

THE RETURN OF PURPOSE

• Glenn W. Olsen •

“Purpose is not to be viewed as simply something extrinsic to individual living things, but as also something intrinsic to them, a description of their capacity for self-maintenance as wholes.”



In E. A. Burtt’s classic formulation, “the central metaphysical contrast between medieval and modern thought, in respect to their conception of man’s relation to his natural environment” is that:

For the dominant trend in medieval thought, man occupied a more significant and determinative place in the universe than the realm of physical nature, while for the main current of modern thought, nature holds a more independent, more determinative, and more permanent place than man . . . [in the Middle Ages] on the teleological side: an explanation in terms of the relation of things to human purpose was accounted just as real as and often more important than an explanation in terms of efficient causality . . . Analogies drawn from purposive activity were freely used.¹

¹*The Metaphysical Foundations of Modern Physical Science* (Garden City, N.Y.: Doubleday & Company, Inc., 1954), 17–19. Burtt’s goal in this book, originally published in 1924, was a critique of positivism, showing that there is “no escape from metaphysics” (227). For more recent comment on the “grey ontology” that results from the Cartesian and Newtonian elimination of teleology, in which wholes are viewed as no more than aggregates of their parts, see Jean-Luc Marion, “Descartes and Onto-Theology,” in *Post-Secular Philosophy: Between Philosophy and Theology*, ed. Philip Blond (London: Routledge, 1998), and Michael Hanby, *Augustine and Modernity* (London: Routledge, 2003), 134–177. Peter J. Bowler and Iwan Rhys Morus, *Making Modern Science: A Historical Survey* (Chicago: University of Chicago Press, 2005), 175–176, 180–181, also have useful things to say.

Burt goes on to contrast the purpose-filled world of the Middle Ages with the purposeless world which modern science seems to present us.²

In the mid-twentieth century, when Burt wrote, his contrast between medieval and modern seemed quite accurate.³ Moreover, the shift in worldviews he described seemed permanent. There was a fairly broad consensus among intellectuals and within the community of scientists that humanity must be reconciled to a world without God and without purpose. Although there had from the first been the occasional Pascal (1623–1662), the dissenter who refused to concede to the cold, mathematical, infinite, centerless, and purposeless world that modern science seemed to necessitate, at mid-twentieth-century only a few saw the possibility that Niels Bohr's

²Over a longer sweep of time, things would be more complicated than Burt indicates. For instance neither ancient Chinese nor Aristotelian thought was anthropocentric in the sense of making man either the most important thing in the cosmos or the consciousness through which all understanding flows. These ancient forms of thought simply assumed a *fit* between nature and consciousness, as if the former existed to enable the latter. This of course continued in the Middle Ages. On the Chinese side, where Daoism is the best example, especially the first seven chapters of the *Zhuangzi*, see *The Complete Works of Chuang Tzu* (New York: Columbia University Press, 1968), 83–85, or the section on Daoism in Benjamin Schwartz, *The World of Thought in Ancient China* (Cambridge, Mass.: Harvard University Press, 1985). Of the extensive bibliography on Aristotle, see Joseph Owens, "Teleology and Nature in Aristotle," *Monist* 52 (1968): 159–173, and John Cooper "Aristotle on Natural Teleology," in *Language and Logos*, ed. Malcolm Shofeld and Martha Nussbaum (Cambridge: Cambridge University Press, 1982).

³Pierre Maurice Marie Duhem, *Le système du monde; histoire des doctrines cosmologiques de Platon à Copernic*, 10 vols. (Paris: Librairie Scientifique Hermann, 1954–1959), first published in 1913, and other works by Duhem had already been written by Burt's day, showing the continuities between medieval and early modern science, but the influence of Duhem's views largely lay in the future. See the many works of Stanley Jaki. Ernst Mayr, though assuming some premises rejected in the present essay, usefully distinguishes between various senses of "teleology," and gives some sense of the history of the concerns addressed here (*The Growth of Biological Thought: Diversity, Evolution, and Inheritance* [Cambridge, Mass.: Belknap Press, 1982], as at 47–51, 517). Cf. David J. Depew and Brice J. Weber, *Darwinism Evolving: Systems Dynamics and the Genealogy of Natural Selection* (Cambridge, Mass.: MIT Press, 1995), 40–41, 476–478; and 33–34, 39, 303, on Georges Louis de Buffon and an earlier form of the present discussion. Peter Hanns Reill treats the mid-eighteenth-century rejection of mechanism by many in favor of a vitalistic model of nature (*Vitalizing Nature in the Enlightenment* [Berkeley: University of California Press, 2005]).

and Werner Heisenberg's narration of the history of quantum theory, or Heisenberg's principle of Indeterminacy, might undo a fairly stable scientific consensus.⁴ In fact, there was a "return of purpose" forming in the uneasy second thoughts of some of the scientists themselves about the worldview they had received. The present essay both surveys this uneasiness and, while focusing on biology and human nature, expands the number of issues about which we should be uneasy.

Great errors as well as advances were made during the formative years of the birth of early modern science. Many significant novelties make their way in the world by indiscriminate criticism of what has gone before.⁵ The new is praised without measure, the old made fun of, and the claimed relevance of new discoveries is extended analogously without careful argument into ever more areas. Thus it was in the seventeenth century: this is the heart of Pascal's *gravamen* against the narrowness of Descartes' mathematical definition of reality. Perhaps no greater mistake was made than in the matter of Aristotle. Early on it was clear that an Aristotelian account of physics or the heavens was no longer adequate. Naturally enough, this led to decreasing study of the Aristotelian texts, and with time to a decreasing sense of how and why Aristotle had framed central questions such as the nature of causation and teleology.⁶ We are on the way to a certain insistence

⁴John Lukacs, *At the End of An Age* (New Haven: Yale University Press, 2002), here at 53, 126–130, is a recent attempt by a non-scientist to tell the story of the collapse of the old certainties of materialist science. Lukacs' treatment of the difficulties Albert Einstein had in accepting Heisenberg's discoveries is especially revealing. Lukacs developed some of his basic arguments in *Historical Consciousness: or, the Remembered Past* (New York: Harper and Row, 1968). In *The Church and Galileo*, ed. Ernan McMullin (Notre Dame, Ind.: University of Notre Dame Press, 2005), Part 2, ch. 6, the editor shows that the dethronement of the earth normally attributed to Copernican theory was an Enlightenment invention.

⁵Edward Grant, *Science and Religion, 400 B.C. to A.D. 1550: From Aristotle to Copernicus* (Westport, Conn.: Greenwood Press, 2004), stresses the openness of medieval religious thinkers to Greco-Arabic science and, in turn, the dependence of early modern science on the work of the medievals.

⁶The issues are too complex for exposition in a short essay, but fortunately there is a wonderful, if insufficiently known, study by Etienne Gilson, *From Aristotle to Darwin and Back Again: A Journey in Final Causality, Species, and Evolution*, trans. John Lyon (Notre Dame, Ind.: University of Notre Dame Press, 1984). See especially chapter one. For fuller orientation to the early modern period, see

in modern science that the proper study of science is the natural order, and not anything “behind” it, God, metaphysics, or finality.⁷ That is, we are on the way to a “surface” understanding of what the natural order is. Since the credibility of his physics had been damaged, an assumption against Aristotle’s thought in general grew in scientific circles. Many thought Aristotle’s ideas about causality were implicated in the inadequacy of his physics.

An argument of the present essay is that Aristotle’s thought about causation, especially final causality, articulated issues that will not go away. Though his thought has been largely ignored in recent centuries, and is not the last word, it is of permanent significance and should not have been jettisoned with more problematic aspects of his thinking during the years of the origin of modern science. Aristotle’s *History of Animals* provides a good entrance to his thought. Here he distinguished between simple and composite parts. Simple or homogeneous parts have a uniform nature: flesh is composed of pieces of flesh. Composite or heterogeneous parts do not have a uniform nature: a hand is not made of hands, but of a variety of parts.⁸ So it is for the entire animal. The interesting question is how an animal, once formed, is to be viewed. Aristotle’s preference was first to describe the completely formed animal (in today’s terminology, synchronically), and then the process by which the animal had been formed (in today’s terminology, ontogenesis or diachronically). This preference articulated his insight that by definition it was only the fully formed animal that expressed everything that the animal could be, that is, that defined the animal. Hence his emphasis on final causality, which looks to the end (*telos*) of whatever is to be defined.

For most biologists or zoologists today this is backwards, if not worse. With some notable exceptions such as Wallace H. Clark,

Dennis Des Chene, *Physiologia: Natural Philosophy in Late Aristotelian and Cartesian Thought* (Ithaca, N.Y.: Cornell University Press, 1996), and *Life’s Form: Late Aristotelian Conceptions of the Soul* (Ithaca, N.Y.: Cornell University Press, 2000).

⁷Surprisingly suggestive here is the comparison of ancient Biblical exegesis and modern science by John J. O’Keefe and R. R. Reno, *Sanctified Vision: An Introduction to Early Christian Interpretation of the Bible* (Baltimore, Md.: The Johns Hopkins University Press, 2005), as at 116–117.

⁸Here I follow the exposition of Gilson, *From Aristotle to Darwin*, 2ff. For Platonic background, see Verity Harte, *Plato on Parts and Wholes: The Metaphysics of Structure* (Oxford: Oxford University Press, 2002).

whose contributions to the study of melanoma have been so important, they commonly think of the parts as what is most basic to an animal, and are reluctant to speak at the level of the organism, let alone of an organic form which reveals purpose.⁹ To understand is to take apart, not to see the whole. This is the perspective famously criticized by C. S. Lewis in *The Abolition of Man*. Lewis dreamed of “a ‘regenerate science’ of the future that ‘would not do even to minerals and vegetables what modern science threatens to do to man himself. When it explained it would not explain away. When it spoke of the parts it would remember the whole.’”¹⁰ One of the few fortunate outcomes of the debates that rage about when human life begins is growing acknowledgment that “single-cell embryos are unambiguously organisms, for the defining feature of an organism, as compared to a simple collection of cells, is that it is ‘organized’ to accomplish a ‘purpose’ that exceeds mere cellular life.”¹¹ Recall that

⁹The larger debate is between “synthetic” and “analytic” science: see Brian Greene in a letter to *The New York Review of Books* (=NYRB) 51, 12 (15 July 2004): 60. See also David L. Schindler, “The Significance of World and Culture for Moral Theology,” *Communio: International Catholic Review* 31, no. 1 (2004): 111–142 at 123, 125–26, 128, 135, fn. 42, on the body as an organism characterized by form and finality, rather than a machine. Cf. in the same issue the comments of Adrian J. Walker on the natural desire to know the cause when one sees the effect (“On ‘Rephilosophizing’ Theology,” 143–167 at 158, 163). Dr. Walker made several very valuable suggestions for the improvement of the present essay. Thomas Molnar approaches this from a different direction, emphasizing the ways in which “science” has become “technology” (“Tradition, Science, and the Centuries,” *Anales de la Fundación Francisco Elías de Tejada* 9 [2003]: 171–177 at 173–174, 177).

¹⁰Stratford Caldecott, “A True Story: *The Lord of the Rings* and Modernity,” *Second Spring: An International Journal of Faith and Culture* 5 (2004): 16–21; 18, quoting Lewis. Lesslie Newbiggin, arguing that it is impossible to expunge final causality, remarks: “The Laplacean ideal, which pretends that by a complete knowledge of the smallest elements we know everything, is absurd” (*Foolishness to the Greeks: The Gospel and Western Culture* [Grand Rapids, Mich.: W. B. Eerdmans Pub. Co., 1986], 83).

¹¹My colleague, Maureen L. Condic, goes on to say: “Talking about ‘purpose’ may make some readers . . . nervous, yet in the context of developmental biology, an organismal ‘purpose’ means nothing more than the playing out of a game plan that we know, by observation, results in the formation of increasingly complex, integrated structures, all of which work together for the continued life and health of the organism as a whole (“The Science of Wishful Thinking,” *First Things* 145 [August/September 2004]: 69–74 at 73). Hans Jonas often addressed the question of the centrality of the organic level: see for instance *The Phenomenon of Life: Toward a Philosophical Biology* (Evanston, Ill.: Harper & Row, 2001), and the splendid

for Aristotle *energeia* in non-divine being is principally self-maintenance, and *telos* is not an extrinsic purpose, but the whole to be maintained in this way. That, minimally, is the manner in which we speak here.¹²

Gilson observes that Aristotle's intent was not to make final causation a scientific idea, but to show its philosophical inevitability. This seems to concede too much to modern science, for final causality is an essential dimension of Aristotle's physics. In any case, the existence of teleology in nature is not something revealed, but something natural, open to reason interpreting sense experience.¹³ Aristotle's observation was that efficient causality was useful in the explanation of any object, but that structures composed of heterogeneous parts had also to be approached through their ends, through final causality. Living beings have heterogeneous parts, and in the sense that they live and die, carry within themselves the principle of their own change, move themselves (though not necessarily consciously). Growth depends on the heterogeneous parts of a living being having an organization, being an organism. Aristotle's category of final causation is an attempt to account for such organization. He is not anthropocentric in the modern sense, made possible by the seventeenth-century "turn to the subject," but, as noted earlier, assumes a fit between nature and consciousness. The ordinary experience of human beings, of conscious bodies, is epistemologically privileged.

In cases where all the parts are homogeneous, we perhaps need to consider only mechanical and material explanations.¹⁴ But

exposition of José Granados, "Love and the Organism: A Theological Contribution to the Study of Life," *Communio: International Catholic Review* 32, no. 3 (Fall 2005): 435–471.

¹²The Introductions to *Aristotle's Physics: A Guided Study*, trans. Joe Sachs (New Brunswick, N.J.: Rutgers University Press, 1995), and *Aristotle's On the Soul; and, On Memory and Recollection*, trans. Joe Sachs (Santa Fe, N.M.: Green Lion Press, 2001), give excellent explanations. There is of course a sense in Aristotle in which all things seek God, and discussion of intrinsic purpose under the headings of *telos* and *energeia* does not exhaust Aristotle's discussion: *relation* to others, ultimately to God, has to be taken into account. This is a question too complicated to be discussed here, but this must add something to "self-maintenance."

¹³Gilson, *From Aristotle to Darwin*, xix.

¹⁴Is mechanism sufficient to account for inanimate nature? Perhaps it would be better to say that even *water* is more than the sum of its parts, at least when it is a

the heterogeneity of the heterogeneous cannot be explained by or derived simply from homogeneity.¹⁵ There must be present some new principle beyond material causality to explain the origin of heterogeneity. This cannot be simply chance, for once formed, species tend to remain themselves: humans give birth to humans, whose nature they largely determine. Inevitably we are thrown back on the anthropomorphic idea that nature must proceed in a way analogous to art. That is, just as a work of art necessitates an artist with a goal in mind, a heterogeneous being necessitates an ordering idea. This is not so much a speculative conclusion arrived at as a fact observed. In seeing beings with a certain order we see teleology, however we subsequently account for this. For instance, the case need not be the same for conscious and unconscious beings. For natural philosophy, teleology is not in the *first* instance a matter of things' being designed for purposes. From the natural-philosophical perspective, this is a *secondary* consideration. It is also the one that seems to have little place in science. But if we consider instead the primary sense, where the *telos* is the whole, then final causality does have explanatory relevance.¹⁶

Seen in long perspective, a major intellectual defect of the new science was its tendency to reconfigure causation as a temporal category. This paralleled its long-term tendency not to take metaphysics seriously, not to wonder about the conditions under which science can develop at all.¹⁷ For ancient and medieval thinkers in general, not just Aristotle, causation was a category of analysis. With the moderns, it became largely a category of temporal relation.¹⁸ The

question of going from H and O to H₂O. But Kathrin Koslicki, a Visiting Fellow from Tufts University at the University of Utah Humanities Center, argued the opposite in a paper "The Language of Counting and Measuring" (22 March 2006).

¹⁵Cf. Emmet Kennedy, "Simone Weil: Secularism and Syncretism," *The Journal of the Historical Society* 5 (2005): 203–225 at 213, for Weil's attack on Henri Bergson's *élan vital*, which she took to be the claim that intelligence can emerge from non-intelligent matter.

¹⁶We may further ask, is there any *telos* without *eros* (at least in some analogical sense)?

¹⁷This is a large topic which cannot be entered here. See Michael Hanby, "Trinity, Creation and Aesthetic Subalteration," a paper presented in April, 2005, at *Communio's* centenary conference, "Hans Urs von Balthasar as Interpreter of the Catholic Tradition," at www.communio-icr.com/conference.htm.

¹⁸William A. Wallace, *Causality and Scientific Explanation*. v. 1: *Medieval and Early*

significance of this reconfiguration for the status of teleology was momentous, for teleology as discussed here depends on an analytical understanding of causation. Most moderns take it for granted that causation is a temporal category. Causes come before, and effects after. Our embedded image of causation is the billiard table. A ball rolling to hit another is the cause, the hit ball, now moving, is the effect. Such a notion no doubt would earn the scorn of any reasonably educated ancient or medieval. One need only ask about the rolling ball denominated “cause” at any moment before it has hit the ball which is to become its effect, “is it the cause yet?” to receive the response “no,” or “only potentially.” It can only be the cause when it touches its effect, that is, when it exists at the same time as its effect. Before, it is only potentially cause; after, it is only formerly cause. Causes must exist simultaneously with their effects. Likely they will have an existence both before and after they are cause, but this existence will not be as cause.

This is simply to say that causation is a category of analysis, not of time.¹⁹ To use modern terminology, what the ancients and medievals meant by cause was roughly the modern “necessary and sufficient conditions.” What a cause (“cause” as the sum of the “causes” necessary for something to be) is, is the full explanation of the conditions under which an effect is. We begin with something to be explained, and by observation form a list of all the things that must be for the thing to be explained to be. As Aristotle and Aquinas pointed out, this list must be finite in number (hence we prove the existence of First Cause), or the thing that is to be explained would not be. Since it is, that is since we begin with something already existing, an effect, we can know that it has a finite series of causes. A burning candle is explained when we have compiled a list of all the things that must be present for a candle to burn (oxygen, heat, etc.). This list must be finite in number or we would always need at least one more condition present than is present, and no candle would burn.

Together with the idea that cause is the sum of the conditions for something to be is the idea that (a) cause is what is required

Classical Science, v. 2: *Classical and Contemporary Science* (Ann Arbor, Mich.: University of Michigan Press, 1972–1981), tells the story in detail.

¹⁹Allan Megill, “The New Counterfactualists,” *Historically Speaking* 5, no. 4 (March 2004): 17–18, sees the importance of this point in his reflections on how historians understand explanation.

for *x* to be *now*—so cause has to do with communicating existence; and (b) there is a hierarchy of causes—so cause has to do with explaining what has being in a limited, conditioned way (there are the conditions) in terms of what has/is being without those limits/conditions. What happened in the modern period was the degeneration of this analytical idea of causation into the vague notion of causation as temporal succession Hume was so easily to criticize. The “cause” that fell under Hume’s criticism had no more logical relation to its “effect” than our habit of observing that one comes before the other. By Hume’s day, in his circle, cause no longer meant looking for all the things whose existence was necessary for something to exist, but looking for what was prior to it. Hidden was the problem of exactly what the relation was between cause and effect, of how implicitly the relation had to be more than temporal if it was not to be arbitrary.²⁰

The reason for the degeneration of the idea of causation in early modern science was Descartes’ and others’ reduction of reality to mathematical categories, to what can be measured mathematically. This virtually of itself necessitated recasting causation as movement, as matter in motion. The closest similarity the new idea could have to the old was to Aristotle’s “efficient cause.” But even efficient causation, which had tried to locate the source of motion of an effect, had been an analytical category, so the similarities between old and new were remote. The degeneration of causation to a temporal category is symptomatic of what happened when the mathematical elements of reality were taken to be more constitutive of reality, more real, than others.²¹ One could by that fact alone bid farewell to all notions of teleology. An advance of inestimable importance, the working out of the ways in which nature could be viewed mathematically, replaced instead of complemented the older belief that at heart reality is qualitative.

²⁰Étienne Gilson, *The Unity of Philosophical Experience* (New York: C. Scribner’s Sons, 1947), is a classic exposition of what is wrong in Hume’s view of causality. Cf. David Johnson, *Hume, Holism, and Miracles* (Ithaca, N.Y.: Cornell University Press, 1999).

²¹David Lachterman, *The Ethics of Geometry: A Genealogy of Modernity* (New York: Routledge, 1989), is very illuminating on the differences between the ancients and moderns, but ultimately to a quite different goal than that of the present essay.

What was lost in bidding adieu to teleology may be assessed by tracing another lost path in the transition from medieval to modern. Clearly those who have some favorable disposition toward religion today are sometimes taken with the possibility of the validity of some contemporary form of what once was called the teleological proof for the existence of God. Commonly this is framed as the question of the validity of the anthropic principle, the question of whether the universe reveals a certain suitability to human life, in that sense purpose.²² Without denying the legitimacy of such a question, it seems to me that the ancient and medieval discussion of teleology, specifically in Aquinas, is in some ways more illuminating. Thomas initially seems to have held a notion of teleology not unlike that found in much recent discussion. Here the question was whether the universe reveals some general order or harmony, some “fitting together of the parts,” that argues for the existence of God. Aquinas seems tacitly to have dropped this approach in favor of that found as the fifth proof for the existence of God in the *Summa theologiae*. Here the argument is that at each moment there is a fixity or intelligible order revealed in even the existence of non-rational heterogeneous beings. Angeworms, if they become anything, always become angleworms. They never become sky-scrapers. That is, whatever the status of the question of the existence of some general order or harmony in the universe, non-rational beings follow intelligible, teleological patterns. Since as non-rational they cannot be the source of these patterns, their very existence argues for the existence of a rational Cause which is the source of their patterning. Though, outside Catholic thought, this form of argument fell out of philosophy in the modern period, it is much more revelatory of the nature of the world than the so-called teleological argument that did pass through modern thought—at least until Voltaire made fun of it in *Candide* and Kant tried to show that it was nothing more than the ontological argument in hiding.²³

²²The bibliography has become very large. For orientation see Stephen M. Barr, *Modern Physics and Ancient Faith* (Notre Dame, Ind.: University of Notre Dame Press, 2003). See also Peter Hodgson, “Beauty in Science,” *Second Spring* 5 (2004): 52–54 at 53–54. Joel R. Primack and Nancy Ellen Abrams, *The View from the Center of the Universe: Our Extraordinary Place in the Cosmos* (New York: Riverhead, 2006), is more an exercise in the anthropic principle than alert to the questions of concern in the present essay.

²³Ian Hacking, “Minding the Brain,” *NYRB* 51, 11 (24 June 2004): 32–36 at 35,

To see the importance of the idea of purpose as a basic constituent of nature, we must turn to the rising criticism in contemporary thought of the narrowness of the scientific view of the world as it has dominated the last four centuries. This view has almost universally been constituted by the idea that the Copernican revolution overthrew a geocentric universe in favor ultimately of an infinite universe with no center. The conclusion drawn—one of those ungrounded analogous extensions of some true insight into areas to which it does not apply that have disfigured the history of scientific thought as much as human thinking elsewhere—has been that humans are not at the center of reality, but are the not very significant inhabitants of a not very significant planet. Such a conclusion virtually inevitably depends on the assumption of some form of materialism, the general notion that matter “comes first,” forming mind itself. Symptomatic of such a view is a language of “brain” rather than of “soul” or “mind.” In human history, the presumption is, consciousness or historical awareness only appeared gradually: thus the concept—the commonly accepted oxymoron—“pre-historical man,” as if humans could exist without being conscious, historical beings.

One might think that a discipline such as paleontology would be the natural preserve of such “materialist” views, which by definition, strictly adhered to, exclude the possibility of the presence of purpose in the world.²⁴ In fact, some of the most searching

seems to be trying to talk about a non-intentional form of teleology in his distinction between “something tending to do something and striving,” but it seems to me that his discussion would be clearer and less labored if he sought much earlier than Spinoza in the history of thought for useful discussion of this question, and if he understood how much Spinoza had confused the question by accusing earlier writers of the straw man of holding (*Ethics*, Part I) “the notion commonly entertained, that all things in nature act as men themselves do, namely, with an end in view.” Such quotations simply show Spinoza’s ignorance of the history of philosophy and theology.

²⁴Of course, in such matters there have been very few rigorous thinkers, witness the waffling about human freedom and purpose running from the beginning of the Atomist tradition in Leucippus, Democritus, and Lucretius, through Marx and scientific materialism, through B. F. Skinner and behavioral psychology, to E. O. Wilson and the current practitioners of sociobiology. Almost always, materialism having been affirmed, some means, Democritus’s “vortex” or Lucretius’s “swerve,” is introduced to avoid the implications of a strict but non-teleological determinism and allow for the possibility of choice. John R. Searle, “Consciousness: What We

critique of the demotion of human beings from being at the center of reality has come from paleontology. Here debate about the criteria for defining the origins of humanity has centered on consciousness as a sure index of the appearance of man. There are no graves in the animal world, only humans construct them. But graves are an indication that humans have understood that they will die, are conscious of their finiteness. The idea of transcendence has appeared: "It is not necessarily with the use of tools that human existence begins, but rather with metaphysics."²⁵ The higher animals can use tools, but only man can transcend himself. This was already Pascal's point in his famous "man is a thinking reed" passage (*Pensées*, 346):²⁶

But, if the universe were to crush him, man would still be more noble than that which killed him, because he knows that he dies and the advantage which the universe has over him; the universe knows nothing of this.

To anyone who knows Giambattista Vico's *The New Science* (1744), the paleontologists' observations are not completely new. Vico's views have become the base from which Robert Pogue Harrison has launched a contemporary reflection on burial of the dead, and the relation of the dead to the living. Harrison is essentially in agreement with the paleontologists: humanity "is a way of being mortal and relating to the dead. To be human means above all to bury."²⁷ Humans have about them a "history-making mortality,"

Still Don't Know," *NYRB* 52, 1 (Jan. 13, 2005): 36-39, though not without problems of its own, continues Searle's ongoing critique of old-fashioned materialism.

²⁵Michael Schulz, "'Fallen' Nature: How Sin Affects the Creation," *Communio: International Catholic Review* 29 (2002): 490-505 at 499. The neglect of consciousness in recent philosophy of mind has been a special concern of John R. Searle, *The Rediscovery of the Mind* (Cambridge, Mass.: MIT Press, 1992). Cf. David Christian, "Bridging the Two Cultures: History, Big History, and Science," *Historically Speaking* VI, 5 (May-June 2005): 21-26, on how different human history is from that of the other animals.

²⁶Lukacs, *At the End of an Age*, 208.

²⁷*The Dominion of the Dead* (Chicago: University of Chicago Press, 2003), quoted in W. S. Merwin, "You Can Take it With You," *NYRB* 51, 6 (8 April 2004): 63-67 at 67.

the aboriginal sign of which is the grave marker.²⁸ This is very much in agreement with a line of thought developed by John Lukacs, who has been arguing throughout a series of books that scientific materialism has it completely backwards. It is not matter that produces mind, but human consciousness that shapes everything. It is nonsense to talk about humans as anything but at the center of reality, for it is humans who are conscious and can speak of centers. And humans have no choice as conscious beings other than to be at the center. This is the deep significance of Aristotle's "anthropomorphism": his option to privilege human experience epistemically.

In showing the many limitations of Darwinism, Lukacs goes further than some of the palaeontologists, arguing for the incoherence of the application of the idea of evolution ever further backwards in time, one result of which has been the claim that humans existed as much as a million years ago. The hidden assumption here is the materialist one that matter preceded human mind, mind only gradually appearing. Lukacs has no patience with this "dribs and drabs" theory, and rejects the very idea of a "pre-historic" man.²⁹ Humans are defined by the fact that they are historic or conscious beings, beings defined by historicity, conscious beings oriented in time. They have no pre-history, only history.

From such materials Michael Schulz has brilliantly constructed a counter-cultural position. Schulz argues that the very terminology "cosmos" or "universe" makes no sense other than as expressed by a human. It is indeed true that the earth is a minor planet, and that in one sense the universe has no center. But statements such as these are not possible without the man who makes them. In this sense, as the surveyor of reality, man is its center. As Albert Einstein and Henri Poincaré insisted, the only time we have is our time.³⁰ The very notion of history must be human-centered.³¹

²⁸Harrison, *Dominion*, quoted in Merwin, "You Can Take it With You," 64.

²⁹Lukacs, *At the End of an Age*, 8, 120–121. Cf. Larry McMurtry, "The Unknown West," *NYRB* 51, 12 (15 July 2004): 47–49 at 49, with discussion of the uselessness of the category "prehistory."

³⁰Peter Galison, *Einstein's Clocks and Poincaré's Maps: Empires of Time* (New York: W. W. Norton, 2003), with Donald A. Yerxa, "Einstein's Clocks, Poincaré's Maps: An Interview with Peter Galison, Part I," *Historically Speaking* 5, no. 2 (November 2003): 5–9 at 8.

³¹Lukacs, *At the End of an Age*, 109, has some fun at the expense of the physicist

In Lukac's provocative formulation, "We did not *create* the universe. But the universe is our *invention*."³² The universe's unity appears to, and in some sense depends on, a conscious perceiver.

Schulz is a theologian who in some respects goes further than Lukacs the historian:³³

One does not become more objective by attempting to gain a neutral perspective from which to view finitude in abstraction from the human knower, which in any event is epistemologically impossible. If the cosmos can be grasped as cosmos only in man, and if independently from man it does not even exist (at least as cosmos), then the most objective view of the world is given within the horizon of man's orientation to God If the ultimate meaning of the essence of the cosmos is dependent upon the reality of man, then the cosmos with man is qualitatively more than it is without him.

Only by standing in a relation with God can man talk of such things as the unity of the world, of categories such as infinity and finiteness.

Perhaps it is time, I might add, to revive the ancient-medieval idea of man as microcosm. That is, there are two further, related, considerations: (1) in order to avoid "speciesism," it is important to note that what the unity of the universe is correlative to is an *embodied consciousness*—and, as far as we know, *man* is the thing that fulfills that role; (2) this is not just phenomenological, but ontological. This I take it, was the intuition expressed in the idea of man as microcosm.

Schulz develops the question of the early history of humans somewhat differently than does Lukacs. For Schulz, who accepts evolutionary theory, the question is not so much whether we may properly speak of human beings where there is no human consciousness, but the way in which history articulates all that it is to be human:³⁴

Steven Weinberg, and see 112–113, 203–204, 223–225.

³²Lukacs, *End of an Age*, 204, and see 206–214.

³³Schulz, "'Fallen' Nature: How Sin Affects the Creation," 497–498.

³⁴*Ibid.*, 498. Cf. especially the editor's "Introduction" to *Dimensions of Darwinism: Themes and Counterthemes in Twentieth Century Evolutionary Theory*, ed. Marjorie Grene (Cambridge: Cambridge University Press, 1983); Michael Hanby, "Creation without Creationism: Toward a Theological Critique of Darwinism," *Communio*:

Evolution . . . testifies to the anthropocentric character of the cosmos . . . evolutionary development ends up with ever more complex structures. The more the complexity grows, the more we are able to distinguish between an interior and an exterior in a living being, and the more the form of subjectivity takes shape.

In sum, though humans initially may not have appeared with a high degree of consciousness nor much historical sense, they are “not bound up with the things of this world in an absolute way like the animals. Man is . . . a creature of transcendence; this creature is the window through which the cosmos ‘sees’ its origin.”³⁵

To sum up, a number of ancient thinkers observed that there is a fit between nature and consciousness. This valuable observation did not lead to an anthropocentric view of the world in the modern sense that human consciousness is a pre-condition for knowledge; but the mixed blessing of the modern “turn to the subject” now allows us to see the centrality of human consciousness in organizing the world. It is not that there is no organization without human consciousness, that the universe is not already a universe before we know it, one that we are “fit” to understand, but that human consciousness is apparently the only vehicle by which such organization can be discovered. This makes humans central to the very idea that there is a universe, and themselves a kind of microcosm. Among the forms of organization and pattern they can discover is the “immanent teleology” of heterogeneous beings, already known to Aristotle, but largely disparaged in the years of the birth of modern science, along with serious debasement of the understanding of causation from being a category of analysis to being one of temporal relation. Though Aristotle is not the last word on any of these issues, and his discoveries have to be expanded to give greater consideration to the place of the relations of things both to each other and to God, the contemporary rediscovery of certain categories of purpose—in particularly in biology—represents a great advance on the mechanistic world we have inherited from the age of Descartes. At least in the

International Catholic Review 30 (2003): 654–694; *Uncommon Dissent: Intellectuals Who Find Darwinism Unconvincing*, ed. William A. Dembski (Wilmington, Del.: ISI Books, 2004); and Alistair McGrath, *Dawkins’ God: Genes, Memes, and the Meaning of Life* (Malden, Mass.: Blackwell Publishers, 2005), a work of great brilliance devastating to Dawkins’ “*a priori* Malthusianism.”

³⁵Schulz, “Fallen’ Nature: How Sin Affects the Creation,” 499.

areas considered in the present essay, purpose is not to be viewed as simply something extrinsic to individual living things, but as also something intrinsic to them, a description of their capacity for self-maintenance as wholes. What is now needed is a synthesis that overcomes the dichotomy “intrinsic/extrinsic” to show that all heterogeneous living beings have not just an intrinsic and extrinsic ordering, but an order that is at once both. □

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