

Fuller Theological Seminary

*Cosmology in “On the Moral Nature of the Universe” by
Murphy and Ellis.*

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1 Introduction

As a student of Nancey Murphy it might seem strange that I should give a critique of the recent book she authored together with George Ellis. Although she has shaped my thought through her teaching to a large degree, I think that I have some distinct views on some of the issues discussed in the book. And maybe as a person having not been part of the considerable history of the issues discussed in the book I might bring some other perspective on some of these things.

On the Moral Nature of the Universe is a step forward to an integration of contemporary religious thought with morality and ethics. Murphy and Ellis want to give a theistic explanation for the evident fine-tuning of the universe. The theistic approach is presented as the one with the most explanatory power compared to competing approaches. God is understood working in that universe in a *kenotic* way respecting the integrity of the created order at all costs. God's kenotic relationship to the universe is then taken to be an example to be followed by humans. Thus Murphy and Ellis deduce a kenotic, self-renouncing morality from the theistic approach presented.

2 Quantum Uncertainty and Scientific Laws

Murphy and Ellis see Quantum uncertainty as occurring on the most basic level of particles that we know about. Uncertainty and non-determinism exist at the elementary level but "quantum uncertainty is washed out, in general, at large enough scales." (42). There is uncertainty at the elementary level of our physical universe but the microscopic quantum world has "reasonably well defined deterministic classical limits" (42). Classic laws of science are a limit to uncertainty.

Yet quantum effects can have “profound effects at the macroscopic level” through systems, which amplify these quantum uncertainties (42). Those systems could be chaotic systems as known from chaos theory or otherwise instable systems in which very minor fluctuations trigger a big change in the reaction of the system as a whole. We could call this kind of causation *quantum triggered events*.

A distinction is made here from non-deterministic elementary particles to a deterministic macro-world. The macro-world can only be reached through amplifying systems and is generally assumed to be deterministic.

Yet if a system consists of non-deterministic components then the behavior of the complete system cannot be deterministic. It can have a statistical average behavior, which might be seen as deterministic for all practical purposes and I think that is what Murphy and Ellis are expressing. Combining elements with probabilistic behavior can never result in a non-probabilistic system as should be evident from the basic mathematical rules governing the calculation of probabilities. Non-determinism cannot lead to determinism.

I would therefore favor the view of scientific laws such as the laws of physics as stochastic laws. They accurately predict the general case when high amounts of particles are involved for any practical purposes. Deviations from the predicted behavior might occur, with larger deviations having a higher and higher improbability.

Scientific laws do not have a reality on their own, nor do they accurately reflect reality.

Scientific laws are a model used to predict the behavior of certain things in the world. The criteria for them is their utility, their predictive power for certain situations and not an accurate mapping or description of hidden entities. Those entities might exist but scientific

theory is dealing with the usefulness of such entities for the accurate calculation and prediction *as if* they would exist. We can go no further in our claims about scientific laws without going into metaphysical speculation.

Murphy and Ellis express similar thoughts when they state that scientific laws are restricted to their proper “domain” of applicability (4). Thus one is led to think of scientific laws as of a basically utilitarian nature. It might be good if the book would clarify the nature of scientific laws. The nature of scientific law is important for the defense against the charge of interventionism (see later section) and for the basic understanding of God as a God who is able to act instead of a God who has created the rules and now lets things play out according to the rules. A God who is able to act is a person that can be related to, a person that can be merciful and a person that can also enforce laws and promises. The concept of scientific law is a key move in theological systems. The picture of a mechanistic world governed by rules written in stone inevitably ends with the detached God of deism, who wrote the rules and then has to sit by and watches the world play out. The picture of scientific law today is different through our knowledge about quantum indeterminacy and therefore a recognition of a certain openness of the universe. *On the Moral Nature of the Universe* opens also a new view of God through a recognition and an integration of key scientific knowledge with theology.

The statistical nature of all our predictions and calculations is frequently discussed in recent literature. John Gribbin (1986, 238) states that the indeterminate nature of particles necessitates a statistical interpretation of our calculated expectations of the macro-world. The huge *number* of particles involved in macro-world events lead to a statistical

averaging out of quantum behavior. This means that even macroscopic entities can behave in unexpected ways in extremely rare cases.

Greenstein and Zajonc (1997, 161-179) discuss macro effects of quantum behavior and even go as far as applying quantum calculations to macroscopic objects in order to discuss potential quantum effects of those objects (165). Implied in all of this work is a modified understanding of macroscopic scientific law as an idealization. Those idealizations are common in physics and involve the discarding of certain factors in order to simplify the solution or the calculations based on those laws. Newtonian mechanics is still used because the relativistic factors are negligible in situations where relativistic speeds are not encountered. Similar macroscopic physical laws are in use because quantum factors are negligible given a big enough quantity of particles.

The reason for Einstein's saying "God does not play dice" and for his rejection of quantum mechanics as incomplete was his conclusion that such a theory would question the basic nature of scientific law. Theology needs to reflect on the implications of quantum mechanics for our understanding of scientific law, which will determine our understanding of divine action.

3 Divine action

One of the most important points made in Murphy and Ellis book is the account of divine action. The universe is seen to be anthropic, providing features for the appearance of humans, and therefore as a "moral universe" (203). The universe is lawlike, in order to allow God to work in a kenotic way, encouraging humans to respond with certain moral

behavior. God is respecting the lawlike nature of the universe and is not overriding the regular operative principles of the universe.

3.1 Quantum Indeterminacy

Quantum indeterminacy is seen to be the best possible way that “noninterventionist noncoercive divine action” could work. Quantum indeterminacy makes the universe an open system for Murphy and Ellis. Quantum indeterminacy may be necessary in order to allow genuine top-down causation (213). Thus presumably God could work things at the macro-level. Indeterminacy at the bottom level of the hierarchical structuring of the universe enables noninterventionist divine action.

The authors explicitly omit the discussion on how this could also allow the explanation of miracles but it is suggested that it would be possible. Quantum events are intrinsically non-deterministic. God manipulates them “within strict limits” (215).

3.2 Interventionism?

The ideas of miracles and divine action usually lead to the conclusion that this is an interventionist account of the universe. God can *intervene* on the quantum level. The indeterminacy at the quantum level can be used by God to communicate and to cause certain things to happen.

Such a notion of divine action opens Murphy and Ellis up to the classic charge of proposing an irrational *God who both ordains the laws of nature and then violates those very laws* (214). They respond by the claim that such divine intervention is compatible with our knowledge about reality, quantum indeterminacy, and therefore is noninterventionist because it is not violating any operational principle of the universe.

Additional reasons for rejecting interventionism are given, not because God would be irrational but because of the issue of freedom. Interventionism is rejected because it is inconsistent with God's refusal to overrule or dominate creatures. Interventionism would make God coercive and dominating.

Murphy and Ellis have shifted the point made by the interventionist charge here.

Interventionism does not mean God is irrational but God is out of character.

In many ways Murphy and Ellis repeatedly defend themselves against the charge of interventionism. On the one hand God can communicate and can influence or act in the universe. On the other hand Murphy and Ellis want to contain what God can do in order to avoid the charge of interventionism and to have a universe conformant to existing physical laws. So for example God manipulates Quantum events "within strict limits" (215). God respects the natural processes of the universe in order to preserve freedom.

I think this defense against the classical charge of interventionism is unnecessary. It is made against a notion of the nature of scientific laws stemming from a pre-relativistic period. The classic charge of interventionism cannot be upheld for two reasons today:

1. It contains the notion that God created the scientific laws as we know them today. The assumption is that we have found the divine unchanging laws operating the universe. A classic Newtonian notion. The assumption has been questioned repeatedly since Einstein has shown Newton's "divine" natural laws to be inaccurate and today, I would assume, that most scientists hold to scientific laws as the best account we can give of how the universe works. But those laws are still subject to refinement and revision by later generations of scientists. What God exactly created and how the

universe exactly works is a mystery to us. We might have a rough idea of how things work but our knowledge is limited and restricted to the domain of verifiable experiments which we are able to conduct.

2. The nature of elementary particles of which the universe is composed is known to be non-deterministic. Scientific laws usually express regularities that happen to large numbers of those particles under certain conditions. Scientific laws express rules for large masses of particles behaving according to probability and not in a deterministic way. For all practical purposes scientific laws might be deterministic but since they are dealing with predicting the behavior of non-deterministic particles I think that scientific laws should be understood as being of a statistical character and not so much as ontological realities. As such there might be infrequent variation occurring that we might not be able to account for and which are unrepeatable due to the improbable chance of the occurring of those variations.

Coming with the charge of interventionism is often the God-of-the-gaps problem. God is seen as working in the gaps of our knowledge that humans have (not yet?) understood.

The gaps at the quantum level are distinct from prior gaps that have been closed by human investigation in that they are a fundamental characteristic of matter. It is widely accepted that quantum indeterminacy is a basic property of elementary particles.

Murphy and Ellis also make a distinction between effects that work at the quantum level which are governed by quantum indeterminacy and macro-events which seem to be seen as governed by deterministic scientific laws. I think that distinction cannot be made since all matter is consisting of quantum particles. Yet quantum behavior is fundamental for all

matter in the universe. The nature of matter at the macro-level is an idealization and only as the idealization can it be seen as deterministic.

I think the defense against interventionism might better be dropped and the treatment of divine action at the quantum level could be made consistent with a revised understanding of scientific laws at the macro-level. The distinction between divine action at the quantum level and macro level could be avoided.

4 Divine Communication

One of the most interesting features of *On the Moral Nature of the Universe* is the account of divine communication in Chapter 5.2. Murphy and Ellis think that a coherent kenotic worldview requires a “channel for divine revelation” (215). This communication channel is open to those wishing to discern the “true nature” of the universe and want to get in contact with its creator. Two ways of communication are distinguished:

- Humans are able to perceive “patterns of God’s intentions” from the history and the general operation of the universe. Such perceptions are not sufficient for people to realize God’s plan. More detailed knowledge is necessary, and therefore:
- There must be a channel through which God can communicate to “make available visions of ultimate reality”. God gives “new patterns of understanding, ... encouragement and strength to follow these visions”. A possible basis for communication is seen in “divine action at the quantum level within the human nervous system” (217).

Are these patterns here just deeper insights into the nature of the universe? Or is this detailed communication? Murphy and Ellis talk about negative and positive impulses,

visions and other religious experience. It might be worthwhile to pursue the issue further. Can neuroscience confirm that the human nervous system works in that way? The conception of divine communication is very interesting.

The divine communication might not be limited in the way Murphy and Ellis describe it. If God can act in the events of the world through quantum indeterminacy then also other communication through signs and events observed by a religious person could potentially be seen as divine communication as also frequently reported in scripture. The Old Testament mentions the *Urim and the Thummim*, a device to cast a lot in order to question God's will. God communicates by influencing the casting of a lot.

A theology taking into account divine communication in this way would be very experiential in contrast to analytical. It would affect the way religion is practiced from being focused on rational and systematic thought to being relational, worship oriented and driven by personal encounters with God.

5 Cosmogony

5.1 Divine Action?

I really appreciated the account of divine action given in *A Moral Nature of the Universe*. But the account of cosmology given in the book does not consider divine action in the evolution of the universe. The following table is listing some contrasts between the view of the history of the universe and the account of divine action.

Divergence between the account of divine action to account of the history of the universe

History of the Universe	Divine Action
Uniformity. No divine action.	Divine action working at the quantum level. Divine communication. Miracles?
The evolution of the universe guided by laws created by God.	God respecting the processes of the universe but works at quantum level.
Fine-Tuning as an indicator of a creator.	God never overrides processes of this world. God is only revealing himself to those open and listening.
God not involved except through creation of physical laws.	Present God
Classic Deist Scheme	Quasi-Interventionist Scheme

The account given for the history of the universe is like the classic deist approach. God created in the beginning and then the universe runs like clockwork playing out God's rules created in the beginning. God created the laws of the universe and then left for a couple of billion years. Only when humans enter the scene does the situation change. God communicates, God intervenes non-interventionistic in the world. God is present and the universe is operating under a quasi-interventionist rule: God respects the natural processes but is able to communicate and influence the world through quantum effects.

I think there is a tension between the history of the universe and the notion of divine action in *On the Moral Nature of the Universe*. If God can communicate and work at the quantum level now then it could be expected that something similar has happened in the past. The evolution of the universe should be marked by both law like and nondeterministic elements that were determined by God in order to bring about the current cosmos.

Recently a number of scholars have proposed theories of a catastrophic origin of the earth for example (catastrophism). It has been theoreticized that the moon is the result of a collision of the earth with an asteroid. The extinction of the dinosaurs has often been assumed to be due to some catastrophe. Both of those events are key events necessary for our current existence. In big bang cosmology there is an unexplainable inflationary period necessary to create the current distribution of matter in the universe. Yet no physical law necessitates these events. Those events can be seen also as having been brought about by some or another quantum fluctuation or an orchestration of quantum events that caused an asteroid for example to have an impact on the earth in a certain way. Could such events also be seen as divine action in a non-coercive way?

May be it is better to see the cosmic history in the same way as the book depicts divine action currently. God basically created a system of physical laws that form the basis of the operation of the universe today and fine-tuned them for the possibility of the emergence of life. Then he repeatedly used freedom inherent in those laws through quantum indeterminacy (following Murphy's and Ellis' way of arguing) to bring about special circumstances allowing the development of human life on earth.

A God interacting in such a way with the universe would no longer be the detached God who created the rules but a God who cares and relates to the world created.

6 Conclusion

The kenotic understanding of the universe is surprisingly fruitful and harmonizes with both the revelation of God in Christ and the nature of the world. I would not go as far as Murphy and Ellis in saying that God is "always" respecting the processes of this world.

We do not know exactly what these processes are and from scripture I would say that God is able to be coercive and dominating when it is needed. The expectation of the Eschaton especially as expressed in Revelation is highly dependent on God finally intervening in a forceful way to bring things to an end and to a new beginning. Yet it is necessary that God's action be kenotic in order to preserve the freedom and autonomy necessary for humans to make their own decisions and follow their own will.

Divine action is one of the key elements of a Christian theology and the integration of concepts of divine action with knowledge about the basics of how matter behaves -- such as quantum mechanics -- and with what we know about the history of the universe is of key importance to the credibility of religious experience and practice today.

The concept of divine action inevitably shapes our theology of God. God will only be a caring and loving God if he can "intervene", act in the world and make a difference.

7 References

- Greenstein, George and Arthur G. Zajonc. *The Quantum Challenge*. Massachusetts: Sudbury: Jones and Bartlett, 1997.
- Gribbin, John. *In Search of the Big Bang: Quantum Physics and Cosmology*. Bantam Books, 1986.
- Lameter, Christoph. *Divine Action in the Context of Modern Scientific Thinking*. Fuller Theological Seminary: Paper for PH870 Advanced Science and Theology Seminar, 1997. Internet: <http://lameter.com/papers/quant.html>.
- Lameter, Christoph. *The Limits of Formal Languages*. Fuller Theological Seminary: Paper for PH852 Methods in Philosophy, 1996. <http://lameter.com/papers/formal.html>.
- Murphy, Nancey and George F.R. Ellis. *On the Moral Nature of the Universe: Theology, Cosmology and Ethics*. Minneapolis: Fortress Press, 1996.
- Murphy, Nancey. *Reconciling Theology and Science: A Radical Reformation Perspective*. Kitchener, Ontario: Pandora Press, 1997