

# Basil, Augustine, and the Doctrine of Creation's Functional Integrity

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*Contemporary scientific theorizing regarding the formative history of the universe (including its multifarious forms of life) presumes that the developmental economy of the physical world is gapless—that is, that material systems lack none of the form-producing capacities needed to actualize, in the course of time, all of the physical structures and biotic forms that have ever appeared. Hence divine acts of special creation in time, although not proscribed, are not incorporated into scientific theories regarding the world's formative history. Some Christian critics of modern science have argued that this approach, by its appearing to transfer the agency of creative action from God to matter itself, constitutes an abandonment of the historic Christian doctrine of creation and an 'apologetic capitulation to philosophical Naturalism. In this paper we will examine this verdict in the light of works by St. Basil and St. Augustine and find it to be contrary to early Christian thought regarding the character of the created world. These patristic writers re-focus our attention on what may be called 'the doctrine of Creation's functional integrity.*



## Searching for the Root Question

Of necessity, modern scientific theorising is performed in a Manner that proceeds from a number of foundational presuppositions regarding both the character of the natural world and the effectiveness of the natural processes, that occur within it. Scientific cosmology, for instance, proceeds on the presumption that the expanding universe of galaxies that we now observe, including the particular forms of matter of which it is composed, is the outcome of a continuous succession of form-producing processes and events—all such dynamic physical processes and events being manifestations of the capacities for action possessed by matter and by other forms of energy. Similarly, most modern biological

theorizing regarding the formative history of life on our planet presumes the possibility of some historical scenario that proceeds from molecules to mankind along a continuous pathway of natural phenomena.

By 'continuous pathway' we here mean an unbroken succession of processes and events not interrupted or blocked by physical, chemical or biological gaps of the sort that would require bridging by 'miraculous' divine interventions<sup>1</sup> or by any other 'special' divine activity, that is, activity in which God chooses to treat what he created in a way different from the way in which he ordinarily treats it,<sup>2</sup> as in the case of miracles, for instance. And by 'natural processes and events' we here simply mean those physical, chemical and biological phenomena that occur in the natural world as an expression of the, capacities, for action and interaction that are an integral part of the very being of matter and material systems.

In the course of discussions regarding how one might fruitfully criticise scientific theorizing from the standpoint of Christian theology, the presupposition apparently at issue here has often been labeled the 'Principle of Uniformity.' Many Christians (especially in North America) question the acceptability, from biblical and theological standpoints, of the concept of uniformity as it might be applied to scientific reconstructions of the Creation's formative history. Have all processes and events relevant to that history occurred in a uniform manner, that is, in conformity to a set of universally applicable and scientifically discernible laws of nature? Or, on the other hand, was it necessary for God to supplement those natural processes and events with extraordinary acts of 'special creation'? Most Christians who favour an evolving creation viewpoint would, I believe, expect the Principle of Uniformity to apply, while those who favour a special creation perspective would argue against the Principle and against the idea that the Creation is in fact gifted with the requisite capacities to accomplish what evolutionary theorizing envisions.

In his work, *Creation and the History of Science*, Christopher B. Kaiser, trained in both astrophysics and systematic theology, articulates the issue in a conceptual vocabulary that I think brings us much closer to the theological heart of the matter, especially as it confronts the Christian world today. In his development of the content of 'the creationist tradition' in Judaeo-Christian thought, Kaiser proposes that, 'The fundamental idea in the creationist tradition is that the entire universe is subject to a single code of law which was established along with the universe at the beginning of time.'<sup>3</sup>

But the essence and import of the issue is more than a matter of mere uniformity, or consistency with pattern alone. In Kaiser's view it is the matter of the relative autonomy of the world to which God has given being,

By the 'relative autonomy' of nature, we mean the self-sufficiency nature possesses by virtue of the fact that God has granted it laws of operation. Like all laws, the laws of nature may come to be viewed as enslaving and inflexible, but, in their original sense, at least, they were viewed as liberating (from chaos) and life-giving. The autonomy of

nature is thus 'relative' in the sense of being relational (to God), as well as in the sense of not being self-originated or entirely self-determined.<sup>4</sup>

By his focus on relative autonomy in place of uniformity, Kaiser shifts attention from the consistently patterned character of material behaviour that is, therefore, describable in terms of universally applicable laws-to the more fundamental issue of the relationship of that patterned material behaviour to divine governance and sovereignty. Without here wishing to diminish the importance of focusing on that issue of the relationship of creaturely and divine action, I will in the course of this essay argue, however, that for many Christians, especially in North America, the root question is this: Does the universe in fact possess the requisite form-producing capacities to develop from its initially unstructured state into its present state of structure and complexity? And if so, what are the implications for the apologetic engagement of Christianity and Naturalism?

In contrast to those Christians who see biblical, theological or apologetic merit in the concept of Special Creationism, I would argue that historic Christian thought welcomes the concept of a Creation gifted with all of the form-producing capacities now presumed by the natural sciences. Drawing primarily from the fourth and fifth century works of Basil and Augustine, I find a substantial basis for articulating a 'doctrine of Creation's functional integrity' that envisions a world that was brought into being (and is continuously sustained in being) only by the effective will of God, a world radically dependent upon God for every one of its capacities for creaturely action, a world gifted by God from the outset with all of the form-producing capacities necessary for the actualization of the multitude of physical structures and life forms that have appeared in the course of Creation's formative history, and a world whose formational fecundity can be understood only as a manifestation of the Creator's continuous blessing for fruitfulness. In such a Creation there would be no need for God to perform acts of 'special creation' in time because it has no gaps in its developmental economy that would necessitate bridging by extraordinary divine interventions of the sort most often postulated by Special Creationism.

## **Of Gaps and God**

As a means of preparing ourselves for seeing the contemporary relevance of the way in which Basil and Augustine pictured the Creation and God's creative activity within it, let us begin with the following question: According to historic, biblically-informed theism, what sort of Creation did God bring into being at the beginning? A world that is rationally intelligible. Yes, we say, because the Creation is called to declare the glory of its rational and thoughtful Creator and because God has graciously equipped our minds to perceive that glory. An orderly world? Yes, we say, because the orderliness of the Creation bears witness to the Creator's sense of order, coherence and harmony.

But what kind of order does this Creation display? Ancient and medieval cosmologies commonly incorporated the concept of hierarchical order in both the celestial and terrestrial realms. In the realm of terrestrial life forms, not only was it thought possible for the whole array of creatures to be hierarchically ordered from lowest to highest, but it

was also assumed that the ontological differences from one rung of the ladder of 'kinds' to the next were so great that no conceivable natural process could transform one of these 'kinds' into another. Given this essentialist perspective reconstructions of cosmological history were bound to the presumption that each kind of creature was constrained to remain within permanently fixed ontological boundaries.

But of course that cosmological picture has been replaced by another. The static hierarchy of planetary and celestial spheres, for instance, has been replaced by the dynamic order of an expanding universe in which there is a history of formation for the chemical elements, for galaxies, for stars and for planets. New forms and structures of matter appear in the course of time as the products of ordinary physical processes that are becoming, we believe, progressively better understood in the disciplines of astrophysics and cosmology.

This historical appearance of new forms is found also in the area of living creatures. Contrary to the assumptions that shaped earlier world views, the array of creatures we see, today was not always present. The first life forms to appear were relatively simple; today both simple and complex forms are present and remarkably diverse. The vast majority of the biotic forms that once thrived are now extinct.

In the context of this kind of biotic history, one question comes quickly to mind: How might the members of this temporal succession of life be related to one another? If one were to insist, as it was earlier done, that the spectrum of life forms is characterized by ontological gaps of morphological differences too great to be bridged by ordinary creaturely processes, then the concept of their being connected by unbroken genealogical continuity would have to be ruled out.

But if the existence or efficacy of continuous genealogical pathways be proscribed, how would new life forms come to appear in the course of time? In the era of Basil and Augustine the concept of spontaneous generation of each kind seemed quite reasonable. Now, of course, such a picture would be scientifically untenable. In its place, the alternative preferred by approximately half of the US population is the concept of 'special creations' by means of 'miraculous divine interventions in the course of the world's formative history.

Hidden within this modern Special Creationist picture, however, is an extremely significant presumption concerning the character of the world brought into being by the Creator at the beginning. In the light of our present knowledge about the temporal succession of life forms, holding to the concept of special creation presumes that, by God's choice to withhold certain-form-producing capacities, the economy of this created world must be developmentally incomplete. That is to say, the whole system of creaturely capacities (what atoms, molecules, cells, organisms and the like are capable of doing) must be characterized by built-in barriers or gaps in its developmental economy,<sup>5</sup> which also implies that the Creator planned from the outset to perform special creative acts in the course of the world's formative history in order that life and new forms of life might appear at the times indicated in the palaeontological record.

Hence, the concepts of 'special creation' and 'gaps' in the developmental economy of the created world go hand in hand. In the tradition of 'God-of-the-gaps' theology, holding to such gaps plays a crucial apologetic role--gaps in the world's developmental economy could have been bridged, it is commonly argued, only by the miraculous interventions of an all-powerful Creator-God; thus both God's existence and omnipotence are assured by the historical bridging of those gaps. But the inclination to include miraculous acts of gap-bridging in one's picture of God's creative work is not confined to persons who explicitly espouse a 'God-of-the-gaps' apologetic strategy. Some hold to Special Creationism on the basis of their beliefs regarding what is required by Scripture or by sound Christian theology. Some present their preference for Special Creationism as being a conclusion based on an unbiased interpretation of the data gathered by the empirical sciences. Some hold to Special Creationism on the assumption that it represents one of the 'deliverances of the faith' from early Christian believers.

### **Of Basil, Augustine and Functional Integrity**

Having been personally embroiled in a denominational controversy regarding what constitutes a faithful reading of early Genesis and what constitutes a proper Christian evaluation of evolutionary theorizing, I have tried to understand what specific feature of the macro-evolutionary paradigm appears most problematic to Christians in my own community. Among numerous candidates, the one that continues to strike me as especially important is the theological concern that to grant natural science the right to presume that the functional and developmental economies of the physical universe are complete (that is not marked by gaps to be bridged by special creative acts in time) is essentially equivalent to proscribing temporal divine action of any sort in the world. The uncomplimentary term 'Deism' surfaces quickly in our discussions. But the question at hand is not whether God is able to act in or interact with the created world, but rather, what is the character of the created world in which God acts, and with which God interacts?<sup>6</sup> Hence the whole issue of Deism is a red herring in this context. Historic Christian thought has, to my knowledge, never maintained that there must be gaps in the created world's functional or developmental economies in order for God to be able to act temporally in the world to which he has given being.

What, then, are the 'deliverances of the faith' on this issue? What is the traditional wisdom regarding the character of the world brought into being by God 'in the beginning'? Did God, by withholding certain creaturely capacities from the Creation at the beginning, give being to a world whose developmental economy is characterized by gaps which would later be bridged by acts of special creation? In my search for an answer to this question I have chosen to begin by looking at some of the exegetical work of two patristic writers—St. Basil of Caesarea (330-379) and St. Augustine of Hippo (354-430).

#### ***Basil's Hexaemeron*** <sup>7</sup>

As one Patristic scholar has expressed it, 'St. Basil's work on the *Hexaemeron* is one of the most important Patristic works on the doctrine of creation.'<sup>8</sup> Delivered as a series of nine homilies, this work has the style of material spoken to inspire praise of the creator--it

is not a treatise written to be subject to philosophical scrutiny--and its central concern is the meaningful interrelationship between God and mankind, not the relationship of natural philosophy and Christian theology. Nonetheless, I have found it profitable to examine Basil's homilies for their general concept of the nature of the created world and the character of God's creative activity in it.



Consistent with the way in which the doctrine of creation had come to be articulated by early Christian theologians, Basil affirms his conviction that the existence of the world is neither eternal nor self-caused. Rather, the world has both a temporal beginning and an ontological origin in the effective will of a transcendent Creator who created the world we see, not from pre-existing matter, but from nothing. Therefore, whatever the visible world's properties and capabilities may be, these must be seen as endowments freely and

thoughtfully contributed by the Creator alone--no other source is conceivable to Basil.

Summarized as succinctly as possible, Basil's picture<sup>9</sup> of creation is one in which God, by the unconstrained impulse of his effective will, instantaneously called the substance of the entire Creation into being at the beginning and gave to the several created substances the harmoniously integrated powers to actualize, in time, the wonderful array of specific forms that the Creator had in mind from the outset. Both matter and the forms it was later to attain were the product of God's primary act of creation. In contrast to those philosophers who spoke of a creator adding form to a pre-existent matter, Basil says: 'But God, before all those things which now attract our notice existed, after casting about in his mind and determining to bring into being that which had no being, imagined the world as it ought to be, and created matter in harmony with the form which he wished to give it' (11.3). And reflecting on the earth being initially without the adornment of grass, cornfields or forests, Basil notes that, 'Of all this nothing was yet produced; the earth was in travail with it in virtue of the power that she had received from the Creator. But she was waiting for the appointed time and the divine order to bring forth' (11.3).

In Basil's judgment, harmony, balance and provision for all future needs are characteristics of the created world that deserve our profound appreciation. Both fire and water, for example, are necessary for the economy of terrestrial life as we know it. But these two elements (as understood in Basil's day) must be provided in correct proportions so that neither one will consume the other. Observing the comfortable balance that appeared to prevail between these two contending substances, Basil says that we owe 'thanks to the foresight of the supreme Artificer, Who, from the beginning, foresaw what was to come, and at the first provided all for the future needs of the world' (111.5). From this it follows, of course, that the Creator need make no special adjustments at some later date to compensate for inadequate provision at the beginning. 'He who, according to the

word of Job, knows the number of the drops of rain, knew how long His work would last, and for how much consumption of fire he ought to allow. This is the reason for the abundance of water at the creation' (111.5).

Because each element is called upon to contribute its natural activity to the functional and developmental economies of the created -world, it is essential for Basil to make clear that even these natures are the product of God's creative word and are not tile manifestation of any powers independent of God. 'Think, in reality, that a word of God makes the nature, and this order is for the creature a direction for its future course' (IV.2). The divine command recorded in Gen. 1:1.1, 'Let the earth bring forth grass. . . 'is for Basil God's empowering of the earth for all time with the capacities to assemble and sustain all manner of plant life. This command from God 'gave fertility and the power to produce fruit for all ages to come' (V1).

In several ways Basil expresses his conviction that although the Creator's word is spoken in an instant, the Creation's obedient response is extended in time. 'God did not command the earth immediately to give forth seed and fruit, but to produce germs, to grow green, and to arrive at maturity in the seed; so that this first command teaches nature what she has to do in the course of the ages' (V.5, emphasis added). And in language that seems almost to anticipate modern scientific concepts Basil goes on to say that, 'Like tops, which after the first impulse, continue their evolutions, turning themselves when once fixed in their centre; thus nature, receiving the impulse of this first command, follows without interruption. the course of the ages, until the consummation of all things' (V.10).

The importance of seeing this emphasis in Basil has also been noted by Thomas F. Torrance:

... [1 In commenting upon the Genesis account of creation through the majestic fiat of God: 'Let there be,' Basil pointed out that though acts of divine creation took place timelessly, the creative commands of God gave rise to orderly sequences and enduring structures in the world of time and space. It was thus that the voice of God in creation gave rise to laws of nature. Expressed the other way round, this means that all the laws of nature, all its intelligible order, are to be regarded as dependent on the word of God as their source and ground.<sup>10</sup>

In his reflections on the words, 'Let the earth bring forth the living creature,' Basil speaks eloquently of the Creation acting throughout the course of time (action understood to be possible only by God's having gifted it with the requisite dynamic capacities) to carry out the effective will of the Creator expressed at the beginning. 'Behold the word of God pervading creation, beginning even then the efficacy which is seen displayed today, and will be displayed to the end of the world! As a ball, which one pushes, if it meet a declivity, descends, carried by its form and the nature of the ground and does not stop until it has reached a level surface; so nature, once put in motion by the divine command, traverses creation with an equal step through birth and death, and keeps up the succession of kinds through resemblance, to the last' (IX.2). In an earlier comment on the Holy

Spirit's activity in creation Basil remarked that 'The Spirit ... prepared the nature of the water to produce living beings' (11.6).

Consistent with the world picture of his day, Basil does not envision any historical transformation of the varied 'kinds'; but at the same time-and more relevant to our present concerns-he offers no theological objection whatever to the spontaneous generation of living creatures from inanimate earthly substance alone. For instance, 'We see mud alone produce eels; they do not proceed from an egg, nor in any other manner, it is the earth alone which gives them birth. "Let the earth produce a living creature" ' (IX.2). It would seem, then, that Basil envisions the first appearance of each kind of living creature occurring in like manner, the earth having been endowed from the beginning with all of the dynamic capacities necessary to physically actualize in the course of time the whole array of life forms first conceived in the mind of God. The elements of the world, created by God from nothing at the beginning, lacked none of the capacities that would be needed in the course of the ages to bring forth what God intended.

As we noted earlier, Kaiser finds in Basil a strong affirmation for the principle of the 'relative autonomy' of the created world. Commenting on Basil's references to the continuation of motion exhibited by a rolling ball or a spinning top, Kaiser says:

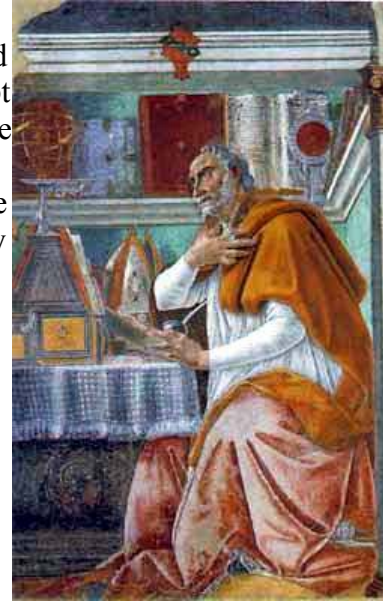
It would be over twelve hundred years before Galileo, Descartes and Newton would formulate a principle of inertia in mathematical terms that could be used in calculations. However, the idea of relative autonomy that lay behind it was clearly fixed by the time of Basil. indeed it was deeply embedded in the Hellenistic-Jewish-Christian tradition that Basil inherited .... Basil merely gave practical examples from everyday experience to illustrate the principle of relative autonomy of nature as it had been understood since the time of Jesus ben Sirach and Aristobulus.<sup>11</sup>

However, where Kaiser chooses to refer to the God-given self-sufficiency and ability of matter and material systems to exhibit lawfully-patterned behaviour as being the expression of Creation's 'relative autonomy,' I would prefer the more inclusive term, 'functional integrity.' By the use of the latter term I wish not only to affirm, with both Kaiser and Torrance, the idea that the Creation has been given by God the capacities to act in accordance with universally applicable laws, but also to call especial attention to the idea that these God-given creaturely capacities--what I have called *Creation's functional and developmental economies*--are sufficiently robust so as not to require additional acts of special creation in time in order to actualize the full array of physical structures and life forms that have ever existed.

As I read Basil's *Hexaemeron*, I see in it considerable encouragement for the vision of a world brought into being with gapless and robust functional and developmental economies, economies that were, from the outset, complete--neither cluttered with powers that had no useful function nor lacking any capacity that is necessary for the world's functioning at any one time or for its actualization of any physical or biotic form over the course of time. In Basil's words, 'Our God has created nothing unnecessarily and has omitted nothing that is necessary' (VIII.7, emphasis added).

## Augustine's *De Genesi ad Litteram* <sup>12</sup>

In his work, *De Genesi ad Litteram*, or *The Literal Meaning of Genesis*, St. Augustine provides an extensive commentary on the first three chapters of Genesis. His goal is to demonstrate a one-to-one correspondence between the text of these chapters and what actually took place in the creative work of God; in fact, this is precisely how he defines the term 'literal' in this endeavour.<sup>13</sup> However, even though his reading is bound by the controlling assumption that Genesis 1-3 is 'a faithful record of what happened,' Augustine is insistent that the literal meaning thereby derived may never stand in contradiction to one's competently derived knowledge about 'the earth, the heavens, and the other elements of this world,' knowledge that one rightfully 'holds to as being certain from reason and experience' (1.19.39). In a tone of voice that leaves no doubt concerning his attitude, Augustine soundly reprimands those Christians who defend interpretations of Scripture that any scientifically knowledgeable non-Christian would recognize as nonsense. 'Reckless and incompetent expounders of Holy Scripture bring untold trouble and sorrow on their wiser brethren when they are caught in one of their mischievous false opinions and are taken to task by those who are not bound by the authority of our sacred books' (1.19.39).



For a number of reasons, Augustine, like Basil, concludes that God created 'all things together' in one initial, all-inclusive and instantaneous creative act. The six-day structure of the Genesis narrative conveys something other than a succession of temporal periods to be placed on the human calendar. For Augustine the days represent both a topically ordered set of divine revelations to the angels (2.8) and a textual accommodation to the limited intellectual powers of those who would later read the Scriptural account (4.33.52). Furthermore, the number six has a mathematical significance as a 'perfect' number--a number that is equal to the sum of its factors [ $6=1 \times 2 \times 3$  and  $6=1 + 2 + 3$ ] (4.2),

But this reference to the simultaneous creation of 'all things together' should not be taken to mean that all created things suddenly materialized, in mature form at the beginning. With considerable perseverance, Augustine developed a rather sophisticated programme of interpretation by which he sought to distinguish the creation of all things together in the beginning from the actualization of those created things in the course of time.

In the beginning, according to Augustine, God called into being all created substances and all creaturely forms. At this beginning all created forms existed both in the mind of God and in the formable substances of the created world. But in the formable substances the creaturely forms existed, not actually, but only potentially. Although the creaturely forms were not initially expressed in visible, material beings, these forms were there potentially in the capacities for actualization, called by Augustine 'causal reasons' or 'seed principles,' with which the Creator had originally endowed the created substances.

Reflecting specifically on the remarkable potentialities for actualization that are present, although not readily visible to us, in the seed of a tree, Augustine says, 'In the seed, then, there was invisibly present all that would develop in time into a tree. And in this same way we must picture the world, when God made all things together, as having had all things together which were made in it and with it when day was made. This includes not only heaven with sun, moon, and stars, . . . but it includes also the beings which water and earth produced in potency and in their causes before they came forth in the course of time as they have become known to us in the works which God even now produces' (5.23.45)

[14](#)

On a similar theme: 'But from the beginning of the ages, when day was made, the world is said to have been formed, and in its elements at the same time there were laid away the creatures that would later spring forth with the passage of time, plants and animals, each according to its kind' (6.1.2). 'In all these things, beings already created received at their own proper time their manner of being and acting, which developed into visible forms and natures from the hidden and invisible reasons which are latent in creation as causes' (6.10.17). ' . . . [W]hat He had originally established here in causes He later fulfilled in effects' (6.11,19). Finally, ' . . . some works belonged to the invisible days in which He created all things simultaneously, and others belong to the days in which He daily fashions whatever evolves in the course of time from what I might call the primordial wrappers' (6.6.9).

Now, lest one be tempted to infer that Augustine is thereby proposing a macroevolutionary scenario in which these emerging life forms are genealogically related in a continuous line of descent with modification, we must hasten to note that he does not in fact suggest any historical modification of the created 'kinds'. Consistent with the world-picture of his day, Augustine envisions each unique 'kind' of creature to have been individually conceptualized in the Creator's initial act of creation and independently actualized in time as the causal reasons functioned to give material form to the conceptual forms created at the beginning. Standing in the heritage of thought in which it was common to picture the world as a hierarchically structured cosmos populated with fixed species of creatures, Augustine had a basis in respected tradition for envisioning an independent creation and formation of each living 'kind.' And without any knowledge of genetic variability or of the temporal succession of life forms over a multibillion-year time span Augustine had no basis for questioning either that tradition or the concept of spontaneous generation. Augustine made appropriate use of the epistemic resources available to him at that time.

But we are not living in the fifth century. Following Augustine by more than fifteen centuries, we must take into account a vast amount of additional information as we attempt now to portray God's creative activity in the conceptual vocabulary of our time. Nevertheless, although the particulars of our modern picture will differ substantially from Augustine's, I am convinced of the continuing relevance and fruitfulness of one of his fundamental conclusions regarding the character of the created world: *the universe was brought into being in a less than fully formed state but gifted with the capacities to transform itself, in conformity with God's will, from unformed matter into a truly*

*marvellous array of physical structures and life forms*, In contrast to both ancient paganism and modern Special Creationism, Augustine appears to have envisioned a Creation that was, from the instant of its inception, characterized by what I have called *functional integrity*. Every category of structure and life form and creaturely process was conceptualized by the Creator from the beginning but actualized in time as the created material employed its God-given capacities in the manner intended by the Creator from the outset.<sup>15</sup>

### **Augustine's de Trinitate<sup>16</sup>**

In his work, *On the Trinity*, especially in Book 111, Augustine also speaks of his vision regarding the natural world as God's Creation and regarding the relationship of natural phenomena to divine action. Central to Augustine's perspective is the understanding that the ultimate cause for the very possibility of any sort of 'corporeal change,' whether it be some familiar natural phenomenon or some relatively unfamiliar event, is the will of God.

He begins his argument with an appeal to common experience. We observe in the natural order, he notes, a diversity of physical processes by which material bodies, both animate and inanimate, undergo change. Some of this changeableness (like the rising or setting of the sun), because it occurs within a relatively brief period of time, has become very familiar to us and 'by reason of its unbroken continuity has ceased to cause wonder' (111.2.7). Other natural phenomena (such as eclipses or earthquakes), because they occur much less frequently, are more likely to attract attention and wonder. In both cases, however, Augustine presumes that these corporeal changes can, by careful observation and reasoning, come to be 'understood by those who inquire into the present world' in terms of 'proximate causes.'

The question that immediately arises, both then and now, is this: What if all creaturely phenomena do in fact have explanations in terms of proximate causes? Would that leave God with nothing to do? Has the apologetic case for the reality or necessity of divine action then lost its strongest argument?

Not at all, according to Augustine. As the articulate and forceful proponent of a wholly theistic worldview he is emphatic in reminding his readers that any explanation in terms of proximate causes alone—even if it be a true explanation at that level—is categorically incomplete. All of these processes, of changes and all of their associated proximate causes must, from the theistic perspective, be understood as phenomena that serve 'the bidding of God.' Those 'philosophers' who speak as if an explanation in terms of proximate causes alone constituted an exhaustive explanation are, by Augustine's measure, persons 'who are not able to see at all the cause that is higher than all others, that is the will of God' (111.2.7).

In the context of our present day concerns regarding the nature and manifestation of divine creative action in the course of the Creation's formative history, it is especially noteworthy that Augustine does not here present us with an either/or choice between

proximate natural causation and divine action. On the contrary, from Augustine's theistic perspective God's effective will is the necessary prerequisite for and ultimate source of the entire, economy of proximate natural causes.<sup>17</sup> Scientific explanations in terms of proximate or 'creaturely' action may be quite useful, but the very existence and fecundity of such creaturely phenomena can be explained only by appeal to a higher level of causation-the will of God. Thus we are called by Augustine not to make a choice between either natural action or divine action, but rather we are challenged to establish the habit of recognizing that all creaturely action-whether it be some familiar everyday phenomenon or some past process or event beyond our empirical reach-is made both possible and fruitful only by the continuing and effective action of God's will. In Augustine's words, 'pray, could there be, I say, any other cause of all these visible and changeable facts, except the invisible and unchangeable will of God' (111.3.8).

Contemporary natural science, though it now knows much more regarding proximate causes-that is, regarding the functional and developmental economies of the physical world-than was known in the time of Augustine, must nevertheless admit that many interesting natural phenomena remain beyond its present epistemological grasp. Some of these unexplained phenomena (numerous physiological processes, for instance) may be occurring at the present time and be readily accessible to empirical investigation; others (episodes of evolutionary development, for example) may have occurred in the empirically less accessible past. Clearly there are, and will always be, gaps in our knowledge regarding the functional and developmental economies of the Creation.

The status and significance of these gaps continues, at least in North America, to be an issue on which Christians have strongly differing judgments. Are these merely temporary epistemological gaps of the sort that could, in principle, be filled by continuing scientific investigation in the manner that many similar epistemological gaps have been filled? Or, on the other hand, are some of these epistemological gaps likely to be permanent because they are indicators of profoundly significant gaps in the very economy of the Creation-empirical evidence, that is, for the necessity of special (miraculous) divine action?

If we follow in spirit the example of Augustine (or of Basil) we will, I maintain, have no desire whatsoever to employ the natural sciences in a search for gaps in the functional or developmental economies of the universe-gaps into which acts of special creation could be strategically inserted and placed in the employment of an interventionist apologetic. An apologetic strategy based on gaps in the Creation's developmental economy would, it seems to me, put the Special Creationist in the most awkward position of rejoicing, not at the wealth of capacities that are, by God's generosity, present in the Creation, but instead at those gifts which the Creator appears (by the measure of one's inability to discover proximate causes) to have withheld from it.

## **From Functional Integrity to an Evolving Creation**

The vision of the created world that we have drawn from the exegetical work of Basil and Augustine is, I believe, one that deserves to be revived. In my judgment, this 'forgotten doctrine of Creation's functional integrity,' as I often refer to it, would provide an

essential guideline in our evaluation, as Christians, of the scientific enterprise in general and of the macro-evolutionary paradigm in particular. And, to be as candid as possible, I believe that applying this guideline would lead one away from the position of Special Creationism (in which special creative acts in time function to bridge gaps in Creation's developmental economy) and toward the concept of an *evolving* Creation.

In the Christian tradition, to see the world as a Creation is to see it as that which owes both its existence and its dynamic economy to the free and effective will of its Creator. I wish unequivocally to stand in that tradition. But the title 'Creation' does not by itself provide any clues concerning the particular manner in which God's will for its formative history has been expressed in the course of time. For clues of this sort we must, I believe, go directly to the created world itself and employ the best of empirical science.<sup>18</sup>

By the term evolving Creation I mean to denote at least these two ideas: (1) broadly, in the manner envisioned by Basil and Augustine, that the Creation brought into being by God was gifted from the outset with both the potentialities for assuming a rich diversity of physical and biotic forms and with the requisite form-producing capacities for actualizing many of these potentialities in the course of time; (2) more specifically, that the Creation has been gifted with those particular form-producing capacities that are necessary to make possible the unbroken continuity of natural development of the sort envisioned by contemporary cosmology and evolutionary biology.

Would this portrait of an evolving Creation constitute a radical departure from the historic Christian doctrine of creation? In my judgment, not at all. Although the particulars of an evolutionary creation scenario might differ significantly from the particulars of traditional independent creation scenarios, I see no strain at all at the level of fundamental doctrine. On the contrary, I would argue that if one were to begin with the 'doctrine of Creation's functional integrity,' add the empirical discovery of the temporal succession of life forms, and disallow the phenomenon of spontaneous generation (Basil's 'mud to eels,' for instance), then one would have the broad concepts of genealogical continuity and descent with modification nearly at hand. Add to this the successes of geology, astronomy and cosmology in reconstructing the continuous formative histories of earth, stars, elements and space-time---each of these histories built on the foundational presupposition of the functional integrity, of the universe--and the portrait of an evolving Creation is practically ready for framing, and display in one's local church.<sup>19</sup>

This portrait would be our attempt, as scientifically informed Christians who are seeking to articulate our faith in the twentieth century, to capture the vision of a universe, brought into being from nothing, pregnant with potentialities conceived in the mind of the Creator. In a manner rich with both pattern and novelty, both continuity and contingency, both coherence and freedom, some of these latent potentialities would be actualized in the course of time--galaxies and galagos, stars and starfish, hulking quasars and human questioners.

The 'doctrine of Creation's functional integrity,' or the concept of a Creation gifted by God from the beginning with gapless and robust functional and developmental

economies, contributes no particulars to scientific theories regarding the formative history of the elements, of galaxies, of stars, of planets or of terrestrial life forms. This doctrine does, however, provide the theological context and basis for one of the fundamental assumptions employed in all scientific reconstructions of formative histories (the assumption to which we called attention at the beginning of this essay) that the presently observed array of physical structures and life forms is the outcome of a continuous succession of form-producing processes and events—all such dynamic physical processes and events being manifestations of the capacities for action and interaction that are an integral part of the very being of matter and material systems.

The astounding character of the universe that ontological Naturalism must take as a 'brute given' can be apprehended by Christian Theism as an expression of God's limitless creativity. The remarkable robustness of the functional and developmental economies of the universe that some persons have attempted to articulate in the form of 'anthropic principles' or the I gaia hypothesis' need not remain as unexplained coincidences, or just remarkable strokes of luck, but may be seen by Christians as expressions of our Creator's most generous provision.

There are, of course, a number of objections that are commonly directed toward this concept of an evolving Creation, many of them by proponents of Special Creationism. Some are especially concerned about the possibility and status of miracles in such a world. Would miracles still be permitted, or would they be disallowed in a Creation marked by gapless functional and developmental economies? The question is, to be sure, a legitimate one. However, as we noted at the outset of our deliberations, the absence of functional or developmental gaps constitutes no threat whatsoever to God's ability or freedom to act extraordinarily in the world to which he has given being. The principal question before us continues to be, What is the character of the world in which God acts and with which God interacts?

There are also Christians who are concerned that the concepts of common ancestry and evolutionary continuity might be seen as stealing all creative power from the Creator and giving it instead to molecular matter.<sup>20</sup> But no molecule, not even DNA, can create a new creature. The most that DNA can do is employ its capacity for variation to explore what might be called 'possibility space,' and thereby discover novel forms that are viable in the environment at hand. And why is possibility space so richly arrayed with viable structures and connective pathways if not because the Creator chose thoughtfully and intelligently to provide these potentialities from the beginning?<sup>21</sup> But there are objections raised by the proponents of a Naturalistic worldview as well. Some, for example, have argued that if one cannot capture the essence of purpose in the impersonal descriptions of molecular mechanisms, then there is no purpose there, or anywhere. But rhetoric of this sort has little, if any, substance. Randomness at one level of structure or scientific account is no enemy of either pattern or purpose when examined within an enlarged arena of consideration. Talk regarding purpose always requires a context larger than physics, or chemistry or biology is able to provide.

Perhaps a simple illustration or two would prove helpful: (1) The molecular motions of the air in one's sitting room are characterized by a high degree of randomness. Nonetheless, we are able purposefully to employ that very randomness in order to maintain a windless environment at a stable and comfortable temperature. (2) In an honest gambling casino [if that is not a glaring oxymoron] the rolling of dice or shuffling of cards leads to an authentically random result. But the operators of that casino purposefully employ and depend on that very randomness in their computation of payoff rates to ensure that the house will make a handsome profit. The point of both illustrations is this: if we humans are able to employ random processes to accomplish our purposes, could not the Creator do the same on a far grander scale? Thus, instead of jumping hastily from the recognition of random molecular variations to the conclusion of purposelessness, I am strongly inclined to propose that these random variations may, by God's design, be essential to the achievement of his purposes for the formative history of the created world .<sup>22</sup>

Neither Basil nor Augustine was prepared by his intellectual heritage to picture the actualisation of the Creation's potentialities for form in the conceptual vocabulary of modern evolutionary science. Nonetheless, their vision of a Creation gifted from the beginning with a robust economy of creaturely, form-actualizing capacities now provides the Christian with a firm basis in respected theological tradition for presuming, as do the contemporary natural sciences, that the Creation's developmental economy is sufficiently robust to make possible the remarkable evolutionary scenario now being explored. How ironic it would be if the 'forgotten doctrine of Creation's functional integrity' were more effectively remembered in the professional sciences than in the community of Christians.

## References

<sup>1</sup> Such interventionist language, with frequent reference to miraculous or supernatural acts of God that would 'make a difference' in the formative history of life, can be found in works such as Johnson, P. E. *Darwin on Trial*, Downers' Grove, IL: InterVarsity Press (1991).

<sup>2</sup> This is the language employed by philosopher Alvin Plantinga; see his essay, 'When Faith and Reason Clash: Evolution and the Bible', *Christian Scholar's Review* (1991) XXI, 8-32 (p. 22).

<sup>3</sup> Kaiser, C. B. *Creation and the History of Science*, London: Marshall Pickering (1991), p. 6. [Note: a revised edition of this book is in preparation.]

<sup>4</sup> *ibid.*, p. 15.

<sup>5</sup> By the term 'developmental economy' I mean to denote that integrated set of capacities for action and interaction by which creaturely entities (atoms, molecules, cells, organisms and the like) are able to actualize, in the course of time, the full array of physical

structures and life forms that have ever existed. One might also speak of the Creation's 'functional economy' as that integrated set of capacities for action and interaction by which creaturely entities (atoms, molecules, cells, organisms and the like) are able to function over some shorter interval of time. The distinction between these two 'economies' is not necessarily a matter of their representing differing sets of creaturely capacities (they might, in fact, be the very same capacities), but rather a matter of the way in which these capacities contribute in one case to the development of new forms over an extended period of time and in the other case to the viable functioning of extant forms at each moment in time,

<sup>6</sup>Another equally important question, not here specifically developed, is this: What is the character of divine action? More specifically, what is the character of God's *creative* action and its consequences in the created world? It has become common to speak of this action in the Aristotelian language of efficient cause and effect relationships, but I am more inclined to employ the royal metaphor, found often in Scripture, of decree and response word followed by creaturely response. Employing the royal metaphor helps one avoid placing divine and creaturely action in competition with one another (God is not like a Demiurge that must overpower resistant creaturely behaviour) and also to resist looking for gaps into which divine action might be inserted.

<sup>7</sup>*The Hexaemeron* by St. Basil the Great, Archbishop of Caesarea, in *Nicene and Post-Nicene Fathers*, second series, vol. VIII (trans. Blomfield Jackson), Grand Rapids; Eerdmans Publishing Co. Subsequent references to this work will be identified by homily number (I-IX) and numbered section.

<sup>8</sup>Dragas, G. 'St. Basil's Doctrine of Creation', *EKKLESIA kai THEOLOGIA* (1982) 3, 1079-1132.

<sup>9</sup>I find it essential to distinguish between the *doctrine* of creation (theological in focus) and a *picture* of creation—a conceptualization of the particular historical scenario depicting the way in which God's creative activity became manifest in time.

<sup>10</sup>Torrance, T. F. *The Christian Frame of Mind*, Colorado Springs: Helmers and Howard (1989), p. 4.

<sup>11</sup>*op. cit.*, Kaiser, pp. 20-21.

<sup>12</sup>Augustine, *The Literal Meaning of Genesis* (trans. John Hammond Taylor), vol. 41 and 42 in the series, *Ancient Christian Writers*, New York: Newman Press (1982). Subsequent reference to this work will be identified by book, chapter and section numbers.

<sup>13</sup>Although I find many of Augustine's theological perspectives fruitful, I would be so bold as to suggest that, given the nature of the text, this particular goal may be unattainable.

<sup>14</sup> In *De Trinitate* Augustine expresses a similar sentiment in the metaphor of pregnancy: 'For as mothers are pregnant with unborn offspring, so the world itself is pregnant with the causes of unborn beings' (111.9.16).

<sup>15</sup> Augustine went so far as to argue that even miracles (like the transformation of water into wine) should be seen, not as divinely imposed violations of causal reasons, but as manifestations of material substances exercising-albeit in an unusual manner-the powers originally given to them by God. To Augustine, it appears, the idea that water had been given the capacities to transform itself, upon divine command to do so, into wine seemed no more extraordinary than the idea that mud had been given the capacity to produce eels. We might also note here that the exegetical goal of Augustine--to formulate a one-to-one correspondence between the text of Genesis 1-3 and the historical particulars of what took place-becomes especially difficult to square with his concept of Creation's functional integrity when he deals with the text regarding the formation of Eve from the rib of Adam.

<sup>16</sup> Augustine, *De Trinitate* (trans. William G. T. Shedd), in *Nicene and Post-Nicene Fathers*, first series, vol. 1H, Grand Rapids: Eerdmans Publishing Co. Subsequent references to this work will be identified by book number, chapter number, and numbered section.

<sup>17</sup> Vernon J. Bourke, reflecting on Augustine's approach to matters of causality, concludes that, 'Most distinctive of Augustine's teaching is his emphasis on primary causality. As the first cause of all events, God is the primary agent in all causal series. Far from denying the existence of secondary, proximate, created causes, Augustine simply insists that their efficiency is quite derivative. *Augustine's View of Reality*, Villanova, PA: Villanova Press (1964), p. 127.

<sup>18</sup> Although I stand with the historic Christian church in believing that the early c Genesis do refer to an authentic account of God's creative activity, I am also convinced are not warranted in treating this biblical literature as a chronicle of historical particulars are directly relevant to scientific reconstructions of Creation's formative history. For, this, see my book *The Fourth Day: What the Bible and the Heavens are telling us about the Creation*, Grand Rapids: Eerdmans Publishing Company (1986), especially chapters 1-5

<sup>19</sup> The term 'functional integrity of the universe' is here meant to include not only the usual principle of universality (physical laws are spatially and temporally invariant) but also the idea of the universe's gapless functional and developmental economies. scientific theorizing based on these principles is said by some authors to employ the strategy of 'methodological naturalism' or 'provisional atheism.' But I find these terms offensively misleading because they are often taken to imply that a Naturalistic (and thereby atheistic) worldview provides a sufficient basis for the principles in question. I do not believe that it does. As I see it, Naturalism is free to presuppose these principles, but it has no basis for any claim that they are either self-evident or derivable from Naturalistic 'first principles.'

<sup>20</sup> See note 1, above.

<sup>21</sup> Recall Augustine's rhetorical question, cited earlier, 'pray, could there be, I say, any other cause of all these visible and changeable facts, except the invisible and unchangeable will of God' (*De Trinitate*, 111.3.8).

<sup>22</sup> I think that a useful analogy might be drawn here from chaos theory: The dynamically changing state of a physical system traces out a path through 'phase space.' As a consequence of the nature of the system, there are distributed throughout this phase space so-called 'attractors' which lead the system to spend most of its time near these special states. In an analogous manner, it is conceivable that biological species, genera, families, etc., represent genomic attractors in a 'genomic phase space.' Employing this conceptual vocabulary of chaos theory, then, one could sensibly discuss the possibilities of both variability (movement of lineages through genomic phase space) and stasis (the tendency of populations to linger in the vicinity of genomic attractors) without fear of contradiction. In theological terms, the whole array of genomic attractors could be seen as biological potentialities given to the Creation by the Creator, and random genetic variability as the capacity given to DNA to explore that genomic space so that some of those potentialities might be discovered in the course of Creation's formative history.

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