

Evolutionary biology, self organization, and divine agency

William E. Carroll

Thomas Aquinas Fellow in Theology and Science, Blackfriars Hall, University of Oxford, UK.
william.carroll@bfriars.ox.ac.uk

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Abstract

A proper understanding of divine agency allows us to affirm that God is the cause of all that happens in nature and that nature itself discloses self-organizing processes among living things. God's causality does not compete with the kind of causes which evolutionary biology discovers.

1. Introduction

The 2012 Euresis Symposium on evolutionary biology and human nature offers an excellent opportunity for discussion among theologians, philosophers, and scientists concerning the ways in which different disciplines contribute to our understanding of human nature. Such an understanding, I think, needs to be located in a recognition that what we mean by nature is prior to discussions of human nature. Furthermore, how we understand nature, in all its diversity and dynamism, depends upon a clear grasp of nature as created, as dependent upon God as cause. Can one maintain a robust sense of nature as a true source of dynamic activity and also affirm that nature is created by an omnipotent God whose constant causality is necessary for the existence of all that is?

2. The self-sufficiency of nature

Increasingly the natural sciences, especially biology, are used to support a kind of "totalizing naturalism" according to which the universe and the processes within it need no explanation beyond the categories of the natural sciences.¹ The French Dominican, Jean-Michel Mal-

¹"The great conflicts of the past between science and religion, first over Copernicanism, and later over Darwinism, have involved what have seemed to be insoluble conflicts between two competing explanations of the same body of phenomena – the motions of the heavens and earth; the origin, distribution and development



damé, summarizes well this view [2]:

La nature est comprise comme auto-créatrice, ce terme connotant que la notion classique de création est devenue inutile. La Nature – et il convient d’écrire le mot avec un majuscule – est autosuffisante pour produire non seulement ses effets, mais pour se produire[...] La notion de création disparaît dans cette perspective de la réflexion.

Or we might cite another French philosopher, Paul Clavier, who, in his recent two-volume work *Ex Nihilo*, traces the relegation of the doctrine of creation to what he calls the “*cimetière des hypothèses métaphysiques*.”²

At a deeper philosophical level there is the claim that existence is a “brute fact” which does not call for any explanation beyond itself.³ The emergence of new things, or their going out of existence, or other varieties of change, need to be explained, but not the mere existence of that which undergoes change.⁴ The fundamental argument is that the natural sciences are fully sufficient, at least in principle, to account for all that needs to be accounted for in the universe. Whether we speak of explanations of the Big Bang itself (such as quantum tunneling from nothing) or of some version of a multiverse hypothesis, or of self-organizing principles in biological change (including, at times, appeals to randomness and chance as ultimate explanations), the conclusion which seems inescapable to many is that there is no need to appeal to a creator, that is, to any cause which is outside the natural order. Evolutionary biology, for example, seems to tell us that we can account for the existence, diversity of, and order among living beings in terms of purely natural processes like genetic mutations and natural selection. As Francisco Ayala has remarked⁵ [5]:

of living beings in relation to the history of the earth. I would suggest, however, that the issues presented by contemporary life science are not of the same character as represented by these classic cases. In our present context, a new level of conflict between theology and science is being generated not by any single issue or theory – it can be argued that molecular biology is not even governed by a unifying idealizing theory – but by the convergence of a wide range of inquiries – evolutionary biology, molecular genetics, reductive physiology, naturalistic scientific cosmology, and cognitive neuroscience – in a totalizing naturalistic world view that claims to give a comprehensive explanation of all aspects of existence.” [1]

²“La thèse de la création du monde se trouve, donc, le plus souvent, reléguée au cimetière des hypothèses métaphysiques” [3]. In the face of significant challenges to the fact of creation, Clavier describes his desire “to rehabilitate the philosophical understanding of creation ex nihilo.”

³Charles Taylor argues that a key feature of the “secular age” is that we are living in an “immanent frame” which is the result of a sharp distinction between the natural and the supernatural, followed by the view that we can live exclusively in the former, the natural. “The sense of the immanent frame is that of living in impersonal orders, cosmic, social, and ethical orders which can be fully explained in their own terms and do not need to be conceived as dependent on anything outside, on the ‘supernatural’ or the ‘transcendent.’ ” [4]

⁴Throughout this paper I leave aside questions such as the role of God as Unmoved Mover being a cause of all motion and change. My concern is the metaphysical topic of God as cause of existence.

⁵“[I]t was Darwin’s greatest achievement to show that the directive organization of living beings can be explained as the result of a natural process, natural selection, without any need to resort to a creator or other external agent... Darwin’s theory encountered opposition in religious circles, not so much because he proposed the evolutionary origin of living things (which had been proposed many times before, even by Christian theologians), but because his mechanism, natural selection, excluded God as accounting for the obvious design of organisms... This is the conceptual revolution that Darwin completed – that everything in nature, including the origin of living organisms, can be explained by material processes governed by natural



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The role of a creator becomes superfluous; a creator represents, at best, an intellectual artifact from a less enlightened age. For many, the choice appears stark, either Darwin or God.

In contemporary biology, there have been important discussions about understanding living things in terms of "self-organization." As mechanism is being replaced by appeals to dynamic, intrinsic, organizing principles, the conclusion often reached is that changes in nature are exhaustively based on principles and entities in the natural world, and that there is no need for any external or supernatural "interference" to explain the change. Furthermore, for many thinkers today there is no category beyond change and the specific behavior of individual things that requires an explanation.

One sophisticated approach to understanding living systems in terms of self-organization is the work of two Chilean scientists, Humberto Maturana and the late Francisco Varela. They argue that living systems ought to be seen as self-contained unities whose only reference is to themselves. These living systems are autonomous, self-referring, and self-constructing. Maturana and Varela coined the term autopoiesis⁶ to describe such living systems.⁷ For them, everything about a living system can be reduced to its autopoiesis.⁸

From another angle, Stuart Kauffman, famous for his work on information systems and bio-complexity, argues that we are "reinventing the sacred" as a result of a new view of science. This new view involves a rejection of reductionism and an affirmation of the emergent properties of a dynamic universe of "ceaseless creativity." As he observes [7],

Life has emerged in the universe without requiring special intervention from a Creator God [...] All, I claim arose without a Creator God [...] Is not this view, a view based on an expanded science, God enough? Is not nature itself creativity enough? What more do we really need of God [...]?

The Harvard biologist, Richard Lewontin, famously warned that science must guard against allowing a "Divine Foot into the door [of explanations of nature]" . All truly scientific ex-

laws. This is nothing if not a fundamental vision that has forever changed how mankind perceives itself and its place in the universe" [5].

⁶Its Greek roots result in the word meaning "self-creating" or "self-producing."

⁷They think that they are able to describe any living thing as an "autopoietic machine. "An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production that produces the components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in the space in which they (the components) exist by specifying the topological domain of its realization as such a network." [6]

⁸ibid., 88. This type of machine "continuously generates and specifies its own organization through its operation as a system of production of its own components."

planations must be framed in terms of what is often called the methodology of naturalism – a methodology which must be rigorously protected and which, for many, involves a commitment to a metaphysical naturalism which is a modern form of materialism.⁹ The fear of the "Divine Foot" is based on a particular philosophical understanding (and ultimately, I would argue, misunderstanding) of the Creator and of divine agency. For Lewontin, God would be a competing cause in the world; the fear is that any causality one attributes to God must, accordingly, be denied to creatures. The exact opposite is precisely the fear which informs many who defend creation against evolution. In order to protect God from being diminished or eliminated from our world, it seems easy to challenge those scientific claims which appear to encroach upon the domain of divine agency. Both sides in this debate tend to share similar assumptions. In either case, God and creatures are seen to be causes which, although differing significantly in degree, fall within the same explanatory category.

Thus, to appeal to any role for divine agency, except perhaps for some initial creative act which brings the universe into existence, seems to compromise the explanatory reach of science. But even this attempt to protect a complementarity between God and science fails the test from the point of view of what creation has traditionally meant. Divine agency is not limited to an initial event.

The extent to which biologists, when they speak about self-organization, move beyond the domain of biology to make wide-ranging claims about "self-creation" and that, accordingly, there is no need to appeal to a source of existence of living things, is the extent to which their claims are broadly metaphysical. An important feature of these philosophical claims – that "self-creation" and "self-sufficiency" evident in the natural order eliminate the need to appeal to God – involves conceptions of God which, even if shared by believers, are not the same as those found in traditional philosophy and theology.

It is true that we do not need an additional cause in nature, a kind of super-agent or "intelligent designer," to make up for the alleged incompleteness of scientific explanations. But still, there is more that needs to be explained about the world than what falls within the domain of science. That there is more to be explained does not mean that scientific explanations are themselves incomplete. As Denys Turner notes [9]:

⁹"[When science speaks to members of the general public] the problem is to get them to reject irrational and supernatural explanations of the world, the demons that exist only in their imaginations, and to accept a social intellectual apparatus, Science, as the only begetter of truth. . . . We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfill many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door." [8]



The difference between a created and an uncreated world is no difference at all so far as it concerns how you describe [the world] [...] That the world is created makes not the least difference to how you do your science, or your history, or read your literatures; it does not make that kind of particular difference to anything. The only difference it makes is all the difference to everything.

3. Thomas Aquinas on creation and science

In this essay I will defend a Thomistic analysis of creation¹⁰ and the relative self-sufficiency of nature: to identify and describe the more that needs to be explained while also embracing all that the natural sciences disclose – and without retreating to a less than omnipotent God, as, for example, process theology does. It might seem strange to appeal to the thought of Thomas Aquinas as being relevant in contemporary discussions about evolutionary biology and divine agency. I think, however, that mediaeval discussions about creation (especially the intelligibility of *creatio ex nihilo*), divine agency, and the autonomy of nature, and ultimately the very possibility of the natural sciences' discovering real causes in nature, provide a rich source of insights for us today.¹¹ What Avicenna, Maimonides, and Thomas Aquinas, for example, saw so clearly, that creation is an account of the existence of things, not of changes in and among things, allows us to conclude that there is no contradiction between creation, so understood, and any conclusion in the natural sciences.

In this essay my focus will be the contributions to understanding creation which Thomas offers as a philosopher: contributions which do not require insights based on Christian faith. To speak of understanding creation separate from religious faith might seem strange, but it was the genius of Thomas to distinguish between the philosophical and theological approaches to creation. Thomas was always alert to the importance of philosophy for theology. His philosophical account of creation can appeal to both believers and non-believers, and it is especially valuable for contemporary discussions about the relation between creation and science. Thomas argues, contrary to the metaphysical claim that existence is a "brute fact," that the various things that exist require a cause of their very existence and that ultimately there must be an Uncaused Cause of all existing things¹².

The natural sciences have as their domain the world of changing things. Whether the changes so described are biological or cosmological, without beginning or end – or temporally finite, they remain processes. As Thomas remarks in his treatise, *De substantiis separatis*, c.9:

¹⁰Throughout this essay, when I use the word "creation," I refer to the act by which God causes things to be, not the result of that act.

¹¹For previous analyses of mine on this topic, see Ref. [10].

¹²I am not offering here the details of the argument Thomas sets forth in defense of this position. I only wish to point out the general structure of the argument – and that it is a philosophical argument, not one dependent upon faith. For an account of Thomas on creation, see [11].



Over and above the mode of becoming by which something comes to be through change or motion, there must be a mode of becoming or origin of things without any mutation or motion, through the influx of being.

Thomas often says that creation is not a change [12]:

Creation is not a change, but the very dependency of the created act of being upon the principle from which it is produced [...] [C]reation appears to be a kind of change from the point of view of our way of understanding only, namely, in that our intellect grasps one and the same thing as not existing before and as existing afterwards.

God does not change "nothing" into something; rather, anything left completely to itself would not exist at all.

All that is, in whatever way or ways it is, depends upon God as cause. Although we often use the verb "to create" to refer to human productions of art, literature, and the like, such human acts really are changes since they all begin with or work from existing things. God's creative act is radically different; it presupposes nothing other than God's power. To create, in its fundamental sense as predicated of God, is a topic for metaphysics and theology, not for natural philosophy, nor for the individual empirical sciences (such as cosmology and biology). Furthermore, for Thomas, creation is not primarily some distant event; rather, it is the on-going complete causing of the existence of all that is. Thomas distinguishes between the beginning of the universe and the origin of the universe. In faith, he believes that the universe is temporally finite; as a matter of reason he thinks that he can demonstrate that the universe has an origin, i.e., that it is caused to be.¹³ Thus, Thomas thinks that even if the universe were eternal (which he does not believe to be the case) it still would be created. Although he thinks that he can demonstrate that God causes the universe to exist, he does not think that he can know by reason alone whether or not the universe began to be. An eternal universe, or a universe with a temporal beginning, or a universe rich in evolutionary processes, for that matter, refers to the kind of universe we have, not whether or not it is created, at least not in the metaphysical sense of being dependent upon God as cause. Thomas, of course, would admit that the fuller theological sense of creation includes the biblical revelation that time and the universe are not eternal.¹⁴

4. The concept of cause

As is apparent, the analysis of divine causality I have begun to sketch is a complex topic in metaphysics. Contemporary discussions of causality, whether divine or that of creatures,

¹³"Not only does faith hold that there is creation; reason also demonstrates it." In II Sent., dist 1., q. 1, a. 2.

¹⁴In this respect, Thomas accepts the dogmatic definition of creation of the Fourth Lateran Council (1215) which does affirm a temporal beginning to the world.

tend to suffer from impoverished notions of cause, at least in comparison with analyses in the Middle Ages. When Thomas speaks of causality, whether it be that exercised by God or by creatures, he employs a different and much richer sense of the term than we tend to use today. He recognizes, for example, that "cause" is an analogical term and thus takes on various and diverse senses depending on the context in which it is discussed and that of which it is predicated. Mediaeval discussions of causality often distinguished between universal and particular causes, actual and potential causes, and essential and accidental causes, as well as, more generally, Aristotle's material, efficient, formal, and final causes.

Whereas contemporary thinkers have come to view causality in terms of a kind of "necessary consequentality" between events, Thomas understood causality in terms of metaphysical dependence.¹⁵ As part of the philosophy of nature connected to the rise of modern science in the seventeenth century, two of the four causes of Aristotelian science, the final and the formal, were considered irrelevant. Furthermore, to the extent that the natural sciences came to be seen as depending exclusively on the language of mathematics, only that which was measurable would fall within their explanatory domains.¹⁶ Even the notion of agent or efficient causality underwent a profound change from the Aristotelian sense. It came to be conceived "exclusively in terms of the force or energy that moved the fundamental parts of the universe" [15]. In the eighteenth century, David Hume called into question even this narrow idea of efficient causality. Since the supposed influence of a cause upon its effect was not directly evident to sense observation, Hume concluded that the connection between cause and effect was not a feature of the real world, but only a habit of our thinking as we become accustomed to see one thing constantly conjoined to another. One important result of Hume's analysis is to come to think of causality not as a property of things but of thought [15];

[causality is] no longer an ontological reality in the world outside ourselves, but an epistemological property of the way we think about the world. [Thus,] [...] the hallmark of causality [is to be] [...] found in the epistemological category of predictability rather than the ontological category of dependence.

To see causality in an epistemological category of predictability results in thinking, among other things, that temporal sequence is an essential feature of the relationship between cause

¹⁵Referring to the famous *Liber de causis*, Cristina D'Ancona observes: "Il titolo di questo libro richiama una nozione, 'causa,' che suggerisce al lettore contemporaneo contenuti concettuali per qualche aspetto sostanzialmente diversi da quelli che evocava nel lettore medievale. Difatti per i contemporanei il termine 'causa' indica per lo più la sola idea di consequenzialità necessaria... Per il lettore medievale, invece, accanto all'idea di una connessione di fatto, il concetto di 'causa' trasmette quella di un ordinamento metafisico. ... La causa, in questo modo, è superiore all'effetto; e poiché è principio della sua sussistenza in essere, è principio anche della sua intelligibilità" [13].

¹⁶Mario Bunge points out the important role that empirical science has played in this shift in our understanding of causality: "The Aristotelian teaching of causes lasted in the official Western culture until the Renaissance. When modern science was born, formal and final causes were left aside as standing beyond the reach of experiment; and material causes were taken for granted in connection with all natural happenings... Hence, of the four Aristotelian causes only the efficient cause was regarded as worthy of scientific research." [14]

and effect. For Thomas, however, the fundamental relationship between cause and effect is one of dependence, not temporal sequence. Thus, for example, he can speak of the intelligibility of an eternal effect to which a cause is prior, but not in the sense of temporal priority. He also can defend the idea of simultaneity between cause and effect; such a view is only possible once one leaves behind any necessary connection between temporal sequence and causality.¹⁷

For many today, only explanations in terms of material constituent parts and of changes in and among these parts are considered to be scientific. Reductionist conceptions of nature have resulted, for example, in form's being an effect rather than a cause. Yet, however successful contemporary science has been in enhancing our understanding of the world, there remains the lingering suspicion that its reductionist paradigms can provide only a partial view of the whole of natural entities.

A result of the failure to grasp the analogical sense of cause, in particular of agent or efficient cause, and to think of agency in terms of a physical force, is that divine causality, too, comes to be seen in such terms. As Philip Clayton has observed: "The present-day crisis in the notion of divine action has resulted as much as anything from a shift in the notion of causality" [16] To conceive God's causality in terms of a force or a burst of energy is to make God a kind of competing cause in the world, or, perhaps better put, just one more cause in the world, although considerably more powerful than any other. Thus, for example, to view the world as functioning in terms of an ordered regularity of mechanical causes seems to mean that there is no room for any kind of special divine action.¹⁸ God's action, then, would mean a breaking of the causal nexus in nature.

5. Causes in nature

We can broaden this analysis of creation to speak of how Thomas defends both a robust notion of divine agency and the autonomy of natural causes. Creatures are what they are (including those which are free), precisely because God is present to them as cause. Were God to withdraw, all that exists would cease to be. Creaturely agency and the integrity of nature, in general, are guaranteed by God's creative causality. Here is how Thomas expresses this view in the *Summa theologiae* [18]:

¹⁷If God is the cause of time we cannot say that He is temporally prior to time.

¹⁸For further discussion of this theme, see [17]



Some have understood God to work in every agent in such a way that no created power has any effect in things, but that God alone is the ultimate cause of everything wrought; for instance, that it is not fire that gives heat, but God in the fire, and so forth. But this is impossible. First, because the order of cause and effect would be taken away from created things, and this would imply lack of power in the Creator, for it is due to the power of the cause, that it bestows active power on its effect. Secondly, because the active powers which are seen to exist in things, would be bestowed on things to no purpose, if these wrought nothing through them. Indeed, all things created would seem, in a way, to be purposeless, if they lacked an operation proper to them, since the purpose of everything is its operation [...] We must therefore understand that God works in things in such a manner that things have their proper operation [...]

God is so powerful that His causal agency also produces the modality of its effect: the effect is assimilated to God's will in every way so that not only what happens occurs because God wills it to happen, but it happens "in that way which God wills it to happen" [19]. God's will transcends and constitutes the whole hierarchy of created causes, both causes which always and necessarily produce their effects and causes which at times fail to produce their effects.¹⁹ For Thomas, the crucial question was – given that God creates – what can we say about the competence of the natural sciences. Often today the question is – given the competence of the natural sciences – what can we say about God as Creator. The two approaches concern fundamentally the same topic.

God's causation does not compete with the causation of creatures, but rather supports and grounds it.²⁰ Since it is characteristic of natural causes precisely to be causes, God's causal determination of them is not such as to deny their proper autonomy.²¹

¹⁹"God's will is to be thought of as existing outside the realm of existents, as a cause from which pours forth everything that exists in all its variant forms. Now what can be and must be are variants of being, so that it is from God's will itself that things derive whether they must be or may not be and the distinction of the two according to the nature of their immediate causes. For He prepares causes that must be for those effects that He wills must be, and causes that might cause but might fail to cause for those effects that He wills might or might not be. And it is because of the nature of these causes that these effects are said to be effects that must be and those effects that need not be, although all depend upon God's will as primary cause, a cause which transcends the distinction between must and might not. But the same cannot be said of human will or any other cause, since every other cause exists within the realm of must and might not. So of every other cause it must be said either that it can fail to cause, or that its effect must be and cannot not be; God's will however cannot fail, and yet not all His effects must be, but some can be or not be" [20].

²⁰Harm Goris notes that the distinction between divine causality and creaturely causality is based on the distinction between divine being and creaturely being: "Aquinas distinguishes the being of the Creator from the being of the creature not in terms of necessary being versus contingent being but more radically in terms of being versus non-being, while God causes the either necessary or contingent being of the creature. Likewise divine causation differs from creaturely causation as being differs from non-being. Without God's causation there is no creaturely causation at all." [21]

²¹God does not need a metaphysical indeterminacy in nature so that His actions would not collide, so to speak, with other causes. In discussing how the human will is free to choose, and yet caused to be so by God, Thomas notes that the autonomy of the will does not require that it be the "first cause" of its activity: "Not every principle is a first principle... [A]lthough it is essential to the voluntary act that its principle be within the agent, nevertheless it is not contrary to the nature of a voluntary act that this principle be caused or moved by an extrinsic principle: because it is not essential to the voluntary act that its intrinsic principle be a first principle." *Summa theologiae I-II*, q. 6, a. 1, ad 1. "If the Thomist solution to the reconcilability of finite free action and divine causal power is to work . . . God cannot be inserted into the world's causal chains, the divine causal influence, as ex nihilo, cannot and must not be thought of as univocal with other

The problem which those who defend a self-sufficiency in nature and its processes see is that any appeal to a cause outside of nature is either superfluous or contradictory to the very claim that nature is the domain of self-organizing activities. Thomas helps us to see that the dichotomy, either nature or God, is a false dichotomy. If we ask, for example, why wood is heated in the presence of fire, we can explain the phenomenon in terms of the characteristics of both wood and fire. Thomas remarks that if a person answers the question of why the wood is heated by saying that God wills it, the person “answers appropriately, provided he intends to take the question back to a first cause; but not appropriately, if he means to exclude all other causes.”²² For Thomas, there is no question that there are real causes in the natural order : “if effects are not produced by the action of created things, but only by the action of God, it is impossible for the power of any created cause to be manifested through its effects.” If no created things really produced effects, then “no nature of anything would ever be known through its effect, and thus all the knowledge of natural science is taken away from us.”²³ Thomas thinks that to defend the fact that creatures are real causes, far from challenging divine omnipotence, is a powerful argument for divine omnipotence. As he says, to deny the power of creatures to be the causes of things is to detract from the perfection of creatures and, thus, “to detract from the perfection of divine power”.

God, as the cause of each creature’s existence, is present at the very center of each creature’s being.²⁴ He is more interior to things than they are to themselves: not as an intrinsic principle entering into their constitution, but as the abiding cause of their existence.²⁵ Simon Tugwell aptly puts it [23]: “The fact that things exist and act in their own right is the most telling indication that God is existing and acting in them.”²⁶

Thomas shows us how to distinguish between the being or existence of creatures and the operations they perform. God causes creatures to exist in such a way that they are the real causes of their own operations. For Thomas, God is at work in every operation of nature, but

causes. As in all other things, God is not to be conceived of as a ‘cause’ in the categorical sense; He does not belong to any categories precisely because He is the ‘cause’ of them all” [22]. In the *Summa theologiae*, Thomas writes: “God is the first cause of both natural causes and voluntary agents. And just as His moving natural causes does not prevent their acts from being natural, so also His moving voluntary agents does not prevent them from acting voluntarily, but rather makes it be just that, for He works in each according to its nature.” *Summa theologiae I*, q. 83, a. 1, ad 3. Indeed, “every movement either of will or of nature proceeds from God as the First Mover.” *ibid.*, ad 3. What is crucial for Thomas, however, is that we recognize that both natural and voluntary movements proceed from an intrinsic principle, but that need not, indeed cannot, be the truly first principle of action.

²² *Summa contra Gentiles III*, c. 94.

²³ *Summa contra Gentiles III*, c. 69.

²⁴ *In I Sent.*, 8, 1, ad 1.

²⁵ *In I Sent.*, 37, 1, 1 ad 1. Thomas draws an analogy from the sun. Just as the air is lighted as long as it is illuminated by the sun, and falls into darkness when the sun does not shine at night, so creatures are caused to be by the creative diffusion of God’s goodness. If God were to withdraw His presence all creatures would fall into non-being. See: *Summa theologiae I*, q. 104, a. 1.

²⁶ God “is neither the matter nor the form of anything. Indeed, He is in all things in the fashion of an agent cause.” *Summa contra Gentiles III*, c. 68. 11.



the autonomy of nature is not an indication of some reduction in God's power or activity; rather, it is an indication of His goodness. It is important to recognize that, for Thomas, divine causality and creaturely causality function at fundamentally different levels. In the *Summa contra Gentiles*, Thomas remarks that²⁷

the same effect is not attributed to a natural cause and to divine power in such a way that it is partly done by God, and partly by the natural agent; rather, it is wholly done by both, according to a different way, just as the same effect is wholly attributed to the instrument and also wholly to the principal agent.

It is not the case of partial or co-causes with each contributing a separate element to produce the effect.²⁸ God, as Creator, transcends the order of created causes in such a way that He is their enabling origin. For Thomas "the differing metaphysical levels of primary and secondary causation require us to say that any created effect comes totally and immediately from God as the transcendent primary cause and totally and immediately from the creature as secondary cause' [24].²⁹ In response to the objection that it is superfluous for effects to flow from natural causes since they could just as well be directly caused by God alone, Thomas writes that the existence of real causes in nature is not the result of the inadequacy of divine power, but of the immensity of God's goodness.

God does not only give being to things when they first begin to exist, He also causes being in them so long as they exist. He not only causes the operative powers to exist in things when these things come into being, He always causes these powers in things.³⁰ Thus, if God's creative act were to cease, every operation would cease; every operation of a thing has God as its ultimate cause. As we have seen, Thomas does not think that an affirmation of divine omnipotence eliminates the real role of created causes. The self-sufficiency of nature, the dynamism of natural processes which science discovers, does not mean that God is superfluous since He is the cause of nature itself, but He is a cause in such a way that nature has its own integrity, its own self-organizing principles.

²⁷*Summa contra Gentiles III, c. 70, 8.*

²⁸"God and creatures are not two causes collaborating on the same level to produce a joint effect. God causes on the transcendental level and He thereby constitutes the creatures' causation on the categorical level" [21]

²⁹Brian Shanley argues that no real explanation of exactly how God's causality functions is possible, since God transcends the mundane world of causation [24]. David Burrell observes that the "terms 'primary' and 'secondary' [causality] come into play when we are faced with the situation where one thing is by virtue of the other. So each can properly be said to be a cause, yet what makes one secondary is the intrinsic dependence on the one which is primary. This stipulation clearly distinguishes a secondary cause from an instrument, which is not a cause in its own right: it is not the hammer which drives the nails but the carpenter using it." [25]

³⁰*Summa contra Gentiles III, c. 67.*

6. Transcendence

The source of most of the difficulties in grasping an adequate understanding of the relationship between the created order and God is the failure to understand divine transcendence. It is God's very transcendence, a transcendence beyond any contrast with immanence, which enables God to be intimately present in the world as cause. God is not transcendent in such a way that He is "outside" or "above" or "beyond" the world. God is not different from creatures in the way in which creatures differ from one another. We might say that God "differs differently" from the created order.³¹ Rudi te Velde puts it this way: "God operates immanently in nature in such a way that He sets nature, so to speak, free in its own operation [...] Thomas [sees] [...] God as a cause which by its transcending immanence constitutes the causality of nature in its own order" [28]. God causes, but in a sense of causality, an analogical sense, immeasurably different from the way other causes operate.

If we follow Thomas' lead, we can see that there is no need to choose between a robust view of creation as the constant exercise of divine omnipotence and the causes disclosed by the natural sciences. Some authors, like Telmo Pievani [29], point to the radical contingency of evolutionary history as being inconsistent with any notion of divine providence. But providence – a divine plan – does not require a deterministic understanding of nature. We ought not to conceive of God's agency as being in the same category that we recognize for creatures. The contingency of particular events is not inconsistent with the overarching agency of God.

There is a temptation for some theists to think that God must withdraw, so to speak, to allow or to permit nature to take its own course. On the contrary, God causes nature to take its own course; He causes that course to be the course which it is. Whatever chance and contingent events occur in nature have God as their cause, precisely as chance and contingent events. Thomas observes: "[W]e must say that everything is subject to divine providence, not only in general but also in particular[...] The causality of God, who is first agent, is extended in such a way as to include every entity".³² Understanding how this is so, requires a firm grasp of what it means for God to be transcendent and to be a cause. No matter how random one thinks evolutionary change is; no matter how much one thinks that natural selection is the master mechanism of change in the world of living things; the role of God as Creator, as continuing cause of the whole reality of all that is, is not challenged. We need to remember Thomas' fundamental point that creation is not a change, and thus there is no possibility of conflict between the explanatory domain of the natural sciences – the world of change – and that of creation.

³¹Kathryn Tanner, who has written persuasively on this subject, observes: "This non-competitive relation between creatures and God is possible, it seems, only if God is the fecund provider of all that the creature is in itself... This relationship of total giver to total gift is possible, in turn, only if God and creatures are on different levels of being, and different planes of causality." [26]. For an excellent discussion of the transition between a Thomistic understanding of divine transcendence and a modern sense, especially beginning with Suarez, see [27].

³²*Summa theologiae I*, q. 22, a. 2.

7. Conclusion

The complete dependence of all that is on God does not challenge an appropriate autonomy of natural causation; God is not a competing cause in a world of other causes. In fact, God's causality is such that he causes creatures to be the kind of causal agents which they are. In an important sense, there would be no autonomy to the natural order were God not causing it to be so. Although certain conceptions of God as designer are challenged by developments in contemporary science, the traditional understanding of God as Creator need not be abandoned in order to embrace an evolving universe in which real novelty and contingency are characteristic features of nature. For Thomas, the natural sciences, philosophy, and theology discover complementary, not competing, truths about nature, human nature, and God. The account he offers of divine agency and the autonomy and integrity of nature is not merely an artifact from the past, but an enduring legacy.

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