

“How to Keep the Non-Reductive in Nonreductive Physicalism?” by Nancey Murphy: An Appreciative Response

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It is a rare privilege to respond to my colleague and friend of nearly four decades, Nancey Murphy. It is especially wonderful given the nature of this paper, with its inclusion of such diverse areas as biblical and theological anthropology, atomism versus dynamical systems, and a response to the problem of reductionism through an appeal to emergence and downward causality in complex dynamical systems. In this response I will first summarize the second part of Nancey’s paper and then raise three questions about it.

In the second part of her paper, Murphy begins with the new atomism in classical physics and with it the “inevitability” of causal reductionism. Under the shadow of Thomas Hobbes’s reductionist theory of human nature and society the “defeat” of causal reductionism became crucial. A vital step was taken through the articulation of downward causation by Robert Van Gulick. While a system is composed of its parts, the causal powers of a system include both those of its parts and their organization. In the latter case, the system “at least partially determines what contributions are made by its parts.”¹ An additional step in the defeat of causal reductionism was achieved through the idea of emergence in nature. Murphy cites Terrence Deacon as “providing the best account so far of emergence” and spelled out in terms of three orders of emergence.

¹ Nancey Murphy, “How to Keep the Non-Reductive in Nonreductive Physicalism?” 451–464 of the present volume, here at 457.

Systems with first-order emergence display properties such as the viscosity of liquids, but these properties do not endure. Instead they are dampened out in time, and the reductionist claim is left unthreatened. But in second-order emergence such properties are amplified and have system-wide and long-lasting effects. Finally, third-order emergence arises in biological systems in which second-order systems are selected and constrained by the environment. This complex form of emergence has characteristics which can be called “memory” and give the system a “history.”

Now she asks a pivotal question: “Do these more sophisticated accounts of emergence and downward causation solve the problem of the reduction of human capacities to biology?” While previously she thought they might, she now raises a point which I find very exciting:

How is it *not* the case that humans are, in a sense, trapped by a combination of downward causation from their environments and the biological factors that do (still) contribute to our behavior? Where is there room for human agency? This is the point at which we must turn to the resources of complex systems theory.²

Here she turns to the work of philosopher of science Alicia Juarrero and her 1999 book, *Dynamics in Action*. Murphy paraphrases Juarrero in calling for a “shift in ontological emphasis” from “things, with their intrinsic properties, to processes and their relational properties.” This shift is warranted by the fact that biological systems are “decoupled” from their atomic components; “if the functional system works, it does not matter what its components are made of.”³ Such systems have what philosophers call “internal relations” while elements such as atoms have only “external relations.” Hence complex dynamic systems enhance our understanding of causation: Along with routine, efficient causation we now find that constraints are placed on the system by the internal relations between its components and by its relations to the environment which serves as its context.

Juarrero also distinguishes between “context-free” and “context-sensitive” constraints. So successive throws of a pair of dice are independent of the results of past throws, but as a card game proceeds, the probability of an “ace” changes by the results of previous draws. This leads Murphy

² Murphy, “How to Keep the Non-Reductive in Nonreductive Physicalism?” 459.

³ Murphy, “How to Keep the Non-Reductive in Nonreductive Physicalism?” 461.

to recommend that we speak of whole-part “constraints” instead of “downward causation.” Here the whole does not exert efficient causality on its parts; instead the whole changes the probabilities of the behavior of its parts. This in turn leads Murphy to set aside the traditional sharp distinction between determinism and indeterminism and adopt the idea of “propensity,” a term created by Karl Popper to mean “an irregular or non-necessitating causal disposition of an object or system to produce some result or effect.”⁴ The cluster of propensities acting within the trajectories of complex dynamic systems can be imaged as a three-dimensional landscape within which the system moves in time as a result of the contextually constrained interactions within the system.

Murphy concludes by describing a major change in worldview from modern to postmodern theologies. This change involves three shifts: (1) from foundationalism to holism in epistemology, (2) from meaning as reference to meaning as use in the philosophy of language, and (3) from an individualist understanding of human nature to something which lay along what can be called a “metaphysical” axis. Murphy tells us she has come to realize that individualism is “but one manifestation of the metaphysics of atomism and reductionism.” Hence the “escape route” from modernism lies through insights regarding an expanded understanding of causality offered by complex systems theory. As Murphy writes:

[Complexity theory] gives us the conceptual tools to explain how downward “causes” cause without violating the causal closure of the physical and without postulating causal overdetermination. Humans, who are complex, self-organizing, dynamical, adaptive systems, are partially decoupled from their biology, attend selectively to environmental constraints, and thus are able to become agents in their own right.⁵

I would now like to raise three questions about the paper.

(1) In her paper Murphy appropriates Juarrero’s distinction between external and internal relations and between context-free and context-dependent constraints to lead us toward what she calls a major change in worldview. Nevertheless Murphy does not draw explicitly on what arguably is Juarrero’s most important point: namely a critique of Aristotle’s rejection of self-causation and its persistence in, and its profound shaping

⁴ Murphy, “How to Keep the Non-Reductive in Nonreductive Physicalism?” 463.

⁵ Murphy, “How to Keep the Non-Reductive in Nonreductive Physicalism?” 464.

of, the contemporary discussions about agency. It is worth quoting Juarrero at some length since her critique of Aristotle is particularly relevant to the Thomistic context of our conference:

To explain Aristotle's analysis of organisms' actual behavior, it is first necessary to understand his views on change. All becoming, he maintained, involves the transformation of something that is so only "potentially" into something that is "actually" so. . . . There are two kinds of potencies: one the passive potency to be acted upon . . . the other the active potency to act on. . . . Inanimate objects and the elements possess only the first kind; organisms . . . have both. However, "in so far as a thing is an organic unity, it cannot be acted on by itself; for it is one and not two different things." . . . For organisms to act on themselves they would have to possess simultaneously both the passive potency to be acted on as well as the active potency to act upon (something else). Since nothing can simultaneously possess both potencies with respect to the same property, nothing can act on itself. . . . [But animals obviously act through self-motion.] Aristotle therefore explains animal self-motion by splitting the organism in two: soul (the unmoved mover) and body (the moved). Strictly speaking, the prohibition against self-cause is thereby upheld: nothing moves itself. And so things remain to this day.⁶

While Murphy does not specifically mention Juarrero's challenge of Aristotle in her paper, she and her co-author Warren Brown do refer to it explicitly in their pivotal work of 2007, *Did My Neurons Make Me Do It?*⁷ Indeed it would not be an overstatement to say that the entire book is shaped by a two-sided coin: The rejection of body-soul dualism, on the one side, and the acceptance of self-causation on the other. Here are a few sample texts:

Juarrero convinced us that [the defeat of neurobiological reductionism] requires . . . an account of how a complex system, as a whole, can be the cause of its own behavior. . . . We shall argue . . . that [Aris-

⁶ Alicia Juarrero, *Dynamics in Action: Intentional Behavior as a Complex System* (Cambridge, MA: MIT Press, 1999), 17–18.

⁷ Nancy Murphy and Warren S. Brown, *Did My Neurons Make Me Do It?: Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will* (Oxford: Oxford University Press, 2007).

totle's assumption] accounts for the reluctance to recognize that humans eventually become the causes of their own moral character.⁸

The goal [of this book] will be to end with the picture of an organism that is an agent, the cause of (some of) its own behavior.⁹

Our position is that complex organisms are in fact self-causes, self-movers.¹⁰

Our suggestion, then, is that free will be understood as being the primary cause of one's own actions.¹¹

So my first question is quite straightforward: What led to the inclusion of much of Juarrero's work in Murphy's paper but not the inclusion of what seems to be Juarrero's most important point, namely her challenge to Aristotle's prohibition on self-causation? This seems oddly missing particularly in light of arguments Murphy gives in the first part of her paper against body-soul dualism and their clear relation to the rejection of Aristotle's prohibition on self-causation.

(2) My second question consists of two parts, first regarding human agency and then regarding divine agency. The first goes to Murphy's crucial claim, which I quoted already, namely that: "[Complexity theory] gives us the conceptual tools to explain how downward 'causes' cause without violating the causal closure of the physical and without postulating causal overdetermination." Suppose the physical world is fully deterministic, as it was according to classical physics. In this case I do not see how Murphy escapes a violation of causal closure, and more particularly the problem of overdetermination in the bodily enactment of human agency. If I am in a straight-jacket, then even if I can come to a decision about what to do that is not entirely the product of my biology or my environment, how do I carry out that decision—say to get up and walk out of the room—if I am stuck in the straight-jacket of all-determining physical forces?

The second part focuses on the question of God's action in the world, and here in previous writings Murphy explicitly takes into account quantum indeterminism. In her 1995 paper for the second conference in the Vatican Observatory / Center for Theology and the Natural Sciences

⁸ Murphy and Brown, *Did My Neurons Make Me Do It?* 86.

⁹ Murphy and Brown, *Did My Neurons Make Me Do It?* 103.

¹⁰ Murphy and Brown, *Did My Neurons Make Me Do It?* 244.

¹¹ Murphy and Brown, *Did My Neurons Make Me Do It?* 305.

series Murphy argues that God acts at the subatomic, quantum level where nature is characterized by ontological indeterminism:

My proposal is that God's governance at the quantum level consists in activating or actualizing one or another of the quantum entity's innate powers at particular instants, and that these events are not possible without God's action. . . . I claim that God's participation in each (macro-level) event is *by means of* his governance of the quantum events that constitute each macro-level event. There is no competition between God and natural determinants because, *ex hypothesi*, the efficient natural causes at this level are insufficient to determine all outcomes.¹²

My question, then, is why divine action requires indeterminism in nature when human action can be enacted somatically in nature with no appeal to indeterminism.

(3) My third question relates to Murphy's telling us of the "metaphysical axis" which helps distinguish modernity from postmodernity, an axis which moves us from atomism to complex dynamical systems. Murphy tells that she had not understood the "metaphysical axis" until her recent work with systems theory in which systems consist not so much in aggregates of individual entities but wholes within wholes, like organs in an organism, wholes which have internal relations as well as external ones, and context-dependent constraints function along with context-independent ones.

But I wonder if she has *fully* explored the depth of the shift—from the *metaphysics* of atomism, which dominated the natural sciences over the past three centuries, to the *metaphysics* of complex, dynamical systems. I know from personal conversations with her that, as an analytic philosopher, Murphy may not want to press the metaphysical implications of such terms as "atoms" and "systems" too far. Nevertheless here at this conference, organized and hosted by Dominican School of Philosophy and Theology, I anticipate there to be a great deal of interest in exploring the potential richness of neo-Thomism for a metaphysical shift from atomism to systems theory, particular in light of neo-Thomism's exquisitely detailed

¹² Nancey Murphy, "Divine Action in the Natural Order: Buridan's Ass and Schrödinger's Cat," in *Chaos and Complexity: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Nancey Murphy, and Arthur R. Peacocke (Vatican City: Vatican Observatory Publications; Berkeley, CA: Center for Theology and the Natural Sciences, 1995), 325–57, at 342–43.

appropriation of the philosophy of Aristotle. I have been wonderfully helped in understanding the Thomistic world of thought by the writings of, and extensive conversations with, Father Michael Dodds, especially in his recent books *The Unchanging God of Love*¹³ and *Unlocking Divine Action*.¹⁴ It would be very intriguing to ask whether Murphy would find resources in such Thomistic arguments about wholism and downward causation helpful for her project of defending non-reductive physicalism by providing a shift along the “metaphysical axis” or would her commitment to analytic philosophy be satisfied with a less developed metaphysical interpretation as suggested by her everyday terms of “atoms” and “dynamic systems”?

Let me close by expressing, once again, my enormous appreciation for Nancey’s work in this remarkable paper and in the many publications which preceded and which feed and nourish it. I look forward to hearing her responses to my questions and to continued conversations and lasting friendship.

N.V

¹³ Michael J. Dodds, O.P., *The Unchanging God of Love: Thomas Aquinas and Contemporary Theology on Divine Immutability*, 2nd ed. (Washington, DC: Catholic University of America Press, 2008).

¹⁴ Michael J. Dodds, O.P., *Unlocking Divine Action: Contemporary Science and Thomas Aquinas* (Washington, DC: Catholic University of America Press, 2012).