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Does Heisenberg Uncertainty Apply to God?: A Reliable Model of Divine Foreknowledge

Alan G. Padgett

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Creation Made Free
Open Theology Engaging Science

Edited by
THOMAS JAY OORD

CREATION MADE FREE

Open Theology Engaging Science

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Does Heisenberg Uncertainty Apply to God?

A Reliable Model of Divine Foreknowledge

Alan G. Padgett

THE DISCUSSION OF OPEN theism is a new and fascinating conversation within the dynamic, international dialogue between religion and science.¹ The question of the degree of openness for the future is one that lies at the intersection of physical science, life sciences, philosophy, and theology. This chapter will address a single question that arises out of this nexus of disciplines. It concludes with some theological implications regarding God's knowledge of the future. I develop a "reliable" model of divine foreknowledge in distinction from both traditional and openness theologies of omniscience. What this means in detail and what is reliable about it I shall soon spell out.

Because we cannot consider every basic matter from the ground up, I will make several assumptions about time, the cosmos, and foreknowledge for the purposes of this argument. The issues I take up are like a complex landscape. I am interested in exploring the ways God might know the future through a perfect knowledge of the past, the present, and key aspects of the future. Here we cannot cover such speculative alternatives as simple foreknowledge, future vision (or other theories which may imply backwards causation), middle knowledge, or absolute divine timelessness. By not following some avenues, I do not seek to cut off interesting options. Rather, I hope to see how far we can

1. I want to thank my fellow participants and the conference organizers for two excellent conferences on this topic in Boston and L.A., in the context of which this chapter was first developed and discussed.

make progress in one direction. With this in mind, I make the following assumptions:

1. God is a mystery, an infinite-personal being that is beyond our full comprehension. Yet the mystery of God is everywhere in theology, not just at the end of our knowing. Even as simple and basic a Christian claim as "Jesus is Lord" invokes the mystery of God. At the same time, truths about God can be known in many ways, including general and special revelation, along with good hard thinking. Our task as theologians is to seek clarity in the midst of mystery and coherence in a context of paradox. To this end, the discipline of theology is a good work, a human enterprise led by the Holy Spirit (or so we pray!) in response to God. We want the good work of theology to be *good*. Appeal to God's mystery or to paradox, therefore, must not become a tolerance for incoherence or waffling.
2. Temporal process (or the movement from past to present to future) is a genuine part of the physical cosmos. The process or A-theory of time is broadly correct and to be preferred to the stasis or B-theory.
3. There is real indeterminacy in the physical cosmos. The laws and principles of nature are not deterministic *in toto*, even though some simple systems are.
4. Human beings have libertarian free will. Human are not externally determined.
5. God is omniscient and has genuine but not absolutely certain foreknowledge of future contingent events.
6. It is logically impossible for an event in the actual world to be indeterminate and also be known in advance with absolute certainty through a causal chain.²

If we grant all these things to start, what is left? Have we not already limited all the options? I do not think so. There is an alternative view that I hope to sketch in this chapter, one in which God's foreknowledge

2. Here I have been influenced by the arguments of William Hasker and Nelson Pike, among others. For representative arguments see N. Pike, "A Latter-Day Look at the Foreknowledge Problem," *International Journal for Philosophy of Religion* 33 (1993) 129-64; W. Hasker, *God, Time, and Knowledge* (Ithaca, NY: Cornell University Press, 1989).

is based upon perfect, infinite wisdom and knowledge of the past, present, and potentialities of the future. I will develop this new option using the Heisenberg uncertainty principle as a kind of analogy or parallel to God's knowledge of future free acts by humans. My basic point will be that the God of classic Christian theology is able to know things with far greater precision, with a vastly greater degree of foreknowledge than any creature however intelligent. God has access to knowledge about free creatures and non-deterministic systems which allow a vast degree of knowledge, enough to qualify as foreknowledge in many cases. This in essence is my argument, and my alternative to both process and classical theism. If you like labels, you can think of my position as a version of Arminianism, or as I would prefer to say, a version of Wesleyan theology.

After explaining the Heisenberg uncertainty principle in very brief compass, we will consider the claim that this principle applies to God's foreknowledge. My main conversation partner will be Arthur Peacocke. I will conclude that as the sustainer of all things in being/becoming including the quantum fields and particles, God knows the exact momentum and position of every particle to the highest degree their reality makes possible. In other words, God does not have a "measurement problem" and need not know things by measuring them or experiencing them "from the outside," so to speak. Even if we interpret QM (quantum mechanics) in a dialectical realist way, there is no reason to limit God's knowledge in the way we limit the knowledge of any other finite creature (any creature who does not know all of creation "from the inside" so to speak).

HEISENBERG UNCERTAINTY

What is the famous Heisenberg uncertainty principle, anyway?³ A major difference between classical and quantum mechanics has to do with the precision that, in theory, one can know the initial conditions of a physical interaction and thus predict the outcome. If we stick to just posi-

3. For a good overview online, see Jan Hilgevoord, "The Uncertainty Principle," *Stanford Encyclopedia of Philosophy* (Winter 2007 edition) <<http://plato.stanford.edu>>. For a good overview in print, see Ian Barbour, *Religion and Science* (San Francisco: Harper, 1997) 166–73; see further Robert J. Russell, "Theology and Quantum Theory," in *Physics, Philosophy and Theology*, Russell, W. R. Stoeger, and G. Coyne, eds. (Vatican City: Vatican Observatory, 1988). For a readable book-length analysis of this and other issues in QM, see John Polkinghorne, *The Quantum World* (London: Penguin, 1986).

tion and momentum for some object, classical mechanics says that we can specify independently the exact position and momentum of, say, a bullet as it leaves the barrel of a rifle. We can predict where this bullet will strike a distant target. In quantum theory, however, we cannot know both of the variables with precision. If we can measure the momentum, the position becomes slightly blurred or, more precisely, uncertain. If we measure the position, the same thing happens to the momentum of a particle: it also becomes uncertain or indeterminate. In quantum theory, we cannot all at once specify the exact physical values of a system to arbitrarily great degrees of accuracy. At very *exact* levels of specificity we reach an uncertainty.

In his famous 1927 paper, Heisenberg understands this uncertainty primarily in terms of *epistemology*.⁴ The question is one of the measurements of a particle or interaction, that is, how much we can know about it. Over time, however, Heisenberg and many other scientists and philosophers, made a move from epistemology to *ontology*. They said that the reason for fundamental uncertainty was the way things actually are in nature.⁵ The tiniest structures of reality studied in quantum physics do not have exact momenta or positions. Rather, they come in wave-packets (or *quanta*) with inherent potentialities for more exact and certain properties.

I propose that we accept a complex and sophisticated yet still *realist* interpretation of the uncertainty principle, at least as a close approximation. This is a position that develops critical realism into a dialectical realism.⁶ While this is just one option among current philosophical interpretations of quantum physics, it is the one I will adopt for this argument.⁷ My own view of the laws of nature and the fundamental laws of

4. W. Heisenberg, "On the Perceptible Content of Quantum Theoretical Mechanics and Kinematics" (1927), in *Quantum Theory and Measurement*, English ed., J. A. Wheeler and W. H. Zureck, eds. (Princeton: Princeton University Press, 1983) 62–84.

5. For his later views, see W. Heisenberg, *Physics and Philosophy* (New York: Harper, 1958).

6. See A. G. Padgett, "Dialectical Realism in Theology and Science," *Perspectives on Science and Christian Faith* 54 (2002) 184–92, and developed further in Padgett, *Science and the Study of God* (Grand Rapids: Eerdmans, 2003).

7. For two good overviews of the many options under current discussion, see J. T. Cushing and E. McMullin, eds., *Philosophical Consequences of Quantum Theory* (Notre Dame: University of Notre Dame Press, 1989) or Michael L. G. Redhead, *Incompleteness, Nonlocality, and Realism* (Oxford: Oxford University Press, 1987).

physics is that they are only true in their models. Or, if you like, they are approximations of the truth about physical reality.⁸ Because the laws of physics are powerful and effective simplifications and abstractions of the real world, they provide us with a real but limited and narrow glimpse into nature. If we espouse some type of critical or dialectical realism for physical science, as scientist-theologians like Arthur Peacocke, Ian Barbour and John Polkinghorne do, we cannot simply assume that the formula of quantum theory give us the way nature is "straight up."

PEACOCKE ON OMNISCIENCE

The late Arthur Peacocke was one of the doyens of the current renaissance of science and theology. A respected biologist and learned theologian, Peacocke provided helpful and creative perspectives on a complex set of issues in religion and science. He was not only an author and investigator, but he was a leader in the field in social and institutional ways. His work helped shape the field as it exists today.

One of his most comprehensive and widely read books was *Theology for a Scientific Age* (1990).⁹ In this work, he made the argument that God is self-limited in making an indeterministic, open, and dynamic world.¹⁰ This includes divine omniscience, so that God's foreknowledge is also limited by the Heisenberg uncertainty principle. He developed and expanded his argument in a later paper, published in the collection *Chaos and Complexity* in the CTNS/Vatican Observatory series on divine action.¹¹

Peacocke's argument rests upon a dilemma that he carefully sets up. *Either* the world is fully deterministic (in which case the "fuzziness" of the variables in QM is purely epistemological, not ontological) and God knows everything with full certainty, *or* the world is fundamentally in-

8. I am still at work on a larger book project on the laws of nature. I have found the following works very helpful in considering the philosophical issues surrounding notions of the laws of nature, especially in physics: I. Prigogine, *From Being to Becoming* (San Francisco: W. H. Freeman, 1980); Nancy Cartwright, *How the Laws of Physics Lie* (Oxford: Oxford University Press, 1983); and Ronald Giere, *Science without Laws* (Chicago: University of Chicago Press, 1999).

9. First published by Blackwell in 1990; I will be citing the enlarged edition (Minneapolis: Fortress, 1993).

10. Peacocke, *Theology for a Scientific Age*, 121–23.

11. Peacocke, "God's Interaction with the World," in R. J. Russell et al., eds., *Chaos and Complexity* (Vatican City: Vatican Observatory, 1995) 263–88.

deterministic and even God's knowledge of some future free or random events is limited to probabilities. If we do not accept a hidden variable or other deterministic interpretation of quantum physics, the second option would seem in order. Peacocke concludes: "God has so made the quantum world that God has allowed God's own *possible* knowledge to be thus limited."¹² He goes one to state that "God's knowledge with respect to HUP variables in future states would be the maximum it could be compared with ours, but would nevertheless still be probabilistic."¹³ He concludes that God's knowledge of the future is only probabilistic for physically random events or, as he puts it, "quantum-dependent" events.

While Peacocke may well be right in general terms about the openness of the future even for God, he takes things too far in stating that God's foreknowledge is somehow limited by the HUP (i.e., the Heisenberg uncertainty principle). The first point I want to make against Peacocke is that God does not know the world through physics or any other science. The quantum physics of the present moment may well provide the best insight we have into the smallest levels of physical reality, but God does not know things through measurement or by the scientific method. God knows things from the inside without disturbing their being in any way. God sustains everything in its being and becoming, including even the most gossamer of virtual particles or quantum fields. God knows creatures far more intimately than any finite creature can. Put in personal terms, God knows me better than I know myself and far better than any mere creature who can only know me from the outside, through some causal mechanism. Even things that are physically impossible for any creature to detect, like some quantum phenomena, are known to God from the inside as creator and sustainer of all things.

What follows from this is that even if God makes creation inherently dynamic, open, and not determined, the omnipresent Creator has avenues of knowledge that creatures cannot possibly have. I agree with Peacocke that God's knowledge would still be self-limited, in that God's foreknowledge of some future events will be less than absolutely certain compared with a fully deterministic possible world. But it does not follow from these facts that God's foreknowledge is somehow limited by Heisenberg uncertainty. This level of uncertainty is generated by humanly constructed systems of mathematics and physics. These systems

12. *Ibid.*, 279.

13. *Ibid.*, 280.

give us the best knowledge we have, of course, but my point is that even the best human systems of science are limited. Peacocke ought to have taken more seriously the critical realism he developed and defended so regularly, this time with respect to quantum mechanics. At best, quantum physics gives us an abstract and limited (but still valid and important) insight into physical reality. I can find no reason why God's foreknowledge should be affected in any way by human systems of mathematical physics. Put in other terms, God does not have a measurement problem.

What is of crucial importance here is the dialectical realism move from science to metaphysics. Perhaps I make this move with more caution than Peacocke evidences in the two publications under review. I happen to think that physical reality is open, dynamic, and indeterministic. But Peacocke may overstate what this means for divine foreknowledge. Given the assumptions we listed at the start, even God cannot (on pain of logical incoherence) know with absolute certainty a future event that is in principle indeterminate and unpredictable. I would like to underscore the word *absolute* certainty in this conclusion. While for a limited range of free and random future events God's foreknowledge may be less than absolutely, mathematically certain, the degree of uncertainty may well be vanishingly small. This allows for a possible third way between the two-part dilemma with which Peacocke left us, one in which God's foreknowledge is *practically certain*. It is this idea of a *practical* certainty which leads me to propose a reliable model of divine foreknowledge. After logical and physical necessity and possibility (what we call "modality"), I point to a practical modality that has to do with the way we actually live our lives in the world.

A RELIABLE MODEL OF DIVINE FOREKNOWLEDGE

What do I mean by a reliable model, you ask? Simply that God's grasp of the future is sound and sure. We can place our trust in God's foreknowledge, even when symbolic logic tells us that God's foreknowledge is not logically necessary, i.e., not up to the geometrical certainty worshiped by the ancient Pythagoreans. While the term "know" usually implies that the proposition known must be true and not merely probable, I suggest we loosen up the concept when we consider divine foreknowledge.¹⁴ This is

14. Here I am developing a suggestion made by J. R. Lucas in *The Future: An Essay on God, Temporality and Truth* (Oxford: Blackwell, 1989).

no way undermines the trustworthiness and faithfulness or reliability of divine foreknowledge, once we learn to overcome what I like to call our Pythagorean anxieties.

On the model I am suggesting, God's foreknowledge is not always mathematically certain. But for practical purposes of our living in the world with God and other creatures, we can ignore the vanishingly small probabilities relative to the future as God foreknows it. God's foreknowledge would include everything that is absolutely certain in the future along with things that are practically certain, that is, events whose occurrence is so highly probable that we can ignore the merely mathematical possibility that something else might take place. An example of this would be the time of tomorrow's sunrise. It is not actually physically necessary that the sun rise at the specific time we have calculated. A huge asteroid could strike the earth, for example, and throw the timing off. But it is so overwhelmingly likely that we can ignore, for all intents and purposes, any other possibility. It is practically certain.

Scripture is the primary source of theological knowledge for Christians. With respect to divine foreknowledge, I find that Scriptures do indeed teach that God knows the future in some sense. In Isaiah, the Lord says, "I am God, and there is no other; I am God, and there is no one like me, declaring the end from the beginning, and from ancient times things not yet done" (Is. 46:9–10). As Terrence Fretheim and John Sanders have shown by careful exegesis, however, the witness of Scripture on this point is not uniform.¹⁵ Sometimes the God of the Bible changes God's mind, or predicts something that does not come to pass. It is not clear that Scripture uniformly teaches that God's foreknowledge of all things is absolutely certain. My experience in the study of God and time leads me to believe that the Bible just does not yield the kind of philosophical answers that we seek today in academic theology and philosophy of religion.

Yet when we look to the great ecumenical tradition of the Church, we discover a uniform teaching that God knows future events before they happen. We can let Eusebius of Caesarea stand as our example of this dominant trend. In *Demonstratio Evangelica*, (book 4), Eusebius praises the God whose foreknowledge covers all to come yet has also endowed

15. Terrence Fretheim, *The Suffering of God* (Minneapolis: Fortress, 1983) 45–59; John Sanders, *The God Who Risks*, rev. ed. (Downers Grove, IL: InterVarsity, 2007) 38–139.

human beings with "undetermined liberty of free-willed choice."¹⁶ The great tradition of Christian ecumenical theology wants to affirm both human free will and complete divine foreknowledge. Holding on to both of these points, however, may lead to an incoherent theology.

I believe the model of faithful, reliable, foreknowledge I suggest meets the witness of Scripture and the central concerns of the great doctors of the church. It is, of course, also a revision of the classical position. But I would argue that science and philosophy, clarity and coherence, demand this revision. It is this tension between undetermined, causally open free human choice and the sure and certain foreknowledge of God that generates the paradox of omniscience. Christian theologians will want to affirm both of these teachings. But are they not contradictory? Can we be satisfied with the bald assertion of antinomies or apparent contradictions?

Much of the concern here comes from philosophy rather than exegesis or historical theology. The reliable model I propose fits the witness of Scripture quite well. The problem is one of conceptual coherence in our systematic theology. As a human good work, we want our theology to be truth-seeking, clear, coherent and comprehensive. In this way, we honor our Creator, who endowed us with intelligence, and our Savior, who calls us to love God with our mind. Paradox and dialectic are useful tools in theology, but outright contradiction is anathema.

HUMAN UNCERTAINTY

With respect to God's foreknowledge of human future free actions, there is a helpful analogy with the Heisenberg principle discussed above. I want to return to the theme of God as a unique kind of knower. God knows things from the inside, because God is the omnipresent sustainer and creator of all. While limited beings can only know contingent events through experience or report, God knows things directly, because God is the constant source of their being and becoming. God's omniscience is non-propositional, direct, and ontological. The omnipresent sustainer of all things knows our inmost thoughts, because God the Creator is present to every atom of our being, in everyplace and for all time. God knows us more intimately than we can know ourselves, or indeed than

16. Eusebius of Caesarea, *Demonstratio Evangelica* (Eng. trans. W. J. Ferrar, 2 vols., London: SPCK, 1920) 4.1 (Ferrar, 1:144).

any creature or group of creatures can know us. I will suggest, therefore, that God can predict our free choices even when they are not causally necessitated.

But how strong or absolute will this foreknowledge be? Again we run up against the limits of what we can truly say about God and the world. I have concluded that theology, upon pain of incoherence, must assert that if human freedom is really free, indeterminate and unpredictable, God's foreknowledge of our future free choices cannot be absolutely certain. There will be a vanishingly small degree of uncertainty in divine foreknowledge. My point is simply this: does that really matter?

Most conceptions of certainty use logic or mathematics as their standard. We turn back to Pythagoras and the Greeks, seeking absolute and unchanging realities that are beyond the vicissitudes of time. I have suggested another kind of certainty, having to do with the way we live our lives, with our being in the world. I am proposing a kind of "practical" certainty. With respect to our life in the world, what God foreknows as happening is practically certain, yet at the same time our choices are genuinely free. We can ignore the vanishingly small mathematical probability involved in some cases of foreknowledge when we are talking about living our lives, praying, seeking God's guidance, and the like. God's foreknowledge can be reliable and sure even in a world of freedom and causal openness. But this need not be a problem in the real world, but only in the rarified Pythagorean air of the logically necessary.

On the standard definition of knowledge, if I *know* X, then X must be true. I can know that I am in Canada today only if I am in fact in Canada today; otherwise, it is mere opinion or belief, not knowledge. Theologians and philosophers of religion have imported this logic into our understanding of divine foreknowledge. Yet perhaps foreknowledge is of a different character than present knowledge, and therefore its logic is different. When we foreknow something, by definition it has not happened yet. It is often impossible to have full certainty that a contingent event will happen. But that does not mean we do not know it, or at least I will insist that we can still *foreknow* it. So foreknowledge has a different definition than knowledge, one which allows that the thing foreknown might not (in some possible world story) actually happen. Of course, for creatures and for the Creator, what is foreknown must actually take place in order for the past belief to count as foreknowledge.

Imagine a situation in which I was offered, with no strings attached or other strange circumstances, a very large salary for the rest of my life just to do further research on problems in theology and philosophy of religion. My wife, who knows me very well, could truly say, "I know Alan will take this job." And yet, I am not causally necessitated to take it. I could freely reject it, as far as causal necessity or determinism is concerned. Does this make my wife's claim mere opinion? Surely not. But her knowledge is not absolutely certain. It is logically and physically possible for her to be wrong, because this hypothetical choice is not determined and has not yet been made. In some possible world story, I do not take the job. But let me tell you, that possible world is not really all that likely! Lots of unbelievable and incredible things are logically possible. It is logically possible that William Hasker can fly to the moon just by flapping his ears. It is logically possible that the moon really is made of green cheese. It is logically possible that the sun does not rise tomorrow. In fact the only things that are *not* logically possible are states of affairs whose description is false by logic alone. For this reason, I want to distinguish between knowledge and *fore*-knowledge. Knowledge will require truth with no possibility of error. No concerns of probability or time enter into its definition. Foreknowledge of future contingent events is different. It will be stochastic, because foreknowledge is not true of necessity. If God foreknows X, what follows is that X is very, very probable and X does actually occur. Unlike my definition of knowledge, foreknowledge is temporally indexed. God foreknows a future event now, but later will simply know it. The logic of foreknowledge demands that the proposition known is both temporally indexed and stochastically qualified. Let's say I do in fact take that job. I would insist that God foreknew that I would take that job with a kind of practical certainty. Other options can, believe me, be ignored for practical purposes.

To summarize the position I am suggesting, let X stand for a future event that is right now causally open. We will stipulate that even God cannot foreknow X with absolute certainty. So if God foreknows X, there is a logically possible world story and even a physically possible world story wherein X does not happen. Nevertheless, if God foreknows X and declares that X will happen, we can rest assured that X will take place. Of course some future things are determined, or willed by God, and the like. God's foreknowledge of them will be absolute. My only claim is that not all foreknowledge has to be like *that*. With respect to some of God's

foreknowledge of future free or random events, for all practical purposes in the real world, we can ignore those other, alternative events which are merely logically possible.

I call this model of foreknowledge "reliable," because on this view God's foreknowledge is always faithful, sure and sound. God's non-propositional, internal and omnipresent knowledge of all creation is so sure and reliable, so intimate and infinite, that God's foreknowledge of some future events is *practically certain*.

SOME QUESTIONS AND OBJECTIONS

Because this "third way" between Peacocke's two-part dilemma is so new, it may be useful at this point to consider some objections or questions. I hope in this way to clarify the model I am proposing.

The first question might be this: how far does God's reliable foreknowledge extend? Are there not future contingent events that are so balanced between probable and improbable that even God would not foreknow them? While we cannot know the limits of divine foreknowledge, it does seem to me that some distant future events will not be foreknown by God. God does not foreknow *every* event that happens in the distant future. God's knowledge will thus grow in certainty over time. My point is that the scope of God's foreknowledge is very large and encompasses a vast swath of things that are now probable from our point of view. And *what* God foreknows is sound, sure and reliable.

Another question might be, if God's foreknowledge of a random system or free choice is certain to such a high degree (though admittedly not 100%), does this allow for genuine freedom or randomness? If God knows my future free choice with practical certainty, does that not suggest that I am determined after all? No, because of the radically different avenue by which God's foreknowledge of future free choices operates. If we were talking about knowledge that came from causal interaction based upon a scientific model of the system in question, I might agree. Absolute certainty regarding the outcome of the system implies that the system in question, whether quantum or human, is determined. But God's knowledge of us as persons is intimate, interior, non-empirical, inter-personal, and without limits. For this reason, God and only God can predict what you or I will do with a very great degree of certainty without jeopardizing our freedom. My analogy from quantum mechan-

ics suggests that the same is true, *mutatis mutandis*, with indeterminacy in the quantum world.¹⁷

Does God ever foreknow something which does not come to pass? No, because God is a perfect knower. God would not make the mistake of claiming to foreknow something that was not certain and sure. To do God honor and to respect the infinite difference between God and ourselves, we ought to allow God's omniscience as great a scope as possible. My suggestion is that we affirm God's foreknowledge to be sure and certain for all practical purposes in the *real* world, while allowing that it is less than fully certain. Distant contingent events may be beyond the scope of foreknowledge, however. In this way God's knowledge does grow over time, but the edge of divine foreknowledge may be quite far into the future.

Let me put this another way: in the actual world, what God foreknows is bound to happen, but there are logically possible world stories in which the specific event God foreknows in this world does not take place. What does this mean for divine omniscience? Here I need to get a little technical regarding possible world stories.

Think of a possible world story as being maximally complete. It includes every compossible description of states of affairs that are affirmed in that world, encompassing all of time in that world story. Let's go back to event X. X is a future contingent event which is very highly probable but not logically or physically certain. In the actual world, God now foreknows X. There is a possible world, let us call it W2, which is like ours in many ways but in which X does not occur (that is, the occurrence of X is not affirmed in W2). But given our definition of "foreknow" *in that world story* (W2) God has never foreknown X. Another way of saying this is, if X does not occur then in the actual world God never foreknows X – however probable X may have been in the past from our point of view. This is simply a logically complex way of insisting on the earlier definition of "foreknow" which includes the fact that X must actually occur. If X does not happen, then God would never have foreknown X in the first place, but only believed it to be highly probable (which it was). In this way God will never believe a false proposition, just because God will never make a modal mistake.

17. The implication of my assertion is this: for any free future choice between X and Y, it may be practically certain that X, yet the agent is still free to choose Y. "Free" in this case means neither causally nor logically necessitated.

I want to answer one last theological question which might now arise. Does God take risks? John Sanders has famously argued that God does take risks, and there is some truth to his claim.¹⁸ The Creator does indeed take a certain kind of risk, in making a world that is causally open, foreknowing that some intelligent creatures would use their God-given freedom to oppose God's purpose and plan for this world. Let us call this a *cosmological risk*. This view has long been the standard view of Catholics, Orthodox and most Protestants (Augustine, Luther and Calvin notwithstanding). God takes a cosmological risk in making a world random, dynamic, self-organizing and free (for some creatures have free will).

We might say that over and above such a cosmological risk there could be a "providential" risk, having to do with God's benevolent governance of creation and history. Even though the world is dynamic and free, God is at the same time the omnipresent, omnipotent and omniscient creator of all things. There is no real risk that creation will do things that God does not understand and anticipate long before they happen. God's foreknowledge, omnipotence and providence are worthy of our deepest trust, and guide the world toward its appointed end. So I do not think God takes any providential risks. In the long run, only those who oppose God take risks. The Creator does not.

In this chapter we have explored an alternative view of omniscience, between a fully revisionist process theism, on the one hand, and traditional omniscience, on the other. In terms of our practice in the world, our relationships with one another, our plans for the future, our prayers, and our discipleship, God's foreknowledge is practically certain according to my reliable model of divine foreknowledge. We can rest assured that what God says will come to pass shall indeed come to pass in the actual future. God does foreknow a great deal of the future, even though his knowledge is not absolutely certain.

The mystery of God requires humility in our placing of limitations upon the Creator in our theological models. Key to my position is the claim that because God is the infinite and personal creator and sustainer of the universe, and of every human being, God has resources for foreknowledge that go beyond any finite knower. Thus God is not limited by the Heisenberg uncertainty principle. I recommend a dialectical approach to this complex question, one that affirms divine foreknowledge

18. See Sanders, *God Who Risks*.

as sure and reliable, thus allowing for a genuine divine providence and guidance. At the level of human reality and creaturely freedom, however, I affirm the genuine causal freedom of human beings in history and of indeterminate events in the physical world. Weaving together these two perspectives without contradiction, while still doing justice to the truth we know from different perspectives, is no doubt an ongoing journey.