

Thomas Aquinas and the Need for a Contemporary Theological Cosmology

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FORTY YEARS after the Second Vatican Council addressed the problem, modern atheism, whether in the form of ideological rejection or practical indifference, continues to be a prevalent feature of contemporary life in the Western world. As the council recognized, there are a number of reasons why an atheistic secularism permeates modern culture, but one important contributing cause that I wish to address in this paper is the flat or closed worldview that, intentionally or not, has come out of modern science.¹ The presumption of the modern mind to reduce reality to the observable world deserves special attention because it vitiates the particular approach the council adopted to evangelize the modern world, and because it has yet to be sufficiently overcome by the dialogue between science and theology promoted by the Church. Indeed, as I will argue, the genuinely Christian view of created reality that should be the fruit of this dialogue has failed to fully ripen because of some of the common approaches taken by theologians engaged in it. Our need is for a properly theological understanding of the cosmos, a worldview that while open to the scientific understanding of nature, dares to transcend it. In the first half of this paper, after explaining

¹ *Gaudium et Spes*, Pastoral Constitution on the Church in the Modern World, in *Vatican Council II*, vol. 1, *The Conciliar and Post-Conciliar Documents*, rev. ed., ed. Austin Flannery (Northport, NY: Costello Publishing Company, 1996), 903ff. Cf. nos. 19–21 for the council's discussion of the various kinds and causes of atheism. The council fathers briefly mention only "scientism" as a contributing factor to the rise of modern atheism: "Many, unduly transgressing the limits of the positive sciences, contend that everything can be explained by this kind of scientific reasoning alone." *Gaudium et Spes*, no. 19.

what a theological cosmology entails, I will give the reasons why the very active dialogue between theology and science has yet to produce it. In the second half, I give three reasons why the thought of Thomas Aquinas offers us resources to promote a truly theological understanding of the cosmos. Although there are philosophical considerations at stake, the primary issue is giving expression to a theological understanding of reality in light of its relation to God as the origin and end of all, an understanding missing from many scientific theologies even as it is at the heart of Thomas's own.

Reading the Signs of the Times

As a way to evangelize the modern world, the Church in *Gaudium et Spes* offered a theological anthropology of the dignity and destiny of the human person in the light of reason and revelation.² Yet without a theological cosmology to frame this theological anthropology, any invitation to consider the question of man in view of the mystery of God will lack intellectual coherence. For unless an understanding of the foundation and purpose of the created cosmos, also as known by reason and faith, challenges the modern mind to think otherwise, it will persist in assuming that all reality is self-given and self-determining, needing no transcendent referent for it to be adequately grounded and properly ordered. Lacking a way to intelligibly relate the things in this world to God, the modern mind reduces the realms of nature and human culture to a self-contained horizon, wherein being is restricted to matter and energy, truth to scientific demonstration, and the good to what benefits earthly existence. This collapse of reality into a cosmological solipsism fundamentally undermines the pastoral effort of the Church to present a theological anthropology to the world, because a transcendent understanding of *anything* has been ruled out of court. When the world is viewed as closed in on itself, discourse on the fundamental human openness to God makes little sense.

Since it is modern science that has reconfigured our understanding of the cosmos, a theological cosmology that is meant to challenge and replace its atheistic counterpart must be able to integrate the understanding of natural processes achieved by the modern sciences. Yet as a *theological* cosmology, this worldview must transcend the limits of scientific methodology and be founded upon the truth of divine revelation. What a theological cosmology can provide is an intellectually cogent understanding of how God's presence and action underlies and permeates all that is and all that occurs, thereby helping to renew in a scientific age the 'theonomous' sense of nature.³ A

² *Gaudium et Spes*, nos. 11–39.

³ See Walter Kasper, *The God of Jesus Christ* (New York: Crossroads, 1999), 16–26.

theological cosmology expresses the truth that all reality is created, sustained, and governed by God. It also explains how necessary it is to view the universe in reference to its transcendent origin and destiny in order to properly understand the intrinsic order that unites its grand diversity of beings. A theological cosmology shows how Christian doctrine supports the worldview of modern science, yet takes that worldview and places it in a theological context of greater intelligibility, one that alleviates science of its barren attempts to explain reality strictly according to the causes it can delineate. Expounding the implications of the doctrine of creation, theology's account of our cosmos gives expression to God's active immanence in creation in a manner that neither compromises divine transcendence nor the genuine integrity of natural causality explained by modern science.

It is incumbent of theology that it engage in critical dialogue with contemporary science in order to develop this contemporary theological cosmology. According to Alister McGrath, "a positive working relationship between Christian theology and the natural science is demanded by the Christian understanding of the nature of reality itself—an understanding grounded in the doctrine of creation."⁴ In welcoming and fostering this engagement, the Church remains true to its traditional teaching that faith and reason are not adversarial but complementary. In his 1988 address to the Vatican Observatory, Pope John Paul II clarified how this dialogue should seek a more comprehensive understanding of the world that incorporates the contributions of both disciplines.⁵ So many thinkers from both fields have labored for a more constructive conversation between science and theology that it has become one of the most popular and well-funded areas of interdisciplinary studies. Moreover, the discoveries and developments of twentieth-century physics have raised deeper questions about the universe as a whole, reinvigorating the field of cosmology.⁶

⁴ Alister E. McGrath, *A Scientific Theology*, vol. 1, *Nature* (Grand Rapids, MI: William B. Eerdmans, 2001), 21.

⁵ Pope John Paul II, "Address at the Vatican Observatory, June 1, 1988," in *John Paul II on Science and Religion: Reflections on the New View from Rome*, ed. Robert Russell, William R. Stoeger, and George V. Coyne (Vatican Observatory Publications, 1990), M1–M14; also in print as "A Dynamic Relationship of Theology and Science," *Origins* 18 (November 17, 1988): 375–78.

⁶ For example, physics has raised the question of why the universe has the precise mathematical exactness in its physical laws that collectively support the development of life and mind—that is, the "anthropic principle." Cf. J. D. Barrow and F. J. Tipler, *The Anthropic Cosmological Principle* (Oxford: Oxford University Press, 1986); Stephen M. Barr, *Modern Physics and Ancient Faith* (Notre Dame, IN: University of Notre Dame Press, 2003), 115–64.

Encouragement from the Church, intense interest from the academy, a new openness from the domain of science—one would expect that with such favorable conditions much has been accomplished to produce a genuine theological cosmology, and yet, regrettably this is not the case. Theologians *have* criticized the reductionism and materialism infecting scientific thinking, rightly separating the method and conclusions of science from false and unnecessary philosophies that foster the modern myth of a fundamental conflict existing between scientific truth and religious faith. Nevertheless, the theological effort to engage the modern scientific understanding of the world has often been willing to refashion Christian teaching to fit the findings and thought categories of science, rather than incorporate the scientific worldview into a more extensive understanding of reality based upon the distinctively theological data of revelation. Dialogue has been pursued with great interest, just not for the proper goal.

In the dialogue between religion and science, the majority of theologians have sought to develop a *theology of nature* rather than the traditional *natural theology* (rational evidence of God's existence and action in the world).⁷ This theology of nature involves the integration or systematic synthesis of religious truth and scientific discovery, finding "consonances" that demonstrate the positive relation between them.⁸ According to Ian

⁷ See Christopher Southgate et al., *God, Humanity, and the Cosmos: A Textbook in Science and Religion* (Harrisburg, PA: Trinity Press International, 1999), 8. Many assume that modern philosophy (Hume and Kant) and evolutionary theory (Darwin's critique of William Daley's 'blind watchmaker' argument) have discredited the possibility and value of natural theology. In its response to nineteenth-century liberalism, neo-orthodox Protestant theology has generally tried to do without natural theology by keeping science and theology separate. See Keith E. Yandall, "Protestant Theology and Natural Science in the Twentieth Century," in *God and Nature: Historical Essays on the Encounter between Christianity and Science*, ed. David C. Lindberg and Ronald L. Numbers (Berkeley and Los Angeles, CA: The University of California Press, 1986), 448–71; cf. McGrath, *Nature*, 267–79. McGrath, however, closely follows the work of T. F. Torrance in understanding natural theology more positively and broadly as an authentically Christian understanding of nature grounded in divine revelation, rather than the attempt to demonstrate God's existence on purely rational grounds (*ibid.*, 279–86).

⁸ Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: Harper San Francisco, 1997), 100–105. Barbour actually distinguishes a "theology of nature" from a "systematic synthesis," in that the latter, by the use of process philosophy, attains an even greater integration of the two fields. He articulates his own position thus: "I am in basic agreement with the 'Theology of Nature' position, coupled with a cautious use of process philosophy. Too much reliance on science in natural theology can lead to the neglect of the areas of experience that I consider most important religiously" (105). One may note that

Barbour, a theology of nature “starts from a religious tradition based on religious experience and historical revelation. But it holds that some traditional doctrines need to be reformulated in the light of current science.”⁹ Although the search for consonance can be a legitimate goal in the dialogue between science and theology, “what consonance often seems to mean in practice is that theology is asked to redraw its map in order to fit its coastlines to new scientific understandings.”¹⁰ However, any position that advocates conforming truths based on divine revelation to the latest findings of modern science has begun to confuse the two disciplines, failing to distinguish their different foundations.¹¹ This “fusion” of the two disciplines leads to a “scientific theology” or a “theological science,” what Avery Dulles has called “a kind of methodological Monophysitism.”¹²

he seems to make religious experience and interpersonal relations, not specifically the data of revelation, as theology’s primary resource that is distinct from the knowledge of nature shared with science.

⁹ Barbour, *Religion and Science*, 100.

¹⁰ Southgate et al., *God, Humanity, and the Cosmos*, 24. One typical example would be a revision of the doctrine of original sin in light of the theory of evolution’s account of the origin of the human species.

¹¹ To be clear, it is not that theology, as an explanation of what is believed, cannot change—indeed, it must vary in accordance with the cultures it endeavors to communicate with. But the requirement that theology adapt its understanding to fit a scientific conception of nature need not require changes in Christian beliefs themselves, a conclusion permissible upon the real distinction, not always recognized today, between doctrine and theological expression.

¹² Avery Dulles, SJ, “Science & Theology,” in Russell, *John Paul II on Science and Religion*, 10–11. McGrath himself uses the term “scientific theology” as the title and goal of his approach (cf. note 4 above), although with his awareness of the historical and philosophical aspects of the science-theology relationship, as well as his effort to base a Christian understanding of the world on the doctrine of creation, he is careful to avoid a conflation of the disciplines and does not seek to reconfigure Christian beliefs in light of the new scientific worldview. For McGrath, “scientific theology” is a “Christian theology [that] provides an interpretative framework by which nature may be interpreted. This approach takes nature as an *explicandum*, something which requires or demands explication, but is not itself possessed of the intrinsic capacity or ability to offer such an explanation” (*Nature*, 294). This framework “offered by Christian theology includes both an account of the natural order of God’s creation and of humanity as created in the *imago Dei*” (ibid., 295)—an approach quite equivalent to what I mean by a ‘theological cosmology’ giving context for theological anthropology. A significant difference, however, between his understanding and the one I am sketching here on Thomistic grounds is that McGrath, again following Torrance, ascribes to the idea that sin has marred nature itself, to the point that the “created order, as it presently exists and as it is presently conceived, incorporates within it a deep-rooted dimension of disorder” (ibid., 290).

John Paul II explicitly and repeatedly warns that such an outcome is not the proper goal of this dialogue.¹³ And yet in two influential typologies of the different ways the relation of science and theology can be conceived, the troublesome conflation of the two disciplines is not even considered.¹⁴ While there are indeed various similarities between the methodologies of the two disciplines, they remain distinct because the data proper to the science of theology can only be known in the faith inspired by grace.¹⁵

The assumption that theology must adapt to the latest scientific findings rests in large part upon the recognition that modern science has given us a new cosmology, an understanding of the world so fundamentally novel that the traditional, pre-scientific conception of God's relation to the world

¹³ "By encouraging openness between the Church and the scientific communities, we are not envisioning a disciplinary unity between theology and science like that which exists within a given scientific field or within theology proper" (John Paul II, "Address at the Vatican Observatory," M7). "Yet the unity that we seek, as we have already stressed, is not identity. The Church does not propose that science should become religion or religion science. On the contrary, unity always presupposes the diversity and integrity of its elements. Each of these members should become not less itself but more itself in a dynamic interchange, for a unity in which one of the elements is reduced to the other is destructive, false in its promises of harmony, and ruinous of the integrity of its components. We are asked to become one. We are not asked to become each other" (ibid., M8).

¹⁴ In his well-known typology Ian Barbour offers four ways of relating science and religion: conflict, independence, dialogue, and integration. See *Religion and Science*, 77–105. John Haught offers a very similar fourfold typology: conflict, contrast, contact, and confirmation. See *Science and Religion: From Conflict to Conversation* (New York: Paulist Press, 1995), 3–25. Both Barbour and Haught favor respectively their fourth model—the most integrative—to counter the lingering myth that the disciplines are at war and to seek a comprehensive, synthetic understanding of the human experience of reality. While these two objectives are noble, the danger that a facile concordism of the two disciplines that risks science setting the bounds for theology does not seem to occur to them.

¹⁵ Cf. Dulles, "Science and Theology," 13–15. The methodological similarities in both disciplines include the cognitional principles of reason and faith, the historical element of a place for the authority of tradition in each discipline with an openness to new developments, and the communal element where both disciplines are group endeavors, with group control of the content and the practice of methodology. Yet Dulles also acknowledges distinguishing elements belonging to theology alone that other comparisons tend to omit or ignore: that the assent of faith to theological truth requires grace, that its doctrines rest upon an unalterable deposit of unique, unrepeatable, past events of revelation and salvation, that over the authority within the discipline of theology is the authority of an infallible ecclesial magisterium.

must be updated accordingly.¹⁶ At issue is not that modern science has exchanged the creation narratives given in Genesis with its own account of the world's origin (although this displacement has helped to push revelation outside the ambit of intellectual respectability). The more important shift is from a static cosmology of enduring substances designed and produced directly by the Creator to an evolutionary cosmology of emergent states brought about and "self-organized" by natural mechanisms. What used to be attributed to God as the intelligent, deliberative, powerful, and, thus, creative cause is now attributed simply to natural mechanisms, fully capable through unintelligent and random processes of producing all the beings and features of this universe. Respecting this new view of nature, not a few theologians deem former conceptions of the character of God and his relationship with the world to be inadequate and obsolete. In their thinking, the absolute perfections traditionally ascribed to God may have fit a world once thought to have been formed directly by his knowledge and power, but not one now known to have organized itself gradually. The Creator's omniscience is difficult to reconcile with the genuine unpredictability of random processes, his perfectly efficacious will with temporal contingency, and his omnipotence with the autonomy and self-sufficiency of natural causes.¹⁷ This difficulty, along with the conception of nature primarily in terms of processes and not substantial forms, lead many contemporary theologians to embrace process thought, convinced that it provides a model of God more compatible with the world of development and flux known by modern science.¹⁸

¹⁶ For example, Barbour argues that the classical theology of God as absolute Lord and King reflected the assumptions of the medieval mind that the world was like a kingdom of enduring substances in a fixed, teleological, hierarchical, and dualistic (spirit/matter) order. See *Religion and Science*, 281–82, 306–20.

¹⁷ The assumption that the traditional conception of God is incompatible with the findings of modern science is widespread in the theology and science literature. For example, Mark William Worthing quotes, without evident objection, the physicist Richard Schlegel: "[I]f we accept the divine postulate, the discoveries of this century in quantum physics surely must affect our conceptions of God. The independent, all-knowing deity of Christian orthodoxy is no longer within the possibilities allowed by the postulate. . . . [Instead God] is limited in knowledge and power in accordance with the statistical, probabilistic properties that quantum theory finds for nature." See *God, Creation, and Contemporary Physics* (Minneapolis: Fortress Press, 1996), 70.

¹⁸ A few thinkers engaged in the science-theology dialogue who explicitly opt for a process philosophy and/or theology include: Barbour, *Religion and Science*, cf. 281–304; John F. Haught, *God After Darwin: A Theology of Evolution* (Boulder, CO: Westview Press, 2000), 40–44; Philip Clayton, *God and Contemporary Science* (Grand Rapids, MI: William B. Eerdmans, 1998), 82–124.

The appeal of process theology is a God dynamically in sync with an evolving world, a deity more intimately involved than the conventional God of transcendence (read: distant aloofness) and immutability (that is, unsolicitous isolationism). Unfortunately, this choice for a God who changes with the world comes at the steep price of abandoning the doctrine of creation, necessary to prevent the non-identification of God with the world.¹⁹ Other problems for theology notwithstanding,²⁰ the consequence of bringing God down to the level of change and process is to strip God of an engagement with the world conceived in transcendent terms. By claiming that God changes with the world and thereby making God subject to its conditions, process thought necessarily makes it impossible for God to act in the world in a transcendent manner and for the sake of a transcendent end.

First, in regard to the loss of the transcendent manner of God's action, the identification of God with world process necessarily means his agency is conceived in terms of the kinds of causality found in the world, if only better by degree. Yet such a reduction unavoidably prolongs the fundamental misconception that modern science has regarding divine action—that it competes with natural causality and thus undermines scientific accounts of how things happen. With no way to attribute what is nature's to nature and what is God's to God, some process theologians go so far as to celebrate a divine hands-off approach to the world as theologically becoming, reflective of God's humility and wisdom to curtail his power.²¹

¹⁹ Alfred North Whitehead acknowledged that the God of process thought is not the true Creator of the world. *Process and Reality: An Essay in Cosmology* (New York: Macmillan, 1929), 528f.; cf. John Cobb and David Griffin, *Process Theology: An Essay in Cosmology* (Philadelphia: Westminster Press, 1976), 66. Aquinas would agree that a mutable God cannot create, since a God of potency cannot be the pure Act that must be the first principle of all that comes to be. See *Summa theologiae* I, q. 3, aa. 4 and 7. Unlike process thinkers, however, Aquinas realizes that such a theological position leaves the actual existence of God (and the world) unaccounted for, since potency in God prevents his essence from being identical to existence, requiring a further cause to bring what is potential in him into existence. Process thinkers do not seem to realize the import of the metaphysical axiom that “nothing can be reduced from potentiality to actuality, except by something in a state of actuality” (*ST* I, q. 2, a. 3).

²⁰ For criticisms that show the incompatibility of the process system with Christian teaching, see R. C. Neville, “The Impossibility of Whitehead's God for Christian Theology,” *Proceedings of the American Catholic Philosophical Association* 44 (1970): 130–40; and Thomas G. Weinandy, *Does God Change? The Word's Becoming in the Incarnation* (Still River, MA: St. Bede's Publications, 1985), 140–53.

²¹ For example, Haught gives us a God who practices a “letting-be” (*God After Darwin*, 111–14) and an “unobtrusive and self-absenting mode of being” (54) vis-à-vis the world. His difficulty with any real divine action in the world seems to arise because he thinks divine causality, as other than natural causality, can be

Second, in regard to the loss of the transcendent end of divine action, what the process God seeks to accomplish is measured by and thus limited to the potencies found in the world, rather than the transcendent wisdom, goodness, and power of God. The order of providence is reduced to the natural order, within which supernatural acts, like miracles, make no sense, and the subordination of this world's goods to the transcendent good of eternal life is lost.

The use of process thought in theology's engagement with science, therefore, prevents the development of a properly theological cosmology by emptying God of the transcendence that makes his presence and action in the world distinctive, for purposes far beyond those found in the material and biological orders. Though the justification offered is that a mutual God-world relation is better for both terms, the identification of the world's becoming with God's self-realization results in a conflation that compromises the non-equivalent integrity of each, leading to a problematic synthesis of science and theology. Although to its adherents the cosmology of panentheism is more sacred than the wholly secular worldview of deism or scientific materialism, in actuality it can be judged as still rather secular, in the sense that it is not nature that has been placed into a higher, theological viewpoint based upon revelation, but rather the mystery of God's being, actions, and purposes have been made to fit the confines of this world. The unfortunate consequence of all this is that the dialogue meant to provide greater intellectual coherence between revealed doctrine and scientific learning has actually helped sustain the narrow-mindedness of modern secularism regarding what is real and true.

To reverse this trend, theological engagement with modern science must rest upon the teaching that process thought has abandoned. Developing a single understanding of our world from these two methodologies requires the one foundation that sustains them both: the doctrine of creation. Theology and science are capable of their engagement only because God is the *author* of all that is knowable (in nature and in revelation), as well as of all human knowing (reason and faith). Modern science itself rests upon two cosmological truths that arise precisely

"supernatural" only in the miraculous sense—that is, as producing its effect without the usual natural cause. As such, divine actions simply take the credit of responsibility away from natural causes, and conflicts with the scientific effort to find natural explanations. Writing against creationism and intelligent design, Haught is concerned to deny an interventionist conception of divine action. Yet he does not give any consideration to the traditional notion of divine first causality being universally responsible for the genuine responsibility of secondary natural causes.

because the world has been created by the wisdom and free act of God—namely, that the world is both intelligible and yet non-necessary.²² Though supportive of science, the truth that the world is created is strictly a theological doctrine, one that implies a non-reductive understanding of God and his active relation to the world. Hence, an understanding of all reality *as created* is the key to the proper form of dialogue between theology and science and the necessary basis for seeing the very same reality known by science in a broader, theological perspective. A theological cosmology based upon the revelation that God is the Creator will elucidate how this world, whose natural operations are properly explained by science, is also a theological reality, whose deeper intelligibility is expressed only in terms of its relation to God.

The theology of Thomas Aquinas is particularly well-suited to offer the resources to engage modern science to produce this theological cosmology in which traditional Christian teaching is fully compatible with, yet not reducible to, the understanding of the world in modern science. Aquinas's theology of God the Creator provides something vital to, and altogether missing from, the contemporary dialogue between theology and science—namely, a rich understanding of how the Creator acts in and for the world in a manner that neither compromises his eternal mystery nor the integrity of finite conditions and causes in the world. Aquinas was able to show how this world of temporality, diversity, and finitude relates to the God of eternity, simplicity, and perfection, while upholding both the genuine causal determination of natural effects by natural causes and God's universal causal determination of all that is and acts in creation. In other words, he acknowledges the integrity of nature now studied by science, yet places that within a theological understanding of reality as a created and providential work of God. His understanding of this world as a relation to an active God depends entirely upon the doctrine of creation, a truth of faith in whose light he transformed the Aristotelian philosophical understanding of nature he inherited.

²² "For empirical science to arise at all, there must be the belief—or at least the presumption—that the world is both contingent and regular. There must be regularities in the world, otherwise there will be nothing for science to discover; but they must be contingent, otherwise they . . . could be thought out a priori" (Eric Mascall, *Christian Theology and Natural Science* [London: Longmans, Green & Co., 1957], 98, quoted in Yandall, "Protestant Theology and Natural Science in the Twentieth Century," 462). Thomas F. Torrance develops the point more extensively in *Divine and Contingent Order* (Oxford: Oxford University Press, 1981), 62–84.

Constructing a Theological Cosmology from the Theology of Thomas Aquinas

Before I proceed to show the resourcefulness of the Thomistic theology of creation for the formulation of a contemporary theological cosmology, I ought to make clear what I am *not* doing. What follows is in no way an attempt to correlate the scientific notion of the Big Bang with the theological doctrine of creation *ex nihilo*. Furthermore, what I am presenting here is something different than a demonstration of the existence and nature of God from the existence and features of this world. Rather than expound upon the famous five ways in question two, article three of the *Summa theologiae*, I will draw more heavily from Aquinas's theology of God and his profound understanding of creation as a relation to God. Aquinas was first and foremost a theologian, and I wish to highlight how he considered the things of our world in a theological manner, even if many of the explanatory concepts he employs are borrowed from philosophy. It is Aquinas's theological understanding of this world that is the needed complement to today's scientific cosmology. In this respect I am not presenting a *theology of nature* in the sense that Barbour advocates, since no admixture of the respective methodologies of theology and science is at stake. Aquinas's theological understanding of the created realm supplements and completes the understanding of nature that we can achieve scientifically and philosophically, precisely by considering reality as *created*. This theological perspective offers a helpful understanding of what science cannot definitively say about our reality as a whole, on account of the limitations of its foundation and method. Specifically, the task is to show in an intellectually coherent manner how the world known by science (and philosophy) requires a fuller understanding in relation to the providential God of Christian faith.

Even though Aquinas predates the emergence of modern science by several centuries, his thought is a fitting theological resource for its engagement in three respects: because of (1) his conception of theology; (2) his theology of God as pure Act with creation as a relation participating in that Act; and (3) his rich understanding of how God acts for and in the world.

First, a certain complementarity between his theology and modern science is possible because Aquinas conceives of theology as a science.²³ Of course, by "science" he means the Aristotelian definition of knowledge of necessary causes, not the modern sense of the mathematical measurement and modeling of matter, energy, and their fluctuations. Nevertheless, because

²³ *ST I*, q. 1, a. 2.

Aquinas considers theology to be a science in the sense of an organized, rational inquiry of what can be known of a cause by way of its effects, his understanding of theology has methodological similarities to that of contemporary science.²⁴ In its critical realism, the theology of Aquinas respects the natural dynamics of the human intellect, whose proper starting point is the sensible and whose proper object is true knowledge of the real. This epistemological similarity to modern science is strengthened by the particular approach taken by Thomistic theology, with its special regard and respect for created reality. “St. Thomas of the creation” treats the material world not just as a symbol of the spiritual but also as possessing an intelligibility and goodness worth knowing and appreciating for its own sake. Because our knowledge proceeds from effect to cause, he especially views nature as a dynamic or active reality, being attentive to the nature of each thing as an operating agent making a real difference in the world. His realism is so open to the givenness of the world that he never attempts to discount or ignore the contingency (non-necessity) and chance (the accidental) present in many causal occurrences in this world, despite the challenges these aspects pose for a theologian committed to a universal divine providence.²⁵ Still, the most important element that connects Aquinas’s theology both to the real character of the world and to the methodology and content of modern science is his fundamental sense of *order*, reflecting his commitment to “things which in their inter-relatedness form the world.”²⁶ The *exitus-reditus* order Aquinas gives to the *Summa theologiae* parallels the providential order God gives to his creation.²⁷ In explicitly

²⁴ The theological science of sacred doctrine differs, of course, from the philosophical and mathematical sciences in terms of its principle, divine knowledge expressed in divine revelation, and in terms of its object, God and all things in their relation to God as beginning and end (*ST* I, q. 1, aa. 5 and 7). And because the purpose of our own existence is included in this scholarly effort on the relation of created realities to God, theology is more properly wisdom than a science in any restricted, modern sense. Nonetheless, even though theology presupposes faith, it is an exercise of reason, seeking what understanding can be had of God through the effects he has produced in creation and salvation history. Aquinas’s conviction that all the branches of human knowledge are related and comprehensively united is evident in his *Expositio super librum Boethii De trinitate*, questions V and VI, translated as *The Division and Methods of the Sciences*, trans. Armand Maurer, 4th rev. ed. (Toronto: Pontifical Institute of Medieval Studies, 1986).

²⁵ Cf. Bernard McGinn, “The Development of the Thought of Thomas Aquinas on the Reconciliation of Divine Providence and Contingent Action,” *The Thomist* 39 (1975): 741–52.

²⁶ Frederick C. Copleston, *Aquinas* (New York: Penguin, 1955).

²⁷ For Aquinas to order theology along the trajectory of divine providence demonstrates his respect for creation and the serious—indeed, unavoidable—obligation

noting that the order of creation is a reality specifically intended and created by God,²⁸ Aquinas points to the common foundation that makes science, metaphysics, and theology possible and fruitful. As we are about to see, his twofold understanding of this order as both intrinsic and extrinsic helps to delineate and correlate a scientific cosmology and a theological cosmology.

And yet, though his theological method and approach have striking parallels to those of contemporary science, Aquinas is respectful of the profound difference between the disciplines, avoiding their fusion. As much as he considers theology to be an exercise of reason and hence a science, he knows its foundation is one of faith, distinguishing and elevating it about all other branches of knowledge.²⁹ Of great significance is the fact that he employs philosophical terms and concepts to express the mystery of how the world relates to God and how God acts in it. In his understanding of metaphysics Aquinas possesses an explanatory system that is distinct from that in science, enabling him to avoid conflation of the mystery of God with that of the natural world.³⁰ Specifically, Aquinas employs the neo-Platonic notion of participation to show how created

to know its basic structure in order to acquire some theological understanding of its Author. This systematic ordering of the *Summa theologiae* confirms that Aquinas is faithful to his definition of the true subject of theology as: "Omnia autem pertractantur in sacra doctrina sub ratione Dei: vel quia sunt ipse Deus; vel quia habent ordinem ad Deum, ut ad principium et finem" (*ST I*, q. 1, a. 7).

²⁸ *ST I*, q. 22, a. 1: "Omne enim bonum quod est in rebus, a Deo creatum est, ut supra ostensum est. In rebus autem invenitur bonum, non solum quantum ad substantiam rerum, sed etiam quantum ad ordinem earum in finem, et praecipue in finem ultimum, qui est bonitas divina, ut supra habitum est. Hoc igitur bonum ordinis in rebus creatis existens, a Deo creatum est." See also *ST I*, q. 15, a. 2.

²⁹ *ST I*, q. 1, aa. 1–2, 5.

³⁰ Barbour too recognizes the value of metaphysics for providing explanatory concepts that lie between those specific to theology and those specific to science. "A more systematic integration can occur if both science and religion contribute to a coherent world view elaborated in a comprehensive metaphysics. Metaphysics is the search for a set of general categories in terms of which diverse types of experience can be interpreted. An inclusive conceptual scheme is sought that can represent the fundamental characteristics of all events. Metaphysics as such is the province of the philosopher rather than either the scientist or the theologian, but it can serve as an arena of common reflection." See Barbour, *Religion and Science*, 103. However, Barbour finds fault with traditional metaphysics and opts for that of process philosophy. "The Thomistic framework provided such a metaphysics, but one in which, I would argue, the dualisms of spirit/matter, mind/body, humanity/nature, and eternity/time were only partially overcome" (*ibid.*). Unfortunately, McGrath's treatment, "The Place of Metaphysics in a Scientific Theology," in *A Scientific Theology*, vol. 3, *Theory* (Grand Rapids, MI: William B. Eerdmans, 2003), 237–94, does not engage the thought of Thomas Aquinas.

reality depends upon and is in its Creator, and the Aristotelian distinction of the different kinds of causality to explain the different ways God acts in regard to the world.³¹ The very fact that these terms are philosophical, and not scientific, helps to keep this theological cosmology distinct from any scientific counterpart, expressing something true about our reality that modern science cannot say but only suggest.³²

The second justification for turning to Aquinas for guidance in today's dialogue between theology and science is that in his theology of God the Creator, Aquinas develops a theology of God as Act that expresses simultaneously the transcendent distinctiveness of God and his active immanence in creation. In contrast to process theology's reduction of God into the created category of *becoming* (process), Aquinas shows that God is, simply and perfectly, the dynamic act of *being* itself.³³ Identifying the essence of God with subsistent existence positively forbids any confusion of the divine mystery with created reality, since what comes into existence cannot by necessity be its own existence.³⁴ Implied in this absolute non-equivalence is the truth that the relation of the world to God is wholly unlike any relation existing between things in this world. Despite the propensity of our imaginations to group them as such, God and the world are not two parts of some greater context. The mystery of God and the nature of the world are not co-defining; the latter exists only as a limited sharing in and reflection of the inexhaustible fullness of the former. Indeed, in light of the doctrine of creation, Aquinas realized that the world must be understood as a *relation*, a reality that is what it is

³¹ Cf. *ST* I, qq. 44, 104–5.

³² Hence the fact that these philosophical notions are not themselves used by modern science is no detriment to their value. On the contrary, since they help explain a view of reality that is complementary to but distinct from that of science, their non-appearance in the lexicon of science is to be expected.

³³ *ST* I, q. 2, a. 3. His argument rests upon the revealed name *Yahweh* (Ex 3:14) and the derived existence of the world.

³⁴ Cf. *ST* I, q. 7, a. 2, ad 1: "It is against the nature of a made thing for its essence to be its existence; because subsisting being is not a created being; hence it is against the nature of a made thing to be absolutely infinite." With the precision of metaphysical thinking, Aquinas maintains the fundamental truth at the core of the doctrine of creation: that the God who freely creates every aspect of the world transcends the limits and conditions he establishes for it.

³⁵ "Creation places something in the thing created according to relation only; because what is created, is not made by movement, or by change. For what is made by movement or by change is made from something pre-existing. And this happens, indeed, in the particular productions of some beings, but cannot happen in the production of all being by the universal cause of all beings, which is God.

precisely on account of and in reference to God.³⁵ Despite the methodological bracketing of the relation of nature to God practiced in modern science, the doctrine of creation precludes this procedural habit from becoming an ontological forgetfulness. In a theological cosmology, unlike its strictly scientific counterpart, the existence, nature, and agency of created things are shown to be actual realities only because of God. In this way theology exposes, in the light of the doctrine of creation (and with the support of traditional metaphysics), the falsity of thinking the world is autonomous.

Just as the theological identification of God as *Act* indicates his transcendence over the world, so also does it imply that God is immanently active in creation and that creation is in God. This half of the matter tends to get overlooked by those who equate classical theism with a God remote from and uninvolved in creation. But if God is *Act* essentially, simply, and dynamically, God cannot be anything except *active* with respect to the world. God's universal and active immanence is also indicated by the world being a relation to its Creator, since "relation" designates, not some sort of inert arrangement, but a fundamental dependence upon God acting in freedom to cause the world's being, development, and perfection. For the world is a relation of participation in the essence of God, sharing in a diverse and limited way in his simple and infinite Act of being. *Participation* is the key term in the discussion of creation in the *Summa theologiae*,³⁶ used to explain how creation is like unto and dependent upon its Creator.³⁷ The universe has its existence from God's *be-ing* the way an iron bar is hot only by sharing in the heat of the fire: by an immediate and enduring participation.³⁸ Creation proceeds from God, not as from some

Hence God by creation produces things without movement. Now when movement is removed from action and passion, only relation remains, as was said above (*ST* I, q. 45, a. 2, ad 2). Hence creation in the creature is only a certain relation to the Creator as to the principle of its being" (*ST* I, q. 45, a. 3).

³⁶ For example, see how Aquinas uses the term repeatedly in *ST* I, q. 44, a. 1 (the first article of the treatise).

³⁷ For a more succinct and recent discussion of participation in the thought of Aquinas than the two magisterial studies by Louis Geiger (1952) and Cornelio Fabro (1961), see John F. Wippel, "Participation and the Problem of the One and the Many," in *The Metaphysical Thought of Thomas Aquinas: From Finite Being to Uncreated Being* (Washington, DC.: The Catholic University of America Press, 2000), 94–131.

³⁸ *ST* I, q. 44, a. 1. Following Augustine, Aquinas also uses the example of how the sky's luminescence immediately depends upon the sun's shining as an analogy for God's sustaining creation in existence in *ST* I, q. 104, a. 1.

extrinsic cause from which it could then be severed, but as always remaining in God's act of willing it a share in himself.³⁹

This notion of *participation* expresses simultaneously: (1) the ongoing intimacy of creation *in* God, for creation is what it is only insofar as it stands in an immediate relation of receiving everything from God its source; (2) God's active relation to the world, for this sharing of creation in God's existence, beauty, and goodness is only on account of God actively and continually causing them to be in creation; and (3) the absolute transcendence of God over all that is the world, since what is by participation can never in any way be identified or confused with the source in which it is participating.⁴⁰ Because creation is in God as a participation, nature is not divinized as in pantheism, or made a part of God's being as in some modern theology. Yet created reality is fundamentally the effect and the arena of divine action, an understanding that reverses the secularization of the cosmos arising when, in the name of autonomy, nature is severed from its author. Through this notion Aquinas provides us a sophisticated way to express the theonomous character of all reality, how God's active sharing of his existence and perfections suffuses the very core of all created being. *Participation* is thus a key term that enables theology to articulate something simple, profound, and fundamental about our cosmos, which science leaves unsaid because it is a truth of faith: Reality is *created*, its constitution standing ever in a crucial relation of dependence upon God being God.

The genius of Aquinas's theology is the perfect symmetry between his theology of God and his theological understanding of creation. The God who is *Act* grants to creation a real (albeit limited) sharing in that Act, with-

³⁹ "Therefore that God gives existence to a creature depends on his will; nor does he preserve things in existence otherwise than by continually pouring out existence into them" (*ST* I, q. 104, a. 3).

⁴⁰ The causal relation indicated by the term *participation* is one where the effect comes to have a property or perfection that the cause has by essence. In the relation of creation to God, the perfections creation comes to have by participation exist virtually in God because his essence is existence itself, that which is most perfect (*ST* I, q. 4, a. 2). Since God is his essence, and all perfections are in him because his essence is existence, God is his perfections, simply and infinitely. In this regard when creation has a perfection (like existence) that God is, creation is only remotely like unto God, never comparable, because the manner by which the perfection is possessed (to say nothing of the degree to which it is possessed) is always so radically incomparable. Because it exists by participation, creation always is a relation of dependence upon God; in contrast, God is always the perfections he is essentially, regardless of creation's participation. Like a fire that is essentially hot regardless of whether an iron bar is sharing in its heat, God is what he is independent of creation, even as creation cannot be anything except by dependent participation in God.

out change on his part, not only because he is simple and beyond change, but also because creation itself requires for its existence and perfection nothing less than an immutable God who is pure Act. In this theology of creation, there is no room for the dipolar God of process thought who needs the world in order to gain completion for himself. Rather than meaning a change in who he is, God's act of creating the world and his providential actions of sustaining and governing it are one with and true to his eternal being. This is crucial for the development of a theological cosmology because it maintains the Godness of God in his activity on behalf of the world. Only by avoiding the reduction of the mystery of God into the categories of the world can the theologian find a way to speak of God's presence and agency in creation that is distinct from natural causality. Not only is the causality of God understood as different in kind, but as greater in scope, being that which grounds and frames the causality of nature. God's activity, vis-à-vis the world, is abiding, not limited to the first instance of creation (as in deism) or the offering of only possibilities (as in process theology). God's activity is also foundational, penetrating, and overarching, providing the transcendent context for created reality and keeping in check the tendency to absolutize the conditions of our reality or the powers of our reason. Hence only the absolute transcendence of God allows for his universal immanence in creation, which in turn promotes the sacred sense of nature as infused with the divine presence.

In a theology of God like that of Thomas Aquinas, one that works out the implications of the doctrine of creation, it is never a question of *whether* God acts in this world; it is simply a matter of finding a proper way to express *how*. The third reason why the thought of Aquinas can be a rich resource for a contemporary theological cosmology, compatible with the worldview of modern science, derives from his explanation of God's agency vis-à-vis the world using the Aristotelian explanatory heuristic of the different kinds of causality. In using metaphysics to help explain the providence of God's ways with the world, Aquinas is able to provide an account of the nexus between divine and natural causality that completely avoids any territorial disputes with the natural sciences over which cause, God or nature, is responsible for the natural effects witnessed in the world. For Aquinas, God the Creator is the first (efficient), exemplary (formal), and final (good) cause of all that is in creation, in a generously distributive manner that produces the genuine natural causality examined and explained by the modern sciences. The integrity of nature is upheld,⁴¹ yet

⁴¹ The modern term for this integrity of natural causal responsibility is "autonomy," a term that I purposely avoid since it tends to connote complete independence

God is not banished to the sidelines of the world playing field, limited to being a mere spectator because his contributions would violate the rules of the game. In this relation of natural (secondary) causality to divine agency, God is universally active as God (that is, operating with his absolute perfections of omniscience, omnipotence, omni-benevolence, etc.), so that natural causes, acting in accordance with their own limited conditions and capabilities, may be genuinely responsible for their effects. No conflict or interference between divine and created causality is possible because the two are completely non-equivalent kinds of causality, the former the universal Act that makes all natural causality *actual*. Hence, all that science comes to explain about how natural causes produce what occurs in the world is here fully acknowledged. Yet theology adds something true but not yet said: God, too, is acting, since all of this exists, is intelligible, and is ordered.

It is crucial to understand that God's universal, creative agency is not just that of first causality. Divine agency that grounds all that is created is three-fold: the efficient causing of all created existence and operation, the exemplary causing of all form and intelligibility in creation, and the final causality of all that is good or ordered in creation.⁴² A theological cosmology adds to the scientific worldview an indication of how the actual existence, intelligibility, and goodness of the universe are only really explicable by reference to a wise and good Creator, who, because he acts by wisdom and good will, produces traces of—really, participations in—his wisdom and goodness in creation. Any intelligible form found in the world (for example, any organism), even if emergent through non-intelligent processes, has its character of intelligibility, not from an exceedingly improbable chance of its component parts falling together simultaneously, but as a limited sharing in the infinite intelligibility that is God himself.⁴³ Likewise, all that is ordered in the world, all the laws that science discovers as grounding natural development, have their character of purposefulness as a participation in the God who, essentially, is goodness itself.

from all other extrinsic agents or authorities (including, not infrequently, God). The dependence of the created upon God is not, of course, a matter of constraint or of interference with what is natural, but rather the very bringing into existence thereof.

⁴² *ST* I, q. 44, aa. 1, 3, 4; cf. *ST* I, q. 6, a. 4, where Aquinas says of divine goodness that it is “*primo principio exemplari, effectivo et finali totius bonitatis*.” The fourth kind of causality in the Aristotelian explanatory heuristic is material (including potency), which does not apply to divine agency but is found in visible creation.

⁴³ Cf. *ST* I, q. 15, on the divine ideas (or the infinite exemplarity of the divine essence).

One implication of the richness of the Thomistic understanding of divine agency is that it can never be reduced to the restrictive categories of causality permitted in natural sciences, principally the material and efficient causes of mechanical physics. God is not some invisible finger pushing this or that object in creation or flipping a control switch from indeterminacy to determinacy at the quantum level.⁴⁴ For Aquinas, God's efficient causality is analogous, not equivalent, to its natural counterpart; one difference is that it is universal in reach and not restricted to particular occasions or only certain kinds of effects. More important, even to say that God is the universal efficient cause of all causality is not to say enough about divine action in the world. The notions of divine exemplary and final causality imply, for instance, that God acts not to show off his power but to diffuse his truth, beauty, and goodness.⁴⁵ Discussion of the very *goodness* of things is one way a theological cosmology is more comprehensive than a merely scientific one that has little to say about this important dimension of our created world.⁴⁶ It is not chance but intentional divine wisdom and goodness that upholds our reality.

Aquinas's conception of divine final causality in the world has another important aspect that is crucial for a contemporary theological cosmology. God's action as Final Cause is that of the governor of creation, directing or guiding creatures to the good purpose of his providence in their very pursuit of natural ends that are intrinsically appealing to them because they perfect their being. Such divine guidance is possible through the very order of creation established by the Creator because creaturely goodness is but a participation in divine goodness. In accordance with the dynamics of

⁴⁴ The tendency to conceive of causality strictly in mechanistic and efficient terms since the advent of Newtonian physics is one reason theologians have grown reluctant in ascribing divine causality in the world. Science rightly finds natural causality to be sufficient for every natural effect, so if causality is conceived only in these terms, then divine causality in the world becomes utterly superfluous—that is, no God of the “gaps.”

⁴⁵ Note that in the *Summa theologiae* the entire discussion of divine government—the temporal execution of the eternal plan of divine providence in the world—is in the terms of *end* or *goodness*, not in terms of *power*.

⁴⁶ The properly liturgical counterpart to this dimension of creation is the acknowledgment of the goodness of God, the intentional author of created good—that is, acts of praise and thanksgiving for the glory of and wonders in creation. Unless one sees, along with the authors of Genesis and of Psalms like 104, that created things are good, that creation as a whole is very good, and that God is to be praised for this goodness, then one does not see our reality in the truest light. On this biblical and liturgical link between creation and worship, see Joseph Ratzinger, *In the Beginning . . . : A Catholic Understanding of the Story of Creation and the Fall*, trans. Boniface Ramsey (Grand Rapids, MI: William B. Eerdmans, 1990), 27–33.

participation, creatures, in seeking their own good, seek God, the essence of goodness by which all things are good.⁴⁷ Yet the particular ends sought by individual creatures are ordered to the common good of the whole universe, so that it may have the perfection of diversity and fullness that most fittingly reflects the infinite, varied depths and breadth of God's own mystery.⁴⁸ What this represents, cosmologically speaking, is that the one order of creation includes first an intrinsic ordering of all things to a (penultimate) good within creation—the “glory of creation,” as it were. Then there is a further, extrinsic ordering of the whole to an ultimate good outside of creation—the divine goodness itself, or God's own glory.⁴⁹

Thus, one may speak first of the common, constitutive good of the whole universe to which all things contribute, as scientists do in explaining the countless ways the many parts of creation are always ordered for the sake of some greater whole—whether it is the cells and organs for the well-being of the whole organism, the individual creature for the good of the species, the species for the overall ecosystem, or, as with the anthropic principle, the exact, favorable specificity of the physical and chemical suborders for the sustaining of the higher orders of life and mind. Yet beyond this intrinsic ordering, there is the higher ordering of all to the end of God's glory: the ordering of nature to grace and the human good to the eschatological Kingdom. Here is where the economy of salvation connects with the intelligibility of the cosmos: both are part of one providential ordering of all things to God.⁵⁰ Though one cannot read off of nature the higher divine intentions revealed in the history of

⁴⁷ *ST I*, q. 103, aa. 2, 4; I–II, q. 1, a. 8; q. 2, a. 8. All creatures seek God so as to “attain himself from himself, according to their measure, since he is their end” (*Summa contra gentiles* III, ch. 18, 5).

⁴⁸ *ST I*, q. 22, a. 4; q. 103, a. 2, ad 3.

⁴⁹ *ST I*, q. 103, a. 2.

⁵⁰ In the dialogue between theology and science, it is crucial not to treat as identical the natural order and the order of divine providence, since the transcendent end of the latter (deification of the rational creature) encompasses the divine work of salvation which both incorporates and transcends the end of the former. The rationalism that restricts divine purpose to natural ends continues to infect theology's engagement with science when supernatural acts are considered problematic for conflicting with natural order. Benedict Spinoza's denial of miracles, on the “theological” basis that they are unbecoming of God who ought to be able to engineer a perfectly consistent body of natural laws, continues to have currency. But to discredit miracles as a poor model for divine action because they do away with natural causes is to expect them to make sense for natural reasons. Process thought contributes to this expectation, for in making the realization of the world's possibilities the becoming of God it collapses the difference between what lies beyond the capabilities of nature and what lies within them. A process

salvation, yet nature itself makes ultimate sense only in reference to the very same end to which grace brings the human family: active participation in the goodness of God. The things of this world cannot be properly understood strictly in the terms of the world's own intrinsic intelligibility. It is in the terms of God's higher ordering of humanity to himself that the truest reason for the order present in the cosmos will be found.

This differentiation between the intrinsic and extrinsic orderings of creation does not amount to a cosmological dualism because both are aspects of the one providential order of creation.⁵¹ Upon them is based the distinction of the secular from the sacred, but the linking of the two orderings means that the everyday and the holy are ultimately integrated. Understanding the ordering of the universe to its intrinsic end is the province of science, while understanding the ordering of the universe to its extrinsic end is the province of theology.⁵² Even as each ordering grounds its respective discipline, giving it an independent, field-specific competence and authority, so too does the interrelation of the two orderings require the dialogue between science and theology. Since the intrinsic ordering of the universe has its ultimate ground and meaning only in relation to the universe's extrinsic ordering to God,⁵³ a scientific cosmology that expresses the world's intrinsic ordering requires incorporation into a grander theological cosmology, one that expresses the relation of that universe to God its beginning and end. The same world that the scientist breaks down into its constitutive and causative parts, and the cosmologist begins to reconstruct in its totality, is the same world that the theologian sees, in the greater vision of faith, as proceeding forth from

theology beholden to science will frame everything in our world's terms, excluding the transcendent reference point of eternal life that miracles and grace require for their *raison d'être* in the divine plan. Unless this world's reality is understood to be ordered to that which transcends the natural, miracles, as divine interruptions of the normal dependency of effects upon their natural causes, will make no sense. As Gottfried Leibniz said, "I hold that when God works miracles he does it, not in order to supply the wants of nature, but those of grace; and whoever thinks otherwise must have a very mean notion of the wisdom and power of God," quoted in *Earnest Enquirers After Truth: A Gifford Anthology*, ed. Bernard E. Jones (London: George Allen & Unwin, 1970), 154.

⁵¹ ST I, q. 22, a. 2; q. 103, aa. 5, 7.

⁵² One may add that philosophy can say something about both orders. The philosophy of nature can add to science a richer understanding of the intrinsic order of creation, while metaphysics can provide an account of what reason can know about how reality requires an ordering to something beyond itself.

⁵³ ST I, q. 103, a. 2, ad 3; ScG I, ch. 78, 4; bk. II, ch. 24, 4; and III, 64, 6; *De potentia Dei* 7, 9. *De veritate* 5, 3: "Quantumcumque ergo multitudinem invenimus ordinatam ad invicem, oportet eam ordinari ad exterius principium."

God, being sustained, directed, and redeemed by him in its course, and returning to him in the end.

The extrinsic, transcendent order of creation requires that God himself be its end. Yet once again this is something that cannot be said in process theology, which sacrifices the ordering of the world to God in favor of yoking God and the world together in a never-ending process of becoming.⁵⁴ When the mystery of God is subordinated to the dynamics of process and change in the world, the subordination of the world to God is lost. Besides the harm to the traditional understandings of God and salvation, the cosmological damage is no longer seeing the universe theologically, in reference to its destiny of participation in God. Without God as the end of all things, by which the good of all things are measured, created reality is cast adrift as autonomous and wholly self-determining. The consequence is an atheistic cosmology and anthropology where the dignity of freedom is said to reside in the unrestricted power to choose, rather than the responsibility to affirm in one's choice the wisdom and goodness of God to order all things well.

Thus we come full circle back to the beginning: A theological cosmology must give expression to the significance of the cosmos being ordered to God for it to support the truth and authenticity of the religious dimension of human nature. Such a cosmological vision must rest upon the doctrine of creation, because it is as Creator that God establishes all things in an order to an end that gives intelligibility and purpose to the existence and nature of everything. The way that all created reality, especially rational nature, relates and is ordered to God, its principle and telos, is a central theme of Thomistic theology, and the primary reason why Aquinas has much to offer us today for the construction of a theological cosmology amenable to modern science. While his approach is open to modern science by affirming the integrity of natural causality and the competence of reason to study it, still it remains truly a theology, not just of God in his transcendence and immanence, but of our reality, too. He

⁵⁴ Process theology does speak of a dipolar God, and Whitehead wrote that "God, as well as being primordial, is also consequent. He is the beginning and the end," quoted in *Process Theology: Basic Writings*, ed. Ewert H. Cousins (New York: Newman Press, 1971), 89. Yet because the notion of "process" is the primary notion by which everything, including God, is defined, there is no place in this system of thought for any genuine end of perfection, realization, or rest. If a definitive end were reached, then process would cease, and the fundamental reality of both God and the world would become the very thing (immutable) that process thinkers say they cannot be. Thus, not only is the process God no longer the true origin of all things (as noted above), he cannot also be the end (that is, heaven, home) to which all things return and come to rest in.

sees all existence as the overflow of God's goodness, all intelligible forms as participation in God's wisdom, all causality as the effect of divine action, and all perfection as the work of God's guidance. We must learn to see reality as theologically as Aquinas sees it, and communicate this theological vision to our modern, scientific world.⁵⁵ **N V**

⁵⁵ An earlier version of this paper was presented at the International Thomistic Congress, "Christian Humanism in the Third Millennium: The Perspective of Thomas Aquinas," Rome, September 21–25, 2003.