

Saving the Appearances: Creation's Gift to the Sciences

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When Nietzsche's famous madman burst into the marketplace in search of God, he was met first with derision and laughter and then with dumbstruck silence. The scene conveys the sense that the death of God, which unchains the earth from its sun and obliterates any reference by which to distinguish up from down or forward from backward, happens almost by accident, less a result of malice and intention than incomprehension and irrelevance. Such is the situation that confronts any attempt to make intelligible the church's understanding of the world as creation. While it may indeed be true that "we can win the future only if we do not lose creation," and that "by living as if God did not exist, man not only loses the mystery of God, but also the mystery of the world and the mystery of his own being," the real problem with any attempt to live otherwise is not overcoming the modern "case against God".¹ Rather it is overcoming the fact that the modern mind has so defined the world that we can no longer imagine, apart from a few nettlesome rules, what difference God's existence or non-existence might make to it.

There are manifold reasons for this, not the least of which I shall call, for the sake of brevity, "the Darwinization of everything", whereby Darwinian biology, a theory with an omnivorous and voracious appetite, is elevated to the position of first philosophy and made into a "theory of everything" explaining, or explaining away, the biological and cultural realms. This is a deeply worrisome phenomenon, as I take Daniel Dennett to be correct in his gleeful assessment that

¹ J. RATZINGER, *'In the Beginning...'* A Catholic Understanding of the Story of Creation and the Fall, Eerdmans, Grand Rapids 1995, 100.

Darwinism is a “universal acid” that dissolves everything it touches.² Hence in suggesting how “creation” might once again figure into our understanding of the natural world *qua* natural and *qua* world, I would like to offer a rather impressionistic sketch, first of the relation between theology and the sciences generally, and then secondly, about the relationship between theology and evolutionary biology in particular.³ I harbor no illusions about doing justice to all the complex problems here, so I will simply state my theses with a little commentary in the hope that some of these complications will begin to sort themselves out.

First, the question of science’s relation to theology is not *fundamentally* an empirical, historical, sociological or even philosophical question, though of course it is also all of these. Rather it is a *theological* question, logically consequent upon the question of the relation between God and the world. This is because any attempt to answer it will invariably presuppose, project, and enforce some understanding of this most basic relation. This is why much of the so-called dialogue between theology and science is useless and why Darwinians cannot refrain from doing theology.

Secondly, a proper understanding of the God-world relation necessitates a real distinction between theology and the sciences such that neither be reduced to nor simply derived from the other.

Inasmuch as creation is the gratuitous gift of being to a world that is *not* God, and inasmuch as the being of the world is therefore irreducible to the being of God, it follows that the sciences are

² D.C. DENNETT, *Darwin’s Dangerous Idea: Evolution and the Meanings of Life*, Simon and Schuster, New York 1996, 63.

³ For a fuller, Trinitarian development of these themes, Cf. M. HANBY, “Creation without Creationism: Toward a Theological Critique of Darwinism,” in *Communio* 30 (Winter 2003), 654-94. Otherwise, this essay represents a further refinement of the views expressed there. See also two forthcoming essays, M. HANBY, “A Few Words on Balthasar’s First Word,” in R. HOWSARE and L. CHAPP (eds.), *How Balthasar Changed My Mind*, forthcoming from Crossroads and “Creation as Aesthetic Analogy,” in T. J. WHITE, O.P., (ed.), *The Analogia Entis* forthcoming from Eerdmans.

irreducible to theology. We must therefore deny that scientific conclusions can simply be deduced from theological premises or that properly theological conclusions can simply be inferred from scientific or empirical starting points. It is not up to theology to adduce the mechanisms of evolutionary development, and it does not fall to the sciences to infer the Incarnation or even to delineate nature from grace, for as Balthasar notes, the creature of itself is incapable of determining wherein it differs specifically from the creator.⁴ There is thus an important truth in the notion that theology and science should each stick to their proper business--truth but not nearly the whole truth.

This is because, thirdly, the sciences remain constitutively and inexorably related to metaphysics and theology. The more vehemently a Dawkins or Dennett asserts his atheism, the more definitive and grotesque his theology becomes. If this is true, it follows that maintaining distinctions and keeping within limits *cannot* mean that theology and the sciences are only extrinsically and accidentally related to each other, or that theology and metaphysics deal with the whole and the sciences only with a part, as is sometimes argued.

This claim is simultaneously theological, philosophical, and historical. It is a claim about what is true in principle and how the sciences, particularly evolutionary biology, have unfolded historically. But it is important to distinguish *just how* the three aspects of this claim are formally related to each other. The historical point will become clear when we consider the origins of Darwinism. To claim philosophically that Darwinian theory *qua* scientific theory is constitutively and inexorably related to theology is to claim that this inexorable relation is inherent in reason's own intrinsic

⁴ H. U. VON BALTHASAR, *The Theology of Karl Barth*, Ignatius Press, San Francisco 1992, 279.

necessities *qua* reason and that it is phenomenologically visible, as it were, from the side of the object in our elementary experience of the actual world. The question “why something rather than nothing?” regarded by science as meaningless, is not just a question of ontological or temporal origins; rather it is a question of the ontological constitution of the world at every moment of its actual existence, a question of what is really *in* the creature, and so a question whose answer, as the tradition from St. Paul to Bonaventure affirms, is visible in principle to the sciences according to their particular modalities.

I wish to postpone this “phenomenological” point until we come to Darwinism *per se*, but David L. Schindler has made the case about reason’s intrinsic relation to God in a recent essay on the nature of scientific abstraction.⁵ Schindler contests the presupposition behind the notion of ‘proper limits’, namely that “limit” as conceived in the scientific abstraction of parts from wholes is methodologically pure and metaphysically innocent. He contends that any attempt to distinguish between *x* and *non-x*—whether they be God and the world or the parts of a thing from its whole—entails a tacit conception of each. Embedded then within the very act of abstraction is an ontology and ultimately a theology that mediates what will count as the relevant (empirical) content of *x*. Inasmuch as *x* in its abstracted state is regarded as indifferent to or unaffected by *non-x*, the notion of limit or boundary inherent in abstraction *per se* and employed to distinguish *x* from *non-x* is akin to a Cartesian line, which divides two entities characterized in themselves by pure externality and which are thus fundamentally separate and external to each other. Consequently, intrinsic and constitutive relations are regarded as extrinsic and accidental, and the inner nature of *x* is taken to be unaffected by these relations. Thus the very notion of a metaphysically innocent,

⁵ D. L. SCHINDLER, “The Given as Gift: Creation and Disciplinary Abstraction in Science,” from SCHINDLER, *Ordering Love, vol I: Creation and Creativity in a Technological Age*, forthcoming 2009 from Eerdmans.

methodological abstraction expresses a mechanistic ontology that governs thought about the God-world relation.

Abstraction does not simply and innocently isolate a part from a whole; it also deals tacitly with the whole—the one actual world that *is* in relation to God—in its own proper mode through the attention given to the artificially isolated part. To deal with this or that isolated facet of the world, say the biological realm, is therefore always *also* to deal with the world in its relation to God, only from within the world according to the formal object of the science in question, in this case biology. The same formal relation that holds between theology and philosophy thus holds analogously for all the sciences.⁶ Each has in view the whole of being, with theology taking its stand “in God” and orienting itself toward the world and philosophy and the sciences taking their stand in the world and orienting themselves toward finite being and thus ultimately toward God. Of course there is an important difference. Unlike philosophy, which deals with being *qua* being, the natural sciences *do* deal with the whole of being through a “part”. Presupposing the whole, they are unable in principle to generate from *within themselves* the conditions for their own truth. The sciences thus remain tacitly dependent upon the “higher science” of philosophy as the traditional doctrine of subalternation held, and were the sciences in good order, they *would not* present the same *prima facie* case for ultimacy that philosophy does.⁷ The history of both physics and biology shows that things haven’t exactly worked out that way, however, and inasmuch as the sciences are

⁶ My understanding of this relation is greatly aided by an as-yet unpublished paper from D.C. Schindler delivered at a conference entitled *Theology and the Disciplines*, Philadelphia, PA, July 2008. For a more detailed account of how *esse* or *ens commune* opens of its own intrinsic necessities into creation, and thus how an implicit philosophical metaphysics entails an implicit theology, see my “Creation as Aesthetic Analogy,” *op cit*.

⁷ The reverse is also true, but I would contend that the relation is not symmetrical. Philosophy’s dependence upon science occurs *within* the context of science’s greater dependence upon philosophy.

elevated to first philosophy in spite of their inherent limitations the truth of being—“what is?”—ceases to be of ultimate concern and is replaced by the criterion of experimental success.⁸

The philosophical aspect of the claim is not deduced from the theological, but it does exemplify in the cognitive sphere the world’s constitutive relation to God, just as the theological aspect brings the philosophical “to its senses”, as it were, and reveals its deepest import. *Theologically* speaking, we have already pointed to creation *ex nihilo* as the giving of the gift of *esse*, the gift of being *other than God*. But this being-other-than-God is the fruit and consequence of one’s interior and constitutive relation *to* God, a gift so deep and comprehensive that no analogy can “adequately express, in all its force, the radical gift of being which God has given me...by creating me. For it is a gift totally interior to me; nothing is left out of it, and nothing of myself is without it.”⁹ This gift is immediately distorted when represented as a qualification of the creature, something done *to* it, which is why Aquinas denies that creation properly speaking is action, passion, motion, or any other species of change and insists instead that it is a *relation* of the effect to the cause. Creation in the passive sense simply *is* the creature, but it is the creature as a certain *reception* of being as *act*, the “evidence” for which is simply the *novum* that is the creature itself, the irreducible novelty and actuality of each concrete act of being as such. To “see” creation, then, is not to isolate some process or mechanism in the world. Rather it is to see the world more deeply and comprehensively. The importance of this point will emerge as we proceed. The thing to note at present is that inasmuch as the creature is constituted through the relation wherein it receives its being, this relation to God is at least implicit in all other relations whether real or rational. What

⁸ Claude Bernard gave paradigmatic expression to this shift. Cf. C. BERNARD, *An Introduction to the Study of Experimental Medicine*, Dover, New York 1957, 80.

⁹ H. DE LUBAC, *The Mystery of the Supernatural*, Crossroad Herder, New York 1999, 77.

therefore emerges from within reason's own necessities, namely the inexorability of thought's relation to God, is explained but not simply derived from a proper understanding of creation as such.

The same gift of *esse* which gives science its objects and the objects to themselves gives it to science to be and to be *other than theology*. But the sciences' being "other than theology" is not *external* to theology anymore than their objects are external to the gift of *esse*, so that "scientific autonomy" is not to be found in some illusory freedom from metaphysical and theological assumptions. To the contrary, the freedom of the sciences not to be theology is itself *theologically granted*, though obviously not in the juridical sense, and the sciences can only do justice to their own nature and to their objects when the gift is well received. There is no pure method, and no science can do and indeed ever does without a metaphysics and therefore ultimately a theology whose "axioms" with respect to being, time, space, matter, motion, truth, knowledge, and God are not simply "presupposed" at the boundaries of the science where they can be bracketed in the name of methodological purity. Rather like Aristotle's principle of non-contradiction, they are operative throughout because they are first in the order of being and thus impose themselves upon the very act of thinking, even if they are last in the order of reason by which we cognize them.¹⁰

This raises a number of issues that I can only indicate here, though I do hope to shed some light on them in my assessment of Darwinism. If the truth of being does impress itself upon the act of thinking as such, then this truth must be more basic than any deviation from it. If all our attempts at rejecting the gift presuppose the gift, then the truth of being must shine through even in

¹⁰ Cf. ARISTOTLE, *Metaphysics* IV, 1005b-1009a.

falsehood. Aristotle must therefore be right when he contends that we cannot really *disbelieve* this truth and insists that those who claim to disbelieve it simply do not know themselves. Likewise, I want to say that there is a strict sense in which Darwinism is simply unbelievable and unbelieved—even by those who adhere to it religiously—because the fundamental logic of Darwinism is contradicted by our living, thinking and acting.

This brings me to my final introductory point before our consideration of evolutionary biology. On the one hand, it follows from all this that theological criticism of Darwinian biology must be *theological* and not scientific: it must be a criticism of the theology that Darwinism invariably presupposes and inevitably tends to become. It should attempt to straightforwardly deny this or that piece of biological data. It should not endeavor to propose an alternative “mechanism” to natural selection, to show how God “uses” natural selection in some kind of “theistic evolution” or to supply some other kind of questionable concordism between theology and science, though neither am I proposing an a priori “discordism.” On the other hand, inasmuch as all natural sciences are constitutively and inexorably related to theology, scientific accounts of nature which are metaphysically and theologically deficient cannot help being deficient *qua natural* and *qua scientific*. Rather good theology liberates the sciences to be science and, moreover, performs for them a service without which they will tend to falsify themselves and their objects. So the question is “what is this service that theology performs for Darwinian biology?”

In brief, I want to maintain that theology “saves the appearances” for biology. It does so precisely through saving the “more than appearance” inherent within appearance itself, a “more” upon

which the truth of appearance depends and which the scientific quest in fact assumes.¹¹ So in saving the appearances for biology the doctrine of creation saves for biology the truth of the biological world as an order of inherently intelligible and thus meaningful living wholes irreducible to the sum of their parts, their antecedent causes and indeed to any true account we can give of them. This also happens to be the truth from which Darwinism begins and which, in spite of itself, it is incapable of denying. Yet for all its genuine achievements in giving us knowledge of the biological world, it remains, or so I contend, constitutively incapable of seeing or accepting what it otherwise *cannot help but see* and what every known historical culture save ours *has seen*, however dimly.¹² You might say that Darwinism is premised upon the denial of the obvious. And yet insofar as the obvious precisely as obvious is undeniable, this means that Darwinism is strangely irrational, whatever the truth of this or that thesis.

I would suggest it is precisely in “saving the appearances” that theology addresses this powerful objection: that science in general and Darwinism in particular *work*. For any theory whose legitimacy ultimately requires the strictly impossible task of holding as effectively unreal the world that we cannot help believing in and which is affirmed in our every action cannot in any ultimate or fundamental sense, *work*, and its “not working” is not only theoretically demonstrable, but practically evident in virtually every facet of our disintegrating culture. The real question is whether our Darwinized culture is finally committed even to any coherent notion of “working” or whether it has grown weary of the claim of truth.

¹¹ Cf. H. U. VON BALTHASAR, *Theo-Logic* I, 55-107.

¹² Cardinal Ratzinger contends that knowledge of the world as in some sense ‘created’ by God is ‘primordial knowledge’ belonging to our birthright as human beings. It is simply (and appropriately) whiggish simply to chalk this up, as Darwinians do, to the primitivism of all pre-Darwinian peoples. Cf. J. RATZINGER, ‘*In the Beginning...*’ cit., 27-32.

Yet even the rejection of truth stands within a relation to it, manifesting in negative form its claim upon us. Assuming, then, that Darwinism is neither able nor willing to relinquish this claim entirely, I would maintain that in “saving the appearances”, in giving account of what Darwinism must presuppose but cannot receive or explain, the doctrine of creation, though *not* the antithesis and therefore a strict rival of evolutionary theory, may nevertheless lay greater claim than evolutionary theory to *rationality*.¹³ According to Alasdair MacIntyre’s conception of tradition-based rationality, the more rational of two rival theories is the more comprehensive theory, the one that can accommodate both the truth of its opponents’ theses and those features of life that have heretofore proved intractable. In brief, he who sees the most wins.

Refusing the Gift

To understand how creation “saves the appearances” for biology we must first understand why the appearances need saving. And to grasp this we need to understand the particular form that Darwin’s constitutive and inexorable relation to theology takes. This requires us to situate Darwin within the broader élan of modern science since the seventeenth century, which Pope Benedict aptly sums up in the words of Francis Bacon as “the triumph of art over nature.”¹⁴ Aristotle had of course premised his natural philosophy on the world of actual things—*this somethings*—that were simultaneously subjects of both a common “whatness” (form) and an irreducible and incomprehensible singularity. This invested things existing by nature with a mysterious interiority. Moreover, precisely because every “this” is always also an actual “what”, it is already a something that “belongs” to the heterogeneous places where things find themselves and flourish in the course of their actual existence. When things in their places move from potentiality to actuality, as when

¹³ A. MACINTYRE, *Whose Justice? Which Rationality?* Notre Dame Press, Notre Dame 1984, 349-69.

¹⁴ BENEDICT XVI, *Spe Salvi*, 26; F. BACON, *Novum Organum* I, 117.

an acorn matures into an oak, it does so according to what Aristotle calls “natural motion,” and its movement manifests what it is to be an acorn-oak tree. As Joe Sachs puts it, “it matters to things where they are.”¹⁵ By contrast, when an acorn is kicked across a road, as when any entity passes through homogenized Newtonian space, its motion reveals nothing of what it is to be an acorn; indeed all the relevant variables here and even the acorn itself are interchangeable with any other so long as these possess the relevant mathematical properties. This Aristotle called “violent motion,” and where it is taken as the paradigm of motion *per se*, as in a mechanistic ontology, there is an important sense in which the actual world falls from view. And so Aristotle says “the person who asserts this entirely does away with “nature” and what exists “by nature”.”¹⁶

The stress on activity or actuality is crucial here. Considered nominally or abstractly from within the mechanical conception of causality paradigmatically expressed by Galileo, “that at whose presence the effect always follows and at whose absence it disappears,” a builder is the cause of a house.¹⁷ But for Aristotle, strictly speaking, he is only the *potential* cause of a house. The *builder building* is its actual cause, which is only realized in and with the effect: he *is causing* the house only *as* the house *is being built*, a change of condition that it actively “undergoes”.¹⁸ Something analogous is true of a being who when thought of as “potentially living” can always be analytically separated and imagined abstractly as somehow prior to a world to which it is otherwise accidentally related. But actually living things and their world, like movers and moved when in the *act* of moving, comprise “a single actuality of both alike.”¹⁹ So Aristotle says in *De Anima* II that the soul and its

¹⁵ J. SACHS, *Aristotle’s Physics: A Guided Study*, Rutgers University Press, New Brunswick 1995, 58.

¹⁶ ARISTOTLE, *Physica*, 199.b13.

¹⁷ E.A. BURTT, *The Metaphysical Foundations of Modern Science*, Dover, Mineola 2003, 72-104.

¹⁸ ARISTOTLE, *Physica*, 201a15-202a37. See also, *De Anima*, 417b29-418a7; 425b27-426a26, 431a8. Cf. J. LEAR, *Aristotle: The Desire to Understand*, Cambridge University Press, Cambridge 1988, 26-42.

¹⁹ *Ibid.*, *Physica*, 202a18-19.

“external” objects when in the second actuality of *knowing*, *touching*, *seeing*, *hearing*, *eating* and *living*—dare we say, when in the *act of be-ing*—comprise a *single actuality* while nevertheless remaining distinct. This “single actuality” of a “this something” and its world alike may be one reason why Aristotle makes touch the primary sense and why this accords so profoundly with his notion of heterogeneous place, defined as “the boundary of a containing body at which it is in contact with the contained body.”²⁰ Touch on this understanding is not simply one of the senses, or one activity of the senses, though of course it is also both, but rather that sense through which any animate being always and at every moment intersects with and belongs to its world. Analogously, hearing, sight and knowledge in their own modalities actualize a similar unity between a thing and its world, indeed between a thing and what Aquinas would call *ens commune*. At this fusion of boundaries, which always already accompanies the organism and indeed encompasses it on every side, “biological insides and environmental outsides” are not two contiguous, but externally related realms, otherwise separated by an abyss and requiring some mechanism as a *tertium quid* to account for their artificial “interaction” or “relation”.²¹ Rather, inasmuch as they are *in act*—breathing, seeing, touching, eating, doing, living—“being”—they comprise a single actuality, the actuality of *kosmos*, maintaining distinction without separation. Teleology in Aristotle’s deep sense is not the external imposition of a purpose “not one’s own” and thus otherwise foreign to the thing. It simply affirms that each living creature is a “this something” transcending itself through its intrinsic relation to a world which its essential presupposition, something that unfolds and moves in characteristic ways “for the sake” of the thing it already is. This then ought to lead us to ask just of what the denial of teleology is actually denying.

²⁰ *Ibid.*, *Physica*, 212a5-7.

²¹ The terms are from S. J. GOULD, *The Structure of Evolutionary Theory*, Belknap Harvard, Cambridge MA 2002, 161.

The interiority proper to Aristotelian nature was only deepened as it was subsumed within a Christian conception of creation understood as the gratuitous gift of *esse*. While Aristotle grasps the equi-primordially of the common and the singular (*tode ti*) perhaps more profoundly than any pre-Christian thinker, there nevertheless arguably remains in Aristotle a double ambivalence with respect to difference *qua* difference. On the one hand, inasmuch as forms themselves express a thing's ultimate difference from every other thing, difference *qua* difference acquires such pride of place in his philosophy that it threatens the unity of the Aristotelian cosmos, as evidenced perhaps by the ambiguous relation between the Unmoved mover and the fifty-five or so unmoved movers responsible for celestial motion.²² Here below, on the other hand, because the form is the *logos* of the thing expressed noetically in its definition, only the form is intelligible in the strict sense (i.e., while "man" has a definition, Socrates does not). As a consequence, Aristotle tends to regard that difference in virtue of which a thing is not identical to its form, whether it be that which distinguishes Socrates *qua* Socrates or that whereby the female imperfectly instantiates the form of man, as the limit of a thing's capacity for imitation or identity with God.²³ In brief, difference *qua* difference remains a deficient reflection of an ontologically more basic unity, a problem that none of the ancients were able adequately to resolve.²⁴

The Incarnation occasioned a revolutionary re-thinking of this problem from the side of both God and the world. For entailed in the claim that Christ is at once very God and very man without admixture, blending or diminution was not only an acknowledgment of the full divinity of the second hypostasis of the Trinity but, concomitant with this acknowledgment, the first genuine

²² Cf. J. OWENS, *The Doctrine of Being in the Aristotelian Metaphysics*, Pontifical Institute of Mediaeval Studies, Toronto 1978, 457-60, 438-53.

²³ For a generous treatment of this ambivalence, Cf. K. L. SCHMITZ, "Immateriality Past and Present," in K. L. SCHMITZ, *The Texture of Being: Essays in First Philosophy*, Catholic University of America Press, Washington 2007, 168-99.

²⁴ That is to say that Plotinus does not adequately resolve it either, but the defense of this claim would take us too far afield.

thinking of divine transcendence, a transcendence so radical as to include reflexivity and reciprocity within itself and the capacity for intimate relation to what is not itself, without losing its own otherness or dialectically negating the world. This made it possible to articulate the long held conviction of creation *ex nihilo* in ontological terms. Because God is Wholly Other to the world, he is able, as St. Augustine put it, to be closer to the world than it is to itself as the gratuitous source of its being. Thomas' transformatory category of *esse* as the act of acts and the most fundamental and interior of perfections gave technical specification to this conviction, simultaneously completing the classical (Aristotelian) conception of nature and transforming it to its very roots. For as Socrates is transformed from a "this-something" into a *creature*, he becomes an irreducible and infinitely irreplaceable "I", who as the fruit and object of love is good and like God not in spite but *because of* his very difference from God. Because being is the most interior gift, nothing falls outside it, and nothing—not Socrates' individual identity, not the body—is excluded from it. Thus what classical philosophy could only regard negatively as the incomprehensibility of Socrates, Christianity regards positively, seeing in the *very incomprehensibility* of Socrates the reverse side of an *infinite* intelligibility coincident with a bottomless depth of mystery. Because Socrates is not his own ground, because the infinite mystery of God is at the bottom of everything, the incomprehensibility of Socrates is the sign of a surplus gratuity, a self-transcending communication internal to every concrete act of being as such. So Thomas tells us that there is a multitude of creatures because no one creature could adequately represent the divine goodness and beauty.²⁵

When the natural philosophers of the seventeenth century uniformly rejected Aristotle's substantial form and its corollary distinctions between act and potency and variegated causality, they dispensed with the primacy of the *actual* world in the senses I have just described it. First, they dispensed the

²⁵ AQUINAS, *ST I.47.1*.

depth of interiority constitutive of actual, irreducible being. Second, they thereby transposed the world of *things-in-the-act-of-being*—a world comprised not just of builders, as it were, but a world of *builders building*—into a static world of discrete entities. One is tempted to say that modern science is premised to this extent upon a *stilling of the world*, a reduction of the ungraspable vitality of *dunamis* and *energia* to a dense sequence of measurable *states*. In this view, change is not significant in its very character as act, namely, the actuality of potential *qua* potential.²⁶ Rather, change (or motion) is but the measured difference between *states*, which, in themselves, are indistinguishable from their opposites.²⁷ This metaphysical gesture then fundamentally transforms our view of motion and it is a fundamental reason why life has largely ceased to be the subject matter of biology. For within this ontology life, as Hans Jonas indicates, is merely an anomalous state of non-life or death, of the inanimate understood as inert.²⁸ Darwin, tellingly, exhibited no interest in the difference between the animate and the inanimate. Like Newton’s famous declaration with respect to gravity—*”hypothesis non fingo”*—he declined to speculate as to life’s origin or essence. To measure it was enough to know it.²⁹

With natural philosophy now indifferent to the ontological significance of act, being and the properly metaphysical question of “why anything at all?” loses its force and intelligibility. The question of being becomes equal to the sum total of things there are, which in turn becomes

²⁶ Descartes, e.g., thought the notion unintelligible. Cf. R. DESCARTES, *The World, or Treatise on Light*, in J. COTTINGHAM, R. STOOTHOFF, D. MURDOCH (trans.), *The Philosophical Writings of Descartes I* Cambridge UP, Cambridge 1985, 94.

²⁷ Simon Oliver makes this point with respect to Newton, that motion and rest are for him quantitatively different instances of the same state which are indistinguishable because motion now communicates nothing of the object moved. Descartes anticipated Newton on this score by defining motion as a state. Cf. R. DESCARTES, *Principles of Philosophy* II.27; CSM, 234. S. OLIVER, *Philosophy, God, and Motion*, 168.

²⁸ H. JONAS, “Life, Death and the Body in the Theory of the Being,” in *The Phenomenon of Life*, Northwestern UP, Evanston 2001, 1-37.

²⁹ C. DARWIN, *On the Origin of Species* 6th ed., Prometheus Books, Amherst 1991, 401.

equivalent to the various possible or actual configurations of formally identical *quanta*. In short, early modern natural philosophy ushers in what Balthasar calls the “sick blindness” of positivism, the sense that the world provokes no questions and is “just there”, and it paves the way for the elevation of physics to the place of first philosophy.³⁰ What is objectively the demise of the actual world of *cosmos* is subjectively the death of philosophical wonder depicted so powerfully by Balthasar, wonder which is the primitive form of cognition’s participation in being-as-gift.³¹

Commencing with what Galileo approvingly called “the rape of the senses” and employing variations of the “principle of annihilation” initially prominent in the voluntarism and nominalism of Ockham, the nascent natural philosophers skeptically demolished the actual world of lived experience, given as a whole and all at once, making it the secondary product of external forces acting on a *counter-factual* world of singulars persisting in a state of inertial isolation.³² We have hardly begun to reflect upon the theoretical and spiritual significance of this founding gesture of modern science to premise the real world upon the unreal. Needless to say, the result is a fundamental reformation of the meaning of order and unity, both cosmic and soon enough organic, as the difference between the animate and inanimate, the natural and the artificial would soon suffer the same fate as the distinction between motion and rest. Aristotle’s universe was one because relationality, implicated in the very nature of act, was ontologically basic. All things were intrinsically related to the pure actuality of the One (the etymological meaning of *uni-versus*), which accounted for their endeavor to remain in being *and* through which they were inherently related to

³⁰ H. U. VON BALTHASAR, *Theo-Drama II: Dramatis Personae: Man in God*, Ignatius Press, San Francisco 1990, 286.

³¹ H. U. VON BALTHASAR, *Glory of the Lord V: The Realm of Metaphysics in the Modern Age*, Ignatius Press, San Francisco 1991, 613-4.

³² On the importance of counterfactuals and their new use in modern natural philosophy, Cf. A. FUNKENSTEIN, *Theology and the Scientific Imagination: from the Middle Ages to the Seventeenth Century*, Princeton UP, Princeton 1986, 177 ff.

their world. The uni-verse was thus an *ordo ad invicem*, as Aquinas would put it, a mutually supporting order because things were intrinsically “ordained toward each other (*ad alia ordinantur*)”. In brief, beings were *at home* in their world; they *belonged* to it, because they were indeed beings.

The advent of the thoroughly singular, self-identical thing would reduce all things in their ontologically primitive condition to the status of brute *quanta*, whose most essential characteristic is sheer externality.³³ In its ontologically primitive form each thing becomes formally identical to every other thing, and all relations are secondary, extrinsic, and therefore accidental in both the scholastic sense and soon enough in the ordinary sense of occurring *by mistake*, as a failure of “replicative fidelity.” We see this curious notion in Jacques Monod’s and Richard Dawkins’ accounts of genetic variability, which echo the classical ambivalence about difference., as variations reflect, in Dawkins’ case, the “failure” of genes.³⁴

With the demise of the universe as a single actuality, the unity of the cosmos becomes the unity of an aggregate, an assemblage of inherently indifferent and *unrelated quanta* requiring an *extrinsic* principle of order, a mechanical *tertium quid* that imposes “law” through power (force) to account

³³ Though Newton vehemently protests Descartes’ identification of the essence of body with extension, since the separation of extension from body was necessary to his crucial notion of absolute space, Descartes’ geometrization of the ‘essence’ of matter and Newton’s identification of matter with mass and Descartes’ geometrical matter are united in this fundamental characteristic: each in itself is fundamentally external and thus constitutes an impervious boundary, dividing absolutely what lies on either side of it. Cf. R. DESCARTES, *The World*, CSM I, 90-98; I. NEWTON, “De Gravitatione et Aequipondo Fluidorum,” in A. R. HALL and M. B. HALL (eds.), *Unpublished Scientific Papers of Isaac Newton*, Cambridge UP, Cambridge 1962, 138-40.

³⁴ R. DAWKINS, *The Selfish Gene*, Oxford University Press, Oxford 1989, 17-18, 21-45. In Dawkins’ case, genetic variability refer to the failure of genes to extend their immortality by reproducing themselves perfectly “in the *form* of a copy”, a notion long on metaphysical presumption but short on metaphysical reflection.

for its unity.³⁵ The unity of an organism would soon follow suit, as each living thing would eventually stand to its own quiddity in more or less the same external and artificial relation as obtained for Aristotle between Antiphon's bed and its wooden substrate.³⁶ For Aristotle and the tradition artifice imitated nature (in the "negative" sense) because artifacts did not possess being of their own. Lacking essential and existential interiority, they received their forms from outside, as it were, and their meaning lay in the purposes of their artificer. From the seventeenth century onward, nature identified alternatively with the brute *quanta* of positive matter and the extrinsic laws governing their accidental interaction would imitate artifice before being collapsed into artifice altogether. To "know nature" is then is to know the laws governing the artificial construction of machines and organisms alike, and to know these laws is to be able to make or unmake nature in accordance with them.³⁷ That is, to know nature in the modern sense is already to have exerted command over it.

In reality the unity of an artifact differs fundamentally from that of an organism. In contrast to the tree from which it was made, Antiphon's bed is not an *unum per se*. It does not transcend itself, move itself, generate another like itself, or assimilate the world to itself through metabolism. The parts do not derive their being and meaning as parts from the whole which it will become, much less do they develop for its sake. It is not, in other words, the subject of its own being. We can ask, in the words of Thomas Nagel's famous essay, "What is it like to be a bat?" We might even

³⁵ Neither Newton nor Descartes identify the "essence" of force (a notion whose conceptual position Descartes occupied with "quantity of motion"), but there are reasons for suspecting that each identified it with God.

³⁶ On the demise of interiority and a meaningful distinction between the animate and inanimate, see the work of Hans Jonas in general but particularly H. JONAS, "Is God a Mathematician? The Meaning of Metabolism," in *The Phenomenon of Life*, 64-98. On an analysis loss of the distinction between motion and rest Cf. S. OLIVER, *Philosophy, God, and Motion*, 156-190. For hints at the correlation between these and the demise of the act-potency distinction, Cf. E. A. BURTT, *The Metaphysical Foundations of Modern Science*, 72-104.

³⁷ See the definition of nature given in C. DARWIN, *On the Origin of Species*, 60.

ask what it is like to be a plant or the one-millimeter in length roundworm *C. elegans*. After all, even a *C. elegans* transcends itself in a certain limited sense inasmuch as it *is* and *is one*, but also in that it “has a world” of ambient bacteria toward which it is metabolically oriented. And even though *C. elegans* are somewhat unique in comparison to most other organisms, each possessing an identical number of cells (935), *this C. elegans* can never *be that C. elegans*. *This one* can never replace *that one* in more than a functional or formalistic sense for “purposes” other than “its own”, and to just that extent, even though they be formally identical, each is distinguished from every other by an infinite *existential* abyss. Every parent knows the truth inherent in this. The difference between a mother and her child is not captured in a measurable degree of departure from replicative fidelity or any other accidental qualification of a common essence. The difference is existential and therefore infinite. The child is *another* person, and therefore a free subject of her own being. This infinite difference cannot be captured by even the most exact measurement of formal features. It can only be suppressed by a willful attempt to exert command over it.

Where we might ask what it is “like” to be a bat or a *C. elegans*, “Nobody would ask what it is like to be a car.” “Being a car,” says Robert Spaemann, “is not *like* anything, because a car does not *exist* in other than a purely logical sense.”³⁸ Why? Because an artifact does not have being of its own, and lacking that, does not “have” a world. Its form is “external” to it, for as Aquinas puts it, “*we* are in a sense the end of all artificial things.” I would want to qualify this in important ways in the case of artifacts whose point is not the useful but the “pointlessness” of beauty or play. This “pointlessness” imbues them with a kind of integrity of their own, independent of their artificer, a kind of being on loan by which they may exist both “for their own sake” and “for another”, making

³⁸ R. SPAEMANN, *Persons: The Difference between ‘Someone’ and ‘Something’* Oxford UP, Oxford 2007, 30.

it possible for them to indeed “imitate nature” in the deepest and most positive sense and for artifice to supply a faint reflection of divine creation in spite of the infinite difference between divine and human making.³⁹

Indeed were biologists to approach their subjects as one approaches a painting, it would no doubt transform the very meaning of science, restoring it to *theoria* in the traditional sense.⁴⁰ Nevertheless it is *useful* or functional artifacts that have always fascinated biology. It is surely telling that some of Darwin’s most radical contemporary defenders are more eager than Darwin to erase any essential difference between the animate and the inanimate and to stress the ‘designed’ or ‘artificial’ character of organisms.⁴¹ And it is surely no accident that some of these acolytes have little scruple about the biotechnical manipulation of the “human person”, to them a quaint relic of folk biology.⁴² In his post-humanist manifesto *Re-Designing Humans*, UCLA biophysicist Gregory Stock writes, “Over the past hundred years, the trajectory of the life sciences traces a clear shift from description to understanding to manipulation...In the first half of the twenty-first century biological understanding will likely become less an end in itself than a means to manipulate biology. In one century, we have moved from observing to understanding to engineering.”⁴³ Stock probably does not mean to say that biology is unconcerned to understand organisms, but he is inadvertently correct. Biology is no longer interested in understanding organisms in the strict sense of knowing “what is” (*ens*) precisely because biology has emptied organisms of the interiority of their own being

³⁹ AQUINAS, *In Metaph.*, lecture 4, 173.

⁴⁰ This is in fact what Adolf Portmann does in inquiring into the significance of animal *gestalt*. A. PORTMANN, *Animal Forms and Patterns: A Study of the Appearance of Animals*, Schocken Books, New York 1952.

⁴¹ R. DAWKINS, *The Blind Watchmaker: Why the Evidence of Evolution Reveals a World without Design*, W.W. Norton, New York 1996, 21-41.

⁴² See the statement of the International Academy of Humanism, signed by Francis Crick, Dawkins, and Dennett among others, in support of human cloning. It is included in L. KASS, *Life, Liberty, and the Defense of Dignity: The Challenge for Bioethics*, Encounter Books, San Francisco 2002, 136-7.

⁴³ G. STOCK, *Redefining Humans: Our Inevitable Genetic Future*, Houghton Mifflin, New York 2002, 1-18, 35-57.

and essence, mechanically reconfiguring this interiority as the functional interaction of so many externally related parts. This alters both the ideational content of our knowledge of organisms and the ideal criteria for knowing them, transforming knowledge from a “knowing what”, in Hans Jonas’ slogan, to a “knowing how”. Leon Kass is right, however, that even this distinction is problematic, for mechanical “know-how” of an organism is at best limited and at worst misleading, since it is purchased by abstracting the relevant feature of the organism—it’s genomic structure, for instance—from the only place where it is ever actually encountered: life as lived by teleological wholes in the actual world.⁴⁴ In short, there can only be mechanism because there are first things, *beings*, which are irreducible to mechanism. If modern biology does not grasp this, if it can scarcely see the phenomenon of life as lived even as it cannot help *but* see it, this is because the trajectory from understanding to engineering is not simply the result of the empirical and experimental successes of modern biology. It has been inscribed into our understanding of nature since the 17th century. In its inner logic, modern biology was always already biotechnology. We ought to pause over the fact that Darwin’s project commences in the *Origin of Species* with an analogy from the artificial selection of breeders and concludes with the patently eugenical anxieties of *The Descent of Man*.

Though the Darwinian faith has many fathers, it is by all accounts Darwin himself who effected the celebrated revolution in our self-understanding and he who is credited, in the modest words of Gaylord Simpson, with rendering worthless all accounts of who, what and why we are published before 1859. Yet a significant portion of the credit for importing Newtonian mechanism into biology belongs to the Anglican clergyman William Paley. Paley’s *Natural Theology* is a footnote in

⁴⁴ L KASS, *Life, Liberty...cit.*, 277-97.

the history of theology but a landmark in the history of biology and to this day a favorite foil of Darwin's most ardent defenders, who regard it as the apex of Christian thought on creation.⁴⁵ It turns out, though, that the appearance of a fundamental disagreement between Darwin and Paley is an illusion, that what unites them is far more profound than what divides them, and what unites them are certain metaphysical and theological assumptions that ground the science.

You will no doubt recall the famous argument, recently rehabilitated by proponents of Intelligent Design, where Paley walks across an imaginary heath, discovers a watch with its intricate and interdependent parts suited to a common purpose, and infers, correctly as it happens, that it must be a designed artifact. Paley is an object lesson in the difference between philosophical wonder and positivist admiration described by Balthasar.⁴⁶ The *existence* of the heath is a given and uninteresting. He exhibits no wonder at all in the fact that Balthasar called astonishing beyond measure, the fact that *he is*. In other words, the question of being and thus of creation proper never comes close to arising. He is far more interested in the difference between a stone and a watch than in the difference between a man and a watch. In fact, his argument depends upon eliminating this difference as much as possible, emptying nature of any inherent meaning or internal principle of unity or order—which he takes to be the mere re-description of a fact rather than the diagnosis of a cause—in order to warrant the inference of an *external* artificer, which he regards as an *alternative* to any natural process.⁴⁷

⁴⁵ Cf. R. DAWKINS, *The Blind Watchmaker*, 1-41.

⁴⁶ H. U. VON BALTHASAR, *The Glory of the Lord V*, 613 ff.

⁴⁷ W. PALEY, *Natural Theology*, Kessinger, 42.

I trust that I hardly need to note how incoherent is this view of a finite God, in competition with natural processes and impervious in principle to any serious qualification by Trinitarian or Christological reflection, or how such a God, being only extrinsically and accidentally related to creatures who are fully transparent to mechanical diagnosis, sows the seeds of his own irrelevance. This is inadvertently confirmed by contemporary advocates of Paley's theory, who stress that assent to a designer for those "irreducibly complex" features of the world otherwise indistinguishable from the world of neo-Darwinian biology does not necessitate commitment to God; one of Francis Crick's space aliens could do just as well.⁴⁸ Paley himself concedes as much; indeed he seems positively relieved by it, acknowledging that divine Providence understood on these terms "neither alter(s) our measures nor regulate(s) our conduct," functioning instead merely "as a doctrine of sentiment and piety."⁴⁹ He then applies this doctrine of sentiment and piety by analogy to living things reconceived as mechanical contrivances, as clusters of parts externally related and indifferent in themselves, requiring the external hand of God to account both for their mutual correlation to each other and for the fit between biological insides and environmental outsides.

This problem of providing an extrinsic mechanism to account for the relation of part to part and the fit between organism and environment in a Newtonian world where nothing properly *belongs*, Paley names *adaptation*, and he bequeaths it to Darwin as the defining problem of evolutionary biology.⁵⁰ In bequeathing this problem to Darwin, Paley determines what Darwin sees when he looks at organisms: "a cluster of contrivances."⁵¹ And he supplies the metaphysical and theological

⁴⁸ M. J. BEHE, *Darwin's Black Box: The Biochemical Challenge to Evolution*, Touchstone, New York 1996, 248-9 .

⁴⁹ W. PALEY, *Natural Theology*, 286.

⁵⁰ Cf. S. J. GOULD, *The Structure of Evolutionary Theory*, 118.

⁵¹ W. PALEY, *Natural Theology*, 109. According to Darwin, "When we no longer look at an organic being as a savage looks at a ship, as something wholly beyond his comprehension; when we regard every production of nature as one which has had a long history; when we contemplate every complex structure and instinct as the summing up

architecture necessary to see it: an extrinsicist view of a finite God in competition with natural processes and the positivism, nominalism and atomism which are mechanism's essential warrants and presuppositions. Hence by the time Darwin gets around to finishing off Paley's God, replacing the invisible hand of Paley's designer with the invisible hand of natural selection, the decisive move will have already been made. In making the problem of adaptation and the view of the organism as a cluster of contrivances his own, Darwin makes Paley's flawed theological presuppositions his own. It makes little difference whether he affirms them for the sake of denying them as he and his disciples do or whether affirms them for the sake of assenting to them as Paley and Intelligent Design advocates do.⁵² Darwinian biology, in other words, is inexorably and constitutively related to an extrinsicist theology which effaces the difference between God and the world, transforms the organism into a machine, and reduces creation to manufacture. Paley and his modern admirers are ostensibly for this truncated God, Darwin and his disciples against, but they might as well be arguing over how many *C. elegantia* can dance on the head of a pin for all its relevance to a proper understanding of creation.

Darwin by his own recollection knew Paley frontward and backward; indeed the *Natural Theology* leaves tracks all over the *Origin of Species* if one knows where to look, and Darwin admits in the *Descent of Man* that the principal preoccupation of the *Origin of Species* was overcoming the "ordinary

of so many contrivances, each useful to its possessor, in the same way as any great mechanical invention is the summing up of the labour, the experience, the reason, and even the blunders of numerous workmen; when we thus view each organic being, how far more interesting—I speak from experience—does the study of natural history become. C. DARWIN, *On the Origin of Species*, 405. See also his discussion of "the aggregate of characters" relative to classification, 349 ff.

⁵² Darwin's negative references to "creation" in the *Origin* are too numerous to catalog, but sufficient to establish it as a reaction that preserves within itself the image of what it rejects.

sense of creation” in order to *replace* it with a natural explanation.⁵³ Thus, according to Stephen Jay Gould, Darwin “*inverts*” Paley, gleefully replacing the aesthetics of Paley’s happy world with the aesthetics of Malthusian scarcity, thereby effecting “a *substitution* of natural selection for God as creative agent.”⁵⁴ The argument, which Darwin quite candidly calls “the doctrine of Malthus, applied to the whole animal and vegetable kingdoms,” is by now quite familiar, as are the formal features of mechanism we have already discussed. Like Malthusian persons, Adam Smith’s *homo economicus*, or Newtonian masses, Darwinian organisms are diverted from their inertial tendency (toward exponential reproduction) by the pressures of scarcity, the ensuing hardships bringing them into a state of equilibrium akin to the equilibrium obtaining between supply and demand in the market. Given the empirical fact of variation between generations and a strong principle of inheritance, those variations are likely to be selected and preserved which afford their possessor a competitive advantage against both its environment and closest kin, allowing them and their offspring to secure a niche within a biogeographical division of labor. Couple the extinction of closest relatives that eventually results from this constant culling process with the vast time scales posited by Charles Lyell’s uniformitarian geology, and the result is eventually branching *taxa* and divergent species.⁵⁵

Like Paley, Darwin too is interested in the organism as a cluster of contrivances, and he does acknowledge the phenomenon of “correlated variation” whereby “the whole organization is so tied together during its growth and development, that when slight variations in one part occur, and

⁵³ Cf. S. J. GOULD, *The Structure of Evolutionary Theory*, 116-21, 260-77; C. DARWIN, *The Descent of Man*, Prometheus Books, Amherst 1998, 62.

⁵⁴ S. J. GOULD, *The Structure of Evolutionary Theory*, 113, 127.

⁵⁵ C. DARWIN, *On the Origin of Species*, 3.

are accumulated through natural selection, other parts become modified.”⁵⁶ Even so, Darwin is arguably even less interested in the organism for its own sake, being concerned on the one hand to stress the organism’s non-functional traits to counter arguments from design and on the other, to dwell on functional complexity only insofar as its existence can be plausibly explained through natural selection.⁵⁷ Darwin thus represents a further shift toward functionalism in the meaning of both explanation and the *explananda*. As the subject of Newtonian physics is not motion *per se* but force, so the subject of Darwinian biology is not really life or the organism but natural selection, portrayed in force-like terms as the “subject” of its own activity. Natural selection thus becomes the principle of organic unity in a thoroughly accidental world, though not without radically altering the meaning of this unity as is shown in the following passage.

«I have spoken of selection as the paramount power, yet its action absolutely depends on what we in our ignorance call spontaneous or accidental variability. Let an architect be compelled to build an edifice with uncut stones, fallen from a precipice. The shape of each fragment may be called accidental; yet the shape of each has been determined by the force of gravity, the nature of the rock, and the slope of the precipice—events and circumstances, all of which depend on natural laws; but there is no relation between these laws and the purpose for which each fragment is used by the builder. In the same manner *the variations of each creature are determined by fixed and immutable laws; but these bear no relation to the living structure which is slowly build up through the power of selection, whether this be natural or artificial selection.*

If our architect succeeded in rearing a noble edifice, using the rough wedge-shaped fragments for the arches, the longer stones for the lintels and so forth, we should admire his skill even in a higher degree than if he had used stones shaped for some purpose. So it is with selection, whether by man or by nature; for through variability is indispensably necessary, yet, when we look at some highly complex and excellently adapted organism, variability sinks to a quite subordinate position in importance in comparison with selection, in the same manner as the shape of «each fragment by our supposed architect is unimportant in comparison with his skill.»⁵⁸

⁵⁶ *Ibid.*, 100, 108.

⁵⁷ Compare, e.g., their respective treatments of the nature and origin of the eye.

⁵⁸ C. DARWIN, *The Variation of Animals and Plants under Domestication* vol. 2, Murray, London 1868, 348-9, qtd. in S. J. GOULD, *The Structure of Evolutionary Theory*, 341.

Now there seem to be a number of problems with the internal coherence of all this. These stem ultimately from Darwin's (unacknowledged) metaphysical and theological starting points, though, as we shall see, acknowledging this need not involve us in a wholesale rejection of Darwin's theory. As heir to the economic theory and social theodicy theory of Smith and Malthus, Darwin's theory belongs among the great eighteenth and nineteenth century attempts to provide a logic for contingent history, a kind of secular providence which accounts for all biological and even cultural life as the outworking of a single transcendental process—hence the need to refer to it in force-like terms. To this extent, natural selection belongs in the realm of metaphysics. Yet if as a mechanist and a nominalist Darwin has foresworn universals, and if as science, Darwinism has foresworn metaphysical speculation, how on its own terms can it justify its appeal to a transcendental mechanism? How can Darwin justify appeal to a universal like natural selection while denying in his nominalism the reality of all other universals such as natures, essences, and real relations? How on the terms of Darwin's own commitments can we justify designating disparate events in the lives of bacteria, beetles, trees, fish and nations as instances in the operation of a single process? Why is natural selection, like the very conception of species itself, not simply a term of convenience? Why, in other words, does the universal acid of Darwinism stop short of dissolving itself?

Perhaps a Darwinian will reply that natural selection is not a “single mechanism” at all but merely a “single name” generically unifying a vast array of causal transactions.⁵⁹ This, presumably, would stave off the allegations of an illicit metaphysics, notwithstanding nominalism as a metaphysical stance. Yet if natural selection is merely a single name, what then makes *this* unity more than nominal, arbitrary, and convenient? And how can Darwinians justify their continued reference to

⁵⁹ D. J. DEPEW and B. H. WEBER, *Darwinism Evolving: Systematics and Geneology of Natural Selection*, MIT Press, Cambridge 1996, 155.

natural selection in force-like terms as if it were the subject of its own action? Natural selection, it is said, acts, causes, and creates.⁶⁰ Does this rhetorical card trick not confuse effects with causes and merely re-describe a fact instead of stating a cause as Darwin himself alleges against Paley? And why, in this case, does the fact described by “natural selection” not really just mean “whatever happens”? This may be a great way to win every argument in advance since no evidence in principle could ever falsify the theory, and this is one reason why we need not simply reject Darwinism. Yet it is hardly an *explanation* to say that some things live and some things die. Darwinian biology must say *why* some things live and others die. Hence what many have argued is the perilously circular character of Darwinian fitness and the endless proliferation of the “just-so” stories of adaptive advantage criticized so persistently by Stephen Jay Gould, Richard Lewontin, and others.⁶¹ These may be gross simplifications, but then Darwinism owes us an answer to some very simple questions: which species do *not* owe their existence to natural selection’s gracious hand, and how could we ever know it? Of course if Darwinism *can* answer these questions, then natural selection is dethroned as a controlling mechanism and Darwinian panadaptationism ceases to be a “theory of everything.”

Let us employ Darwin’s “universal acid” still further and see whether Darwinism itself dissolves. Darwin has here given us a picture of a thoroughly accidental world which nevertheless preserves the traces of eighteenth century theodicy, providing (sometimes) subtle assurances that history remains perpetually on the upswing. Darwin thus takes frequent recourse to teleological language both to describe the relations of the “useful” parts of an organism to the whole of which it is a part

⁶⁰ The ascription of agency to natural selection is such a pervasive feature of the *Origin* that the instances defy enumeration.

⁶¹ Cf. S. J. GOULD and R. LEWONTIN, “The spandrels of San Marco and the panglossian paradigm: a critique of the adaptationist programme,” in *Proceedings of the Royal Society of London*, B 205, 1979, 589–590.

and to describe the effects of natural selection “working for the good” of its beneficiaries. Thus despite viewing the organism as a cluster of contrivances, he nevertheless writes as if insects resembled their environment *for the sake of* their protection, for example, or as if we had eyes *in order* to see.⁶² Darwin trades on the obvious, in other words, on the teleological wholes now disparagingly catalogued as the epiphenomenal holdings of “folk biology”. Aware of this, perhaps, he excuses himself on grounds that everyone understands what the real meaning of these conventions, implying that teleological forms can be translated into merely functional ones without loss.

In this case, however, eyes cannot be “for” seeing and certainly cannot develop in time with that end “in view”—especially if natural selection does not induce variability as Darwin insists. Rather eyes merely “happen” to function so as to see in a world that also happens, happily, to be illuminated, thus conferring an advantage on the seeing organism. Yet if we follow these ontological commitments through to their end, then even this is illusory. For in a world of mere functions or effects in which the external relation of part to part and the relation of biological insides to environmental outsides is merely accidental, the organism as a whole can no more have a *sake* than the individual part can, not least becomes the organism’s unity is identical with the coordinated interaction of parts itself.

Well before one even comes to the incoherence of “truth” on these nominalist terms, a fact effectively acknowledged in the convergence of Darwinian biology and pragmatic philosophy, we see that Darwinism is indeed a universal acid, objectively speaking, dissolving itself along with everything else. For one cannot consistently hold to Darwinian principles without depriving

⁶² Again, the references are legion. Cf. C. DARWIN, *On the Origin of Species*, 33, 47, 59, 61, 117, 136, 154, 172.

Darwinism of its founding presupposition: organisms engaged in the struggle for life. For if the denial of teleology ultimately entails the denial that the living organism has a “sake”, then its living too and the “interest” embodied in the very fact that it endeavors to continue doing so can be but happenstance, the epiphenomenal appearance thrown up by so many algorithmic functions operating on a world in which the organism itself and the distinction between living and non-living are, like every other distinction, finally and fundamentally meaningless.

The fact that one cannot really *be* a Darwinist does not stop people from trying, however. So a whole breed of genetic reductionists has arisen who obviate the problem and hasten the convertibility to function by making “the gene” (or genomic patterns statistically arrayed in populations) the real “unit of selection”, at the price of rendering the organism itself epiphenomenal and incidental to the real evolution occurring “behind its back,” and reducing the whole drama of “Darwinian evolution” to an illusion thrown up by the cold algorithms of biochemistry.

Now one might object that this is all too simple. It could be argued, as indeed Robert Richards has done, that Darwin himself was as much a romantic as a mechanist.⁶³ One could point to the advent of systems biology, the epigenetic corrective to the one-sided emphasis of the code-script metaphor in genetics, and to the current movement to return the organism to the center of its own evolution as evidence that Darwinism is less reductionist in its essence than I have portrayed it here. Even Dawkins, whose genetic reductionism is the target of many of these developments, denies that any

⁶³R. J. RICHARDS, *The Meaning of Evolution: The Morphological Construction and Ideological Reconstruction of Darwin's Theory*, University of Chicago Press, Chicago 1992; *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*, University of Chicago Press, Chicago 2002, 514-54.

such “baby eating” reductionists really exist.⁶⁴ One could add to this the rise of emergence theory in physics and other fields and so-called non-reductive materialism in some quarters of philosophy of science.⁶⁵

I am not claiming, however, that Darwinian biology *simply* denies that there is “more” to organisms than the coordinated interaction of externally related mechanical parts. To the contrary, I have insisted that while nature admits of mechanical analysis and while this has indeed “worked”, our elementary experience of reality is so much richer than this analysis that it is strictly impossible to think, believe, act, and *live* as if mechanical reductionism were true, which is perhaps why a culture intent on this impossibility is slowly but surely killing itself. Even Dawkins acknowledges that when he looks at the girl standing before him, he sees his daughter and not an assemblage of genes, and there is no catalog of “bridge laws” connecting lower and higher level phenomena that could ever add up to what he knows when he sees her. Because the infinite truth, goodness, and beauty internal to created being imposes itself on thought in spite of itself, because it asserts itself even in our attempts to deny it, this objective ‘more’ everywhere manifests itself. Rather what I wish to claim is that modern science in general and Darwinian biology in particular, despite protestations to the contrary, remain saddled with an inherently reductive ontology that forces them to deny the reality they cannot but affirm. Enacting a form of abstraction that itself embodies this ontology, it

⁶⁴ R. DAWKINS, *The Blind Watchmaker*, 13. For opposition along the lines I’ve indicated, Cf. L. MOSS, “Darwinism, Dualism, and Biological Agency,” in V. HOSLE and C. ILLIES, *Darwinism and Philosophy*, Notre Dame Press, Notre Dame 2005, 345-79; L. MOSS, *What Genes Can’t Do*, MIT Press, Cambridge 2004, esp. 44-50, 75-116. Cf. also E. NEUMANN-HELD, “The Gene is Dead—Long Live the Gene!” in P. KOSLOSKI (ed.), *Sociobiology and Bioeconomics: The Theory of Evolution in Biological and Economic Theory*, Springer, Berlin 1999, 105-37 and G. WEBSTER and B. C. GOODWIN, “The Origin of Species: A Structuralist Approach,” in E. NEUMANN-HELD and C. REHMANN-SUTTER (eds.), *Genes in Development: Re-Reading the Molecular Paradigm*, Duke UP, Durham 2006, 99-134.

⁶⁵ R. B. LAUGHLIN, *A Different Universe: Reinventing Physics from the Bottom Down*, Basic Books, New York 2005.

thus becomes impossible for these sciences to give a principled account of this “more” equal to our encounter with it in the experience of a world of unique meaningful wholes, much less a world of persons. Either the experience itself is regarded as non-evidentiary and thus ultimately unreal, or the explanation of its intelligibility and unity is endlessly deferred on the assumption that its explanation can ultimately be reduced to a more thorough enumeration of the parts and their interconnections. (Hence the contemporary fascination with computers as models for consciousness.) Both Aristotle and Aquinas understood the folly of abstracting parts from an actual integrally related whole in order to treat the whole as the sum of its parts.⁶⁶ Such abstractions “work”, so far as it goes, but they never arrive again at the whole from which they began any more than a thousand monkeys pounding on typewriters could arrive at the *meaning* of a Shakespearean phrase that, given world enough and time, they had randomly managed to bang out.⁶⁷

Darwinism is left with two options that dismiss (and thereby achieve mastery over) this “more”, sometimes in the very act of trying to account for it. Each is fatal not just to the organism itself who, lacking the unity and interiority of *esse* and *essentia* alike, is no longer the irreducible and incomprehensible subject of its own being and life but also to Darwinism itself to the extent it is serious about being true. Taking the *donum* of being as mere *datum*, dispensing with formal and final causes, and conflating ontological and chronological causal dependence, Darwinian biology is

⁶⁶ Thomas noted this and made space for a legitimate form of abstraction when he correlated Aristotle’s distinction between understanding and judgment to the two *poles* of the real distinction. It is surely possible to study form in abstraction from its matter or to isolate parts from their wholes in experiments without losing sight of the priority of the ‘single actuality’ of the one concrete, existing order and without falling into the Cartesian illusions that abstraction itself is indifferent. AQUINAS, *In De Trin.*, V.3

⁶⁷ The reference is to Richard Dawkins’ computer simulation of genetic evolution, using the analogy of monkeys hammering out a Shakespearean target phrase. My critique of this adventure can be found in Hanby, “Trinity, Creation, and Aesthetic Subalternation,” in D.L. SCHINDLER (ed.), *Love Alone is Credible: Hans Urs von Balthasar as Interpreter of the Catholic Tradition*, Eerdmans, Grand Rapids 2008, 70, n. 78.

forced by its mechanistic assumptions to see the whole as arising simply out of the parts as in the process of manufacture, or perhaps more subtly but ultimately no less reductively, out of the parts' epigenetic manifestation. There *is* of course an important sense in which the whole is dependent upon the interaction of the parts comprising it for its being and well being. Yet insofar as the organism is an *unum per se*, which is to say insofar as it transcends those parts as the principle of their coordinated interaction, the parts are always already dependent on the whole whose parts they are. Borrowing terminology from David L. Schindler, we might call this the asymmetrical dependence of wholes and parts, and it means that each organism is irreducible to, and more than the coordinated interaction of its parts, dependent though it is on the proper functioning of those parts for its flourishing. Precisely to this extent, the organism as an *unum per se* transcends and thus in an important sense is anterior to, that coordinated interaction. Epigenetic manifestation and metabolic function, to note just two examples, do not simply *produce* the organism, integral though they are to its full actualization. Rather, they are achievements *of* the organism, which are possible because the organism is already a “this something” even in its incipient stages.

Darwinism presupposes this “more” in its every turn of phrase, but it is constitutively incapable of giving account of it. So it endlessly defers the understanding of this “more” until the point, always around the next corner, that it acquires the “bridge laws” necessary to connect “supervenient properties” to their material bases, all the while failing to notice that this form of reckoning would dispense with the very thing it is attempting to explain, by subtly reducing the unity of an *unum per se* back to the mechanical unity of an aggregate. Thus it must once again regard the phenomenal appearance of such beings in the world we actually inhabit as the epiphenomenal deliverances of

“folk” biology and psychology. Michael Ruse and Francis Crick have each maintained versions of this argument.

I wish to suggest that the doctrine of creation properly understood, far from being the simple *antithesis* of Darwinian biology, actually saves the appearances *for* Darwinism by securing its subject, actual organisms and their worlds, *against* Darwinism, by insisting on the more-than-appearance as the gift that grounds the truth of appearance. It does this not by positing creation as an alternative process in competition with natural processes for how this or that feature of the world came to be, but rather by insisting that creation, the interior and irreducible gift of *esse* simultaneously veiling and manifesting itself in the unity of *essentia*, is simply *what the world is*, and by insisting that this gift is the precondition for the very novelty, causal transactions and substantial identity upon which Darwinism itself depends. Creation performs this service by restoring to creatures the self-transcending unity and interiority evacuated in the mechanistic turn, but this means restoring to them an essential mystery—the mystery of be-ing—that cannot in principle be attained by way of addition or by bridge laws connecting supervenient properties to their material bases. In its present condition, Darwinism is confined to registering this mystery in negative terms either as what it has not yet mastered or as non-evidentiary, epiphenomenal, and ultimately unreal. Yet Darwinism itself is not immune to its own universal acid. As Stephen R.L. Clark says, if Darwinism is the *only* truth, then even it cannot be true.

The gift that is creation cannot simply be imposed upon Darwinian explanation without ceasing to be the gift that it is. The reception of it, then, by Darwinian biology, cannot simply take the form of acquiescence to theological authority or assent to hypotheses external biology itself, hypotheses

which would have the result, in any event, of converting the act of creation into yet another finite process in competition with natural processes. The *doctrine* of creation can no more be an alternative to immanent explanation than the *act* of creation can be an alternative to natural processes. To think otherwise is already to be lost in theological confusion, to have substituted some crude idol of our own making for the *esse ipsum subsistens* who is God himself. Rather, as the source of gratuitous being that is somehow not God, and as the source therefore of difference-in-unity as such, creation is the condition of possibility for every causal transaction whatsoever, for an analogous difference must obtain, effects must be irreducible to—more than—their causes, if there is to be causality at all. As Aquinas puts it,

«The fact, therefore, that a creature is the cause of some other creature does not preclude that God operate immediately in all things, insofar as His power is like an intermediary that joins the power of any secondary cause with its effect. In fact, the power of a creature cannot achieve its effect except by the power of the Creator, from whom is all power, preservation of power, and order to effect. For this reason, the causality of the secondary cause is rooted in the causality of the primary cause.»⁶⁸

Creation, in other words, is the condition of possibility for anything being genuinely *new*, and this irreducible novelty is visible in, and indeed is, the irreducible goodness, beauty, and truth of every concrete act of existence. This power of making new, as Paul says in Romans, is already visible in and as the world, had we only the eyes to see and the ears to hear it, and yet since we cannot help but seeing and hearing it, we are “without excuse”. The truth of creation, therefore, has already been given to Darwinian biology in and with the giving of the world, but Darwinism is congenitally blinded by its constitutive animosity toward this gift. To accept this gift, Darwinism must first lay down its arms, relinquish its own theological ambitions which are no less theological for being negative, and “come to its senses” in both the ordinary and Aristotelian senses of that phrase. Only

⁶⁸ Cf. AQUINAS, *In Sent.*, 2.1.1.4.

thus can it recuperate a wonder adequate to the phenomena that it everywhere presupposes. Inherent in this wonder is a love designated by Augustine as *amor frui*, the love of enjoyment which first lets the other *be* for its own sake and thus contains within itself the recognition that it *has* a sake, that it is the mysterious subject of its own irreducible being. This is in contrast with the *amor uti* that loves only for use, and therefore desires the other only as a means to ends of its own arbitrary devising, a *pathos* endemic to mechanistic ontology and its conversion of nature into artifice. We are here brought once again to wonder as the primitive form of cognition in the order of being which is the fruit of *amor frui*. There is still hope that by coming thus to its senses, by losing its life so as to finally to discover life, Darwinian biology may at last accept the gift offered to it from the beginning, the gift which provides the conditions whereby even Darwinism, or at least some features of it, might be said to be true.