1995) by giving more positive stress to the unique dignity of the ministerial priesthood, while maintaining the axiom's apophatic nature against christic or ecclesial representationalism. DENNIS MICHAEL FERRARA received his S.T.D. from the Catholic University of America and continues to study the christological, historical, and sacramental implications of the argument that Catholic teaching on the inadmissibility of women to the priesthood derives from the conscious will of Christ.

Reader-Response Criticism and the Allegorizing Reader suggests that appreciation of reader-response criticism could offer a way to reappropriate the allegorical commentaries of the past which continue to present difficulties for biblical scholars and theologians alike. MICHAEL CAHILL, associate professor of biblical studies in the department of theology at Duquesne University, specializes in the history of exegesis. He is completing a critical edition and annotated translation of the Pseudo-Jerome Commentary on Mark described in his "The Identification of the First Markan Commentary," *Revue biblique* 101 (1996).

Pastoral Care of the Divorced and Remarried examines the 1994 pastoral letter of several prominent German bishops that addressed this issue. The authors list key issues that remain focal points for debate among bishops, theologians, and canonists on how appropriately to minister to the divorced and remarried. The study is coauthored by two faculty members of the Washington Theological Union, KENNETH R. HIMES, O.F.M., who received his Ph.D. from Duke University, and JAMES A. CORIDEN, who received his J.C.D. from the Gregorian University and his J.D. from the Columbus School of Law, Catholic University of America. Himes specializes in fundamental moral theology and Catholic social teaching. He published *Fullness of Faith: the Public Significance of Theology* (Paulist, 1993) and contributed to the forthcoming volume *Global Stewardship: A Roman Catholic Perspective* (University of Notre Dame, 1996). Coriden is a canon lawyer who has written widely on church structures, ministry, and the rights of the faithful. He is also working on a book entitled *The Parish in Catholic Tradition.*

The Return of Casuistry offers a comprehensive survey of recent writings on casuistry that demonstrate how it came to be understood as an instance not of deductive but rather inductive reasoning. This study is concretely illustrated by the case of a man, recently tested HIV positive, now applying for admission to a religious congregation. JAMES F. KEENAN, S.J., obtained his S.T.D. at the Gregorian University and is associate professor at the Weston Jesuit School of Theology, Cambridge, Mass. He is now completing a book entitled *Moral Instruction: Virtues, Cases and Conscience in Seventeenth-Century British Practical Divinity.*

Michael A. Fahey, S.J.
Editor

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DOES GOD PLAY DICE? DIVINE PROVIDENCE AND CHANCE

ELIZABETH A. JOHNSON, C.S.J.

Fordham University, New York

IN EVERY AGE theology interacts directly or indirectly with the view of the world prevalent in its culture, including knowledge of the world gained through observation or experimental means. Although certain encounters of theology with this "scientific" intelligence have been shot through with hostility, the history of theology may also be read to disclose how dialogue with technically learned insights about the world has enkindled new religious wisdom, inspired appealing metaphors, and provided a context for new interpretation of religious tradition.[1] In any event, theology's interaction with science is essential to make religious faith both credible and relevant within a particular generation's view of the world and how it works.

In the last two decades of the 20th century, dialogue between theology and science has entered into a newly flourishing state thanks to the emergence of a somewhat less dogmatic, more hermeneutical temper in each discipline, as well as the desire of certain key players to engage the questions of the other.[2] Significant for Catholic theology was the solid encouragement Pope John Paul II gave to this dialogue in a 1987 message:

> The scientific disciplines are endowing us with an understanding and appreciation of our universe as a whole and of the incredibly rich variety of intricately related processes and structures which constitute its animate and inanimate components. . . . The vitality and significance of theology for human-

[1] For historical background of the theology-science exchange, see Ernan McMullin, "Natural Science and Belief in a Creator: Historical Notes," in Robert Russell, William Stoeger, and George Coyne, ed., *Physics, Philosophy, and Theology: A Common Quest for Understanding* (Vatican City: Vatican Observatory, 1988) 49–79; and Michael Buckley, "The Newtonian Settlement and the Origins of Aetheism," ibid. 81–102.

[2] See results of dialogue in Ted Peters, ed., *Cosmos as Creation: Theology and Science in Consonance* (Nashville: Abingdon, 1989); David Burrell, ed., *God and Creation: An Ecumenical Symposium* (Notre Dame: University of Notre Dame, 1990); and Robert Russell, Nancey Murphy, and C. J. Isham, ed., *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action* (Vatican City: Vatican Observatory; and Berkeley: Center for Theology and the Natural Sciences, 1993). Ian Barbour's Gifford Lectures explore the theology-science encounter in illuminating detail: *Religion in an Age of Science*, 2 vols. (San Francisco: Harper and Row, 1990–91). Individuals who have scholarly credentials in both science and theology and whose work helpfully reflects this dialogue include John Polkinghorne (see, e.g., his *One World: The Interaction of Science and Theology* [Princeton: Princeton University, 1986]) and Arthur Peacocke (see, e.g., his *Theology for a Scientific Age: Being and Becoming—Natural, Divine and Human* [Minneapolis: Fortress, 1993]).

ity will in a profound way be reflected in its ability to incorporate these findings.[3]

Continuing, the papal message presented an interesting list of possibilities:

> If the cosmologies of the ancient Near Eastern world could be purified and assimilated into the first chapters of Genesis, might contemporary cosmology have something to offer to our reflections upon creation? Does an evolutionary perspective bring any light to bear upon theological anthropology, the meaning of the human person as the *imago Dei,* the problem of Christology—and even upon the development of doctrine itself? What, if any, are the eschatological implications of contemporary cosmology, specially in light of the vast future of our universe? Can theological method fruitfully appropriate insights from scientific methodology and the philosophy of science?[4]

Gently chiding theological research and teaching for being less than enthusiastic about pursuing these questions, the pope concluded by urging dialogue that can bring mutual benefit to both parties:

> Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutism. Each can draw the other into a wider world, a world in which both can flourish.[5]

In sum, theological reflection today should endeavor to speak about God's relation not to an ancient nor medieval nor Newtonian world, but to the dynamic, emergent, self-organizing universe that contemporary natural and biological sciences describe.

This is not an easy world to comprehend or to comprise within a religious perspective. One of the most challenging discoveries has to do with the natural occurrence of chance, seemingly more intrinsic to the evolutionary development of the world than ever before thought to be the case. Albert Einstein's famous remark denying that God plays dice with the universe is in fact an expression of his religiously based refusal to accept the uncertainty of events encountered at the heart of quantum reality. Subsequently, however, the indispensable role played by random events operating within a law-like framework has received greater appreciation. Now the theological search is on for language, models, and metaphors that will give expression to faith experience in ways coherent with this fundamental scientific insight.

In this article I will engage the particular question of how God's providential activity can be affirmed in a world where chance plays a more essential role than ever before imagined. The conclusion, that divine providence is compatible with genuine randomness and that this compatibility in turn can shed light on the incomprehensible,

[3] Papal message reprinted in Robert Russell et al., ed., *John Paul II on Science and Religion: Reflections on the New View from Rome* (Vatican City: Vatican Observatory, 1990) M 1–M 14, at M 5.

[4] Ibid. M 11.

[5] Ibid. M 13.

gracious mystery of God, will be arrived at in three steps. First I will describe the relevant scientific data essential for understanding the problem; next I will retrieve the Thomistic notion of dual agency; and finally I will explore the interface between the two. In no way does this analysis exhaust the topic nor does my proposal resolve the debate. Rather, it simply traces and attempts to contribute to the issue out of the heritage of the Thomistic tradition.

SCIENCE: THE INTERPLAY OF LAW AND CHANCE

By almost any measure, 20th-century science has brought to an end the mechanistic view of the world associated with Newtonian physics and has replaced it with a dynamic, open-ended view of the world in which some events are in principle unpredictable, although in retrospect they may make sense. This holds true for events at very small and very large magnitudes of space as well as for events through the long reaches of time.

At the infinitesimal level of the atom and its subatomic particles, quantum mechanics uncovers a realm where time, space, and matter itself behave according to laws whose very functioning have uncertainty built into them. Statistical probability lends a measure of order to this realm, but precise subatomic events do not seem to occur according to any discernible regularity. For example, while it can be predicted that a certain mass of radioactive uranium will decompose within a given time, there is no way to predict which atom will decompose next, or why.[6] Furthermore, as the Heisenberg uncertainty principle asserts, a human observer cannot simultaneously plot both the position and velocity of a subatomic particle, for by charting one we disturb the other. Does this human inability to nail down and predict subatomic events point to the poor state of our equipment or rather to an ontological indeterminacy in reality itself? Many philosophers of science argue for the latter. Judging from the realm of the infinitesimally small, the fundamental building blocks of the world are neither mechanically preprogrammed nor utterly chaotic, but spontaneous within an orderly system.

At the macro level of nonlinear, dynamical systems such as weather, chaos theory explores how very slight changes in initial conditions are ramified to produce massive effects.[7] A butterfly fluttering its wings in Beijing may set up an air current that amplifies upward through dif-

[6] For general background written for the non-specialist, see John Polkinghorne, *The Quantum World* (Princeton: Princeton University, 1984); and C. J. Isham, "Quantum Theories of the Creation of the Universe," in Russell et al., ed., *Quantum Cosmology* 49–89.

[7] For a general introduction, see James Gleick, *Chaos: Making a New Science* (New York: Penguin, 1987); a key refutation of the idea that chaos amounts to blind, purposeless chance is the volume of Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos* (New York: Bantam, 1984).

ferent levels of intensity to produce a major storm in New York a week later. While the ramifications of change through chaotic, nonlinear systems are regular enough to be traced in mathematical equations, the number of initial conditions that effect each system is so immense and their confluence so unique that human observation will never get a total handle on them. We will never have a completely accurate weather forecast earlier than a week ahead, and this is due not to the limitation of our instruments but to the nature of the weather system itself. Being intrinsically unpredictable in an epistemological sense, dynamical systems thus represent a form of "structured randomness" in the world.[8] Does this indicate an ontological indeterminacy in the dynamical systems themselves? Many philosophers of science think so.

The immensely long evolution of the cosmos from the Big Bang to the present and still evolving clusters of galaxies, as well as the evolution of matter on earth from nonorganic to living states and from simple life to human consciousness is another story fraught with the subtle interplay between chance and law.[9] To stay with the example of life on earth, mutations in genes caused by the sun's ultraviolet rays or exposure to chemicals issue in variations on life forms. Natural selection then rewards the ones that adapt best to their environment and reproduce. On and on goes this process of a hundred thousand variables, dead ends, and breakthroughs. Roll back the clock to before the appearance of life on earth and then let it roll again. Would humanity appear as we are now? Scientists are virtually unanimous in saying "no," so multiple and diverse are the factors that combined to produce our species. Intelligent life would probably develop, for the matter of the universe has the potential to evolve into complex structures (brains) from which consciousness emerges. But it would be a group with a different genetic history, even a different physical appearance.

The emergence of human mind sheds light on a wondrous ability of matter, namely its capacity so to organize itself as to bring forth the truly new from within itself. Beginning with the featureless state right after the Big Bang, a rich diversity of physical systems and forms have emerged in a long, complex sequence of self-ordering processes even to the point where mind emerges from matter—and seeks to understand the process by which it came to be! This evolutionary interpretation of mind as emergent within the process of matter's self-organization leads to a holistic, nondualistic idea of the human person. Not a com-

[8] Term used by John Polkinghorne, "The Laws of Nature and the Laws of Physics," in Russell et al., ed., *Quantum Cosmology* 437–48.

[9] Helpful scientific introductions include Carl Sagan, *Cosmos* (New York: Ballantine, 1980); Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: Norton, 1989); and Edmund O. Wilson, *The Diversity of Life* (New York: Norton, 1992). For religious reflections on this data, see Robert Jastrow, *God and the Astronomers* (New York: Norton, 1978); Paul Davies, *God and the New Physics* (New York: Simon and Schuster, 1983); and Arthur Peacocke, *God and the New Biology* (San Francisco: Harper and Row, 1986).

posite of the isolatable elements of material body and spiritual but somehow substantial mind, the human being is a single entity whose physical structure enables and supports the emergence of mind. As Paul Davies graphically puts it, mind is not some sort of extra ingredient glued onto brains at some stage of evolution; it did not require any factors external to the world itself.[10] Rather, consciousness is a power that emerges gradually in and through the increasing complexity of those intricately ramified and interlaced structures we call brains. We are the universe become conscious of itself. Material, physical reality is much richer in its possibilities than we are accustomed to think.

Taken together, scientific understandings of the indeterminism of physical systems at the quantum level, the unpredictability of chaotic systems at the macro level, and the random emergence of new forms through the evolutionary process itself undermine the idea that there is a detailed blueprint or unfolding plan according to which the world was designed and now operates. Rather, the stuff of the world has an innate creativity in virtue of which the new continuously emerges through the interplay of chance and law: "there is no detailed blueprint, only a set of laws with an inbuilt facility for making interesting things happen."[11] The genuinely random intersects with deep-rooted regularities, issuing in a new situation which, when regularized, becomes in turn the basis for a new play of chance. The world develops, then, neither according to anarchy nor according to teleology, but purposively if unpredictably. Physical phenomena are constrained in an orderly way, but themselves give rise to novelty due to the intrinsic indeterminism and openness of physical processes.

In this construal of nature's constitutive dynamic, it becomes clear that the classical idea of the laws of nature also requires revision. These are now understood to be descriptive rather than prescriptive, that is, abstract descriptions read off from regularities in the universe that approximate what we observe, rather than rules that preexist platonically apart from the universe, operating to dictate or enforce behavior.[12] The laws of nature approximate the relationships in nature but do not comprehend them to their depths, which remain forever veiled. Nature itself is a mystery.

Furthermore, the laws of nature require the workings of chance if matter is to explore its full range of possibilities and emerge toward richness and complexity. Without chance, the potentialities of this universe would go unactualized. The movement of particles at the

[10] Paul Davies, "The Intelligibility of Nature," in Russell et al., ed., *Quantum Cosmology* 145–61, at 152; see also George Ellis, "The Theology of the Anthropic Principle," ibid. 367–405.

[11] Paul Davies, *The Cosmic Blueprint* (New York: Simon & Schuster, 1988) 202.

[12] See William Stoeger, "Contemporary Physics and the Ontological Status of the Laws of Nature," in Russell et al., ed., *Quantum Cosmology* 209–34.

subatomic level, the initial conditions of nonlinear dynamic systems, the mutation of genes in evolutionary history, all are necessary for the universe's becoming, though none can be predicted or controlled. It seems that the full gamut of the potentialities of matter can be explored only through the agency of rapid and frequent randomization. This role of chance is what one would expect if the universe were so constituted as to be able to explore all the potential forms of the organization of matter, both living and nonliving, which it contains.

It can even be seen in retrospect that the emergence of human nature as we know it requires such an infrastructure. There is a deep compatibility between the autonomous ways physical, chemical, and biological systems operate though the interplay of law and chance on the one hand, and human consciousness and freedom on the other. These particular human qualities (consciousness and freedom) are intensely concentrated states of tendencies (purposiveness and chance) found throughout the universe in natural forms. The radical freedom of natural systems to explore and discover themselves is the condition for the possibility of the emergence of free and conscious human beings as part of the universe.

The capacity to form a world is there from the beginning in the fundamental constitution of matter. Chance's role is to enable matter to explore these potentialities. No chance, no evolution of the universe. If it were not such an impossible oxymoron, chance might even be called a law of nature itself. Chance, consequently, is not an alternative to law, but the very means whereby law is creative. The two are strongly interrelated and the universe evolves through their interplay.

On balance, the general character of the world as we know it from contemporary science calls for a more subtle notion of overall design, one that incorporates the occurrence of the genuinely novel and unpredictable in the context of laws that underdetermine what occurs. Great possibilities are left open.

GOD'S ACTION IN THE WORLD: THEOLOGICAL OPTIONS

This contemporary view of the world, which enjoys wide allegiance in the scientific community and is not contingent on particular, disputed points, provides a uniquely new context in which to understand God's creative and providential action. The traditional model of God as king and ruler, gifted with attributes of omniscience and omnipotence, who in creating and sustaining the world preprograms its development, who establishes its laws of nature but sets them aside to intervene miraculously when the occasion warrants—this monarchical model is less and less seriously imaginable. The potentiality of matter, the complexity of self-organizing systems, the potent unpredictability of evolution, the operation of chance within underdetermined laws, the presence of chaos and novelty, the interdependent processes of the world in becoming, all are putting pressure on the classical idea of God and divine action in the world.

Engaging this new question, recent theology has itself self-organized into a range of options. In his 1989–90 Gifford Lectures, Ian Barbour delineates eight different schools of thought on the issue, each of which has its strengths and shortcomings. Classical theology understands God to be omnipotent, omniscient, unchanging sovereign who relates to the world as ruler to kingdom. The Deist option sees God as designer of a law-abiding world to which God relates as clockmaker to clock. Neo-Thomist theology predicates God as primary cause working through secondary causes, on the analogy of an artisan with tools. The kenotic position perceives God as voluntarily self-limiting divine power in order to participate vulnerably in the life of the world, the way a parent enables a child to grow. Since existentialist theology sees God acting only in personal life, it has no model of God's relation to the world. Linguistic theology discerns God as the agent whose intention is carried out in the overall development of the cosmos, the whole then being interpreted as the one, all-encompassing action of God. The option for the theme of embodiment sees the world as God's body to which God relates intimately as a person does to one's own body. Process theology sees God as a creative participant in the cosmic community, with a divine leadership role to play.[13]

In addition to these positions described by Barbour, there is also another, not uncommon view of God's relation to the world that springs from a more closely literal interpretation of the Bible, understanding God to act directly in the events of the world as an individual, personal player. In dialogue with contemporary science this position argues ingeniously that, thanks to the indeterminism of reality at the quantum level, God's direct intervention in any instance does not transgress the laws of nature. Rather, the natural system itself is "gappy" and open to outside influence without being violated.[14] Thus God can answer prayer, arranging, for example, that the sun shines on the church picnic as a result of God's setting certain initial conditions in the weather pattern a week ahead, and can do so without violating the laws of nature. The difficulty with this position, however, is that it confuses a gap, something missing in the ontological structure of natural systems, with indeterminacy, the openness of natural systems to a variety of outcomes. This openness of matter, however, is an intrinsic part of the working of nature and necessary for its creative development. In principle there are no gaps in the universe, which is complete on its own level.

Evaluating the current state of discussion in 1991, Owen Thomas, editor of a major volume on divine action, argues that while each

[13] Ian Barbour, *Religion in an Age of Science* 1:243–70, with chart on 244. See also the organizing schema by Robert Russell, "Introduction," in Russell et al., ed., *Quantum Cosmology* 4–10.

[14] Representative of this group is William Alston, "Divine Action, Human Freedom, and the Laws of Nature," in Russell et al., ed., *Quantum Cosmology* 185–207.

position contributes some insight, only neo-Thomism and process theology are genuinely adequate as they alone give a philosophically satisfying and coherent account of how both divine and creaturely agents are fully active in one unified event.[15] How, in either case, can we conceive of the play of chance in the providential guidance of the world? Process theology would appear to have the advantage in this question with its understanding of how God continuously lures the world to its goal. In this ongoing process, God prehends every new event into the divine consequent nature and gives new initial aims to every ongoing experience on the basis of what has already transpired. Since God and the world are in process together, not only does chance not threaten divine control over the universe, as it does in the classical model, but chance positively enriches divine experience. At the same time it provides opportunity for God's ongoing providential guidance in the giving of new initial aims to actual occasions impacted by chance.

Neo-Thomism, with its roots in a medieval and thus scientifically static view of the world, would seem less able to account for the occurrence of genuinely random events. Assessing its strengths and weaknesses, Barbour notes as a problem its difficulty in moving away from divine determinism to allow for the genuinely random to occur.[16] My own wager at this point, however, is that Aquinas's own thought is not all that closed to the possibility that chance may factor into divine creative and providential action. In fact, it seems to me that Aquinas's insight into how God acts in the world fairly resonates with potential to account for the play of chance.

AQUINAS AND THE INTEGRITY OF CREATED SYSTEMS

At the heart of Aquinas's vision of the nature of created reality is the evocative idea of participation. In creating the world, God, whose essence is the very livingness of Being (*esse*), gives a share in that being to what is other than Godself:

> Whatever is of a certain kind through its essence is the proper cause of what is of such a kind by participation. Thus, fire is the cause of all things that are afire. Now, God alone is actual being through divine essence itself, while other beings are actual beings through participation.[17]

As to ignite is the proper effect of fire, so too is the sharing of being the

[15] Owen Thomas, "Recent Thoughts on Divine Agency," in *Divine Action,* ed. Brian Hebblethwaite and Edward Henderson (Edinburgh: T. & T. Clark, 1991) 35–50. See Thomas's own edited volume, *God's Activity in the World: The Contemporary Problem* (Chico, Calif.: Scholars, 1983).

[16] Ian Barbour, *Religion in an Age of Science* 1:249–50.

[17] Thomas Aquinas, *Summa contra gentiles* 3, chap. 66.7 (hereafter cited as *SCG;* the edition used is translated by Vernon Bourke [Garden City, N.Y.: Doubleday, 1956]). Aquinas's extended discussion of divine governance can be found in *SCG* 3, especially chaps. 64–77, and his *Summa theologiae* 1, qq. 103–109 (hereafter cited as *ST;* the edition used is translated by the English Dominicans [New York: Benziger, 1956]).

proper effect of the Mystery of Being. Hence, all that exists participates in its own way in divine being through the very gift of creaturely existence. It is not as if God and creatures stood as uncreated and created instantiations of "being" which is held in common by both (a frequent misunderstanding). Rather, the mystery of God is the livingness of Being who freely shares being while creatures participate. Nor is the gift of being given only once in the instant when a creature begins to exist, but continuously in a ceaseless act of divine creation. To cite another fiery analogy, every creature stands in relation to God as the air to the light of the sun. For as the sun is light-giving by its very nature, while the air is illuminated only so long as the sun shines, so also God alone simply exists (divine essence is *esse*) while every creature exists insofar as it participates in being (creaturely essence is not *esse*).[18]

This notion of participation affects the understanding of both God and the world. Continuously creating and sustaining, the life-giving Spirit of God is in all things not as part of their essence but as the innermost source of their being, power, and action. There is, in other words, a constitutive presence of God at the heart of things. Conversely, in its own created being and doing, the world continuously participates in the livingness of the One who is sheer, exuberant aliveness. The universe, in other words, is a sacrament. Every excellence it exhibits is a participation in that quality which supereminently exists in the incomprehensible mystery of God. Take the key example of goodness. Since "it befits divine goodness that other things should be partakers therein,"[19] every created good is a good by participation in the One who is good by essence. It follows that "in the whole sphere of creation there is no good that is not a good participatively."[20] In having their own good, creatures share in a way coherent with their own finite reality in divine goodness which is infinite. Indeed for Aquinas, this is the basis for any speech about the transcendent mystery of God at all, for in knowing the excellence of the world we may speak analogically about the One in whose being it shares.

One of the strengths of Aquinas's vision is the autonomy he grants to created existence through its participation in divine being. He is so convinced of the transcendent mystery of God (*esse ipsum subsistens*) and so clear about the sui generis way God continuously creates the world into being that he sees no threat to divinity in allowing creatures the fullest measure of agency according to their own nature. In fact, it is a measure of the creative power of God to raise up creatures who participate in divine being to such a degree that they are also creative and sustaining in their own right. A view to the contrary would diminish not only creatures but also their Creator: "to detract from the perfection of creatures is to detract from the perfection of

[18] *ST* 1, q. 104, a. 1.
[19] *ST* 1, q. 19, a. 2.
[20] *ST* 1, q. 103, a. 2.

divine power."[21] This is a genuinely noncompetitive view of God and the world. According to its dynamism, nearness to God and genuine creaturely autonomy grow in direct rather than inverse proportion. That is, God is not glorified by the diminishment of the creature but by the creature's flourishing in the fullness of its powers. The nature of created participation in divine being is such that it grants creatures their own integrity, without reserve.[22]

This participatory relationship has strong implications for the question of agency. The power of creaturely forces and agents to act and cause change in the world is a created participation in the uncreated power of the One who is pure act. Conversely, God's generous goodness and wisdom are seen especially in the creation of a world with its own innate agency. As is the case with created things' participation in divine being and goodness, so too with agency. God's action is not part of the creature's essential action, which has its own creaturely integrity. Rather, God's act giving creatures their very nature is what makes creaturely act possible at all in its own created autonomy. Technically, God is primary cause of the world, the unfathomable Source of being who continuously creates and sustains it, while creatures are secondary causes, moved movers who receive from God their form and power to act with independence.[23]

These two causes are not two species of the same genus, not two different types of causes united by the commonality of causing. They operate on completely different levels (itself an inadequate analogy), one being the cause of all causes and the other participating in this power. In this system of thought it is incoherent to think of God as working in the world apart from secondary causes, or beside them, or in addition to them, or even in competition with them. God's act does not supply something that is missing from a creaturely act or rob it of its power so that it is only a sham cause. Rather, the mystery of God acts by divine essence, power, and presence in and through the acts of finite agents which have genuine causal efficacy in their own right. It is not the case that divine and finite agents are complementary, each contributing distinct elements to the one outcome. Instead, God acts wholly through and in the finite agents that also act wholly in the event. As a result, the one effect issues from both primary and secondary causes simultaneously, with each cause, however, standing in a fundamentally different relationship to the effect. God makes the world, in other words, in the process of things acting as themselves.

[21] *SCG* 3.69.15.

[22] For further explanation of this position, see Piet Schoonenberg, "God or Man: A False Dilemma," in his *The Christ* (New York: Seabury, 1971) 13–49.

[23] For explanation of this point, see Etienne Gilson, "The Corporeal World and the Efficacy of Secondary Causes," in Owen Thomas, ed., *God's Activity* 213–30. Gilson stresses how strong Aquinas is on the integrity of secondary causes, using Aristotle to combat the Platonism of Avicenna. See also David Burrell, *Aquinas: God and Action* (Notre Dame: University of Notre Dame, 1979).

Working in this tradition, Karl Rahner argues that even in the creation of the human soul divine causality does not insert itself into the finite causal series but, through the power given to matter to evolve toward spirit, enables human parents to transcend themselves in the creation of a genuinely other person.[24] Rahner among others also appeals to the doctrine of the Incarnation, wherein the divine and human are united while remaining distinct, and to the doctrine of grace, wherein the Spirit brings wholeness to human beings without violating their freedom or responsibility, as paradigms for the God-world relationship. It seems to me that it is so easy to forget this, slipping God into the web of interactions as though the divine were simply a bigger and better secondary cause. But the distinction between primary and secondary causality enables thought to hold firm to the mystery of the Godness of God and the integrity of creatures, seeing both acting in a unique *concursus*.

In Aquinas's discussion of divine governance of the world, this idea of double agency with respect to efficient causality is correlated with final causality to provide the grid for his understanding of providence. It would seem, he objects with a curiously modern ring, that the universe does not need to be governed by God, for the processes of the world seem to accomplish their purpose on their own and without any interference. However, he replies, this very self-direction is itself an imprint (*impressio*) from God, for in giving creatures their own being God gives them a natural inclination whereby through their own natural actions they tend toward the good. This dynamic tendency is genuinely part of their own nature but it also expresses God's purposes. While endowing creatures with their intrinsic nature and ways of acting, God leaves them free to follow the strivings of their natural inclination which aims them toward the good. Since all good is a participation in divine goodness, we can affirm that the universe as a whole tends toward the ultimate good which is God. While in scholastic categories this is summed up in the notion that God is immanent in the universe as final cause, Aquinas also finds this view resonating in the biblical depiction of Sophia or Holy Wisdom, who reaches from one end of the world to the other, ordering all things sweetly and mightily (Wisdom 8:1).[25]

Let us draw all of these threads together to see how they might deliver an interpretive view of how God acts providentially in the world. As Aquinas explains, the way God is governor of things matches the way God is their cause. As God is primary cause of the world as a

[24] Karl Rahner, *Hominization: The Evolutionary Origin of Man as a Theological Problem* (New York: Herder & Herder, 1965); see also his essays "Christology within an Evolutionary View of the World," in *Theological Investigations* 5 (New York: Seabury, 1975) 157–92; and "The Unity of Spirit and Matter in the Christian Understanding of Faith," in *Theological Investigations* 6 (New York: Crossroad, 1982) 153–77.

[25] *ST* 1, q. 103, a. 8.

whole and in every detail, endowing all created beings with their own participation in divine being (enabling them to exist), in divine agency (empowering them to act), and in divine goodness (drawing them toward their goal), so too God graciously guides the world toward its end in and through the natural workings of the processes found in creation as a whole. Immanent in these processes, divine providential purposes come to fruition by means of purposes inherent in creatures themselves.

Why is this fitting? Aquinas argues in a particularly insightful reply that those forms of governing are best that communicate a higher perfection to the governed. Now there is more excellence in a thing's being a cause in relation to others than in its not being a cause. Consequently, God governs in such a way as to empower creatures to be causes toward others. Indeed, "If God were to govern alone, the capacity to be causes would be missing from creatures,"[26] to the detriment of their flourishing and their Creator's glory. Looked at another way, if God did everything directly so that created causes did not really affect anything, this would be a less powerful God. For it shows more power to give others a causative capability than to do everything oneself.[27] Thus God is everywhere present and active, continuously interacting with the world to implement divine purpose while granting creatures and created systems a full measure of being and efficacy. This is a both/and sensibility that guarantees the integrity of the created causal nexus while affirming the gracious and intentional immanence of the transcendent God active within worldly purposiveness.

Divine purpose is accomplished in a *concursus* or flowing together of divine and creaturely act in which the latter mediates the former. This means that the world necessarily hides divine providential action from us. God's act is not a discrete object that can be isolated and known as a finite constituent of the world, for its very nature is transcendent mystery while its mode of operation transpires immanently in and through created causes. At the same time, faith affirms that the world, far from being merely a stage for divine action, is itself a sacrament of God's providential action, which is sweet and strong within every cause so that everything may truly contribute to the realization of the goal.

PROVIDENCE AND CHANCE

Bringing contemporary science's view of the creative role of chance within law-like structure into dialogue with Aquinas's understanding of the God-world relation yields interesting results. The latter's conviction of the integrity of natural causes, while formulated within a largely static worldview, accommodates evolutionary science with almost surprising ease. For the basic principle remains the same: God's

[26] *ST* 1, q. 103, a. 6.

[27] *ST* 1, q. 105, a. 5.

providential guidance is accomplished in and through the free working of secondary causes. Indeed, for Aquinas the understanding that God's providential activity is exercised in and through secondary causes includes rather than excludes chance, contingency, and freedom of choice: "It is not the function of divine providence to impose necessity on things ruled by it."[28] Rather, random occurrences themselves are secondary causes with their own integrity. Science may describe these secondary causes in different ways today, but they still function theologically as the means by which God fulfills divine purpose.

As we have seen, the process of creation is described by the natural sciences as one in which new qualities and modes of existence continuously emerge out of simpler forms of matter by the operation of natural laws. These laws of nature are ingenious and felicitous in that they enable matter and energy to self-organize in unexpectedly remarkable ways from clouds of dust and gas to galaxies and solar systems, and from nonorganic matter to life to mind. Multilayered and underdetermined, these laws reflect the universe's potential to create richness and complexity spontaneously, from within, in a process whose inherent openness precludes detailed fixing in advance. As secondary causes, they realize God's purposes. In the words of astrophysicist and theologian William Stoeger, reflective of the Neo-Thomistic consensus, "God is always acting through the deterministic and indeterministic interrelationships and regularities of physical reality which our models and laws imperfectly describe."[29]

Today's science has discovered that chance is an essential element in the continuous working out of these laws of nature. "In the beginning" the Creator endows the material of this world with one set of potentialities rather than another. These are then unveiled by chance exploring their gamut in an inevitable yet indeterminate evolutionary process. Indeed, in retrospect, this seems to be the only way in which all of matter's potentialities might eventually, given enough time and space, be actualized. Consequently, chance is not an alternative to law, but the very means whereby law is creative. The two are strongly interrelated and the universe evolves through their interplay. If *this* is the kind of universe created by the Holy Mystery who is God, then faith can affirm that God works not only through the deep regularities of the laws of nature but also through chance occurrence which has its own, genuinely random integrity. God uses chance, so to speak, to ensure variety, resilience, novelty, and freedom in the universe, right up to humanity itself. Absolute Holy Mystery dwells within, encompasses, empowers the evolutionary process, making the world through the process of things being themselves, thus making the world through chance and its genuinely irregular character. If God works through chance, then the natural creativity of chance itself can be thought of as

[28] *SCG* 3.72.7; see also 3.73 and 74.
[29] William Stoeger, "Contemporary Physics" 234.

a mode of divine creativity in which it participates. And the gracious mystery of God can be glimpsed as the Source not only of deep regularities in the universe, but also of novelty. The future remains genuinely open: God does not act like a bigger and better secondary cause to determine chance atomic events or initial conditions of chaotic systems. Randomness is real, for God respects the structure of creation while at the same time weaving events into providential patterns toward the realization of the whole. Divine sovereignty and creaturely freedom, of which chance is one instance, do not compete.

RISK-TAKING GOD

How does this interpretation of providence working through chance in turn influence classical understanding of divine attributes? With this question we reach a frontier where scientific insight in dialogue with Christian faith is providing the occasion for new forays into the doctrine of God. In these explorations theology today seems to be making bolder use of its own particular wisdom of Christology and pneumatology than did early modern theologians caught on the cusp of scientific atheism's first attacks.[30] The appeal today is to God's gracious action expressed in Incarnation and the gift of grace as the basic paradigm of the God-world relationship.

The creating God is also the redeeming God whose self-emptying Incarnation into the vagaries of history reveals the depths of divine Love, and is also the sanctifying God whose self-gift in grace brings wholeness to the brokenness of sinful hearts and situations without violating human freedom. Could it not be the case that, rather than being uncharacteristic of the mystery of God, divine kenosis revealed in the human history of salvation is what is most typical of God's ways, and therefore also distinguishes God's working in the natural world? Could it not be that God's being edged out of the world and onto the cross, in Bonhoeffer's profound intuition, also refers to the cost of divine vulnerability in creation?[31] Could it not be that since the human world is on a continuum with the micro world, only mediated by more complex biological matter, the best way to understand God's action in the indeterminacy of the natural world is by analogy with how divine initiative relates to human freedom?

[30] See the magisterial study by Michael J. Buckley, *At the Origins of Modern Atheism* (New Haven: Yale University, 1987), who concludes: "It is not without some sense of wonder that one records that the theologians bracketed religion in order to defend religion" (345).

[31] Dietrich Bonhoeffer, *Letters and Papers from Prison* (New York: Macmillan, 1953) 219 (letter of July 16, 1944). For development of the idea of divine kenosis in creation, see Jürgen Moltmann, *God in Creation* (San Francisco: Harper and Row, 1985); and John B. Cobb and Christopher Ives, ed., *The Emptying God* (Maryknoll, N. Y.: Orbis, 1990). In the latter collection, the pitfalls and strengths of this idea for subordinated groups are explored by Catherine Keller, "Scoop up the Water and the Moon is in Your Hands: On Feminist Theology and Dynamic Self-Emptying" 102–15.

If so, and an eminently coherent case can be made for this position, then divine perfection is ultimately a perfection of relationality and love rather than of self-sufficiency and control. Consequently, omnipotence unfailingly manifests itself not as coercive "power over" but as sovereign love which empowers. Exercising this power, God's providential guidance eschews pre-ordaining or imposing exact sequences of events but rather makes itself known as the patient, subtle presence of a gracious Creator who achieves divine purpose through the free play of created processes. Indeed, it is quite likely that Love is able to work only in such a way, out of respect for the beloved. It should be noted that the basic difference between process theology and Thomism regarding God's self-limitation of omnipotence is that for process thought this is a metaphysical necessity while for Thomism it is a free and voluntary act of love.

Divine governance involves God in waiting upon the world, so to speak, patiently acting through its natural processes including unpredictable, uncontrollable random events to bring about the emergence of the new while consistently urging the whole toward fullness of life. Even more can be said. With the development of nerves and brains, suffering in both the natural and human world becomes a terrifying consequence of the free play of randomness. Indwelling the world with the power of providential love, the gracious mystery of God is involved in suffering with the beloved creation as new life is created through death. Not the monarch but the lover becomes the paradigm.[32]

In the course of thinking upon these things, theologians are finding it helpful to imagine new metaphors to capture the nuances of God's providential relation to the workings of chance. As might be suspected, these images are drawn more from artistic creativity and the relationship of love than from the classical model of an artisan working with inert tools. No one of these metaphors, of course, is adequate but each sheds a little light. They also point quite directly to the importance of responsible human action in cooperation with God's providential purpose. Among them: God is like a master theatrical improvisor in live performance, amplifying and embroidering each theme as it presents itself; like a choreographer composing steps in tandem with the creative insights of the whole dance troupe; like a composer of a fugue, starting with a simple line of melody and weaving a complex structure by endlessly folding it back upon itself; like a jazz player, inspired by the spirit of the audience and the night to improvise riffs upon a basic melody; like a designer who sets the rules of a game that includes wild

[32] Peter Hodgson, *God in History: Shapes of Freedom* (Nashville: Abingdon, 1989) develops this idea with depth and lucidity; Sallie McFague, *Models of God: Theology for an Ecological, Nuclear Age* (Philadelphia: Fortress, 1987), and *The Body of God: An Ecological Theology* (Minneapolis: Fortress, 1993) gives it imaginative depth. Cf. Elizabeth Johnson, *SHE WHO IS: The Mystery of God in Feminist Theological Discourse* (New York: Crossroad, 1992) 224–72.

cards and then lets it play. In every instance the image is arrived at through the logic set out in W. Norris Clarke's evocative passage:

> [W]hat must the "personality" or "character" be like of a Creator in whose image this astounding universe of ours is made, with its prodigal abundance of energy, its mind-boggling complexity, yet simplicity, its fecundity of creative spontaneity, its ever surprising fluid mixture of law and chance, etc. Must not the "personality" of such a Creator be one charged not only with unfathomable power and energy, but also with dazzling imaginative creativity? Such a creator must be a kind of daring Cosmic Gambler who loves to work with both law and chance, a synthesis of apparent opposites—of power and gentleness, a lover of both law and order and of challenge and spontaneity.[33]

Key biblical images for Creator Spirit, namely, dynamic wind, fire, and water, also express the moving, playing, unpredictable qualities of the God to whom chance is not a rival.

In dialogue with contemporary science, theology understands that the Creator God is neither a maker of clocks nor an instigator of anarchy, but the one ceaselessly at work bringing overall direction and order to the free play of the undetermined realms of matter and spirit, "an Improviser of unsurpassed ingenuity."[34] In this evolutionary world, the essential role of genuine randomness does not contradict God's providential care but somehow illumines it. To use Christopher Mooney's lovely phrasing,

> Wave packets propagate and collapse, sparrows fall to the ground, humans freely decide for good or for ill; yet hairs of the head nevertheless get numbered, elusive quantum particles eventually statistically stabilize, and "where sin increased, grace abounded all the more."[35]

The world develops in an economy of divine superabundance, gifted with its own freedoms in and through which God's gracious purpose is accomplished. "The Love that moves the sun and the other stars,"[36] it now appears, is a self-emptying, self-offering, delighting, exploring, suffering, sovereign Love, transcendent wellspring of all possibilities who acts immanently through the matrix of the freely evolving universe.

[33] W. Norris Clarke, "Is a Natural Theology Still Possible Today?" in Russell et al., ed., *Physics, Philosophy, and Theology* 103–23, at 121. The theme of improvisation is stressed by Peter Geach, *Providence and Evil* (Cambridge: Cambridge University, 1977). The model of a fugue is developed by Arthur Peacocke, *Theology for a Scientific Age* 173–77, and that of the game by Paul Davies, *God and the New Physics*. Jazz is my suggestion.

[34] Arthur Peacocke, *Intimations of Reality* (Notre Dame: University of Notre Dame, 1984) 73.

[35] Christopher Mooney, "Theology and the Heisenberg Uncertainty Principle," a paper delivered to the Catholic Theological Society of America in June 1992 and summarized in *Catholic Theological Society of America Proceedings* 47 (1992) 130–32; the citation is taken from p. 62 of the original unpublished paper, and the biblical reference is to Romans 5:21.

[36] Dante, *The Divine Comedy: Paradise*, trans. Dorothy Sayers and Barbara Reynolds (Harmondsworth, England: Penguin, 1962) canto 33, line 145.