus' saying that, not the Son, but only the Father knows the time of his second coming (Mark 13:32), Reymond argues that this limitation in knowledge applies only to Jesus' *human* nature (p. 224).

21 Peacocke, op. cit. [1], p.212.

22 Alston, William P. 'Divine Action, Human Freedom, and the Laws of Nature', In Russell, R.J., Murphy, N., Isham, C.J.(eds.)*Quantum Cosmology and the Laws of Nature* (2nd ed.), Vatican City State: Vatican Observatory Publications (1996), p.191.

23 Ward, op.cit. [7], p.37.

24 Peacocke, Arthur 'Response to Davis', *Science & Christian Belief* (1997) 9:145-147 (p.145).

25 *ibid.*, p.146.

limited definition of omniscience still implies complete knowledge of the past and present. This rules out Bartholomew's suggestion that, at any instant, God's left hand does not know what his right hand is doing.

W.G. Pollard²⁶ and, more recently, Nancey Murphy²⁷ advocate that the apparently random events at the quantum level are all specific, intentional acts of God. God's action at this level is limited in that (1) he respects the integrity of the entities with which he cooperates (e.g., he doesn't change the electron's mass arbitrarily) and (2) he restricts his action to produce a world that, for all we can tell, is orderly and law-like. God is the hidden variable. Murphy asserts that this position is not only theologically preferable to indeterminism, but has the further advantage of consistency with the principle of sufficient reason.²⁸ Of course, if God is directly responsible for quantum events this entails that these are therefore predictable by God. Hence we are left with a deterministic universe, at least at the quantum level.

In short, the orthodox view of God's providence implies that the universe is fully determined from God's perspective. Whether it is strictly determined in terms of purely secondary, physical causes remains an open question. Such secondary causes, even if they do exist, might well be too deep for finite humans to fully comprehend, let alone utilise for prediction.

3.2 Divine Foreknowledge and Chance

Attempts have been made to harmonise chance with God's foreknowledge of future events. For example, J.J. Davis²⁹ asserts that, contrary to Peacocke's limited view of divine omniscience, the Bible depicts God as having a rather complete knowledge of future events (Is. 41-46), extending even to human thoughts (Ps. 139: 1-6). This implies that God knows also the outcome of any future quantum events. Davis seeks to square God's complete omniscience with genuine quantum indeterminism by means of the notion of middle knowledge, which was first developed by the Jesuit theologian Luis Molina (1553-1600). Molina tried to harmonise divine omniscience with human freedom by asserting that God has a special type of knowledge ('middle knowledge') of how a free agent would freely choose in a given hypothetical situation. This concept is extended by Davis to quantum events. Davis postulates that God knows whether or not a given radium atom, placed in a given causal nexus, would indeterministically decay in a given time. According to Davis, 'God "sees" that

26 Pollard, William *Chance and Providence: God's Action in a World Governed by Scientific Law*. New York: Scribner (1958), p.22.

27 Murphy, Nancey 'Divine Action in the Natural Order: Buridan's Ass and Schrodinger's Cat', In Russell, R.J., Murphy, Nancey & Peacocke, Arthur (eds.) *Chaos and Complexity: Scientific Perspectives on Divine Action*. Vatican City State: Vatican Observatory (1995), pp. 325-357 (p.339).

28 *ibid.*, p.342.

29 Davis, John Jefferson 'Quantum Indeterminacy and the Omniscience of God', *Science & Christian Belief* (1997) 9: 129-144 (p.135).

a given nucleus is about to disintegrate, and is free either to concur – and so to make certain – or not to concur in the propensities and tendencies of the creature in question.³⁰

In response, Peacocke asks how God could possibly know that a particular nucleus will disintegrate at a particular time if there are no underlying laws that determine this.³¹ He argues that, if quantum events are genuinely indeterministic, God's middle knowledge can be only of the *probability* of a quantum event occurring. This criticism of middle knowledge is, in my opinion, fully justified. How could God know with *certainty* the future outcome of an *uncertain* quantum event? It is impossible to know the outcome of an indeterministic event before it occurs. To say, with Davis, that God knows how a particle will behave in a given *hypothetical* situation implies that, given specific circumstances, the particle will *always* behave in exactly the same way. In that case the outcome is *not* indeterministic but is fully determined by the circumstances. In short, divine middle knowledge presumes determinism.

4. Human Freedom, Creativity and Moral Responsibility

Thus far I have argued that ontological indeterminacy is scientifically unwarranted, philosophically objectionable and contrary to traditional Christian theology. Why, then, is it still so widely promoted? A major factor is the perception that determinism conflicts with human freedom and responsibility. Thus, for example, Arthur Peacocke sees a logical contradiction between human free will and divine knowledge of the future;³² Keith Ward argues that the universe must be non-deterministic if it is to generate freely creative beings;³³ and Nancy Murphy³⁴ asserts that indeterminism is needed for moral responsibility – determinism makes God responsible for evil.

Let us examine these claims. What is necessary for human freedom? Human freedom is what we experience as we deliberate about a decision (how to vote in an election), make a choice (decide which candidate we prefer), and actualise that into a physical action (direct my hand to put a mark beside the chosen name).

Human freedom surely requires a genuine ability for us to make a mental choice, as well as the power to convert this *mental* choice into a *physical* action. My mental choice may depend on various abstract, non-physical factors such as, for example, the moral qualities of the candidates running for office. Hence, human freedom certainly implies *physical* indeterminism, in the sense that

30 *ibid.*, p.144.

31 Peacocke, *op.cit* [24], p.147.

32 Peacocke, *op.cit* [1], p. 122.

33 Ward, *op. cit.* [4], p.12.

34 Murphy, *op. cit.* [27], p.355.

some *physical* events (raising my hand) must have *non-physical* (i.e., mental) causes. In the same *physical* situation different non-physical factors (my character, beliefs and moral standards) may well cause me to choose differently.

That our freedom depends crucially on our mental control of our physical body is obvious when one considers the alternative. If our minds were completely determined by physical processes in our brains, as asserted by reductionists such as Sir Francis Crick, then, as Crick himself notes, all our beliefs, including our sense of freedom, would be mere illusions.³⁵ Since these illusions include, for Crick, the belief that our beliefs are caused by brain neurons, it follows that Crick's position is self-refuting. Further, this view reduces humans to mere puppets, beings that appear to choose and act but are actually fully controlled by purely physical forces.

Further, freedom implies that our choices are made *freely*, without coercion. We choose what we want, in accordance with our own character, history and moral standards. Such freedom is essential for moral responsibility. To be morally responsible entails that we make our own decisions; they are not forced on us contrary to our will. Responsibility for our actions implies that we have a measure of control, so that we can be held accountable for our wilful decisions and subsequent actions.

4.1 Freedom and Predictability

The most contentious issue in free will is whether our decisions are in principle fully predictable. In the same *comprehensive* situation, with the same external conditions plus the same internal (mental) characteristics and circumstances, would the same agent always make exactly the same decision? There are two responses to this question, representing two different notions of freedom. One notion is that of freedom of *indifference*, the freedom to choose either of two incompatible actions with equal ease and out of no necessity. This is the freedom to act contrary to our nature, called *libertarianism*. A lesser freedom is that of *spontaneity*, choosing and acting as one pleases. As long as one's acts are expressions of what one wants to do they are to be regarded as free, even if what one wills is in some way determined.³⁶ This latter view is more commonly known as *compatibilism* or 'soft' determinism (as opposed to the 'hard' determinism of Crick's physical reductionism).

The compatibilist argues that our choices are always based on reasons; they are made in accordance with our character and experiences. Hence God, one who knows us perfectly, could surely predict our free choices. Our choices are free because they were willingly made by us, rather than coerced against our will.

³⁵ Crick, Francis *The Astonishing Hypothesis*. New York: Touchstone (1994), p.3.

³⁶ see Reymond, op. cit. [20], p.191.

The libertarian, on the other hand, objects that, if our choices are predictable then they are predetermined, which implies that we could not have chosen differently. In that case our sense of freedom is illusory and hence, it is often argued, we would have no moral responsibility. God would then be directly responsible for all the evil in the world. Libertarians contend that our will is genuinely free only if our choosing or willing is not pre-determined by external or internal conditions. Our motives and beliefs may incline us toward a particular choice, but they should not guarantee it.

4.2 Freedom and Indeterminism

Libertarianism, with its assumption that our choices are not entirely caused by such things as character and circumstances, implies that these choices are, at least to some extent, indeterministic. Only thus, with an element of chance, might the same agent choose differently in identical situations. Bartholomew asserts, 'the reality of chance is not merely compatible with the doctrine of creation but is required by it...only in a world with real uncertainty can people grow into free responsible children of their heavenly father'.³⁷

We note, however, that in practice one cannot distinguish between genuine randomness and the pseudo-randomness of a deterministic process too complicated for humans to unravel. Why, then, should 'real' uncertainty be required, as Bartholomew claims? Further, how could we ever prove that our decisions are ultimately based on no sufficient reasons? This would require our omniscience with regards to all possible causes. Thus the assertion of the necessity of chance is no more than a metaphysical assumption. Hume, arguing against libertarian freedom, writes, 'liberty, when opposed to necessity, not to constraint, is the same thing with chance; which is universally allowed to have no existence'.³⁸

Terrance Tiessen³⁹ discusses a further difficulty for libertarianism. If our choices are made for no causally sufficient reasons then what causes the will to choose? And what determines which choice is made? If the answer is 'nothing', then we are faced with the same problems concerning quantum events, as discussed above, particularly regarding divine providence and foreknowledge. The notion that our choices are not sufficiently caused implies that they are not entirely explicable in terms of secondary causes. However, a strong view of providence implies that these must then be attributed to the direct primary action of God. This makes God directly and solely responsible for our sinful choices, thereby defeating Murphy's efforts to make humans responsible for their own actions.

³⁷ Bartholomew, op. cit. [6], p. 145.

³⁸ Hume, op. cit. [11], p. 105.

³⁹ Tiessen, *Terrance Providence and Prayer: How Does God Work in the World?* Downers Grove, IL: InterVarsity Press (2000), p. 247.

Libertarianism seems to require that I make choices based on no good reason but, rather, capriciously, perhaps analogous to flipping a coin. Yet, as Stapp notes, any play of chance would falsify the idea that I, from the ground of my essential nature, make a true choice.⁴⁰ Indeed, it seems clear that uncaused, random events, occurring without reason, do not enhance our human free will at all, since these are beyond our control. As Tiessen⁴¹ points out, moral responsibility requires our acts to be *intentional*. Hence random actions are not free in the sense required for accountability. Therefore, indeterminism undermines, rather than bolsters, moral responsibility.

How about human creativity? Does that require chance, as Ward asserts? Here, too, it is not clear why chance is needed. Creativity has to do primarily with our *imagination*, our ability to produce novel *ideas*. But novel ideas do not spring up from nowhere. The mind produces them by combining or modifying old ideas. To solve a particular problem our imagination may try various possibilities. These possibilities may flow from a particular chain of thought. Our intuition picks out likely candidates from those that the imagination presents. Although the process may be hard to formalise exactly, no genuine randomness appears to be necessary. Again, what is required, of course, is that our *mind* is causally effective. This, in turn, requires that our brains are not purely *physically* determined but are open to input from our *minds*. In other words, human creativity and free will require a dualist view of reality that properly distinguishes between matter and mind.

Human freedom is often associated with quantum indeterminacy,⁴² which is then seen as leaving room for humans to act in the physical world. As we have seen, however, quantum mechanics does not prove that nature is inherently indeterministic. Moreover, it has yet to be shown how quantum effects can actualise mental choices. There is certainly no evidence that the human mind can at all influence where a photon will hit a photographic plate or when a radium atom will decay.

4.3 Freedom and Divine Sovereignty

A further problem with libertarian free will is how to reconcile this with divine sovereignty. Creatures, unlike God, can neither create from nothing nor sustain themselves in being. They, and their powers, continue to exist only through God's providential power. Along these lines, Peacocke notes that God is the 'sustainer and faithful preserver' of his creation.⁴³

40 Stapp, op. cit. [8], p. 92.

41 Tiessen, op. cit. [39], p. 247.

42. For example, Eccles, John C. *How the Self Controls Its Brain*, Berlin: Springer-Verlag (1994), p.146.

43 Peacocke, op.cit. [1], p.105.

However, if the existence of creatures and their powers depends upon God's upholding power, all their actions must likewise depend on that power. Hence creatures cannot act independently of God. Ron Highfield comments on libertarian freedom:

Acknowledging that God must act for the agent and its powers to continue in existence and yet contending that God need not – indeed, for the sake of our freedom, must not – act in our action so that it may have being...lands open theism in a self-contradiction.⁴⁴

Libertarian freedom requires that an action of an agent, to be free, must originate and be carried out independently of God. This contradicts God's sovereignty, which is essential to his nature.

4.4 Freedom and Divine Foreknowledge

It is sometimes asserted that divine foreknowledge is incompatible with human freedom.⁴⁵ A common argument states that if God knows that tomorrow I shall do action A it is therefore true that I shall do A; therefore I do not have the power to refrain from A; thus I am not free. Such reasoning confuses *determinism* (the notion that nothing happens without a cause) with *fatalism* (the notion that I have no control over my decisions).

One attempt to avoid fatalism is to postulate that God is timeless, so that he does not literally foreknow anything, and, hence, nothing is fated by his knowledge. However, as Craig points out, the statement 'God knows timelessly that some event occurs in my future' is still true prior to the event, thus fatalism is not avoided.⁴⁶

Nevertheless, Craig argues that fatalism is a fallacy.⁴⁷ First, why should God's mere knowledge about a future event constrain it to occur? God's knowledge of our future acts does not, in itself, influence our actual decisions. It hampers neither our freedom nor our creativity. Craig comments:

From God's foreknowledge of a free action we can infer only that that action will occur, not that it must occur. The agent performing the action has the power to refrain, and were the agent to do so, God's foreknowledge would have been different. Agents cannot bring it about both that God foreknows their action and that they do not perform the action, but this is no limitation on their freedom. They are free either to act or to refrain, and which ever they choose, God will have foreknown. For God's knowledge, though

44 Highfield, Ron 'The Function of Divine Self-Limitation in Open Theism', *Journal of the Evangelical Theological Society* 45/2 (June 2002): 279-99 (p.296).

45 For example, Peacocke, op. cit. [1], p.122.

46 Craig, William L. *The Only Wise God: The Compatibility of Divine Foreknowledge and Human Freedom*. Grand Rapids, MI: Baker (1987), p. 65.

47 *ibid.*, p.69.

chronologically prior to the action, is logically posterior to the action and determined by it. Therefore, divine foreknowledge and human freedom are not mutually exclusive.⁴⁸

The fatalist argues that, if the future is already determined, then there is nothing I can do to change it, since even my choices are predetermined. Such reasoning fails to take into account that my will is an active cause that helps to determine the future. We cannot *change* the future but we can help *determine* what the future will be.

Is divine foreknowledge compatible with *libertarian* freedom? One is again faced with the question of how God could foreknow with certainty a future that is as yet uncertain. One might suggest that God has a special, non-predictive, means of viewing the future, perhaps like consulting a crystal ball or previewing a film. But how could such a device be constructed in the first place? What – other than God – can possibly form the future? The notion that God simply foreknows the future, without predetermining it, entails the existence of an independent force that forms the future. Such independence, we saw above, contradicts the sovereignty of the biblical God. Hence, divine foreknowledge is consistent only with *compatibilist* freedom.

4.5 Compatibilism and Responsibility

The freedom that we seem to have – and to need for moral responsibility – is not a libertarian freedom from *causation* but, rather, a freedom from *coercion* by forces outside ourselves. We are free when we can act upon our own wants and our own will. Such freedom is needed for moral responsibility. Moral responsibility does not require that there are no reasons for our decisions.

For example, Adam was not forced to eat the fruit against his own will; he did so for reasons sufficient to him. As Reymond notes, Adam did not exercise an indifferent will but acted knowingly, willingly and spontaneously, with no violence being done to his will.⁴⁹ Man is free to do what he wills, but his will is not free in that it can determine itself. Man responds to his nature, which is what it is either by sin or by the sovereign grace of God. This leaves human responsibility fully grounded, for nothing more is required for holding a man accountable than his acting with the consent of his will, however much this may be determined. Thus the Bible holds fallen man wholly responsible for his words and deeds (Matt. 12: 35-37), even though he is born with a nature enslaved to sin (Rom. 8: 7-8).

Compatibilism, we noted, does not destroy freedom but merely assumes that everything – including our choices – has a sufficient cause. These causes are

⁴⁸ *ibid.*, p.74.

⁴⁹ Reymond, *op. cit.* [20], p. 374.

not just physical circumstances but include our own beliefs and character, which have in turn been formed, at least in part, by our own wilful decisions of the past. We make significant choices for weighty reasons, in accordance with our deepest convictions and desires. Compatibilism therefore enables us to be influenced by reasoning, criticism or the prospect of reward or punishment. The knowledge that we shall be held accountable for our actions is itself a factor that influences our actions. For such reasons David Hume asserted that only on the assumption of determinism could there be moral responsibility.⁵⁰ In short, compatibilism secures, rather than erases, moral responsibility.

5. Conclusions

In summary, I conclude that ontological indeterminism conflicts with divine sovereignty and providence, as upheld by traditional Christianity. A rational, omniscient, omnipotent God cannot create a genuinely random entity, of which he would not be able to predict the outcome. God's sovereignty rules out the possibility of agents acting independently of him. In particular, quantum mechanics does not imply ontological indeterminism, given that determinist interpretations of quantum mechanics are possible, that non-physical secondary causes cannot be ruled out and that God is the primary cause for all events. Further, a libertarian view of human freedom, to the extent that it posits that our free decisions are indeterministic, defeats, rather than supports, the notions of human freedom and responsibility. On the other hand, a compatibilist view of human freedom stresses that we wilfully make our decisions for sufficient reasons, in accordance with our nature, our beliefs and our desires. As such, God, our Creator and Sustainer, who knows us completely, can fully predict all our decisions and actions.

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⁵⁰ Hume, *op. cit.* [11], pp.104-107.