

SOMETHING FROM NOTHING
THIS WAY COMES

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When Darwin theorized about how man and other organisms might have evolved, he assumed the existence of the lower life forms and proposed an account of how others could have evolved from them. With the advent of cellular and molecular biology evolutionists began to theorize how the lowest life forms might have evolved from inorganic nature. Moreover, scientists now think that the elements themselves are the products of evolution. The heavier elements came into being from lighter elements some time after the big bang about 13.7 billion years ago. So the theory of evolution itself has evolved from explaining the origin of biological species to the origin of the whole universe. The big bang theory now being widely accepted, the next question is where did the material out of which the elements evolved come from? Stephen Hawking and Leonard Mlodinow in their new book, *The Grand Design*, have answered this question by saying that the cosmos spontaneously generated from *nothing*.

According to M-theory, ours is not the only universe. Instead, M-theory predicts that a great many universes were created out of nothing. Their creation does not require the

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intervention of some supernatural being or god. Rather, these multiple universes arise naturally from physical law. They are a prediction of science.¹

Hence, according to these well-known physicists, the cosmos with its unfathomable size, order, complexity and diversity of being came to be from nothing. One suspects that getting-something-from-nothing has been implicit in the evolutionist account all along.² It just becomes explicit as they attempt to explain the origin of the first material principles. Moreover, according to this *multiverse* theory, the laws of nature are themselves the result of chance and are different for every universe. So our cosmos was not only generated out of nothing but the primary efficient cause, to the extent to which there is one, is chance. According to this view, then, the universe as a whole does not have any *per se* causes; it has no real explanation, it just happened. It is, therefore, fundamentally unintelligible.

Now although biological evolution has been taught in our schools since the 1950s and uniformly promoted in the media of popularized science, still only 15% of Americans think that human beings evolved without God guiding the process.³ In fact the lack of a Designer has been a consistent objection to Darwinism from the beginning. Darwin himself admits that it is difficult to imagine how the vertebrate eye, for example, could have come about by the blind processes of chance and natural selection. Common sense, it seems, is at odds with the theory.

¹ Stephen Hawking and Leonard Mlodinow. *The Grand Design*. (New York: Bantam Books, 2010), p. 8.

² If one thinks that the intelligent comes from the non-intelligent, the sentient from the non-sentient, the living from the non-living, it is predictable that when asked where matter comes from, one would say from the non-material, and, for some, this is the same as saying from nothing.

³ www.cbsnews.com/2100-500160_162-965233.html

Richard Lewontin,⁴ in his review of Carl Sagan's last book, *The Demon-haunted World: Science as a Candle in the Dark*, acknowledges the clash between scientific claims and common sense. Speaking of scientists, he says,

Our willingness to accept scientific claims that are against common sense is the key to an understanding of the real struggle between science and the supernatural. We take the side of science *in spite* of the patent absurdity of some of its constructs, *in spite* of its failure to fulfill many of its extravagant promises of health and life, *in spite* of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.⁵ (italics are author's)

This candid statement makes clear that Lewontin's commitment to materialism is prior to what science has revealed about nature. It comes from a philosophical view regarding the nature of reality itself. It is difficult to argue with one so committed to his principles that he is willing to reject common sense. The difficulty is compounded by modern authors on evolution, such as Stephen J. Gould, Richard Dawkins, and Stephen Hawking, so that it is even difficult to know where to begin. For Lewontin "this struggle for possession of public

⁴ Richard Lewontin is the Alexander Agassiz Professor of Zoology and Professor of Biology at Harvard University specializing in population genetics and evolution.

⁵ R. Lewontin. *Billions and Billions of Demons*. (The New York Review of Books. January 9, 1997), p. 7.

consciousness between material and mystical explanations of the world is one aspect of the history of the confrontation between elite culture and popular culture.”⁶ The elitists, of course, know that they are right and the rest of us should be willing to accept it. As Lewontin says,

... given the immense extent, inherent complexity, and counterintuitive nature of scientific knowledge, it is impossible for anyone, including non-specialist scientists, to retrace the intellectual paths that lead to scientific conclusions about nature. In the end we must trust the expert and they, in turn, exploit their authority as experts and their rhetorical skills to secure our attention and our belief in things that we do not really understand.⁷

It is my purpose, nevertheless, in this paper to address some questions that arise from common sense, not only about the evolution of the living and the evolution of the cosmos, but about change in general. These questions were asked by the first philosophers, all of whom recognized that becoming is prominent in the world we experience. All natural things are subject to change in some way. In trying to understand change, all of the pre-Socratic philosophers asked the same question: If beings come to be, what do they come to be from? It seemed to them that there are only two possibilities; being either comes from being or from non-being. There is, however, a related question: given that things come to be, they must be *able to be* something before they actually *are*, so that *potency* is clearly prior to *act*. Is it always and in every way prior? Evolutionists tend, at least implicitly, to hold that potency is absolutely prior to act, for evolution is a process that generally goes from the simple to the complex, or from lower to higher forms. Hence the simpler or lower must be

⁶ Ibid., p. 8.

⁷ Ibid., p. 9.

able to become the more complex or higher, and they exist before them; therefore, potency is prior to act.

Likewise, with regard to the first question, if something new comes into existence, what does it come from? Insofar as a species that did not exist comes into existence, speciation seems to involve a coming to be from nothing—in some sense, from non-being a species comes to be. (This notion is taken to the extreme regarding the evolution of the cosmos when Hawking flirts with the idea that the whole cosmos could have come to be from nothing.)

Let us begin our examination by seeing how the problem of change came to the first philosophers. One of the things that astounded me most in my first acquaintance with the *Physics* of Aristotle is how similar the principles arrived at by the pre-Socratics are to those of modern scientists. The reason for this is that the ancients and the moderns are both looking at what is common to all natural things, i.e., they are all subject to *becoming* or change. Both philosophers and scientists think they will have reached their goal if they can explain how things come to be. Moderns sometimes put it this way: the goal of physics is to have sufficient knowledge of the forces and laws of nature so that, given the present location of particles in the universe, one can say where they were in the past and will be in the future. Quantum theory states the same with qualification: “Given the state of a system at some time, the laws of nature determine the probabilities of various futures and pasts rather than determining the future and past with certainty.”⁸ Somehow knowing where the particles are and how they got there will explain everything else. This is not essentially different from the views of Empedocles or Democritus except that we now have a more determinate understanding of the nature of the particles and of laws and forces in nature.

Aristotle tells us that:

⁸ *Grand Design*, p. 72.

those who originally and first philosophized about nature focused on the material principle . . . on what it is and of what sort it is, and how the whole comes to be from it; and they also focused on some mover, such as strife or friendship or intelligence or chance, supposing that such material existed with some nature out of necessity, e.g., that fire is hot and earth is cold, the former being light and the latter heavy. For in this way they generated the cosmos. (*Parts of Animals*, 640b5)

Perhaps in considering their position, it would be well to begin with the becoming which is more known to us. Obviously our experience of the coming-to-be of artifacts is better known to us than the coming-to-be of natural things because we cause them. What is common in the making of artifacts is that the artist takes appropriate material, shapes it, and arranges it so that it suits his purpose. So we know by experience that there are at least two principles of coming-to-be, the material (matter) and the artist (agent). Given, then, the apparent similitude between the comings-to-be in art and nature, one might expect that the first physicists would look for the same causes in natural things. But though the most obvious cause is the matter; the agency by which natural coming-to-be takes place is much less obvious. It is not surprising, then, that they first devoted their attention to matter. When faced with the question, therefore, whether being comes from being or from non-being, they were thinking of *that from which* as the material cause. All agreed that non-being as such cannot be a material cause of being; you can't make something out of nothing. Unlike Hawking and Mlodinow, the pre-Socratics let common sense rule here.

However, a difficulty arose when they considered what appeared to be the only other alternative, that being comes from being. Being already is. How can it come to be? Furthermore, they saw that if anything is now, something had to be always. Hence all posited the eternal nature of the material element

or elements. For example, Empedocles posited earth, air, fire, and water as the elements out of which all things are made. These have no beginning and no end. Furthermore, because they are eternal they must be indestructible. So anything composed out of the elements must be simply a mixture or arrangement of these elements, which remain unchanged in composites. For this reason all the pre-Socratics denied substantial change.

If, however, there is no substantial change, living things only *appear* to be individual substances; they are really just mixtures of the elements. Hence, as Empedocles says,

There is no birth of any mortal thing, nor end in destructive death, but there is only a mixing and exchange of what has been mixed. "Birth", however, is a name given to these by men . . . when these [the elements] have been mixed in any way suited to men. . . . They do not name things rightly. . . .

It follows, therefore, that there will be no growth or decrease in any strict sense of the terms, because they belong properly to living things. Crystals are said to grow, but this is a diminished sense of the term. What is getting larger is not really the same individual but only a collection of substances. On the other hand, when an animal grows it is a single substance that increases in size.

What about qualitative change? Can there be a change in color, or temperature, or an alteration of any sort? Following the same principle, that being cannot come from being or from non-being, the pre-Socratics denied that things can change quality; there is only an appearance of change. Some simply denied the existence of qualities, such as Democritus, who maintained that the appearance of quality comes from the arrangement or shape of atoms. The atoms themselves do not have any qualities except shape. Others, such as Empedocles, thought the elements had qualities. For example, fire

is hot and water is cold, but fire does not become cold nor water hot. If water appears hot it is because it has fire mixed with it. Likewise for anything that appears to change quality, elements with those qualities must be mixing in to make the appearance of a change.

Most of the pre-Socratics, therefore, thought the only possible kind of change is locomotion; all other kinds of change are mere appearances, reducible to a change of place. This kind of change seems allowable because it has the least sense of becoming. To be here rather than there, or to be moving from here to there does not seem to be a real difference of being and, therefore, not a becoming. Parmenides, however, saw that to be consistent with the principle, as he understood it, any change is impossible. Consider the following fragments:

Look steadily with thy mind upon things afar off as if they were near at hand. Thou canst not cut off being from its hold upon being, neither scattering everywhere in order, nor crowding together.

Come now, and I will tell thee—and do thou hearken and carry my word away—the only ways of enquiry that can be thought of: the one way, that *it is* and cannot not-be, is the path of conviction, for it accompanies truth; the other that *it is not* and that it needs must not-be, that I tell thee is a path altogether unthinkable. For thou couldst not know non-being (that is impossible) nor utter it.

That which can be spoken and thought is necessarily being, for it is possible for it, but not for nothing, to be; that is what I bid thee ponder.

The way only is left to be spoken of, *that it is*. And on this way are full many signs that being is ungenerated and imperishable. For it is complete, immovable, and without end. It never *was*, nor *will it be*, since it is now, all at once, one and continuous. For what birth wilt thou seek for it, and how and from what did it grow? I shall not allow thee to say or think “from non-being.”

Are the pre-Socratics right? It seems that in a general way many modern scientists would agree with them. Scientists tend to reduce all change to locomotion and deny the substantial unity of everything but the elements. How can they deny things which seem so obvious? Granted that substantial change may not be perfectly evident in the inanimate, it certainly seems evident in living things. It is obvious that an animal is one substance and not simply a mixture of elements, that plants and animals grow and apples change color. Why would anyone deny such things? They must think that they know something else more certainly.

Parmenides distinguishes the Way of Truth from the Way of Opinion. He speaks of a goddess that greeted him kindly and said,

It is no ill chance, but right and justice that have sent thee forth to travel on this way. Far indeed does it lie from the beaten track of men! Meet it is that thou shouldst learn all things, as well the unshaken heart of well-rounded truth, as the opinions of mortal, in which there is no true belief at all. Yet none the less shalt thou learn these things also—how passing right through all things one should judge the things that *seem to be*. . . .

Does this sound like Lewontin's distinction between the elite culture and the popular culture? Apparently, once one has arrived at god-like knowledge of the principles of things he must be prepared to hold on to them *in spite* of the fact that they lead to conclusions that are contrary to our most ordinary and obvious experience of things. Shouldn't science or natural philosophy explain things as we experience them rather than tell us that things aren't as they appear? What is left to explain? If philosophers of nature (I include scientists under this name) deny things such as: substantial change, the difference between living and nonliving, the essential difference between biological species, the difference between man and

animal, etc., they certainly simplify their task, but they have not accomplished what they originally intended to do, i.e., give an account of the way things are. Rather, they give an account of the way things ought to be if they are to conform to their philosophical principles. Isn't this like a poker dealer changing the rules of the game once he has dealt himself a hand?

On the other hand, consider how Aristotle solves the problem of becoming. He begins by assuming that the perceived types of change, substantial, quantitative, qualitative, locomotion, are all real and distinct from each other. And furthermore, by examining all these cases he sees common principles.

... one can grasp from all the cases of coming to be, if he looks into the matter as we say, that there must always be something underlying the coming to be. And this is not one in species even if it be one in number. For by "in species" and "in account" I mean the same thing. For it is not the same to be man and to be musical.⁹

Everything that comes to be is composed of that which underlies the change and of one of two opposites. In his example of the unmusical man becoming a musical man, man underlies the change and musical is opposed to the unmusical. The underlying, man, is one in number, that is, is one individual, but is two in notion. To be man is not the same as to be unmusical, but both are found in one subject. Musical is a form or actuality that comes to be in man at the term of becoming. Hence there are three principles of all change, *that which becomes* or the *underlying*, and two principles which are opposed to each other as form and privation. These principles are found analogously in all changes.

⁹ Aristotle. *Physics* bk. I, ch. 7, 190a12-17.

After laying out these principles Aristotle claims that the problem of the ancients can be solved in *no other way*. He reiterates the problem:

... they say that nothing among beings comes to be or is destroyed because it is necessary that the thing coming to be either comes to be from being or from non-being, but it is impossible that it be from either of these. For being does not come to be (for it already is) and nothing can come to be from non-being, for something must be underlying.¹⁰

The crucial question, then, is what underlies? Aristotle shows that we must consider this question carefully, for the pre-Socratics overlooked it. He points out that to say that being comes to be from non-being can be taken in two ways, either *per se* or *per accidens*. To make this clear he gives an example from agent causality where the distinction is more evident. We might say that a doctor builds a house. However, he does not build the house as a doctor, but as a house-builder; he cures patients insofar as he is a doctor. So when we say a doctor builds a house, this is said *per accidens*; the doctor builds the house only insofar as the house-builder happens to be a doctor. Failure to make this distinction is what led the ancients away from their experience of nature, and hence to deny common experience.

In applying this distinction to material cause, Aristotle says that, "we ourselves say that nothing comes to be from non-being simply; nonetheless, somehow there is coming to be from non-being accidentally. For something comes to be from its privation, which is in virtue of itself non-being, not being present in what comes to be."¹¹ In other words, being comes from non-being insofar as privation is attached to what underlies the change, and not from non-being as such. So, being

¹⁰ *Ibid.*, 191a23-27.

¹¹ *Ibid.*, 191b15.

comes from non-being, but only in a qualified way. Yet this qualification is necessary if there is to be change, for anything that changes must lack what it becomes.

One might think, as the pre-Socratics did, that since being does not come from non-being simply, it must come from being simply, but neither is this the case. Aristotle argues that being also come from being accidentally. He gives the example of a substantial change, which is coming-to-be simply. If an animal comes to be from an animal and some animal from some animal, what comes to be only comes to be accidentally from animal, because animal already exists. Animal does not come to be from animal as such. This is more clear if we take a particular animal coming to be from a particular animal. Aristotle gives the example of a horse becoming a dog. I presume that Aristotle is not talking about evolution here, rather I take it that the ancient Greeks did the same thing then with their dead horses as we do with ours; we feed them to dogs. It is clear in such a case that it is not insofar as it is a horse that it becomes a dog. It has to cease being a horse in order to become a dog. So being a horse is accidental to what becomes a dog. Therefore, being a horse is accidental to the becoming.

But if being comes from both being and non-being accidentally, what does it come from *per se* or simply? The answer, according to Aristotle, lies in distinguishing what is according to potency from what is according to act. Aristotle clarifies this by showing that the underlying and the form are the *per se* principles of change, whereas privation is a *per accidens* principle. He says,

It is apparent that if there are causes and principles of things which are by nature, from which things they first are and come to be, not accidentally, but what each is according to its substance, all things come to be from the underlying and form. For the musical man is in some way composed from

man and musical. For you resolve the account into accounts of these.¹²

So, if we are looking for the *per se* principle from which a thing comes to be, it must be *the underlying*. The *underlying* is the only *per se* principle that can be *that from which* the change takes place, the form is what is acquired at the term of the change; it is what *the underlying* becomes. Aristotle shows that ignorance of the nature of *the underlying* caused his predecessors finally to deny the reality of change: "Others touched upon this nature, then, but not sufficiently. For, first, they agree, insofar as they think that Parmenides speaks rightly; that for something to come to be simply is to come to be from non-being. Further, it appeared to them that if a thing is one in number, it is also one in potency."¹³ But we must, therefore, distinguish between privation and matter; even though they are one in subject, matter is non-being accidentally while privation is non-being in virtue of itself.

Speaking of first or primary matter, he says that it is close to substance, and somehow *is* substance; privation, on the other hand, is substance in no way. What, then, characterizes primary matter? "[I]t is not one or being as a 'this something' is, but rather it is formless before it receives form."¹⁴ So the question is how to distinguish the formless from privation. The solution lies in saying that primary matter is something between being *per se* and non-being *per se*. How can that be? No wonder philosophers fail to see it! Primary matter is what underlies substantial change; it is what endures when one substance becomes another substance. In other words, it is what becomes a substance; that substance which is the term of the change. Therefore, it can not be a substance itself.

¹² Ibid., 190b17-20.

¹³ Ibid., 191b35-192a1.

¹⁴ Ibid., 191a10.

Hence, Aristotle says, "the enduring is a joint cause with the form of things which come to be, like a mother."¹⁵ As the female must receive the male in order to be a mother, so primary matter must receive a form in order to be a substance. Primary matter, therefore, is a principle of substance without itself being a substance. It never exists without form.

Describing primary matter as formless, however, does not distinguish it from privation. How can we be more precise about the difference between primary matter and privation? Aristotle points out that the contrariety between form and privation can be seen as an opposition between the good or desirable and its opposite. Change seems to involve inclination, desire or appetite for the good. But privation can not be what desires because it would desire its own destruction; neither can the form desire itself because it is not lacking. Therefore, what desires is the material. So although primary matter is formless, its potency for form includes or involves an inclination or disposition to receive form; this distinguishes it from privation or non-being. Matter desires form not as something destructive of itself but as something perfective, (as the female desires the male in order to become a mother or as the base desires the noble in order to become better).

The distinction between primary matter and privation is very subtle. Primary matter is as close to non-being as being can be. Because Plato saw the distinction between matter and form he came close to seeing the nature of matter, yet he did not adequately distinguish it from privation. If Hawking can be used as an example, we have the same problem. When he suggests that the world could have come to be from nothing, perhaps he does may not mean non-being as such, but some kind of being in potency.

Aristotle, therefore, solves the confusion about becoming by pointing out the principles involved in any change. If one grants that there is change but denies that there is something underlying, he must say that being comes from non-being. On

the other hand, if one grants something underlying a change, then with regard to that change the underlying (matter) is neither a being nor a non-being strictly speaking, but a being in potency. Without this understanding of the nature of the underlying and its composition with form and privation, one is forced either to deny that there is change or to affirm that being comes from non-being, both of which are manifestly false. Aristotle was correct in saying that the problem of becoming is solved in no other way. His solution is not just a theory which saves the appearance; it is the only possible solution.

Absolute Priority of Act to Potency

It is clear that in any particular case of coming-to-be that which is in potency is prior to what comes to be. The man who is able to be musical is prior in time to the man that becomes musical. To put it another way, if the underlying is related to the form it receives at the term of the change as potency to act, then in any particular coming-to-be, potency is prior in time to act. Is it true absolutely, however, that potency is prior to act? This is a critical question regarding coming-to-be in general, but it is of particular interest in relation to the question of evolution. The question is often put enigmatically: which came first, the chicken or the egg? Thomas Huxley and Alfred Russell Wallace ask whether life is prior to organization or organization is prior to life. One might also ask whether mind is prior to matter or matter prior to mind. All of these are particular ways of asking whether potency is prior to act or vice versa. The answer to this question will determine whether matter and the laws by which it acts are sufficient causes of everything or whether another kind of cause is necessary.

Evolutionists tend to think that matter is all that is necessary. Of course, when they speak of matter they do not have Aristotle's notion of primary matter in mind. Nevertheless,

¹⁵ Ibid., 192a12.

they think that whatever was first in the order of material cause had the potency to become everything else. And there was an order to the course of evolution from the simple to the more complex. So whatever was first had the potency to become more complex, i.e., to become any of the elements and compounds. Furthermore, it had the potency to be living, sensing, self-mobile, and finally, rational.

One might argue that because in every particular case of coming-to-be what is in potency is prior to being in act that it must be true absolutely. One might also argue from the nature of matter itself that since it is what becomes, it must exist prior to any becoming. Furthermore, if the whole cosmos can be considered as one individual that came to be, then potency is prior to act absolutely.

On the other hand, Aristotle argues that actuality is prior to potency in three senses, it is prior: 1) in notion, 2) in time, and 3) in substance. Let us briefly consider some of his arguments.

Regarding the first, Aristotle says,

It is evident that actuality is prior to potency in notion; for what is potential in a primary sense is potential because it is possible for it to become actual. I mean, for example, that it is what is capable of building that can build, and what is capable of theorizing that can theorize, and what is capable of being seen that can be seen. And the same reasoning also applies in the case of other things; and therefore it is necessary that the conception or knowledge of the one should precede that of the other.¹⁶

In other words, potency is defined or specified by the act to which it is ordered. "A builder is defined as one who can build, and a theorist as one who can theorize, and the visible as what can be seen . . ." (St. Thomas, *Commentary on Meta-*

¹⁶ Aristotle. *Metaphysics*, bk. 9, ch. 8, 1049b12-17.

physics of Aristotle, bk. 9, lect. 7, 1846). Therefore, actuality is prior to potency in notion.

Secondly, we said above that in any particular case where something comes to be, potency is prior to act in time. However, Aristotle points out a way in which actuality is prior to potency in time.

. . . actuality is prior to potency in time in the sense that an actuality which is specifically but not numerically the same as a potency is prior to it. I mean that the matter and the seed and the thing capable of seeing, which are a man and grain and seeing potentially but not yet actually, are prior in time to this man and to grain and to the act of seeing which exist actually. But prior to these are other actually existing things from which these have been produced; for what is actual is always produced from something potential by means of something which is actual. Thus man comes from man and musician from musician; for there is always some primary mover, and a mover is already something actual.¹⁷

Hence insofar as agents are necessary to bring potential beings into act, actuality is prior to potency in time.

With regard to the third, Aristotle divides the arguments that actuality is prior to potency in substance into two parts. He first considers things which are changeable, i.e., things which are sometimes in potency and sometimes in act, and then considers eternal beings which are always in act.

He begins by saying, "But actuality is also prior in substance; (1) because those things which are subsequent in generation are prior in form and substance; for example, man is prior to boy, and human being to seed for the one already has its form, but the other has not."¹⁸ In commenting on this passage St. Thomas points out that to be prior in substance is to be prior in perfection, and in this argument Aristotle

¹⁷ *Ibid.*, 1049b17-29.

¹⁸ *Ibid.*, 1050a4-7.

is arguing that what is in act is prior in form to what is in potency, because the process of generation always proceeds from what is imperfect to what is perfect. The chicken comes to be from the egg and is more perfect than the egg. The mature chicken has the perfection of the form of its species; the embryo in the egg does not. Note that this argument is not claiming at this point that actuality is prior in time but only in perfection.

Aristotle presents another argument involving the end of activity:

. . . because everything which comes to be moves toward a principle, namely, its goal. For that for the sake of which a thing comes to be is a principle; and generation is for the sake of this goal. And actuality is the goal, and it is for the sake of this that potency is acquired. For animals do not see in order that they may have the power of sight, but they have the power of sight in order that they may see.¹⁹

So in this sense potency exists for the sake of actuality; actuality is therefore a principle of potency as a final cause.

Aristotle concludes this part of the argument by putting together what he said about priority in time with priority in substance: "It is evident, then, that substance or form is actuality. Hence it is clear according to this argument that actuality is prior to potency in substance. And, as we have said, one actuality is always prior to another in time right back to that actuality which is always the first principle of motion."²⁰ Commenting on this text St. Thomas says that the priority of substance or form is also prior in time "because the actuality whereby the generator or mover or maker is actual must always exist before the other actuality by which the thing generated or produced becomes actual after being potential. And this goes on until one comes to the first mover,

which is actuality alone; for whatever passes from potency to actuality requires a prior actuality in the agent, which brings it to actuality" (1866). This not only answers the question about the priority of the chicken over the egg, it argues that the actuality of the agent must go back to a first agent which is pure actuality.

Aristotle begins the next part of the argument with the following: "But actuality is prior to potency in a more fundamental sense; for eternal things are prior in substance to corruptible ones, and nothing eternal is potential."²¹ The reason he gives for this is that every potency is at the same time a potency for opposites. In other words, whatever has a potency to be also has a potency not to be; therefore, such a being may either be or not be, speaking here of being in the absolute sense, as substance. Thus everything which has being potentially is corruptible. Conversely, nothing that is incorruptible in an absolute sense is potential in an absolute sense, and none of those things which exist necessarily are potential. "In fact," he says, "such things are the first; for if they did not exist, nothing would exist."²²

Now it seems that the pre-Socratic philosophers intuitively knew this because they all posited first principles which they considered to be necessary, eternal, and unchangeable with regard to substance. The question is whether material principles can have such characteristics. We showed earlier that all material substances, including the elements, are composites of an underlying (primary matter) and form. They are composites of potency and act and are, therefore, corruptible. In fact the corruptibility of all other material beings is due to the fact that the elements out of which they are composed are corruptible.

The ancient philosophers were in part confused about the

¹⁹ *Ibid.*, 1050a7-11.

²⁰ *Ibid.*, 1050b2-6.

²¹ *Ibid.*, 1050b6-8.

²² *Ibid.*, 1050b18-19.

first principle because they thought the world and its parts were eternal. Modern philosophers have an advantage over the ancients in this regard; we have evidence that the cosmos had a beginning in time. This gives us the opportunity to consider more carefully the nature of the necessary and eternal first principle. The elements cannot be first because they came to be. The first principle cannot be primary matter because as such it is formless and pure potency; it only exists with form, never alone. We must look for this principle at the other end of the spectrum, in something that is pure actuality. We have argued that act is prior to potency in time and substance. There must, then, be a first in the order of actuality that has no admixture of potency.

What would be the nature of a being in which there is no admixture of potency and act? As we have seen, all material beings are composed of matter and form; they are therefore a mixture of potency and act. So, whatever is pure act can not be a material being; it must be a subsisting form. It will be difficult for materialists to grant this point, but this is because they have not paid close enough attention to the nature of change; as a consequence, they have not noticed the difference between matter and form. It is the form that gives the composite its actuality because it gives actuality to what is underlying and receptive. St. Thomas puts it this way:

The relation of form to matter . . . is found to be such that the form gives existence to matter, and therefore it is impossible that matter exist without some form; nevertheless it is not impossible that some form exist without matter, for form insofar as it is a form does not depend on matter. But if there are found some forms that cannot exist but in matter, this befalls them according as they are distant from the first principle that is the first and pure act. Whence those forms that are closest to the first principle are forms subsisting through themselves without matter, for form does not, according to the whole genus, need matter . . . therefore

it is not necessary that the essences or whatnesses of these substances be other than the form itself. (*De Ente et Essentia*, ch. IV, 3)

These subsistent forms must be intelligences. St. Thomas gives a concise argument for this in the *Summa Theologiae*, q. 14, art. 1: A knower is distinguished from a non-knower because a knower is not only endowed with his own form but is able to possess the species or forms of other things as well. Consequently, his nature is not contracted and limited, as is the case with non-knowers. Since the contraction of form is through matter, the more immaterial a thing the more it has the mode of being a knower. Plants do not know at all. Animals in some way overcome the limitations of matter by being able to receive individual sensible forms of other things through their sense organs, but the intellect of man, which is not a power of any organ, is able to know the natures of things. So, even though the human soul is the form of a body, it is able to know the natures of things because of the immateriality of the intellectual power. It is because of this that the soul is separable from the body at death. Hence, if there are forms which subsist without matter, they will be more perfect knowers because they are more immaterial than the human soul.

Granted then that there are subsistent forms, are they all equally actual? The above text implies that there is a gradation of forms, from those closest to the first principle to forms that exist with matter. How do subsistent forms differ from the first principle? Speaking of these forms St. Thomas says that

. . . substances of this sort, although they are only forms without matter, nevertheless do not have every mode of simplicity in them, nor are they pure act, but they have an admixture of potency; and this is evident as follows: For whatever is not of the understanding of the essence or whatness comes to it from outside and makes a composition with the essence, since no essence can be understood

without those things that are parts of the essence. Every essence or whatness, however, can be understood without this, that anything be understood of its existence; for I can understand what a man or a phoenix is and, nevertheless, be ignorant whether it has existence in the nature of things; therefore it is evident that the existence is other than the essence or whatness. Unless perhaps if there is some thing the whatness of which is itself its own existence, and this thing cannot exist unless it is one and first.²³

St. Thomas then argues the following:

And therefore it is necessary that every such thing whose existence is other than its nature would have existence from another. And because everything that is through another is reduced to that which is through itself as to a first cause, it must be that there is some thing that is the cause of existing for all things in that it itself is existing only; otherwise one would go into infinity in the causes, since everything that is not existence only has a cause of its existence, as has been said. It is evident, therefore, that an intelligence is a form and existence, and that it has existence from the first being, which is existence only, and this is the first cause, which is God.²⁴

So Parmenides was correct in one way: If the being he was speaking about is the maximum being whose very essence is existence itself, this being must be the fullness of being and entirely immobile. It would have no privation, nor any potency to actuality. Rather, it would have complete possession of all perfection and would, therefore, have no need or ability to change. This being is the actuality that is not only prior to all potency, but also to all other being and becoming. Parmenides, however, obviously erred in denying the distinction between this first being and other beings.

²³ *De Ente et Essentia*, ch. IV, 5.

²⁴ *Ibid.*, ch. IV, 6.

Creation: Being from Non-being

This brings us to another way in which being comes from non-being. All things depend on the first being for existence, even matter itself. Hence the first being must bring other beings into existence out of nothing. Unlike natural agents, the first being does not need pre-existent matter in order to make something. In any kind of change, whether brought about by art or by nature, privation is a *per accidens* principle because it is in the notion of the underlying to lack what it becomes. In God's act of creation, privation or non-being is not even a *per accidens* principle because nothing underlies. Hence, when we say that creation is the coming-to-be of something from nothing, we are saying that there is no material cause. We are not, however, saying that there is no cause at all. There is an agent that acts in virtue of His own perfection; He not only possesses the act of existence in the maximal sense, existence is what He is.

Evolution and Creation

The theory of evolution raises questions, on one hand, about how far God's creative action extends and, on the other, what can be accounted for by the powers of natural things. The popular school of evolutionists, beginning with Darwin, certainly thinks that there is an opposition between evolution and creation. In other words, things came to be either by evolution or creation: they are contrary hypotheses. Darwin is explicit about this, ". . . I shall not confine myself to the mere question of dispersal; but shall consider some other facts, which bear on the truth of the two theories of independent creation and descent with modification."²⁵

²⁵ Charles Darwin, *Origin of Species*. 1st ed. (New York: Bantam Books, 1999) pp. 398-99.

To be fair, Darwin, in the conclusion of his first edition of the *Origin*, explicitly admits that “the first creature, the progenitor of innumerable extinct and living descendents, was created.” (He deletes this text from the sixth edition.) We also grant that Darwin claims to be arguing against a limited notion of creation, what he calls “special” creation. In fact, his aim in this work is to “banish the belief of continued creation of new organic beings, or of any great and sudden modifications in their structure.”²⁶ We may gather from this text and others that he thinks that if there was an original act of creation, it was all that was necessary. There were not subsequent acts of creating over time and in different geographical locations.

For Darwin, the argument *against* special creation forms a large portion of the argument *for* evolution. The phrase “how inexplicable are these facts on the ordinary view of creation” or ones to that effect are used over twenty-five times in the *Origin*. Ernst Mayr admits that this is so not only true of Darwin but of evolutionists generally: “The greatest triumph of Darwinism is that the theory of natural selection, for 80 years after 1859 a minority opinion, is now the prevailing explanation of evolutionary change. It must be admitted, however, that it has achieved this position less by the amount of irrefutable proofs it has been able to present than by the default of all the opposing theories.”²⁷

Darwin raises many particular difficulties regarding why a creator would make things the way they are. He says one difficulty has been admitted by almost every experienced naturalist and well expressed by Milne Edwards, “nature is prodigal in variety, but niggardly in innovation.”²⁸ He says,

²⁶ *Ibid.*, p. 74.

²⁷ Cited in Cornelius Hunter. *Darwin's God: Evolution and the Problem of Evil*. (Grand Rapids, Mich., Brazos Press, 2001), p. 64.

²⁸ Darwin. *Origin of Species and Descent of Man*. 6th ed. (Toronto, The Modern Library), p. 143.

We can see why throughout nature the same general end is gained by an almost infinite diversity of means, for every peculiarity when once acquired is long inherited, and structures already modified in many different ways have to be adapted for the same general purpose. We can, in short, see why nature is prodigal in variety, though niggardly in innovation. But why this should be a law of nature if each species has been independently created no man can explain.²⁹

Apparently, God would be more innovative!

Darwin mentions other difficulties, such as the apparent lack of perfection in organisms not only in their structure but also in their behavior; some of them are downright evil. Why would God create things this way? Note, however, that these difficulties are not just difficulties with “special creation,” they are difficulties regarding the wisdom and over-all providence of God. For example,

As natural selection acts by competition, it adapts the inhabitants of each country only in relation to the degree of perfection of their associates; so that we need feel no surprise at the inhabitants of any one country, although on the ordinary view supposed to have been specially created and adapted for that country, being beaten and supplanted by the naturalized productions from another land. Nor ought we to marvel if all the contrivances in nature be not, as far as we can judge, absolutely perfect; and if some of them be abhorrent, to our ideas of fitness. We need not marvel at the sting of the bee causing the bee's own death; at drones being produced in such vast numbers for one single act, and being then slaughtered by their sterile sisters; at the astonishing waste of pollen by our fir trees; at the instinctive hatred of the queen bee for her own fertile daughters; at ichneumonidae feeding within the live bodies of caterpillars; and at other such cases. The wonder indeed is, on the theory

²⁹ *Ibid.*, 468.

of natural selection, that more cases of the want of absolute perfection have not been observed.³⁰

Darwin is at least trying to distance the creative power and providence of God from the details of nature and from the natural evil found therein.

Modern Darwinists have similar problems. Sir Gavin de Beer concludes that unless “one is prepared to believe in successive acts of creation and successive catastrophes resulting in their obliteration, there is a strong presumptive indication that evolution has occurred.”³¹ Douglas Futuyma, professor of Biology and Evolution at the University of Michigan, says that the “sequential appearance of different groups at different times, the more advanced appearing in general later than the more primitive, is predicted by evolutionary theory. It cannot be reconciled with creationism.”³² Stephen J. Gould argues that “odd arrangements and funny solutions are the proof of evolution—paths that a sensible God would never tread but that a natural process, constrained by history, follows perforce. No one understood better than Darwin. Ernst Mayr has shown how Darwin, in defending evolution, consistently turned to organic parts and geographic distributions that make the least sense.”³³ Gould again says, “what alternative can we suggest to evolution? Would God—for some inscrutable reason, or merely to test our faith—create five species, one after the other . . . , to mimic a continuous trend of evolutionary change?”³⁴

Examples could be cited *ad infinitum* to show that the argument for evolution is at least in part an argument against creation, and it is more than an argument against special cre-

³⁰ *Origin of Species* (Bantam), pp. 385–86.

³¹ Cited in *Darwin's God*, p. 82.

³² *Ibid.*, p. 82.

³³ *Ibid.*, p. 48.

³⁴ *Ibid.*, p. 82.

ation; it is an argument against God as the cause of the way things are.

From what we have shown about the nature of the first being or pure act we can see that this view of evolution is impossible. We have shown that the first being is the only being whose essence is His existence; all other beings must receive their existence from Him. Further, because creatures are not the cause of their own existence, they must be continually sustained in existence by God. Moreover, since God is wholly immaterial, he acts by intellect and will. He therefore knows all things to which his causality extends and wills all things for some purpose. His causality extends not only to the existence of created beings but also to their operations because these too are actualities which depend on the first actuality. He governs the activity of every creature and moves it to the end for which He created it by implanting a nature in it as an intrinsic principle of its motions. If things come to be by evolution God must be the cause of the being, the movement, and the direction of what evolves. Evolution would be a mode of His continual act of creation.

Evolution and creation, therefore, cannot be contradictory hypotheses. There can be creation without evolution, but not evolution without creation; there must be some actual creature before it can evolve. Furthermore, if God sustains all things in existence, is the first mover of all their activities, and directs all their movements to an end, then all things ultimately depend as much on His creative power as something He creates directly from nothing. So, in this sense, even things generated by natural causes can be said to be created. It cannot be, as the Darwinists say, that there is no purpose in nature. It cannot be, as Kenneth Miller says, that the Designer “just can’t get it right the first time. Nothing he designs is able to make it over the long term.”³⁵ The fossils of extinct species

³⁵ *Ibid.*, p. 82.

are not a record of the Designer's failures. What the fossil record tells us will not be discovered by those who think it is simply a product of random variations that get selected and then destroyed by the blind forces of nature.

Now granted that Darwinian theory cannot be an argument against creation as such, is it an argument against special creation? We know by reason that the human soul, since its rational power is not the act of a bodily part, can not be passed from parent to offspring by the act of generation. Each soul must be specially created every time a human being is generated. This is not true in the generation of other animals. No biologist, however, is able to observe this special creation; we must reason to this truth from the nature of the human intellect.

Is there reason to think that there are other special acts of creation? Since the souls of other living things are actualities wholly in matter they can be passed from parent to offspring in the act of generation. To generate another like itself is the most perfect act a non-rational creature can perform. However, when a horse generates a horse, it does not generate what it is to be a horse; it generates an individual with the same nature by passing on what it has received. Where do the forms of the species of material beings come from? They cannot come from the first material principle. Forms come from an agent that pre-possesses the actuality it gives to others. Other than the first being, are there any other agents that possess the substantial forms of lower creatures?

As far as I know no one has observed a new species come into existence. What would the generation of new species look like? Would it not appear something like spontaneous generation, a process that until the last 150 years was thought to be a common occurrence? Aristotle thought that many lower creatures were only generated spontaneously from decaying matter, i.e., they were not produced by sexual or asexual means. No one thinks this now. All living organisms are

known to come to be by generation of like from like. But evolution requires spontaneous generation, especially in the case where the higher is generated from the lower. It is reasonable to think that such events have not been observed because of their rarity. Nevertheless, what would be the account of spontaneous generation? In his *Commentary on the Metaphysics of Aristotle* (bk. VII, lect. 6. 1403), St. Thomas has this to say:

Nothing prevents a process of generation from being a proper process when referred to one cause, and yet be an accident when referred to another . . . if the process of generation of an animal generated from decay is referred to the particular causes acting here below, it will be found to be accidental and a matter for chance; for heat, which causes decay, is not inclined by nature to have as its goal the generation of this or that particular animal which results from decay, as the power in the seed has as its goal the generation of something of a particular type. But it is referred to the power of the heavens, which is the universal power regulating generation and corruption in these lower bodies, it is not accidental but is directly aimed at it, because its goal is that all forms existing potentially in matter should be brought to actuality.

One can infer from this text that if an animal generates an individual of another species, it would be an accident as far as its causality is concerned. For it is inclined by its nature to produce individuals of its own kind. Therefore, the *per se* cause³⁶ of the generation of a new species must be attributed to a universal cause that regulates generation and corruption and aims directly at creating the new species. The sun is no longer considered such a cause, but some kind of universal cause is necessary to avoid the absurdity of something coming from nothing, being from non-being.

³⁶ By "per se cause" we mean a cause that intends, either by its nature or by intellect, to bring about the effect. A horse by its nature tends to produce offspring that are horses.

An Alternative Theory of Evolution

Why in the sixth edition of the *Origin of Species* did Darwin retract his statement that the first living creature was created? Was he afraid to let a Divine foot in the door? It is worth noting that the co-founder of the theory of evolution, Alfred Russell Wallace, wrote a large volume called *The World of Life: A Manifestation of creative power, directive mind and ultimate purpose*. In this book, published in 1910, he summarizes a half century of thought and work on the Darwinian theory of evolution. He says in the Preface that the most prominent feature of his book is that he enters into a "critical examination of those underlying, fundamental, problems which Darwin purposely excluded from his work as being beyond the scope of his enquiry. Such are the nature and causes of Life itself, and more especially of its most fundamental powers—growth and reproduction." He goes on to say,

I first endeavor to show . . . by a careful consideration of the structure of the bird's feather; of the marvelous transformations of higher insects; and, more especially highly elaborated wing-scales of the Lepidoptera. . . , the absolute necessity for an organizing and directive Life-Principle in order to account for the very possibility of these complex out-growths, I argue that they necessarily imply first, a Creative Power, which so constituted matter as to render these marvels possible; next, a directive Mind, which is demanded at every step of the process we term growth and often look upon as so simple and natural a process as to require no explanation; and, lastly, an ultimate Purpose, in the very existence of the whole vast life-world in all its long course of evolution throughout the eons of geological time. This Purpose, which alone throws light on many of the mysteries of its mode of evolution, I hold to be the development of Man, the one crowning product of the whole cosmic process of life-development; the only being which can to some extent comprehend nature; which can perceive and trace out her

modes of action; which can appreciate the hidden forces and motions everywhere at work, and can deduce from them all a supreme and overruling mind as their necessary cause.³⁷

This view of evolution is much more in keeping with the principles that we have laid out.³⁸ Why was it ignored by the elite of the scientific community? Wallace undoubtedly had the credentials to speak about evolution. The commitment by modern scientists to materialism and the rejection of formal and final causes must have played a role. Then as now the most prominent proponents of Darwinism were atheists. In his work Wallace argues explicitly against atheistic views of Ernst Haeckel and Thomas Huxley. By making such arguments Wallace no doubt lost his place among the elite.

The result of rejecting Wallace's approach is a theory that flies in the face of common sense. Ernst Mayr complains about the fact that when he explains the Darwinian argument for evolution to educated people, even to other biologists, he is met with skepticism. Common sense tells them that there is something inadequate about a theory that attempts to explain the complexity, hierarchical order, beauty, and intelligence in nature simply by matter, motion, and chance.

Mark Ridley, in his textbook on evolution, raises two difficulties commonly raised against the notion of a creator:

We can accept that an omnipotent, supernatural agent could create well-adapted living things: in that sense the explanation works. However, it has two defects. One is that supernatural explanations for natural phenomena are scientifically

³⁷ Alfred Russell Wallace. *The World of Life: A Manifestation of Creative Power, Directive Mind and Ultimate Purpose*. (New York: Moffat, Yard, & Co., 1910) p. vi-vii.

³⁸ The view that Wallace lays out is not just an addition to Darwinian Theory, but is in fundamental disagreement with it. Darwin says that if it can be shown that one species is for the sake of another, his theory would be destroyed. Insofar as Wallace sees all evolution ordered to the existence and benefit of man, he is disagreeing in principle with Darwin.

useless. The second is that the supernatural Creator is non-explanatory. The problem is to explain the existence of adaptation in the world; but the supernatural Creator already possesses this property. Omnipotent beings are themselves well-designed, adaptively complex entities. The thing we want to explain has been built in the explanation. Positing a God merely invites the question of how such a highly adaptive and well-designed thing could in its turn have come into existence.³⁹

The first difficulty assumes that if one looks for any cause other than matter, one is going beyond nature, or, as Lewontin might say, going to the mystical. Suffice it to say that this is too limited a view of science. Aristotle included agent, formal and final causes in his works on nature; these works can not be considered theological or mystical. Moreover, tracing causes back to ones that are proportioned to the effect is not going to the mystical *even if* it goes to a cause that is outside the order of natural things. One has not arrived at the proper cause until one has reached a cause that fully accounts for the effect.

The second difficulty takes us back to the pre-Socratic position regarding the primacy of the elements and reveals no more sophistication than one finds there. It assumes that the principle of all things is matter and the first principle is the simplest sort of material being. All the higher forms are compositions and complex arrangements of it and come to be by adaptation and natural selection. So the first principle will be pure potency or something close to it, but it will be the cause of everything else. What we call God will be the product of evolution, or, more likely, the product of our own mind. This is even more ridiculous than David of Dinant's position that God is primary matter. We have shown that Pure Act must be prior to pure potency, and that Mind is prior to matter.

³⁹ Cited in *Darwin's God*, p. 90.

Aristotle says in the first chapter of the *Physics* that we must proceed from what is more known and certain to us to what is more knowable by nature. In the study of nature this means that we must start with what is most evident to the senses and then look for the principles and causes. If the principles and causes we find do not sufficiently account for our starting points, we must keep looking until we find an account that does explain what we know certainly. *Our ordinary experience of things is the measure of science.*

Presumably the causes we arrive at by our study will be more knowable by nature, as Aristotle says, i.e., they will be prior in substance to their effects. This will not be true in the order of material cause, however. As one proceeds to what is first in the genus of material cause, one approaches primary matter, which is unknowable in itself. This seems to be borne out by nuclear physics where the subatomic particles and their activities are almost unintelligible. We should not, as Hawking and Mlodinow do, let the uncertainty of what happens at the quantum level make us willing to jettison what we know by ordinary experience. On the other hand, if we want to find principles and causes that are more knowable and intelligible by nature we must look to the orders of agent, formal, and final causes, the causes that are prior in time and in perfection, the causes which are ultimately united in Pure Actuality.