

Teleology in Natural Theology and Theology of Nature: Classical Theism, Science-Oriented Panentheism, and Process Theism

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Introduction

The world is full of teleological dimensions. When we search for them, we can easily see that virtually any of the main aspects of our world can be taken as a particular case of teleology. Although this holds especially for living beings, the physicochemical world also exhibits many directional features that acquire a special meaning when seen as necessary conditions for the existence of living beings. Directionality indicates the existence of tendencies toward goals, which is the hallmark of natural teleology. . . . It is not difficult to find examples of directionality and cooperativity. If we begin with the most elementary components of the world, we find out that subatomic particles and the four basic interactions behave according to well-known specific patterns and collaborate to build up successive levels of organization—atoms, molecules, macromolecules, and the bigger inorganic and organic beings. The entire construction of our world is the result of the deployment of tendencies that collaborate to make up unitary systems.¹

If Mariano Artigas is right in his assertion—and many seem to agree that he is²—it seems reasonable to ask about the ways in which the notion of

¹ Mariano Artigas, *The Mind of the Universe: Understanding Science and Religion* (Philadelphia: Templeton Foundation, 2000), 129.

² See, e.g.: Francisco José Ayala, “Teleological Explanations in Evolutionary Biology,” in

teleology may inspire theology, especially in the context of the ongoing dialogue between science and theology. We may think about at least two possible answers to this question, in reference to two related, yet distinctive strategies pursued in theological reflection, (1) the approach of natural theology and (2) the approach of theology of nature. What brings them together is their close attention to nature and our attempts to understand it. Avoiding theological and spiritual escapism and dismissive detachment from nature and natural phenomena, both natural theology and theology of nature point toward their ultimate grounding in God. While doing so, both approaches strive to remain free from the errors of panpsychism, vitalism, and pantheism, thus enabling nature to be natural, available to a thorough and meaningful analysis and description at the level of the research pursued by natural sciences and philosophy of nature and of science. What differentiates these theological approaches are their starting and ending points.

Natural theology departs from the observation of natural phenomena. In a search for their ultimate explanation, in reference to philosophy of nature and metaphysics, it arrives at the theological conclusion that only the existence of God offers a satisfying and conclusive answer to the human search for understanding and meaning of the reality that surrounds us. Consequently, one may say that natural phenomena, or at least some of their most fundamental aspects such as teleology, can be used as a basis for arguing in favor of the existence of God.

The advantage of such an approach—notes Ian Barbour—is that “it starts from scientific data on which we might expect agreement despite cultural and religious differences.”³ However, taken alone, it may reduce the notion of God to the God of philosophers, the unmoved mover,

Nature's Purposes: Analyses of Function and Design in Biology, ed. Colin Allen, Marc Bekoff, and George Lauder (Cambridge, MA: MIT Press, 1998), 29–49; David J. Bartholomew, *God, Chance and Purpose: Can God Have It Both Ways?* (Cambridge: Cambridge University Press, 2008); Michael Denton, *Nature's Destiny: How the Laws of Biology Reveal Purpose in the Universe* (New York: Free Press, 1998); Arthur Peacocke, “God's Action in the Real World,” *Zygon* 26 (1991): 455–76; William R. Stoeger, “The Immanent Directionality of the Evolutionary Process, and Its Relation to Teleology,” in *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, ed. Robert J. Russell, William R. Stoeger, and Francisco José Ayala (Vatican City: Vatican Observatory; Berkeley, CA: Center for Theology and the Natural Sciences, 1998), 163–90.

³ Ian G. Barbour, *When Science Meets Religion: Enemies, Strangers, or Partners?* (New York: HarperOne, 2000), 30. See also 28–34 for a more detailed analysis of the strategies of natural theology and theology of nature.

or even a deistic Creator, remote and not engaged in his relation to the created reality. Moreover, although we know many examples of people who actually did go through a conversion and discovered the existence of God following the path of natural theology, one might ask whether at least some of the arguments developed within it do not presuppose God's existence as rhetorical exercises for the expression of religious faith, compromising thus its principal commitment.

In contrast to natural theology, theology of nature begins with a firm belief in God, based on historical revelation—codified in the Scriptures and reflected upon within theological Tradition—and religious experience (personal and communal). It applies this perspective as an explanatory tool, providing a definitive answer to the questions of origin and ultimate fulfillment of natural phenomena observed in the universe. Hence, while it would be rather strange to claim that the existence of God proves the existence of the natural world—which is better known to us (*quoad nos*) than the principles of theology—we may still argue that, from the point of view of theology of nature, our knowledge of God and our relation toward him as the Creator enable us to discover a deeper, theological meaning of natural phenomena, including those which may not be directly available for the empirical research, such as teleology.

The advantage of theology of nature lies in its departure point. The explanatory potential of the revelation of God in his relation to the contingent universe enables us to develop an analogously far-reaching notion of the ultimate meaning of things that surround us. However, taken alone, this approach may alienate some Christians who hesitate to engage in critical analysis of the revealed Truth, received Tradition, and personal and communal religious experience. Such analysis is necessary nonetheless to understand the mystery of God and his creation more deeply, in accordance with the tradition of faith seeking understanding.

Keeping in mind similarities and differences, as well as strong and weak points of these approaches, I argue that both are valid and important for the overall endeavor of theology, and for theology engaged in a dialogue with natural science in particular. Hence, concentrating on the topic of teleology, I will refer to both natural theology and a Christian theology of nature. My goals in this paper are the following. First, in line with the tradition of Thomistic natural theology, I will clearly distinguish between the argument from teleology and the argument from design. Second, approaching teleology from the same perspective of natural theology, I will explore the explanatory potential of Aquinas's fifth way, which I claim enables us to say much more about God than a simple assertion that all

natural things are ordered to him as an end. Third, I will show the way in which a distinctively Christian theology of nature, as defined above, may actually enrich our reflection on teleology. Finally, I will ask about the role of teleology within two influential projects in contemporary science–theology dialogue: science-oriented panentheism and process theism. As an introduction to these four key points, I will begin with a short presentation of Aristotle’s understanding of teleology and chance.

Aristotle’s Notion of Teleology

Reflecting upon the phenomenon of teleology (goal-directedness), Aristotle sees it, first of all, as a natural phenomenon. He lists it as one of the four causes, metaphysical yet naturalistic categories indispensable for explaining what particular things and organisms are, what their active and passive dispositions are, and why they act and react in a given way. Defining goal or *τέλος* (*telos* = end, hence “teleology” = goal-directedness), he sees it as “that for the sake of which” a thing is done, or a good that is proper for a being and that can be attained. In the *Physics*, when discussing the ways we can call something a cause, we find him saying:

... again in the sense of end or “that for the sake of which” a thing is done, e.g. health is the cause of walking about. (“Why is he walking about?” we say. “To be healthy,” and, having said that, we think we have assigned the cause.) The same is true also of all the intermediate steps which are brought about through the action of something else as means towards the end, e.g. reduction of flesh, purging, drugs, or surgical instruments are means towards health. All these things are “for the sake of” the end, though they differ from one another in that some are activities, others instruments. (2.3.194b 32–95a 2)⁴

This statement is profound for at least three reasons. (1) First, it defines goal-directedness primarily as an intrinsic feature of an entity, even if it includes using external instruments (as surgical instruments serving human health in Aristotle’s example). As such, teleology is better understood in reference to one of the terms Aristotle uses to describe the formal principle of a given being, which makes it to be what it is. Apart from terms such

⁴ Quotes of the *Physics* are trans. Gaye, in *The Basic Works of Aristotle*, ed. Richard McKeon, 213–394 (New York: Modern Library, 2001). See also *Metaphysics* 5.1.1013a 33–b 2.

as παράδειγμα (*paradeigma*; “paradigm”; “archetype”; “pattern”; “model”; “characteristics of the type”), μορφή (*morphē*; “shape”), εἶδος (*eidos*; “form”), and ὁ λόγος τοῦ τί ἦν εἶναι (*ho logos tou ti ēn einai*; “statement [definition] of the essence”), he describes form, on several occasions in terms of ἐντελέχεια (*entelecheia*), which relates formal to final causation and denotes form as actualized in the final state of a being.⁵ Teleology is then nothing else but an intrinsic tendency of a given entity to be fully actualized in its essence, meaning (in a metaphorical and somewhat colloquial expression) to express its own identity and live its own life to the full. Commenting on this term, Fran O’Rourke says: “It is form (μορφή), therefore, which is nature (φύσις [*physis*]). It is form as ἐντελέχεια which is the τέλος [*telos*] of γένεσις [*genesis*], that is, of the coming-to-be of φύσις. In its state of completion, φύσις is synonymous with ἐντελέχεια, the fulfillment of εἶδος.”⁶

(2) Moreover, Aristotle’s definition of finality implicitly suggests that teleology—which is usually associated with, and often wrongly limited to, conscious human decisions—should be extended to other living and nonliving entities. Indeed, as notes David Bostock, in *Meteorologica* 4.12.389b 25–90a 21, “Aristotle does explicitly say that the elements, and the inorganic compounds that are formed from them, are ‘for the sake of something,’ equating this with the view that they have a ‘function’ (ἔργον [*ergon*]) which in turn is a power (δύναμις [*dynamis*]) to act or be acted upon.”⁷ This “function” does not need to be necessarily known nor intended by a conscious agent. That is why Aristotle delineates in *Physics* 2.8.199b 26–27 that “it is absurd to suppose that purpose is not present because we do not observe the agent deliberating.”

(3) Finally, it becomes apparent that teleology has a normative import,

⁵ See *Metaphysics* 9.8.1050a 21–23: “For the action is the end, and the actuality is the action. And so even the word ‘actuality’ [ἐνέργεια, *energeia*] is derived from ‘action’ [ἔργον, *ergon*], and points to the complete reality [ἐντελέχεια, *entelecheia*];” quotes from the *Metaphysics* are trans. W. D. Ross in McKeon, *Basic Works of Aristotle*, 681–926. As Joe Sachs notes, “Aristotle invents the word by combining *enteles* [ἐντελής] (complete, full-grown) with *echein* (ἔχειν) = *hexis*, to be a certain way by the continuing effort of holding on in that condition), while at the same time punning on *endelecheia* [ἐνδελείχεια] (persistence) by inserting *telos* [τέλος] (completion). This is a three-ring circus of a word, at the heart of everything in Aristotle’s thinking, including the definition of motion” (*Aristotle’s Physics: A Guided Study* [New Brunswick, NJ: Rutgers University Press, 1995], 245).

⁶ Fran O’Rourke, “Aristotle and the Metaphysics of Evolution,” *The Review of Metaphysics* 58 (2004), 3–59, at 17.

⁷ David Bostock, *Space, Time, Matter, and Form: Essays on Aristotle’s “Physics”* (Oxford: Clarendon Press, 2006), 71.

observed not only in humans (to take Aristotle's example, being healthy is good for a human being) and lower animals and plants (we can imagine them taking various actions to achieve what is good for them), but also in the case of inanimate entities (Aquinas finds intrinsic goodness in each thing being what it is). In other words, as Mark Bedau notes, teleology is "value-centered," and this fact cannot be neutralized by relating it, in a Humean way, to minds and their designs (the mental approach), or by explaining it in terms of goal-directedness of natural systems (the systems approach), or by rationalizing it in reference to causal histories of teleological phenomena (the etiological approach). Bedau successfully shows that all three ways of striving to eliminate teleology's reference to value end up reorienting the conversation back to the value approach.⁸

Naturally, the evaluative element of teleology thus understood—that is, understood as the proper good of a given entity—need not consist in any moral good. Nor does it have to confer an important or the best good. Quite the opposite, it is enough for it to refer to some good: "moral or non-moral or even immoral, important or insignificant, and intrinsic or merely instrumental."⁹ The good in question is always related to what kind of thing a given entity is (its formal principle). Thus, even if properly classified and named in philosophical investigation performed by conscious beings, it is, nonetheless, real and intrinsic to the entity in question, independently of the operation of any human mind.

Aristotle on Teleology and Chance

As a source of regularity and order in observed reality, teleology is often opposed to chance. However, the classical approach helps us realize that the relationship between these two fundamental categories is more nuanced. With regards to chance, Aristotle considers it to be, first of all, an ontological aspect of reality and not merely an epistemological unexpectedness of certain occurrences due to the limitations of human understanding. He sees it as a kind of event that (ontologically) demands the agency/intentionality of nature or human will, since it appears to "happen for an end," but no such agency is involved in its occurrence.

To explain its nature, Aristotle introduces the distinction between *per*

⁸ See Mark Bedau, "Where's the Good in Teleology?," *Philosophy and Phenomenological Research* 52, no. 4 (1992): 781–806, at 783–87. See also Bedau's response to the criticism of the value analysis of teleology as viciously circular and spurious in reference to the cases of supposedly value-free teleology (793–94).

⁹ Bedau, "Where's the Good in Teleology?," 791.

se (καθ' αὐτὸ αἴτιον, *kath' hauto aition*) and *per accidens* (κατὰ συμβεβηκός, *kata symbebēkos*) causes, or incidental causes. He sees *per se* causes as fundamental and essential efficient causes that come from nature (φύσις, *physis*) or intellect (νοῦς, *nous*). As such, they are naturally related to the formal and final causality of a given agent. In other words, an efficient cause is acting *per se* when its activity is performed by an agent, in accord with the agent's substantial form, to produce its proper effect (see *Physics* 2.7.198a 23–26). The character of the second, *per accidens* (accidental) type of causes, on the other hand, can be explained in reference to Aristotle's metaphysics of substance. Just as an accident (accidental formal feature) of an entity has no existence of its own, but is rooted in its substantial formal features, similarly an accidental cause must be related to a *per se* cause (see *Physics* 2.3.195a 26–34 and 2.5.196b 24–29).

Keeping this distinction in mind, Aristotle defines chance as an unusual incidental (*per accidens*) cause, which is inherently unpredictable, although it still falls in the category of events that “happen for the sake of something” (since it refers and is related to such occurrences). Thus, chance events are in a way posterior, since their occurrence and analysis require always a reference to *per se* causes of a given causal situation. Consequently, trying to specify its ultimate nature, Aristotle states that “chance is an incidental cause. But strictly it is not the cause—without qualification—of anything.” (*Physics* 2.5.197a 12–14). And yet, because it is distinguished as a unique type of occurrence which is not primary, and which yet is inherently related to nature (φύσις, *physis*) and intellect (νοῦς, *nous*), chance needs to be defined in reference to *per se* formal and final causality rather than blind material necessity. This tells us that delineating it in a stark opposition to these causes is an unjustified simplification.¹⁰

To give an example, when riding on my bicycle through the downtown, I met my friend walking to the store. While my intention was to get out of the city to take a break, my friend's intention was to get to the store and do some shopping. Our intentions (final causes), our actions (efficient causes), and the essence of each one of us (hylomorphic union of primary matter and substantial form) were *per se* causes of our activities but not of our accidental encounter. In other words, tracing back *per se* causes of our activities does not eliminate the chance character of our encounter, making it to be inevitable (predetermined). The accidental nature of our meeting

¹⁰ See *Physics* 2.6.198a 8–13: “No incidental cause can be prior to a cause *per se*. Spontaneity and chance, therefore, are posterior to intelligence and nature. Hence, however true it may be that the heavens are due to spontaneity, it will still be true that intelligence and nature will be prior causes of this all and of many things in it besides.”

was something real, in addition to *per se* causes of our actions. Moreover, it could not transpire without these causes. Hence, one might say that, in a way, it was ontologically parasitic upon them.

Consequently, we may say that the need of reference to *per se* causes in the case of chance occurrences protects Aristotelian metaphysics not only from blind material necessity—defined as “tychism” (from the Greek τύχη, *tyche*),¹¹ attributing everything to chance—but also from absolute determinism, which sees chance simply as lack of human knowledge of causes.¹² This fact has a significant influence on Aristotle’s philosophy of nature and his understanding of necessary occurrences in the physical world. Necessity as such is for him never absolute, but always suppositional. Things happen in accordance with causal patterns, but on the supposition that nothing interferes with given causal occurrences. In other words, what we observe in nature is a nomological necessity governing relations between metaphysically contingent entities and the processes they enter.

The Distinction between the Arguments from Teleology and from Design

Based on Aristotle’s view of teleology, we might consider it to be one of the most fundamental aspects of nature, available for the analysis of natural science and philosophy of nature and of science. As such, it became one of the crucial points of departure for Aquinas’s natural theology. Indeed, he based on teleology the last of his famous “five ways,” the five arguments for God’s existence developed in *Summa theologiae* [ST] I, q. 2, a. 3:

The fifth way is taken from the governance of the world. We see that things which lack intelligence, such as natural bodies, act for an end,

¹¹ Note that Aristotle has actually two terms for chance: τύχη (*tyche*), meaning luck or fortune (chance occurrences in causal situations related to human deliberating), and the more general term τὸ αὐτόματον (*to automaton*), meaning chance (chance occurrences in causal situations related to an entity acting for its natural end [teleology]).

¹² See John Dudley, *Aristotle’s Concept of Chance: Accidents, Cause, Necessity, and Determinism* (Albany: State University of New York Press, 2012), 323: “For Aristotle it is not legitimate to view the present condition of the world as the outcome of the interaction of chains of necessary causes, as many contemporary scientists and philosophers would hold. For Aristotle the human intellect can only trace back one chain of causes at a time, and will always have to stop the process when it reaches a free choice or a [sc. unusual] accidental cause, both of which introduce contingency into chains of causes, since the effect of free choices and [sc. unusual] accidents on the course of events is inherently unpredictable.”

and this is evident from their acting always, or nearly always, in the same way, so as to obtain the best result. Hence it is plain that not fortuitously, but designedly [ex intentione], do they achieve their end. Now whatever lacks intelligence cannot move towards an end, unless it be directed by some being endowed with knowledge and intelligence; as the arrow is shot to its mark by the archer. Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God.¹³

The literature on all five ways of Aquinas has a long tradition.¹⁴ Leaving aside the vivid discussion which scrutinizes their logical structure and asks about their argumentative power,¹⁵ as well as the detailed analysis of

¹³ Quotes from ST are taken from the Dominican Fathers translation (New York: Benziger Bros., 1946). The other four ways argue from motion, efficient causality, contingency of things, and grades of perfection of things. Jules Baisnée provides a list of passages in other works of Aquinas parallel to the fifth way (*In I sent.*, d. 1, q. 1; *De veritate* q. 5, a. 2; *Summa contra gentiles* [SCG] I, ch. 13 [we will say more about this argument below]; ch. 44; *De potentia*, q. 3, a. 6; *In XII metaphys.*, lec. 12; *Super Ioan.*, prologue; *In symbolum apostolorum*, a. 1) and claims that this is, in fact, the most common argument for God's existence found in Aquinas's corpus ("St. Thomas Aquinas's Proofs of the Existence of God Presented in Their Chronological Order," in *Philosophical Studies in Honor of the Very Reverend Ignatius Smith, O.P.*, ed. John K. Ryan [Westminster, MD: Newman Press, 1952], 19–64, at 62–64).

¹⁴ For a more recent comprehensive analysis of all five ways see: Réginald Garrigou-Lagrange, *Dieu, son existence et sa nature: solution thomiste des antinomies agnostiques* (Paris: G. Beauchesne, 1914), ch. 3; Étienne Gilson, *Le thomisme: Introduction au système de Saint Thomas d'Aquin*, 5th ed., revised and expanded (Paris: J. Vrin, 1944); A. Kenny, *The Five Ways: Saint Thomas Aquinas' Proofs of God's Existence* (London: Routledge and Kegan Paul, 1969); J. Owens, *St. Thomas Aquinas on the existence of God: The Collected Papers of J. Owens*, ed. John R. Catan (Albany: State University of New York Press, 1980); Thomas Joseph White, *Wisdom in the Face of Modernity: A Study in Thomistic Natural Theology* (Naples, FL: Ave Maria University, 2009), 234–45; Edward Feser, *Aquinas: A Beginner's Guide* (Oxford: Oxford University Press, 2009), 62–120; Timothy Pawl, "The Five Ways," in *The Oxford Handbook of Aquinas*, ed. Brian Davies and Eleonore Stump (Oxford: Oxford University Press, 2012), 115–31; John F. Wippel, *The Metaphysical Thought of Thomas Aquinas: From Finite Being to Uncreated Being* (Washington, DC: Catholic University of America Press, 2000), 442–500; Fergus Kerr, *After Aquinas: Versions of Thomism* (Malden, MA: Wiley-Blackwell, 2002), ch. 4; Serge-Thomas Bonino, *Dieu, "celui qui est" (de Deo ut uno)* (Paris: Parole et Silence, 2016), ch. 5; Robert Arp, *Revisiting Aquinas' Proofs for the Existence of God* (Leiden: Brill, 2016). For an excellent introduction to all Aquinas's arguments for God's existence, see Baisnée, "St. Thomas Aquinas's Proofs," 29–64.

¹⁵ The question at stake for many is whether the five ways are demonstrative arguments that can be accepted as proofs for God's existence. In the second article of the same

the possible objections raised against each of the five arguments,¹⁶ I will concentrate primarily on the content of the argument presented in the fifth way. Before turning to it, however, I want to emphasize its distinctiveness from the argument from design, which requires the existence of a supreme

question Aquinas distinguishes between, on the one hand, a demonstration of a reasoned fact (*propter quid* demonstration) that moves from knowledge of a cause to knowledge of its effect and, on the other, demonstration of the fact (*demonstration quia*) that moves in opposite direction, i.e., from knowledge of an effect to knowledge of its cause. He adds that a demonstrative argument for God's existence is possible only under the second scheme. Wippel notes that another vexing issue refers to the nature of the syllogism used in each of five ways and that Aquinas himself acknowledges in *Summa theologiae* [ST] I, q. 2, a. 2, obj. 2, ad 2, that "the middle term in a demonstration is a thing's quiddity. But when it comes to God we cannot know what he is but only what he is not. Therefore [it seems that] we cannot demonstrate that God exists. In his response [to this counterargument] Thomas notes that when a demonstration moves from our knowledge of an effect to knowledge of its cause, we must put the effect in the place of the definition of the cause if we are to prove that the cause exists. This is especially true when we are dealing with God. In order to prove that something exists we need only use as a middle term a nominal definition of that which is to be demonstrated [a definition explaining the meaning of a given term], not a real (or quidditative) definition [a definition explaining the real nature (*quid rei*) of a thing]. This follows, continues Thomas, because the question 'What is it?' comes after the question 'Is it?' But we apply names to God from what we discover in his effects. Therefore, in demonstrating his existence from an effect we may use as a middle term that which the name God signifies, that is, some purely nominal definition" (*Metaphysical Thought of Thomas Aquinas*, 443). Whether Aquinas's explanation justifies classifying his five ways as demonstrative arguments remains an open question, the analysis of which goes beyond the scope of our interest in this article.

¹⁶ Concerning the fifth way, there are at least four major objections that have been raised against it. (1) Perhaps the operation of natural bodies can be explained in reference to material, formal, and efficient causation. (2) Or maybe it can be accounted for by appealing to chance. (3) Still another critical approach might acknowledge that finality is real but not that it is required to be grounded in God. Finally, (4) if God is still necessary in this equation, grounding the normative aspect of teleology in him raises the old question of evil present in the created universe. In response to (1), taking generation as an example, Aquinas argues in ch. 3 of *De principiis naturae* that, while matter, form, and privation might be considered as its principles, they are still insufficient to explain it. An actualizing agent is needed. However, once we introduce an agent, we must realize that, as such, it always acts for an end. Having said that, Aquinas reminds us that not only voluntary agents tend toward an end (*intendit finis*), but also natural (i.e., involuntary) ones. Wippel notes that Aquinas develops a similar argument in ST I-II, q. 1, a. 2. Concerning (2), we have already seen that according to Aristotle (and Aquinas follows him) chance, though ontologically real, is a *per accidens* cause, which is intrinsically related to *per se* material, formal, efficient, and final causes, decisive for operation of entities participating in chance occurrences. Facing (3) Aquinas does not

designer. Unfortunately, these two arguments are often confused and treated as one and the same argument.¹⁷

First of all, it seems that through his major works Aquinas does not present us with a clearly formulated argument from design. The closest he gets to framing such proof is the concluding section in *Summa contra gentiles* [SCG] I, ch. 13, no. 35, where he states:

Contrary and discordant things cannot, always or for the most part, be parts of one order except under someone's government, which enables all and each to tend to a definite end. But in the world we find that things of diverse natures come together under one order, and this not rarely or by chance, but always or for the most part. There must therefore be some being by whose providence the world is governed. This we call God.¹⁸

On the one hand, it is true that, even if we find in this argument a passing reference to an end or a final cause, what stands in its center is the notion of an order coming out of parts, which repeatedly shows in nature. On

question the validity of the explanation at the level of secondary causes, but he denies its sufficiency, as it always refers to things that can change (*mutabilia*) or fail (*defectibilia*). Finally, in response to (4), we might turn, together with Aquinas, to the classical Augustinian theorem stating that God would not have allowed for evil unless his goodness and omnipotence were able to bring good out of it. See Wippel, *Metaphysical Thought of Thomas Aquinas*, 480–85.

¹⁷ See, for example, Pawl, "Five Ways," 125 (commenting on the fifth way, he juxtaposes chance and design and speaks about "the designer [who] directs the actions of the noncognizant beings to act for an end"), or Kenneth Einar Himma's entry on "Design Arguments for the Existence of God" in the *Internet Encyclopedia of Philosophy*, in which, in reference to the fifth way, he states: "Perhaps the earliest philosophically rigorous version of the design argument owes to St. Thomas Aquinas" (iep.utm.edu/design). Similar is the approach of Del Ratzsch and Jeffrey Kopersky, who state that "Theistic arguments [departing from exquisiteness of structure, function, or interconnectedness], in their various logical forms, share a focus on plan, purpose, intention, and design, and are thus classified as teleological arguments (or, frequently, as arguments from or to design)" (Del Ratzsch and Jeffrey Koperski, "Teleological Arguments for God's Existence," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, last revised June 19, 2019, plato.stanford.edu/entries/teleological-arguments). It is possible that one of the reasons for the confusion of teleology and design is the term "designedly," which the standard translation of the Fathers of the English Dominican Province uses for *ex intentione* in the translation of Aquinas's fifth way (see above).

¹⁸ Quotes from the *Summa contra gentiles* are taken from *On the Truth of the Catholic Faith: Summa Contra Gentiles*, 4 vols., trans. Anton C. Pegis et al. (Garden City, NY: Image, 1955–1957).

the other hand, however, we should not be too quick in classifying it as an argument from design, since “order” and “design” are not equivalent terms. Quite to the contrary, only the latter presupposes the existence and causal activity of a conscious designer. Hence, to meet the requirements of the argument from design, Aquinas would have to introduce one more proposition that order observed in nature is an outcome or a sign of a design and replace the conclusion referring to the categories of “providence” and “government” with the one saying: “There must therefore be some being by whose designing activity different parts in the created reality come together to form order.” Otherwise, his argument in here remains closer to the one from providence and governance, developed in *De veritate*, q. 5, a. 2.

Moreover, and this is crucial within the context of the contemporary debate concerning the relation between religion and science, even if we agree to treat Aquinas’s argument from *SCG* I, ch. 13, no. 35, as the argument from design, we must not forget that, within his system of philosophy and theology, the designer does not need to perform his designing action directly. Quite to the contrary, Aquinas would most likely contend that he does it as the first and principal cause, working through secondary and instrumental causation of creatures. This radically distinguishes Thomism from the position of Intelligent Design (ID), which defines causal agency of the intelligent designer univocally in terms of a direct intervention (i.e., an activity of a transcendent cause among contingent causes) and states that its main argument falls within the scope of natural science (in reference to the contemporary division of scientific disciplines, Aquinas’s argument has undoubtedly a philosophical/theological nature).¹⁹

Finally, specialists unanimously acknowledge that the argument from design, as presented in *SCG* I, ch. 13, no. 35, is less developed from the philosophical standpoint, and for this reason it should not be regarded as equal to Aquinas’s major ways of demonstrating God’s existence. Consequently, it needs to be clearly distinguished from the argument from teleology, to which we should now return.²⁰

¹⁹ A number of supporters of ID are disappointed by the fact that, with some rare exceptions, Thomists are not enthusiastic about the content and the logic of their argument (see, for example, the section “Thomism and Intelligent Design” in Logan Paul Gage, “Can a Thomist Be a Darwinist?” in *God and Evolution*, ed. Jay W. Richards [Seattle: Discovery Institute Press, 2010], 196–201). In the light of our analysis, the reasons for the skepticism about ID in the Thomistic circles become apparent.

²⁰ See: Wippel, *Metaphysical Thought of Thomas Aquinas*, 434; Norman Kretzmann, *The Metaphysics of Theism: Aquinas’s Natural Theology in Summa Contra Gentiles I* (Oxford: Clarendon, 1997), 84, 88–89.

Teleology within the Perspective of “Natural Theology”

A careful analysis of Aquinas's fifth way (see above) inspires various thinkers to support one of its two major interpretative traditions. The first one of them (1) claims that the way Aquinas proceeds in this, and all other ways, makes his arguments perfect examples of the reasoning characteristic for natural theology. Its goal and ambition is to prove that, by the power of reason, reflecting upon nature, one can discover the existence of God as the first principle of all contingent beings—this much and not more. It does not tell us anything more about God's nature.²¹ The other interpretative tradition (2) claims something opposite. Those who follow it believe that, following this and other ways of Aquinas, one may not only prove the existence but also discover some crucial attributes of Christian God, such as his omniscience, omnipotence, and ultimate goodness.²²

Speaking of these two interpretative traditions, Timothy Pawl claims that the first one is predominant and in principle more adequate. He argues that Aquinas himself sees the concept of God discovered through his five ways as rudimentary, since in the following articles we find him “questioning whether God has a body, . . . is perfect, good, infinite, immutable, eternal, and even whether there is just one God.”²³ Hence, further truths about God come later, on the way of reasoning enlightened by revelation and faith. However, despite the predominance of (1) and Pawl's arguments in its favor, I want to argue that, in the case of the fifth way, (2) is actually more relevant. I will try to show it in reference to Aristotle's notion of teleology discussed above and the text of the fifth way (brought in the former section).

First, we have seen that Aristotle's notion of teleology introduces a dynamic aspect to his definition of the essence of a given thing or organism. He states that “the ‘what’ [essence] and ‘that for the sake of which’ [οὗ ἕνεκα, *hou heneka*] are one” (*Physics* 2.7.198a 25). This inspires him to coin a new term, ἐντελέχεια (*entelecheia*), which denotes form as actualized in the final state of the development of a being. Consequently, if

²¹ See Denys Turner, “On Denying the Right God: Aquinas on Atheism and Idolatry,” *Modern Theology* 20, no. 1 (2004): 141–61, at 152: “For Thomas the proofs prove an unknowable God, known to exist and known to be unknowable from the unutterable mystery that there is anything at all.”

²² See: Elliott Sober, *Core Questions in Philosophy* (New York: Macmillan Library Reference, 1991), 36–56 (lectures 4–5); John R. Wilcox, “The Five Ways and the Oneness of God,” *The Thomist* 62, no. 2 (1998): 245–68.

²³ Pawl, “Five Ways,” 115.

teleology “drives” things and organisms to achieve the highest level of actuality available for them, to express their own identity and live their own life “to the full,” we must acknowledge that God, who is the source of goal-directedness in his creatures, is not only the highest metaphysical principle but also a being that is actualized to the highest possible degree, a being that is most alive, that is Life itself.

Moreover, in his formulation of the fifth way Aquinas tacitly states that, at the end of the day, all intrinsic teleology relates beings to knowledge and intelligence. The fact that he says that only about natural, most likely inanimate bodies does not mean his rule is not applicable to conscious beings: their goal-directedness relates them to still higher (divine) knowledge and intelligence. By saying it, Aquinas asserts indirectly that God, as the transcendental source of teleology, must have knowledge and intelligence, and have them in highest possible degree: he must be omniscient and infinitely surpass all other intelligent beings.

Another important aspect of Aristotle’s notion of teleology that is echoed in Aquinas’s fifth way is its normative import. If goal-directedness in things and organisms is oriented toward what is good for them (metaphysically speaking), then God as the source of teleology must be utterly good; he must be Good itself. Moreover, some interpreters claim that, when he states that contingent beings aim for what is best (*id quod est optimum*), Aquinas has in mind not only goodness of particular parts or wholes, at various levels of the complexity of matter, but also the goodness of the universe as a whole. Engaging this argument in the context of natural theology, we may conclude that God, who desires the goodness of the universe as a whole (taken as one), must himself be one and totally simple.

Finally, we must not ignore the notion of chance in its relation to order and regularity observed in nature. Carefully analyzed by Aristotle, this topic is also alluded to by Aquinas in his fifth way, when he speaks about things acting for an end “always, or nearly always, in the same way.” What may stand in their way is either *per se* causation of some other entities or *per accidens* quasi-causal character of chance occurrences. Because the latter are an integral part of the ontological make-up of the universe, we must conclude that God is not only the author of both regularity and chance but also the principle of their interplay in dynamically changing reality.

I believe that the analysis presented here shows the richness of the interpretative potential of natural theology. Departing from the argument for the existence of God as the first (ultimate) principle of the contingent reality—which defines its principal undertaking—it enables us to make a meaningful inference into a number of divine attributes, before

introducing knowledge that comes from revelation. It is true in particular in reference to the phenomenon of teleology and Aquinas's fifth way that takes it as its starting point.

Teleology within the Perspective of "Theology of Nature"

Thinking about teleology from the perspective of theology of nature, we discover at first that, just as the human mind reflecting upon goal-directedness observed in nature is capable of discovering God as its source, the same human intellect, enlightened by the revealed truth, realizes that all created contingent beings "flow" from God and must be directed toward him. Hence, following Aquinas's theology of nature, in reference to the normative aspect of the phenomenon of goal-directedness, we can join him in his conclusion, stating that "everything is . . . called good from the divine goodness, as from the first exemplary effective and final principle of all goodness."²⁴ Consequently, we acknowledge that:

All things, by desiring their own perfection, desire God Himself, inasmuch as the perfections of all things are so many similitudes of the divine being. . . . And so of those things which desire God, some know Him as He is Himself, and this is proper to the rational creature; others know some participation of His goodness, and this belongs also to sensible knowledge; others have a natural desire without knowledge, as being directed to their ends by a higher intelligence.²⁵

Aquinas writes elsewhere to the same effect:

All things desire God as their end, when they desire some good thing, whether this desire be intellectual or sensible, or natural, i.e. without knowledge; because nothing is good and desirable except forasmuch as it participates in the likeness to God.²⁶

²⁴ *ST* I, q. 6, a. 4, corp. See also a. 1, corp. and ad 2; q. 105, a. 2, ad 2 ("God moves as the object of desire and apprehension"); I-II, q. 109, a. 6, corp.; *In I sent.*, d. 34, q. 1, a. 2 corp.

²⁵ *ST* I, q. 6, a. 1, ad 2.

²⁶ *ST* I, q. 44, a. 4, ad 3. See also q. 105, a. 5, corp.: "Thus then does God work in every worker, according to these three things. First as an end. For since every operation is for the sake of some good, real or apparent; and nothing is good either really or apparently, except in as far as it participates in a likeness to the Supreme Good, which is God; it

But we may go still further. Based on the revealed tradition, we learn that, just as the original sin of the first parents harmed the entire created reality (Gen 3:17), the eschatological consummation of the history of salvation at the second coming of Jesus Christ will bring its final renewal and transformation (Rev 21:1–8). Characterizing the present state of nature, St. Paul speaks about its groaning for restoration, which finds expression in our conscious longing for the final completion of the rebirth of the human nature. Through it, the entire creation will be reestablished in the dignity given to it by God at the moment of *creatio ex nihilo*, the dignity that has been disgraced by human sin:

For creation awaits with eager expectation the revelation of the children of God; for creation was made subject to futility, not of its own accord but because of the one who subjected it, in hope that creation itself would be set free from slavery to corruption and share in the glorious freedom of the children of God. We know that all creation is groaning in labor pains even until now. (Rom 8:19–22)

In this context, we can think about intrinsic teleology of each created entity as an expression of its groaning for the fulfillment in God. In other words, flowing from God, yet ontologically radically distinct from him, created beings strive to achieve the maximal level of actuality and goodness available to them. Their intrinsic teleology is thus oriented toward the highest possible resemblance of the perfection and goodness of God. I claim that this enables us to analogically extend the classical theological scheme of *exitus* and *reditus*—traditionally referred to humanity—to the entire creation. This proposition finds support in Aquinas, who notes that “the end of all things [by which he seems to understand the totality of the universe] is some extrinsic good,” which is “outside [extrinsic to] the universe” (*ST* I, q. 103, a. 2, corp.).²⁷ Once again, the longing for this end finds expression in the phenomenon of teleology embedded in creatures.²⁸

follows that God Himself is the cause of every operation as its end.” See also: Étienne Gilson, *The Spirit of Mediaeval Philosophy* (New York: Charles Scribner’s Sons, 1940), 75; Corey L. Barnes, “Natural Final Causality and Providence in Aquinas,” *New Blackfriars* 95 (2014): 349–61.

²⁷ That Aquinas is thinking here about the end of the universe as a whole becomes clear from the title of the article, as well as the last sentence of the respondeo, in which he speaks about “the end of the whole universe” (*finis totius universi*). Hence, the term “the end of all things” (*finis rerum*) in the earlier part of the same passage should be interpreted as referring to the entire universe as well.

²⁸ The eschatological perspective delineated here, in reference to the classical philosophy and theology, finds its new expressions in contemporary theology, and in the

I believe that the reflection from the perspective of theology of nature offered here complements and deepens the one offered by natural theology. By combining them together we can achieve a more thorough and coherent theological interpretation of the meaning of goal-directedness observed in the universe. As such, it remains an attractive proposition for the science–theology dialogue, especially in the context of the recent rediscovery and ongoing debate on teleology in both natural science and philosophy of science.

Teleology in Science-Oriented Panentheism and Process Theism

One might justifiably assume that the theological recognition of the importance of natural teleology and its grounding in the Creator God—delineated in reference to the Aristotelian-Thomistic tradition of philosophy and theology—reflects a more general approach to this topic among theologians, including those engaged in dialogue between theology and science. However, that this might not always be the case can be seen in reference to at least two contemporary and highly influential theological projects, both of which were developed in reference to natural science: science-oriented panentheism and process theism.

Before analyzing each one of them we should note that for the most part they follow the approach of theology of nature. However, their understanding of its strategy varies from the one defined here. Instead of applying the perspective of faith as an explanatory tool, providing a definitive theological answer to the questions of origin and ultimate fulfillment of natural phenomena observed in the universe, science-oriented panentheism and process theism open to natural science holding that “some

science–theology dialogue in particular. Here we may think about Pierre Teilhard de Chardin’s vision as developed in *The Phenomenon of Man* (New York: Harper, 1959)—with its explanatory potential, as well as many scientific, philosophical, and theological problems it raises—or some ideas concerning eschatology expressed by Karl Rahner in *Foundations of Christian Faith: An Introduction to the Idea of Christianity* (New York: Crossroad, 1978). Another important point of reference is the scientific, philosophical, and theological analysis concerning fine tuning, anthropic coincidences, and anthropic principle—which refers to teleology on the cosmic scale. For a concise evaluation of Teilhard de Chardin and Rahner, in reference to John D. Barrow and Frank J. Tipler’s *The Anthropic Cosmological Principle* (Oxford: Oxford University Press, 1986), see Robert J. Russell, *Cosmology from Alpha to Omega: The Creative Mutual Interaction of Theology and Science* (Minneapolis, MN: Fortress, 2008), ch. 9. On anthropic principle, see Giuseppe Tanzella-Nitti, “Anthropic Principle,” *Interdisciplinary Encyclopedia of Religion & Science*, 2005, doi.org/10.17421/2037-2329-2005-GT-1.

traditional [theological] doctrines need to be *reformulated* in the light of current science.”²⁹ Although a similar approach is not entirely absent from the tradition of classical theism—as one of the most fundamental explanations of its identity as faith seeking understanding—its contemporary proponents would be hesitant to make it a principal aspect of their definition of theology of nature.³⁰

Science-Oriented Panentheism

Panentheism is one of the prominent versions of theism rooted in some ancient non-Christian and Christian traditions, suggesting that everything is in God (pan-*en*-Theos), who at the same time transcends the created and contingent reality. Recommended as forging a middle path between classical theism and pantheism, panentheism gained much popularity in the last century. For the purpose of the present conversation, I will put aside the complexity of the analysis of its historical and contemporary versions, some major difficulties concerning a precise qualification of the key preposition “in” (*en*) in its definition, the controversy around its suggestion of mitigating omni-attributes of God (such as omnipotence and omniscience), and doubts whether it manages to find a proper balance between divine transcendence and immanence (allegedly making it an attractive alternative to classical theism—accused of exaggerating divine transcendence at the cost of divine immanence).³¹ What interests me here is the question concerning the notion of teleology in a particular version of panentheism developed by theologians (and scientists) engaged in the science–theology dialogue.

²⁹ Barbour, *When Science Meets Religion*, 31.

³⁰ Michael Dodds notes: “For Aquinas, theology’s use of science cannot result in a reformulation of the truth that God has revealed, but may change one’s interpretation of it. Accepting the truth of Scripture as the ‘given,’ theology may turn to human reason, including empirical science, not to critique or modify that truth, but in order to penetrate its depth: ‘Sacred doctrine makes use even of human reason, not, indeed, to prove faith . . . but to make clear other things that are put forward in this doctrine. . . . Hence sacred doctrine makes use also of the authority of philosophers in those questions in which they were able to know the truth by natural reason’ [ST I, q. 1, a. 8, ad 2]. Theology’s use of science cannot change revealed truth, but it may help the theologian to understand it more deeply” (“Thomas Aquinas Vis-à-Vis Natural Theology, Theology of Nature, and Religious Naturalism,” *Theology and Science* 15, no. 3 [2017]: 266–75, at 269).

³¹ I discuss all these issues in detail in Mariusz Tabaczek, *Divine Action and Emergence: An Alternative to Panentheism* (Notre Dame, IN: University of Notre Dame Press, 2021), and “The Image of God in Western (Christian) Panentheism: A Critical Evaluation from the Point of View of Classical Theism,” *Sophia* (forthcoming; published online 2021, doi.org/10.1007/s11841-021-00848-2, awaiting print assignment).

Among the most prominent representatives of this movement, we find Barbour, Philip Clayton, Paul Davies, and Arthur Peacocke.³²

Focusing their research on the philosophical and theological implications of quantum mechanics, the theory of relativity, the big bang theory, nonequilibrium thermodynamics, evolutionary biology, and genetics, they all state that God created the universe with a very precise set of laws that combine uniformity and randomness, through which he continues the work of creation. In other words, God chose not to determine the universe in detail, but instead to give a vital, cocreative role to nature. This role comes into play through an interplay of chance and order.³³ Peacocke writes:

³² Emphasizing the importance of panentheism in the science–theology dialogue, David Nikkel goes as far as to say that “the *raison d’être* of panentheism was to re-balance transcendence and immanence in light of modern scientific knowledge. Rejecting what its originators considered the neglect of divine immanence in classical theism and deism, it attempted to affirm a strong divine interest and presence in the world but without supernatural intervention that controverted natural laws” (“Affirming God as Panentheistic and Embodied,” *Sophia* 55, no. 3 [2016]: 285–95, at 296).

³³ One of the important aspects and consequences of the panentheists’ understanding of God’s immanence is their interpretation of *creatio continua* in terms of the ongoing creative action of God, which he shares with the creatures. Davies speaks of a God who decided to “give a vital, cocreative role to nature itself” (“Teleology without Teleology: Purpose through Emergent Complexity,” in *In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God’s Presence in a Scientific World*, ed. Philip Clayton and Arthur Robert Peacocke [Grand Rapids, MI: Eerdmans, 2004], 95–108, at 104). Clayton suggests we should consider God as the “‘co-creator’ with finite agents” (“Emergence from Quantum Physics to Religion: A Critical Appraisal,” in *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion*, ed. Philip Clayton and Paul Davies [Oxford: Oxford University Press, 2006], 303–22, at 307). Peacocke, similarly, speaks of God continuously creating through the processes of the natural order, working from inside the universe. He thinks that “creation goes on all the time and is not just a one-off event” (*Theology for a Scientific Age: Being and Becoming—Natural, Divine, and Human* [Minneapolis, MN: Fortress, 1993], 170). He sees God as “creating at every moment of the world’s existence through perpetually giving creativity to the very stuff of the world” (Arthur Peacocke, “Articulating God’s Presence in and to the World Unveiled by the Sciences,” in Clayton and Peacocke, *In Whom We Live and Move and Have Our Being*, 137–55, at 144). Such claims are rather problematic from the point of view of the tradition of classical theism. If we define creation as bringing entities into existence *ex nihilo*, we must acknowledge that such an act requires an infinite power. Hence, notes Aquinas, only God can create (see *ST* I, q. 45, a. 5, corp.). Consequently, the incessant processes of changes in nature described by panentheists should be perceived as important aspects of God’s governance (*gubernatio*) of the created universe, rather than creation (*creatio ex nihilo*). The same classical theological tradition acknowledges that creation finds its logical continuation in God’s keeping all created things in existence (*conservatio a nihilo*), which may, properly

It has become increasingly apparent that it is chance operating within a lawlike framework that is the basis of the inherent creativity of the natural order, its ability to generate new forms, patterns and organizations of matter and energy. . . . It is the combination of the two which makes possible an ordered universe capable of developing within itself new models of existence. *The interplay of chance and law is creative.*³⁴

Barbour:

Randomness at one level leads to dynamic patterns at another level. In some cases the new order can be predicted by considering the average or statistical behavior of the myriad components.³⁵

And Davies:

The development of complexity is not just an outworking of the laws of nature; it also depends on the kind of radical chance permitted by, and yet transcending the determination of, these very laws.³⁶

While these assertions are by all means adequate and plausible, we must note that, in explaining the notion of order (or necessity), the advocates of science-oriented panentheism constrain themselves, in most cases, to its definition in terms of the laws of nature: "The laws of physics produce order."³⁷ However, once we realize (following William Stoeger and many others) that the laws of nature are epistemological descriptions rather than ontological prescriptions, we must acknowledge that the order in the

speaking, be called *creatio continua*. But if creatures participate both in God's governance and in God's keeping things in existence causally, they do so acting as secondary and instrumental causes under the primary and principal causality of God, and not as sharing (univocally) in the creative action of God *per se*. See Mariusz Tabaczek, "Pantheism and Panentheism," in *T&T Clark Handbook of the Doctrine of Creation*, ed. Jason Goroncy (London: Bloomsbury T&T Clark, forthcoming).

³⁴ Peacocke, *Theology for a Scientific Age*, 65.

³⁵ Barbour, *When Science Meets Religion*, 104–5.

³⁶ Davies, "Teleology without Teleology," 95.

³⁷ Davies, "Teleology without Teleology," 105. I believe Davies is thinking here about the laws of nature as discovered and described in physics. John Polkinghorne speaks about "the lawful regularity of physical process" as the source of necessity and law in nature (J. C. Polkinghorne, *Science and Theology: An Introduction* [Minneapolis, MN: Fortress, 1998], 39).

universe, observable in empirical science, needs a metaphysical grounding.³⁸ What seems to be lacking in the science-oriented panentheism is a foundation similar or alternative to the one expressed in reference to classical categories of substantial form, intrinsic teleology (goal-directedness), and the normative notion of a good proper to a given entity. This affects its otherwise accurate theological conclusion portraying God as the ground and source of both order and chance, as can be seen in Peacocke:

One might say that the potential of the “being” of the world is made manifest in the “becoming” that the operation of chance makes actual. Hence we infer God is the ultimate ground and source of both law (“necessity”) and “chance.”³⁹

Likewise in Barbour:

Both law and chance are part of God’s design. . . . This approach is consistent with the idea of divine purpose, though not with the idea of a precise predetermined plan.⁴⁰

And in Davies:

We may exploit the chess analogy and suggest that God, on the one hand, acts by selecting from the set of all possible laws of nature those laws that encourage or facilitate rich and interesting patterns of behavior. . . . On the other hand, the details of the actual evolution of the universe are left open to the “whims” of the players (including chance operating at the quantum or chaos level, the actions of human minds, etc.).⁴¹

³⁸ See William R. Stoeger, “Contemporary Physics and the Ontological Status of the Laws of Nature,” in *Quantum Mechanics: Scientific Perspectives on Divine Action*, ed. Robert J. Russell et al. (Vatican City: Vatican Observatory; Berkeley, CA: Center for Theology and the Natural Sciences, 2001), 208: “Although the laws of nature reveal and describe fundamental patterns of behavior and regularities in the world, we cannot consider them the source of those regularities, much less attribute to them the physical necessity these regularities seem to manifest. Nor can we ascribe to them an existence independent of the reality whose behavior they describe. Instead I claim that they are imperfect abstract descriptions of physical phenomena, not prescriptions dictating or enforcing behavior. Thus, a Platonic interpretation of these laws is unjustified.”

³⁹ Peacocke, *Theology for a Scientific Age*, 119.

⁴⁰ Barbour, *When Science Meets Religion*, 73. See also 164–66.

⁴¹ Davies, “Teleology without Teleology,” 100.

The weak point of these assertions is that their authors do not specify in what way God is the ground and source of order and chance. In this regard they differ significantly from the classical position which sees the origin of the above-mentioned, clearly defined grounding metaphysical categories in the pure actuality and ultimate goodness of God, who is both the source and the final end of all that is.

Moreover, it is worth noting that the very term “teleology” is rather avoided by the advocates of science-oriented panentheism. A clear reason for this may be found in Barbour and even more explicitly in Davies. They both associate teleology with a particular kind of “design” arguments which assume direct special divine interventions in nature and are often identified as “God of the gaps” type of reasoning. With this idea of goal-directedness in mind, Davies states:

In the earlier divine teleological schemes of pre-Darwinian Christianity, God directly selected a final outcome (e.g., the existence of “Man”) and simply engineered the end product by supernatural manipulation. By contrast, the concept I am discussing is “teleology without teleology.” God selects very special laws that guarantee a trend toward greater richness, diversity, and complexity through spontaneous self-organization, but the final outcome in all details is open and left to chance. The creativity of nature mimics pre-Darwinian teleology, but does not require the violation or suspension of physical laws.⁴²

In the light of what was said so far, it becomes apparent that Davies’s notion of the “earlier divine teleological schemes” refers to the notion of teleology that has little to do with the one offered by Aristotle and analyzed theologically by Aquinas. It most likely refers to William Paley’s argument from design, which in its refurbished version is fostered by the contemporary proponents of ID (see above). Moreover, apart from his distorted view of teleology, Davies’s own proposition of “teleology without teleology” seems to define—if not identify or even replace—goal-directedness with laws of nature. I find his approach vulnerable to Stoeger’s criticism of hypostasizing these laws and assigning to them causal nature (powers).⁴³

⁴² Davies, “Teleology without Teleology,” 105–6. In his *When Science Meets Religion*, Barbour identifies teleology with the “design argument,” which he understands in ways similar to Davies (see 9–10, 28–30). The view he presents in his other books is similar.

⁴³ Davies says that laws of nature “permit the universe . . . to originate,” or that the laws of physics “produce order,” or that they “can themselves be regarded as expressions of

One more reason for skepticism about the teleological language within the circles of the contemporary science-oriented panentheism might be implicitly grounded in its principal theological manifesto. We have seen that, in the classical theological reflection on teleology, created entities, flowing from God yet ontologically radically distinct from him, strive to achieve the maximal level of actuality available to them. Their intrinsic teleology is thus oriented toward the highest possible resemblance of the perfection of God. Similar to the grades of goodness proper to them, they are leaning toward God as Goodness itself. This enables us to analogically extend the classical theological scheme of *exitus* and *reditus* to the entire creation. However, such an approach becomes difficult, if not entirely implausible, in panentheism, which assumes that all things are already in God (pan-*en*-Theos). If this is the case, then there is little space left for teleological development that would bring creatures closer to divine perfection and goodness. Leaving aside the challenge of specifying the meaning of *en* in panentheism—which is one of the vexing issues concerning its definition—a panentheist might argue that her God still transcends the universe, which makes the notion of teleology at least potentially theologically fruitful in her version of theism. However, we do not find panentheists engaging in this type of argumentation. Rather, it seems that their central theological commitment of placing creation “in” God encourages them to ignore or abandon the notion of teleology.⁴⁴

God” and his divine agency (“Teleology without Teleology,” 103, 105, 108).

⁴⁴ Evaluating some recent definitions of panentheism, Raphael Lataster and Purushottama Bilimoria refer to its Eastern formulations and suggest to “consider panentheism to be a type of pantheistic model of the divine” (“Pantheism(s): What It Is and Is Not,” *Journal of World Philosophies* 3, no. 2 [2018]: 49–64, at 51). Bringing this assertion to its logical conclusion, they add that “To the panentheist, the ‘stuff’ of the universe is quite literally the ‘stuff’ of the deity” (53). Consequently, “Only the divine can tell us what to do, but we are the divine! And unlike the poor [classical] theists, who are told that they are imperfect and must take action to get closer to the deity, we need do nothing, and we need feel no guilt. For we know that we are god. And we are what we are meant to be, at any moment in time. We do not wage destructive wars based on who worships the correct god. For we are all god” (52). One might say that the version of panentheism suggested by Lataster and Bilimoria is quite radical and thus marginal. However, speaking of the origin of the universe, they claim their adversary (Benedikt Paul Göcke) ignores “numerous—and more mainstream, as well as etymologically appropriate—panentheistic models where *creatio* is *ex deo* rather than *ex nihilo*, and similarly overlooks panentheistic models entailing no creation at all” (55).

Process Theism

The second highly influential theological project advanced in reference to natural science that requires our attention is process theism. Initiated by Alfred North Whitehead and Charles Hartshorne, it was further developed by John Cobb, David Griffin, and many other theologians who favored Whitehead's idea of stability through change. Among them we find Barbour and Clayton. Leaving aside explanation of the complex metaphysical background of process theism, we need to refer to the fundamental ontological commitments of process philosophy on which it is founded. This will enable us to evaluate the role of teleology in theology based on Whitehead's project.⁴⁵

Whitehead sees the universe as an organic complex—rather than a dualism of “mind and mechanism”—constituted of basic events, “bits of experience,” “actual occasions,” “puffs of existence,” that realize and actualize themselves (or “concrese”) in one instant of time, to pass away or “perish” in the next instant. The enduring objects of our experience, such as atoms, molecules, material objects, and living creatures, including human beings, are nothing more than organized “societies of actual occasions.” Hence, it becomes clear that “process,” rather than “substance” or “being,” stands for the basic ontological category in Whitehead's system. Despite his insistence on each “actual occasion” as a self-creating and self-actualizing individual, seeking the “satisfaction” or “enjoyment” of its own existence, Whitehead notes that actual occasions are related in space and time to other realities in their immediate environment. They “prehend” both past actualities and possible future actualizations, which is

⁴⁵ As an introduction to process philosophy and theology, see: Alfred North Whitehead, *Science and the Modern World* (New York: New American library, 1950); Whitehead, *Religion in the Making* (New York: Macmillan, 1926); Whitehead, *Process and Reality* (New York: Free Press, 1979); Charles Hartshorne, *The Divine Relativity: A Social Conception of God* (New Haven, CT: Yale University Press, 1948); Hartshorne, *Omnipotence and Other Theological Mistakes* (Albany: State University of New York Press, 1984); Joseph A. Bracken, *Christianity and Process Thought: Spirituality for a Changing World* (Philadelphia: Templeton Foundation Press, 2006); William A. Christian, *An Interpretation of Whitehead's Metaphysics* (New Haven, CT: Yale University Press, 1959); John B. Cobb and David Ray Griffin, *Process Theology: An Introductory Exposition* (Louisville, KY: Westminster John Knox, 1976); *Explorations in Whitehead's Philosophy*, ed. Lewis S. Ford and George Louis Kline (New York: Fordham University Press, 1983); Palmyre M. F. Oomen, “God's Power and Almightiness in Whitehead's Thought,” *Open Theology* 1 (2015): 277–92; Clark H. Pinnock, *Most Moved Mover: A Theology of God's Openness* (Grand Rapids, MI: Baker Academic, 2001); Mariusz Tabaczek, *Divine Action and Emergence*, 126–32.

decisive for their dipolar nature. As they are neither mind nor matter taken separately, occasions of experience are implicitly both physical and mental.

Whitehead's ontological manifesto definitely makes space for goal-directedness. Although in his *Process and Reality* the term teleology occurs only once,⁴⁶ it becomes clear that the tendency of actual occasions towards self-actualization has a teleological character. However, since each one of them has a mental or experiential pole (dimension), it becomes questionable whether Whitehead upholds the classical distinction between intrinsic teleology in inanimate, animate, and conscious beings.

Concerning process theology, we shall look first at God. As is commonly known, Whitehead famously states that "God is not to be treated as an exception to all metaphysical principles. . . . He is their chief exemplification."⁴⁷ Faithful to this rule, he places God among other actual occasions. What distinguishes him is the nontemporal aspect of his nature, in which God prehends not only all actual occasions, but also all eternal objects—possible kinds (ways) of existence that actual occasions can actualize (transcendental points of reference). Moreover, unlike other actual occasions, God does not perish. However, since he exists among actual occasions, God changes, and teleology applies to him as well. Consequently, Whitehead speaks about three aspects (phases of dialectical development) of God's nature: "primordial," unchangeable and eternal but, in some way, impersonal and not fully actual; "consequent," reflecting and affected by the world of atomic actual occasions and reaching thus a fully personal and actual stage of development; and "superjective," achieving highest satisfaction qualifying the transcendent creativity in the various temporal instances.⁴⁸

The teleological concept of God's nature fits the basic commitment of process theology, which sees him as both "maximally absolute" and "maximally relative," or "surrelative." But this is possible only at a price. Understood as such, God ceases to explain the teleology of other actual occasions and their societies. Rather, he shares it with them, participating in the reality in which "the ultimate is termed 'creativity.'" As such, "God is its primordial, non-temporal accident."⁴⁹ Consequently, bringing their

⁴⁶ See Whitehead, *Process and Reality*, 214.

⁴⁷ Whitehead, *Process and Reality*, 343.

⁴⁸ Whitehead, *Process and Reality*, 87–88, 343, 345. One might object that in the case of God—within the Whiteheadian system—we are dealing with a truncated version of teleology, i.e., goal-directedness without a goal. For, if God and the world ever reached an end/fulfillment, they would cease to be, since being consists in becoming/process.

⁴⁹ Whitehead, *Process and Reality*, 7, 21, 31.

version of theism to its logical conclusions, at least some process theists follow Whitehead and reject the notion of God as Creator *ex nihilo* of the universe, which in the process metaphysics is simply everlasting: "God does not create the world, he saves it: or, more accurately, he is the poet of the world, with tender patience leading it by his vision of truth, beauty, and goodness."⁵⁰

However, one might push back, saying that we should not forget that the God of process theism "conceptually feels" which possibilities best fit each actual occasion, makes them available for prehension, and exerts a "pull," an attraction towards eternal ideas, which can be seen as a type of final causation inspired by him. "He is the lure for feeling, the eternal urge of desire," which strives to attract each actual occasion to appropriate his "initial aim" as its own "subjective aim."⁵¹

Although true, within the Whiteheadian system, this fact still does not make God the ultimate source of the teleology of actual occasions. Because actual entities share with him the characteristic of self-causation, they can transcend all other actual entities, including God.⁵² All God can do is propose which eternal objects each actual entity shouldprehend in the future and give to each of them an objective immortality in his consequent nature. As such, God remains "the outcome of creativity, the foundation of order, and the goad towards novelty."⁵³ Consequently, even if teleology expressed in self-actualization of atomic actual occasions, including God, seems to play a significant role in process theism, it seems to remain metaphysically ungrounded.⁵⁴

⁵⁰ Whitehead, *Process and Reality*, 345.

⁵¹ Whitehead, *Process and Reality*, 344.

⁵² Whitehead, *Process and Reality*, 222.

⁵³ Whitehead, *Process and Reality*, 88.

⁵⁴ Another major challenge faced by process theism in reference to teleology on a grand scale is theodicy. A processual universe is devoid of eschatological hope, as one cannot be sure that God's love will eventually and ultimately conquer evil. As Niels Henrik Gregersen points out, in process theism "there seems [to be] no redemption possible for the tragically un[ful]filled aspirations of life, nor for the problem of the horrendous evils of wickedness. . . . A soteriological deficit is obvious" ("Three Varieties of Panentheism," in Clayton and Peacocke, *In Whom We Live and Move and Have Our Being*, 19–35, at 32–33).

Conclusion

A contemporary philosopher of biology, Denis Walsh, in his chapter on teleology in *The Oxford Handbook of Philosophy of Biology*, makes a striking observation:

The “Aristotelian purge” was seen as a pivotal achievement of early modern science. As a consequence of the scientific revolution, the natural sciences learned to live without teleology. Current evolutionary biology, I contend, demonstrates that quite the opposite lesson needs now to be learned. The understanding of how evolution can be adaptive requires us to incorporate teleology—issuing from the goal-directed, adaptive plasticity of organisms—as a legitimate scientific form of explanation. The natural sciences must, once again, learn to live with teleology.⁵⁵

If Walsh is right, then a new possibility emerges in the science–theology dialogue. Its reflection on God and divine action in reference to quantum mechanics, the theory of relativity, the big bang theory, nonequilibrium thermodynamics, and various sub-disciplines of biology in particular (e.g., evolutionary biology, molecular biology, and systems biology) may be enriched by reference to the natural phenomenon of teleology. I hope to have shown that, when clearly distinguished from Paley’s argument from design and its contemporary version developed by the proponents of ID, the classical notion of teleology becomes a promising and fruitful

⁵⁵ Denis Walsh, “Teleology,” in *The Oxford Handbook of Philosophy of Biology*, ed. Michael Ruse (Oxford: Oxford University Press, 2008), 113–37, at 133. Walsh recognizes the immanent character of Aristotle’s teleology (in opposition to its transcendental Platonic version). He finds an irreducible example of it in the adaptiveness and phenotypic plasticity of organisms, manifested in their self-organizing goal-directedness and capacity to make compensatory changes to form or physiology during their lifetime (e.g., acclimatization or immune response). On the level of evolutionary changes, lineages undergo selection to thus become ever more suited to the conditions of their environment. Walsh shows that the Darwinian process of iterated mutations and selection does not provide a satisfactory explanation for adaptive evolution. A careful observer notices that the explanatory role of phenotypic plasticity brings back a genuine Aristotelian teleology. It gives a reason why organisms of the one species resemble one another, despite genetic variations and environmental influences. It also illuminates Aristotle’s idea of hypothetical necessity, by showing that alterations to development are hypothetically necessary for the continued existence of an organism in its environment (128–32).

inspiration for both natural theology and theology of nature. The analysis of highly influential projects of science-oriented panentheism and process theism shows that they do not seem to pay enough attention to teleology. Hence, a further research is needed that will reinvigorate the classical theological reflection on teleology, contextualize it in reference to contemporary science, and engage it in a conversation with other schools of theology participating in the ongoing dialogue among science, philosophy, and theology. N.V.