

Responses to Darwin in the Religious Traditions

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DARWIN AND THE OTHER CHRISTIAN TRADITION

by Ernan McMullin

Abstract. Augustine, and following him some major theologians of the early Christian church, noted the apparent discrepancies between the first two chapters of *Genesis* and suggested an interpretation for these chapters significantly different from the literal. After examining a selection of the relevant texts, we shall follow the later fortunes of this interpretation in brief outline, figuring in particular an unlikely trio: Suarez, St. George Mivart, and Thomas Henry Huxley. Moral: Darwinian theory might plausibly be construed as implementing, unawares, a suggestion from that other Christian tradition.

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In *Darwin and the Tree of Life*, a television program in 2009, David Attenborough opened an ornate Bible to the familiar opening lines of *Genesis* and intoned the story of God's creation of the diversity of living things over the period of four days. That, he said, is the Bible's explanation of how that wonderful diversity came about and it "was believed, literally, by pretty well the whole of Western Europe for the best part of two thousand years." Most of his listeners would assent: he was, to be sure, expressing a view that *is* believed by pretty well the whole of Western Europe at the present time. But is it correct? Not really: there was, in fact, a quite different way of reading the *Genesis* account of creation in the early and medieval Church, one that was gradually more or less lost from sight, but one, as

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it happens, that would have made the appearance of Darwin's *Origin of Species* seem more culmination, perhaps, than surprise.

BEGINNINGS

Theologians of the early Church were struck by the way in which the first verses of *Genesis* describe the origins of living things: "God said: 'Let the earth bring forth nourishing crops. . .and fruit trees bearing fruit. . .'; 'Let the waters bring forth living creatures and birds to fly above the earth. . .'; 'Let the earth bring forth living creatures according to their kinds: cattle, creeping things, and beasts of the earth. . .'." It seemed as though the Creator had, in the work of the Six Days, conferred successively upon waters and earth the power to bring forth all the living kinds. Basil, John Chrysostom, and Ambrose, leading theologians of the fourth century, made much of these remarkable verses, testifying to the mighty powers of God (Messenger 1932, 19–39). The "bringing forth" on a single day would clearly have been miraculous in their eyes; it would not have been part of the processes that would constitute the "order of nature" from then forward.

In his *Apologetic Treatise on the Hexaemeron*, Gregory of Nyssa carried this thought a crucial stage further. Instead of a successive conferring of new powers, would not a transcendent Creator have imparted these powers from the beginning? The successive appearances of the different living kinds testify, rather, to potentialities that were already there from the moment of creation, to mature at the proper time:

The sources, causes, and potentialities of all things were collectively sent forth in an instant, and in this first impulse of the Divine Will, the essences of all things were assembled together: heaven, ether, star, fire, air, sea, earth, animal, plant. . . There followed a certain necessary series according to a certain order, not by chance. . . but as the necessary arrangement of nature requires succession in the things coming into being. (Messenger 1932, 24–25)

Gregory's imaginative construal of the "bringing forth" so heavily emphasized in the biblical text was prompted primarily by a growing appreciation of what creation *ex nihilo* amounted to (McMullin 2010). It is not a sequence of additions to something originally incomplete; rather, it is a drawing forth of what was contained in "seed-like potency" (Gregory's term) from the beginning.

AUGUSTINE

From quite early in his career, Augustine took the problem of interpreting the *Genesis* account of creation very seriously. One immediate reason was that his erstwhile Manichaean colleagues in their attack on Christian belief focused mainly on those chapters. Their own opposing doctrine of two

warring cosmic principles, Light and Darkness, led them to scoff at the story of the Six Days, simplistic in their eyes. Even before his ordination to the priesthood, Augustine composed a two-volume work in 388, *De Genesi contra Manichaeos*, in which he resorted to allegory when literal interpretation defeated him. Dissatisfied with the result, he tried again a few years later, this time aiming at a literal interpretation throughout. He failed once again, leaving the work unfinished: *De Genesi ad litteram imperfectus liber*.

Finally, in 401 he began again and over 14 years composed his classic *De Genesi ad litteram*, that is: *The Literal Meaning of Genesis*, finding a very different way to approach the puzzling texts. The *literal* of his title could mislead the modern reader. For Augustine the term signified the meaning that the author intended. In some contexts, this might be literal (in our sense); in others, it could be metaphorical (“the right hand of God”) or parable. In this work he hoped that he had hit upon the meaning that the author (God and the human author, as one) must have intended, though he was willing to allow that others might disagree. He was helped in this by the earlier interpretations of the puzzling *Genesis* texts but he went well beyond these in the imaginative power and persuasive force of his presentation.

He saw clearly that *Genesis* 1 could not be taken literally (in our sense, not his). As both critics (the Manichaeans) and defenders had already noted, the “days” in which the narrative is organized could not possibly be days in the normal sense. The “day” of creation, Augustine notes, “is not to be taken in the sense of our day, which we reckon by the course of the sun, but it must have another meaning applicable to the three days mentioned before the creation of the heavenly bodies” (Augustine [415] 1982, book 4, chap. 26, sec. 43). Because the sun was not created until the fourth “day,” the previous “days” would have no sun to mark them. Besides, “for the whole twenty-four hours of the sun’s circuit there is always day in one place and night in another (LMG, 1, 10, 21). And God’s making would not occupy a day, nor should God’s “rest” be measured by the sun.

More fundamentally, however, the story told in the first chapter of *Genesis*, if interpreted literally, is not consistent with that presented in chapter 2. God is said to have “finished his works” at the end of the first account. But then the second account appears to begin the process all over again, and in a different sequence. After the creation of heaven and earth come “the green things of the field, before they appear above the earth”; Augustine makes much of the fact that life is still in seed as the second account opens. Next comes the first man, though man was already said to have been created in the earlier chapter. There is no mention yet of woman, though man and woman were earlier said to have been created together. Animals and birds are mentioned next, and then finally, woman.

What can the author have meant by these two quite disparate accounts of origins?¹

Augustine took the two stories to constitute a single narrative from a single author, Moses (McMullin 1985, 10–16.) In his view, they must have been intended to address two different aspects of the creation-act, the first, God's instituting the initial state of the universe, the second, the subsequent working out of the potentials that were already present in that initial act. From the Creator's perspective, the two are one, from ours they are temporally distinct. This is where Augustine's distinctive notion of time comes into play:

It is idle to look for time before creation, as if time can be found before time. If there were no motion . . . there would be no time at all. A creature could not move if it did not exist. We should therefore say that time began with the creation rather than that creation began in time. [Time] is, in fact, the motion of creatures from one state to another. Hence, when we think of the first creation of things . . . we should not think of those days as solar days nor . . . in time. Rather, He made that which gave time its beginning, as "He made all things together" (Sirach 18: 1),² disposing them in an order based not on intervals of time but on causal connections.³ (5, 5, 12)

Time itself, Augustine says, is a feature of the created changing universe, a measure of that change. From God's atemporal standpoint, the Creation is a bringing to be of the universe from its first moment to its last in a single act. The seven "Days" are but one, indeed no more than a single timeless instant. Viewing the Creator's action in this light, it is plausible (though not strictly necessary) to suppose that the potentials *would* be there from the beginning. At the creation, the universe, as far as possible, receives the capacity from the beginning to achieve what the Creator intends it to achieve: "The first day created knew the whole array of creatures arranged in hierarchical order. . . Creation was revealed . . . as if in six steps called days and thus was unfolded all that was created, but in reality there was only one day."⁴

Another clue that guides Augustine's interpretation of the first chapter is the significant difference he finds there between two kinds of creative action, one described as "Let there be. . .," the other as "Let the . . . bring forth. . ." The Creator said: "Let there be. . ." when speaking of the firmament, the separation of waters from dry land, the sun and moon to establish day and night. These are the features of the universe that are instituted from the beginning. They do not appear gradually; they do not grow. But living things are in a different category: they are "brought forth" from earth and waters. They must then, in some sense, have been already there, ready to appear later when the conditions of water and earth are right.

The analogy of seeds immediately suggests itself. The earth already is known to "bring forth" from seed the crops and fruit trees mentioned

on the Third Day. Why not extend that analogy and suppose that the earth might bring forth the “beasts of the earth” likewise from seed? These would clearly be no ordinary seeds. Even in the case of the “green things of the field,” these would first appear, not from prior seed, but from seed-potentials implanted by the Creator in the dawn-universe.

To express this in a language that would have been familiar to his readers, Augustine drew on the Stoic philosophy of his day, long popular in Rome. The Stoics saw the universe as being in a constant state of making and unmaking, beginning and ending in fire, where seed-like “principles,” *rationes seminales*, give gradual rise to all the different kinds of things.⁵ Where they took the universe to be directed by a seed-bestowing Divine (though material) Word-Fire (*logos spermatikos*), Augustine proposed instead a Creator entirely transcending material process who would bring the seed-like agencies to be in a single creative act: “The motion [change] we now see in creatures, measured by the lapse of time as each fulfils its proper function, comes to creatures from those *rationes seminales* implanted in them, which God scattered as seeds at the moment of creation” (4, 33, 51).

More specifically:

In the seed, then, there was invisibly present all that would develop in time into a tree. And in the same way we must picture the world, when God made all things together, as having had all things that were made in it and with it when day was made. This includes not only heaven with sun, moon, and stars . . . and earth . . . but also the beings which water and earth produced in potency and in their causes before they came forth in the course of time. (5, 23, 45)

In his *De Trinitate*, he develops this thought further. The Creator must have conferred a generative power on the elements from the beginning: “All these creatures by way of origin have already been created in a kind of texture of the elements, but they come forth when they get the opportunity” (Augustine [c. 399–422] 1887, 3, 9, 16). The presence of this generative power can be known: “Although we are unable to see it with our eyes, yet we can conjecture its existence from our reason. For unless there were some such power in those elements, there would not so frequently be produced from the earth things which had not been sown there, nor yet so many animals . . . that themselves sprang up without any union of parents” (3, 8, 13).

But it is important to distinguish ordinary seeds from the original ones which gave rise to the first living kinds:

For those seeds which are visible now to our eyes from fruits and living things are quite distinct from . . . those former seeds, from which, at the bidding of the Creator, the water produced the first swimming creatures and fowl, and the earth the first buds after their kinds, and the first living creatures after their kinds. . . . But oftentimes, suitable combinations of circumstances are wanting whereby they may be able to burst forth and complete their species. (3, 8, 13)

The critical text for him was that of the sixth day, where God is said to have “finished the works that He had made” (Augustine [415] 1982, 5, 20, 41). There must, then, be a real sense in which the work of creation could be said to be complete at this point. Only if the “seeds” of all that will come later are already present from the beginning can this be true. The works are then “finished” in the sense that the bringing-to-be from nothing is now complete. What is left is their development over the course of time. And this will begin in the second Genesis account with the story of man: the appearance of the first man, the role assigned to him in the Garden of Eden, the injunction laid on him, his naming of the animals (assumed to have appeared earlier), and finally the making of a partner who would “complete him.”

Augustine sees this as the best way to resolve the tensions between the two biblical narratives. It is also, implicitly, closer to his own understanding of the act of creation itself. The two narratives recount an act that manifests itself to us in two quite different ways: the initial act of bringing to be the universe and all the potentialities needed for its later development, and the subsequent working out over time of all that was contained potentially in that first act, with an emphasis on the topics of most consequence to us. To the Creator, these two acts are one; to us temporal beings, they appear as creation and conservation.

To what extent are the tensions in the text resolved? Augustine worried about several difficulties that remain. First, the operation of these seed-like agencies is of a completely unfamiliar kind. Ought this rule them out? Not at all, he responds. After all, we don’t even know what permits ordinary seeds to grow as they do or what it is within our own bodies that makes us grow old. The nature of this latter process is hidden from us but “by another kind of knowledge we conclude that there is in nature some hidden force by which latent forms are brought into view. . . . The principle which makes this development possible is hidden to the eyes but not to the mind. . . .” (6, 16, 27). Our minds can reason to the presence in nature of latent processes of all kinds even though we don’t see them or fully understand them.

Augustine does not take the biblical text to authorize a special kind of making for man, one that involves God in a different way than in the case of animals. Both, he insists, are made from the earth: “The same Scripture that says that God formed man from the slime of the earth says also that He formed the beasts of the field from the earth” (6, 16, 22, quoting Genesis 2:19). The distinction between man and animal lies elsewhere, he says, in the fact that man is made in God’s image; he has been endowed with an intellect “by which he surpasses the beasts.”

But there is a serious difficulty: “In what state did God make man from the slime of the earth? Did He make him a fully developed man, an adult . . . or an infant, as he makes human beings today in their mothers’ wombs?”

(6, 16, 23). Though Augustine does not dwell on the difficulties facing either option, they are sufficiently clear, recalling that in either event, the first man is supposed to develop naturally from a seed-principle implanted in the earth of the initial creation. The same difficulty would come up for animals generally but Augustine poses it in what for him is the most problematic case. The “seed” metaphor obviously works much better for plants which require only the requisite conditions of earth and water to grow into maturity. Animals on the other hand ordinarily need periods of nurturing and therefore pre-existent nurturers:

Did God make (the seed like principles) to cause the development of (living) things over periods of time different for each creature according to its kind. . . ? Or did he provide that through these principles creatures would be fully formed instantaneously, like Adam if he is made an adult man without any previous period of development? But why can we not assume that the seed like principles had both potentialities, so that from them would come whatever would have pleased the Creator . . . either for the ordinary development of new creatures or by providing for the rare occurrence of a miraculous production of a creature. . . ? (6, 14, 25)

This is a crucial concession. Faced with the difficulty of conceiving how Adam, and by implication, animals generally, could originate from seeds implanted in the earth, Augustine allows that there could be two quite different possibilities, one according to the order of nature, the other miraculous:

In either case, whichever way God made Adam, He did what was in accordance with his almighty power and wisdom. God has established in the temporal order fixed laws governing the production of kinds of beings . . . and bringing them forth from a hidden state into full view. But his will is supreme over all. By his powers he has given numbers to his creation but he has not bound his powers by these numbers. (6, 16, 23)

They may be brought about through the “fixed laws,” the “numbers,”⁶ governing the created world, even if the particular laws proper to the seed-principles are unknown to us. Or they may be brought about in miraculous fashion. God has not “bound his powers” by these laws and thus may, on occasion, transcend them by way of miracle. But in the latter case, should one still describe this in the language of “seeds”? He had said, as we have seen, that “in the seeds, there was invisibly present *all* that would develop in time.” Has he not abandoned his original commitment to requiring the potentialities from which all the natural kinds later develop to be present in the waters and earth of the original creation?

Augustine thinks not. Even if God were to form Adam miraculously, he would still do so from the earth of that first creation. And so there would have been a “potentiality” in that earth from the beginning to permit such a miracle to take place. (Later commentators would speak of an “obediential” potency in this context.) Why should it too not be described in terms of

seed-principle, in line with his original insistence that the potentiality for man and (by implication) for other animals had to have been an effective reality in the first creation? It should be added that a miraculous bringing-to-be of the first human body could still be described as “natural” from his (distinctive) point of view: “When events like this happen, they do not happen against nature except for us, who have a limited knowledge of nature, but not for God, for whom nature is what He has made” (6, 13, 24).

So this is where Augustine leaves it.⁷ The extreme difficulty of imagining the sort of “fixed laws” of nature that could conceivably bring about the first appearance of man, presumably as an adult, has led him to qualify his original insight and allow at least the possibility that God could have chosen to bring this about miraculously. Identifying as a *ratio seminalis* in the first creation the mere *possibility* that God might later bring about a particular kind in a miraculous manner tends, however, to undermine the original seed metaphor: an infinite range of different kinds would qualify as seed-like principles according to this rubric. His original claim was that all the kinds that came afterward had to have been present in a *real* sense in earth and waters from the first moment of the universe’s existence. If man and other animals were present only in the sense that the *possibility* of their being later miraculously created was true from the beginning, that does not really qualify as a seed-like, that is, a real generative, principle. More seriously, the difference between this version and the literal reading of *Genesis* 1 that would have God bringing the different living kinds to be in miraculous fashion at a later time seems to diminish if not to vanish.

The lesson that we can draw from this need not, however, be stated in so hedged a manner. The best interpretation of the first chapters on *Genesis* in Augustine’s view was that, from our perspective, there were two creations, one the instantaneous bringing to be of the material universe, containing the seed-like principles that would eventually yield all living kinds, the human body included,⁸ and the other, the working out in time, when the conditions of earth and moisture permitted, of all that was contained in seed-like potency in the first creation. This working out would call on the regularities (“fixed laws”) of the natural world, including ones entirely unknown to us. But where these would not suffice, God could bring about the desired result in a miraculous way.

It seems fair to conclude that Augustine’s favored solution was that miracle would not be necessary (so that one could confidently say that man and the other animals were present in a straightforwardly real sense in the first, instantaneous, creation). After all, he had introduced his discussion by saying: “It is our business here to seek in the account of Holy Scripture how God made the universe, not what He might produce in nature or from nature by his miraculous power” (2, 1, 2). But the serious difficulty of imagining how the first man (and, implicitly, the first complex animals)

could conceivably develop from the earth in a seed-like and law-like fashion forced him to retain the option of miracle in reserve, as it were, even though doing so stretched the seed metaphor dangerously close to breaking point.

AQUINAS

In the renaissance of learning associated with the cathedral school of Chartres in the twelfth century, scholars developed an account of the creation that drew not only on Scripture but also on Plato's newly influential *Timaeus* as well as on the Aristotelian doctrine of the four elements. The most elaborate of these accounts was that of Thierry of Chartres (d. c. 1150) who saw the creation as an initial bringing-to-be by God of the four elements ("the heavens and the earth") in which were implanted the *rationes seminales* of all the living kinds that would come later. Unlike Augustine, Thierry took the Six Days to stand for six successive rotations of the heavens, as fire, the first element, gradually worked downward to transform the others, bringing forth fish, birds, beasts, and even man, in the order described in *Genesis* 1 (Lindberg 2007, 210). Where the "seeds" for Augustine appeared to be God-given potentialities over and above those specific to earth and water, Thierry's representation of the process of bringing-forth in purely naturalistic terms tended to underplay their special character.⁹ But where the two agreed was in holding that the potentialities for the later development of all the living kinds lay implicit in the first creation and that this was an acceptable way of reading the Scripture.

A century later, Thomas Aquinas stayed much closer to Augustine's original interpretation of the *Genesis* account. He discussed it in some detail in two of his works. The first of these was his early *Commentary on the Sentences*, where he "sustains with Augustine" that the "six days" are in reality only one, the division into six marking the different levels in the created world, not divisions of time (1998, 2, 12, 1, 3c.).¹⁰ And he emphasizes that: "as regards the way and the order in which the world was made, such matters, insofar as they are handed down in Scripture, do not pertain to the faith except *per accidens*. The saints [Church Fathers] have handed down a variety [of views on such matters], preserving the truth of Scripture in varied ways." He goes on:

Where Ambrose takes the six-day account literally, Augustine maintains that at the very beginning of creation, some things, such as the elements, the heavenly bodies, the spiritual substances, were distinguished according to their species in their own nature, but others, such as animals, plants, and human beings, only in their specific *rationes seminales*. All those (latter) things were produced in their own natures later, *in that work by which God, after the sixth day, guides nature which was already established*. (2,12, 1, 2c)

In the initial creation, some things were already produced in their fullness. Aquinas's list includes the elements, not mentioned by Augustine. In the Aristotelian natural philosophy of his day, the four elements were the basic materials from which all else derive. Because there was nothing more basic from which they themselves could proceed, Aquinas saw them as, necessarily, the product of the first creation. Implanted in them were the seed-like principles from which the living kinds would later develop in the "established" ways of nature. He describes these principles as active and passive "powers" (*virtutes*) with which the elements themselves came to be endowed, sufficient to bring new kinds to be. These were in addition to the more familiar powers required for the regular functioning of a particular nature (2, 13, 1, 1c.).

It may be worth noting that the term *power* carries a somewhat different set of associations than does *seed*. Seeds are specific to individual kinds and ordinarily mature only once; powers are more general and suggest permanency. In adopting the Stoic analogy, *spermatikos* (*seminalis*), Augustine had simply offered the suggestion of a capacity on the part of each *logos* (*ratio*), to bring about the first appearance of a particular living kind without need for further action on God's part (hence: "natural"). He left it open whether the seed-like *ratio* should be thought of as a regular property with which earth or water were to be endowed or whether it was something separate superadded, as the term *seed* seemed to suggest. Though Aquinas firmly commits here to the first option, this ambiguity would remain in later discussions of Augustine's idea.

In Aquinas's first reading of Augustine, the powers that animated the formation of the first man were thus as much part of nature as those that direct the normal processes of growth: "the power that is in the semen of a lion or a horse." The operation of the *rationes seminales* in bringing about the body of the first man as well as the first in each animal kind did not, then, it would seem, call for miracle on the Creator's part. Aquinas does not mention the difficulties that troubled Augustine about how a seed-like process could give rise to an adult man and his subsequent concession that this might possibly require miraculous assistance.

One might have expected an Aristotelian in natural philosophy, like Aquinas, to balk at the whole idea of *rationes seminales* that would bring new kinds to be in ways altogether unfamiliar. Yet we find Aquinas preferring Augustine's interpretation of the *Genesis* chapters to the six-day account of Ambrose, even though the latter is "more widely held and, superficially, seems more consonant with the text." Augustine's "is more reasonable and better protects Scripture from the derision of the infidel, which Augustine, in regard to his literal interpretation of *Genesis*, teaches is especially to be considered. . . . (*His*) *opinion is more pleasing to me*" (2, 12, 1, 2c, emphasis added).

Aquinas returns later to this topic in his *Summa Theologica* (Aquinas 1920). Throughout the section on the work of the Six Days (I, qq. 65–74), Augustine's view is treated with respect though Aquinas nowhere mentions the distinctive *rationes seminales* that he had acknowledged in his earlier work and that were a critical component in Augustine's interpretation. He is at some pains to argue that the divergence between it and the more widely shared literal interpretation is not as deep as it seems. According to Augustine, he says: "all the days that are called seven are one day represented in a sevenfold aspect, while others consider that there were seven distinct days. . . . Now, these two opinions, taken as explaining the literal text of Genesis, are certainly widely different. . . . If, however, they are looked at as referring to the mode of production, they will be found not greatly to differ. . . ." (*Summa* 1, 74, 2c.).

But this, he admits, leaves some real differences between the two interpretations. The others "hold that plants and animals were produced actually in the work of the six days, Augustine, that they were produced potentially." Augustine and the others disagree on the ordering of the various features of the created universe, his ordering being based on the natures involved, that of the others on time of appearance. Augustine "takes the earth and water, as first created, to signify matter, totally without form,"¹¹ leaving the impression of form upon matter to a second stage, whereas the other writers take the earth and water to be fully formed from the beginning. Aquinas ends his review: "In order, therefore, to be impartial, we must meet the arguments of either side."

This time, he does not endorse the Augustinian interpretation over its rival but leaves it up to the reader to decide between them. It is interesting that he does not discuss the exegetic case that Augustine so carefully built up in support of his way of surmounting the evident tensions between the two different stories of the creation. He does, however, remind his readers more than once that Augustine is not calling on miracle to carry through the needed "potentialities" to maturity: "Augustine remarks that in the first founding of the order of nature, we must not look for miracles but for what is in accordance with nature" (*Summa* 1, 67, 4, ad 3; 1, 68, 2, ad 1).

BONAVENTURE

Was the first matter created not yet perfectly formed or was it fully formed from the beginning? This was Bonaventure's way of describing the debate in his *Commentary on the Sentences of Peter Lombard*. The former was the view of those who held that six days were needed to complete the task, whereas defenders of the latter held that the work was complete from the start (complete with the inclusion of the *rationes seminales*, of course, though Bonaventure does not mention these):

Some of the Fathers prefer to follow the theological way in this matter, drawing support from those things which are of the faith. Others, *principal among them Augustine, prefer to follow the philosophical way, relying on those things which seem more consonant with reason, drawing confirmation of their reasoning from the understanding of Scripture.* Thus, since it seems more reasonable for Supreme Power to produce all things together and that interposing time-delays is neither useful nor necessary, they hold that all things were produced together, confirming their view by appealing to the authority of Scripture. They deal with what seems to contradict their view, namely, the distinction of the six days, by showing that these days are not material but spiritual, which can allow all things together. This position is *highly rational. . . and quite subtle.* (2006, 2, 12, 2c., emphasis added)

This was not Augustine's way of presenting his case. He represented it, as we have seen, as a solution in the first instance to the problem of harmonizing the first chapters of *Genesis*. But Bonaventure astutely suggests that another, unstated, "philosophical" rationale is the more important one. By his time, it was this latter that may have attracted continuing support among philosophically inclined theologians for Augustine's view, even more than his making it account for the apparent discrepancies between the *Genesis* chapters.

Bonaventure regards Augustine's as an "anagogical" interpretation (i.e., pointing to a higher spiritual sense) though he notes that Augustine himself describes it as "literal," aiming to avoid the mockery of Scripture by philosophers. And he recalls that Augustine held that Scripture can in any case have many different senses simultaneously. So he is content to let Augustine's interpretation stand as a possible sense. But as for himself, he finds the literal way of reading the Six Days to be "more probable on Scriptural grounds" even though the other seems to be "more consonant with human reason." He cites Augustine himself in support of his choice because the latter says in his commentary on *Genesis* that "the authority of Scripture is greater than that of any human perspicacity" (2, 12, 2f).

As the Middle Ages waned, the "Hexaemeral" ("Six Day") literature flourished (Robbins, 1912). Its authors held forth, in sometimes fanciful detail, as Basil and Ambrose had earlier done, on the wonders of the natural world as testimony to God's power and goodness. Their emphasis on natural history lent itself to taking the story of the Six Days literally as a simple, easily grasped, story. But theologians remained aware that there were two quite different ways of understanding the account of the creation in *Genesis*, and continued to debate their merits.¹² As the sixteenth century dawned, the leading Roman theologian of the day, Tommaso Cajetan (1469–1534), was just one of those who still strongly supported the Augustinian reading of the *Genesis* chapters (Cajetan 1539, chapters 1 and 2). If some precocious genius had, *per impossibile*, come up with a credible theory of evolution around that time, it does not seem far-fetched to speculate that it would have been welcomed by a sizeable proportion of

Christian theologians, mindful of Augustine's confidence that the Creator would somehow or other have conferred the potential on the original creation to bring forth the living kinds at a later time. But all that was soon to change.

THE TURN TO THE LITERAL

The proclamation of "Scripture alone" as the rule of faith by the Protestant reformers of the early sixteenth century did not of itself mandate a turn to the literal where the Bible was concerned. But if individuals were expected to discover from their own reading the intended meaning of biblical texts, the literal meaning was likely to be favored. Not only would allegory be banished but more abstract construction of problematic texts would automatically be suspect. Peter Harrison writes:

With the new biblical literalism which followed in the wake of the Reformation, many portions of Scripture were read for the first time as having history as their primary sense. The significance of narrative passages of the bible now lay in the fact that they recounted things that had happened hundreds or thousands of years ago. Whereas the accounts of Creation in the book of *Genesis* had provided scope for the imaginations of exegetes given to allegory, now the significance of these stories was seen to lie in their literal truth as depicting past events. . . (Moses) became "the sacred historian" . . . who had written a factual account of the first ages of the earth, the significance of which was historical, not figurative or allegorical. The contents of the book of *Genesis* attracted new descriptions: "the history of Creation" . . . "the history recorded by Moses." (Harrison 1998, 122)

Augustine's reading of the first chapters of *Genesis* was, in fact, neither figurative nor allegorical. But neither was it straightforwardly historical: it was in the first instance an attempt by a gifted and widely read scholar to discover a coherent way of reading a puzzling sacred text.

John Calvin's *Commentary on Genesis* offers a striking contrast with the earlier Hexaemeral literature. In his lengthy construal of the work of the Six Days there is not a single reference to any earlier author. This is the work of an enormously learned scholar who, entirely from his own resources, sets out to discover what the literal meaning of the famous texts is. He leaves the reader in no doubt as to what he thinks of one particular errant reading:

Here the error of those is manifestly refuted who maintain that the world was made in a moment. For it is too violent a cavil to contend that Moses distributed the work which God perfected at once into six days for the mere purpose of conveying instruction. Let us rather conclude that God himself took six days for the purpose of accommodating his works to the capacity of man. (Calvin, [1554] 1847, I, 5)

Nor had (the earth) a germinating principle from any other source till the mouth of the Lord was opened (on the third day). (1, 11)

Though he does not say so, it is the Augustinian construal of those same texts that Calvin is criticizing here. When he comes to the bible passages where living creatures are said to be “brought forth” from the waters or from the earth, however, he notes that this can still qualify as creation “from nothing,” that is, creation proper: “Not that the beginning of their creation is to be reckoned from the moment in which they receive their form, but *because they are comprehended in the universal matter which was made out of nothing*. So that as respect to species, form only was added to them; but creation is nevertheless a term truly used respecting both the whole and the parts” (1, 21, emphasis added).

There are echoes of Augustine here, prompted by the “bringing-forth” metaphor. In order to have all the living kinds that would come later already contained somehow in that first creation (i.e., creation *ex nihilo* proper), Calvin points out that the matter on which their forms will later be miraculously imposed over six days was already part of what came to be at the beginning. Where Augustine secured the original presence of the living kinds by means of the seed-like principles, each to a particular kind, Calvin does so more tenuously by invoking a generic matter, to be individuated only later.

There was an even more marked turn to the literal on the side of the Counter-Reform. The norms governing the proper interpretation of Scripture were one of the main concerns of the Council of Trent. The Fourth Session of the Council (1546) decreed that interpretation should be governed by the authority of the Church and the “unanimous consent of the Fathers” (Waterworth 1848, 19–20). There was no mention of the literal but the divisions regarding the Scriptures that were at the heart of the bitter controversy between the two sides led, on the Counter-Reform side, to a new conservatism in interpretation.

A striking example of this conservatism can be found in the work of Francisco Suarez (1548–1617), who was perhaps the most eminent Catholic philosopher-theologian of this period. His *Tractatus de opere Sex Dierum*, published posthumously in 1622, was a mighty work running to five books and 447 double-column pages, surely one of the most exhaustive treatments of the topic in the entire Hexaemeral tradition. Unlike most other commentators, he focuses his discussion of Augustine’s view mainly on the latter’s exegetic analysis of the *Genesis* chapters, among other things vigorously deploring its departure from the literal.

Traversing the *Genesis* text practically line by line, with frequent reference to other parts of Scripture, he draws on scholastic philosophy of which he was an acknowledged master, unsparing in his criticism of what he perceives as logical inconsistencies in Augustine’s readings of Scripture. He leaves the reader in no doubt as to his uncompromisingly negative view of Augustine’s exegetic analysis of the Six Days as well as of Cajetan’s energetic efforts on Augustine’s behalf. He insists, for example, that the *Genesis* description

of the Days themselves uses expressions that can only be understood in terms of temporal succession. The transitions from day to night and from morning to evening on which the whole account depends make no sense unless time passes.¹³ “‘Let the waters gather and the dry land appear . . . and so it was’ . . . the waters gathered, land appeared, surely a change. ‘Let the earth produce vegetation. . . and so it was’: the earth produced vegetation. . . .” All this could only happen, Suarez argues, *after* the earth appeared. The same holds with the appearance of sea-creatures and land animals: “God said: ‘Let them come forth!’ and they came forth” (Suarez [1622] 1856, 1, 10, 7).¹⁴ And God is said to rest *after* the work of the previous days (1, 12, 7). Relying on metaphor to deny that these passages imply the passage of time is, in effect, “foolish and insufficient.”

If the creation of all in the first instant is rejected, as Suarez urges it should be, there is no need, he notes, to introduce Augustine’s ideas about seed-like principles because these would no longer be necessary (2, 7, 2). Still, he feels that some comment on them is called for. In brief: The seeds from which animals develop can develop naturally, from conception to birth, only *within* animals. So that adult animals have to come first. Seed-bearing plants are said to be created on the third day: the plants, fully formed, not the seeds, are said to come first. Seeds cannot come naturally from other seeds.

But if someone were to say: Augustine does not mean by *virtus* or *potentia* this sort of seed but rather, another kind of peculiar *virtus* of earth capable of germinating, this is to be rejected with the same facility with which is uttered *because it has no foundation in Scripture* (nor does Augustine claim that it has). Nor can it be explained in a natural way what this *virtus* is: miraculous or extraordinary works are not to be accepted without necessity. (2, 7, 3, emphasis added)

Suarez several times repeats this warning against invoking miracle, which is odd because the literal account of the Six Days that he advocates is entirely dependent on miracle for the origin of each natural kind. That it has the “foundation in Scripture” that Augustine’s account is said to lack, for him makes the difference.

At every step in his extended discussion of the first chapters on *Genesis*, faithful to the mandate of Trent, he cites a long list of the Fathers in his support, presenting Augustine as a lone figure among them. Aquinas is more of a problem. He does not cite the favorable assessment of the Augustinian position by Aquinas in his *Commentary on the Sentences* and suggests that Aquinas’s own view is really the literalist one but that he is offering token support to Augustine in the *Summa* only “because of his reverence for him” (2, 7, 2), “because of his own modesty,” “rather than openly arguing for [Augustine’s] inconsistency” (1, 12, 2).¹⁵

On the main issue: Was all the creating (in some sense) at once or else spread out over six literal days? The objection against the former that Suarez

clearly thought to be unanswerable was that it would implicitly make God a deceiver:

The words of Scripture are not to be converted into metaphor, especially in historical narratives that pertain to instruction in the faith, unless warranted by necessity or indicated by the text itself. ... If God had not performed the works in six true days, it is not likely that the people would have been able to understand that [six days] here meant something different. It is incredible that God would have conveyed his precepts to the people in words that would deceive them by conveying a false sense. (1, 12, 3)¹⁶

Where Augustine took the discrepancy he found between the first two chapters of *Genesis* to invite a search for what the true meaning of the text could be, Suarez made light of the discrepancy and insisted that the meaning had to be what the Fathers saw in it (excepting Augustine, of course) and, equally important, what the ordinary reader would be likely to take from it. On this latter criterion he and the Reformers could agree. This sweeping assault on the part of the most influential Catholic theologian of the early modern period would have strongly discouraged later Catholic theologians from expressing interest in Augustine's departure from the now-canonical literal sense of the *Genesis* text. There would still be some supporters. But Suarez's extended attack and the prevailing literalism in Scripture interpretation meant that Augustine's view dropped almost out of sight among Catholic exegetes.

The growing popularity of natural theology among Anglican theologians in the seventeenth century would not have encouraged the idea among them either that the potential for a *natural* development of the living kinds was present in the first creation. The whole point of the design argument developed by Boyle, Ray, and others was that the ordaining of means to end so lavishly manifested in the bodily structures and instinctual behaviors of the animal world required the active interposition of a shaping intelligence at the origin of each kind.¹⁷ Did Christians have to choose in the light of this between the rival interpretations of the first chapters of *Genesis* (supposing them even to be aware that there *were* two such) they would surely have opted for the literal reading.

AFTER DARWIN: FROM SIMPSON TO MIVART TO HUXLEY

It was not in the least surprising, then, that the publication of Darwin's *On the Origin of Species* did not find theologians rushing to point out that there was a precedent for the notion of evolution, understood as gradual development, within the Christian tradition itself. The specifically Darwinian contribution, natural selection, was of course entirely new. But it would not have been far-fetched to regard it as solving a problem that Augustine had long before worried over.

Darwin's book called forth a flock of reviews, ranging from the celebratory to the dismissive. Among the latter was a substantial review in 1860 in the *The Rambler*, a short-lived Catholic journal, whose editor at that point was John Henry Newman. The reviewer signed himself "R.S." but readers would immediately have known that the letters stood for Richard Simpson, an earlier editor of the journal. Simpson was a convert to Catholicism who had already published several combative essays on the relationship of Catholicism to contemporary philosophy and science (Lyon 1972). In philosophy of science he was an inductivist, as were so many at that time, willing to admit the use of hypothesis but only in terms of its utility. That Darwin's theory explains many facts, he says, in no way justifies seriously proposing it as an account of origins. Darwin simply fails to understand the limits of inductive reasoning.

Defenders of the new theory, Simpson goes on, wrongly claim that Christians are limited to believing in a miraculous account of the origin of each living kind. This is quite wrong. Rather: "law and regularity, not arbitrary intervention, was the patristic ideal of creation" (372). He refers to Aquinas who quotes Augustine (from *The Literal Meaning of Genesis* 2, 1) as remarking that in the first founding of the order of nature, we must not look for miracles but for what is in accordance with nature (*Summa Theologica*, 1, 67, 4, ad 3). The early Christian founders of the theology of creation, represented by Augustine, held that "when God said: 'Let the waters produce. . .,' 'Let the earth produce. . .,' He conferred forces on the elements of earth and water which enabled them to produce the various species of organic beings in a natural way. This power, they thought, remains attached to the elements throughout all time."

Simpson drew attention, therefore, to the other Christian tradition early on in the post-Darwin debates. He would most probably have encountered it in the work of Aquinas, then coming back into prominence among those, like himself, well read in Catholic theology. His review overstates the case by giving the impression that the Augustinian view was widely shared in the early Church, that it was "the patristic ideal of creation." What he evidently wanted to convey was that Christians, like himself, could be perfectly comfortable, on traditional grounds, with the evolution of living kinds but that Darwin's explanation of how it came about fell far short of the claims being made for it.

One person who read Simpson's review and took good note of it was the accomplished naturalist, St. George Mivart, himself also a convert to Catholicism. Mivart regarded himself as an evolutionist but was altogether unimpressed by the claims being made for natural selection as an explanation for how it all came about. In 1870, he published *The Genesis of Species*, the title already suggesting that it would present an alternative to Darwin's account. He aims, he says, to show, first, that though natural selection does indeed act, "it requires to be supplemented by the action

of some other natural law or laws as yet undiscovered" and, second, that "the consequences drawn from evolution, whether exclusively Darwinian or not, to the prejudice of religion . . . are in fact illegitimate" (Mivart 1870, 278). He allows that natural selection might provide satisfactory explanation in some limited areas but goes on in seven detailed chapters to argue that it fails in many more. The gaps in the fossil record suggest discontinuous change rather than the gradual change Darwin postulated, which would rarely confer real advantage. Rather than natural selection, Mivart favors internal, goal-directed, forces responsible for progress and for convergence on recurrent structural forms (Desmond 1982, 176–80).¹⁸

In a lengthy final chapter, "Theology and Creation," Mivart draws a distinction between "absolute" creation, that is, the creation *ex nihilo* from which the universe first began, and "derivative" creation which is: "not a supernatural act but is simply the Divine activity by and through natural laws" (278). For those who believe in a Creator, God is active at all moments in the history of the universe, not just the first one. Thus a believer is entitled to describe the ordinary workings of the laws of nature as themselves a testimony to creation, at one remove admittedly, hence "derivative."

Mivart is emphatic in holding that all the living kinds have evolved and would even extend this to the origins of the first cell (which, as he notes, is more than Darwin himself had claimed). Evolution is derivative creation in action so that creation and evolution (including evolution by natural selection) are clearly compatible. The disagreement between some supporters of evolution and religious believers thus reduces to one issue: creation *ex nihilo*. And this, of course, is not something on which science itself can properly adjudicate. His own acceptance of evolution, furthermore, is not an aberrant view for a Christian. Indeed, it "would be easy to give numerous examples" among "writers of earlier ages" who would broadly agree. "It will be better, however, only to cite one or two authorities of weight." (Here and elsewhere, he greatly overstates the degree of support for this "evolutionary" point of view within the broader Christian tradition.)

Not surprisingly, the first two writers he lists are Augustine and Aquinas, citing Simpson as his source (Mivart 1870, 30). Considering that, in their day, the age of the world was assumed to be no more than some thousands of years, he remarks, it is striking that: "St. Augustine insists in a remarkable manner on the merely derivative sense in which God's creation of organic forms is to be understood, that is, that God created them by conferring on the material world the power to evolve them under suitable conditions" (281). And he goes on to cite (in Latin!) several of the passages from the *De Genesi ad litteram* and the *De Trinitate* that we have already noted above. For Aquinas he quotes only the *Summa*, presumably unaware of the more favorable assessment in the *Commentary on the Sentences*. He

nevertheless interprets him as offering unqualified approval in the *Summa* of Augustine's view (282). In a long chapter, his discussion of the two theologians occupies only a couple of pages. But it plays a key role for him in arguing that the view that the ancestors of all living things came to be in a natural way when conditions were favorable (in his terms, "derivative" creation) was of long standing among Christian theologians generally.

But, unfortunately, Augustine and Aquinas were not the only ones he called on. To show that their view continued to find adherents after Aquinas's day, he added just one more name: Suarez, "widely venerated as an authority . . . whose orthodoxy has never been questioned" (281). "Perhaps no post-medieval theologian has a wider reception among Christians throughout the world than Suarez" (31). In his case: "it will be enough to refer to *Disputationes*, XV, 2, 9, and 13–15, and many other references to the same effect could easily be given, but these may suffice."¹⁹ Recalling what was said earlier about Suarez as perhaps the most formidable critic the Augustinian view had ever encountered, it will be seen that this reference was an out-and-out disaster. Just how complete a disaster it was did not take long to emerge.

A year later, Darwin's pugnacious defender, Thomas Henry Huxley, outraged by his former student's attack on *Origin*, joined battle in the *Contemporary Review* with a blistering attack on Mivart's book, much of it devoted to the single chapter on "Theology and Evolution."²⁰ Not only did Suarez *not* subscribe to the Augustinian thesis (as Mivart claims) but, rather, "that great light of orthodoxy takes no small pains to give the most explicit and direct contradiction to all such imaginings" (Huxley 1871, 453). Huxley can, therefore, draw extensively on Suarez's criticisms of Augustine's interpretation of the first chapters on *Genesis* to make the point that this is not an authentic reading of the biblical texts: it would, in effect, make God a deceiver because the people for whom the text was originally intended would have been seriously misled by it (452).

Augustine's arguments in favor of his own reading are passed over by Huxley, as they largely had been by Suarez, and Aquinas's support for that reading is dismissed as no more than a "kindly subterfuge" (quoting Suarez). Because Mivart had described Suarez as a "venerated authority," this can now be turned directly against himself: it seems that his chosen authority totally disagrees with him! Suarez is the key to this tour-de-force: Huxley uses him to undermine the credentials of the Augustinian thesis and then demolishes Suarez himself in turn by arguing that his literal account of the Six Days is incompatible with extensive scientific evidence. And then a final thrust: because Suarez (according to Mivart) speaks for the Catholic Church and thus for its commitment also to the literal Six-Day account, until the Church "formally declare that Suarez was wrong," it is convicted of being anti-evolution and hence anti-science, a favorite theme of Huxley's. A neat triple play! Had Mivart not incautiously made that

single reference to Suarez, Huxley's response could not have been nearly as damaging.

Mivart was not about to leave this onslaught unanswered. In a thirty-page article in the next issue of the *Contemporary Review*, he did his best to respond. He notes that Suarez "adopts an extreme literalism of scripture interpretation" (Mivart 1871, 181), a point that he could have dwelt on even more forcefully, because it was the key to Suarez's sweeping dismissal of the Augustinian thesis. To call into question (somewhat belatedly!) Suarez's authority to speak for the Catholic tradition on the disputed issue, he lines up further support among Catholic theologians for Augustine's position: Albert the Great and Bonaventure²¹ among medieval theologians, and Tommaso Cajetan, Melchior Cano, Henry Noris,²² and Giovanni Berti²³ from later times. He challenges Suarez's suggestion that Aquinas deferred to Augustine out of respect rather than agreement with his position by quoting, to better effect, Aquinas's more explicitly affirmative *Commentary on the Sentences*. But, of course, this continuing emphasis on Catholic authorities tended to reinforce Huxley's dismissal of Mivart as a mere advocate for specifically Catholic doctrine and hence (in Huxley's view, at least) automatically suspect. Mivart tried to respond to this charge by claiming that his references to Catholic sources were only meant to suggest that if Catholics were free to accept evolutionary ideas, then other Christians, less conservative in such matters, should not hesitate (175). But the identification of the Augustinian reading of the *Genesis* chapters as somehow distinctively Catholic would persist. And its association with Mivart would, in addition, tend to convey a vaguely anti-Darwinian suggestion to many.²⁴

CALLING ON AUGUSTINE'S AID

It was scarcely surprising in the circumstances that those writers in Britain who described themselves as "theistic evolutionists" in the decades that followed rarely mentioned the Augustinian thesis. One notable exception was the Anglican priest, Aubrey Moore, Canon of Christ Church, Oxford, who in an essay defending Darwin's theory from the Christian standpoint, quoted Augustine's *De Genesi*: "St. Augustine distinctly rejects [special creation] in favor of a view, which without any violence to language, we may call a theory of evolution." He continued: "Aquinas, if he did not adopt St. Augustine's view, at least recognized it as tenable. His words are so remarkable that they are worth quoting, especially as we have never seen them quoted in this connection." And he went on to quote at length from the *Summa* (I, q.59, a.2).²⁵

The only book-length works recalling it in those years were two extended defenses of evolution by Catholic authors (McMullin 2011). The first of these was by a French Dominican, Dalmace Leroy: *L'évolution aux*

espèces organiques (1887), the second by John Zahm, a professor at the University of Notre Dame in the United States: *Evolution and Dogma* (1896). In responding to criticisms of the first edition of his book, Leroy introduces Augustine mainly to argue that the Church Fathers had not been unanimous in supporting a literal reading of the Genesis passages. Zahm leans much more heavily on the Augustinian account itself as warrant for accepting evolution, though in the tradition of Mivart rather than of Darwin. For him, evolution is a logical extension of ideas to be found among the theologians of the early and medieval church. He asks whether “any modern philosopher stated more clearly [than does Augustine] the salient facts of organic evolution” and concludes that Augustine and Aquinas both advocated “theistic evolution.” This was, of course, to overstate the case but Zahm may be forgiven for the excitement he clearly felt at finding support in the early Christian tradition for a theory he valued on scientific grounds. His book brought the Augustinian developmental approach to cosmic origins to wide notice among Catholic readers in the United States.²⁶

With the coming of a new century, and with the resolution, thanks to the new science of genetics, of some serious difficulties in the original Darwinian proposal, suspicion of evolution gradually lessened among Catholic theologians, though it did not by any means disappear. Two more books by Catholic defenders of evolution that appealed to the Augustinian precedent attained wide circulation: *Darwinisme et la Pensée Catholique* (1921; English version 1923) by Henri de Dorlodot, Director of the Geological Institute at the Catholic University of Louvain, and *Evolution and Theology* (1932) by the English theologian, Ernest Messenger. Writing for fellow Catholics in the French-speaking world, among whom suspicion of Darwin and Darwinism was still widespread, de Dorlodot too was tempted to overstate: Augustine is said to uphold “as certain the theory of the absolute natural evolution of living beings, from inorganic matter right up to the body of man inclusively” (1923, 63). Messenger’s book was more measured, better documented, and more comprehensive than its predecessors. He argued effectively for the relevance of the Augustinian precedent for Christians as they weigh up the acceptability of evolutionary ideas about origins. Human origins still presented him with a challenge but he did his best to lay out the issues involved, while insisting on the separate creation of each human soul.

By this time Catholic theologians were gradually coming to terms with these ideas, though their broader consequences for Christian theology were only beginning to be weighed. The extent to which Augustine’s example helped to bring this change about is hard to estimate but it must have played a part. The Mivart-Huxley chronicle makes it easier to understand why it did not carry the same force among Christian defenders of theistic evolution more generally.

DARWIN AND THE OTHER CHRISTIAN TRADITION

What is the relevance of this long story today? Why should we still hark back to Augustine when discussing the response of the contemporary Christian to Darwin and his legacy? After all, the specifically exegetic case that Augustine made for his dramatic version of cosmic origins, though ingenious, was in the end insufficient. A much more consistent way of dealing with the textual discrepancies has long been accepted. But his version of origins itself turned out to be prescient, anticipating the dazzling vision today of a universe billions of years old in which the seeds of what would come after were present in its first cataclysmic moment. His case was flawed, true, but his version of origins was not.

This might make it seem as though he stumbled on that version by accident. It was no accident. As later commentators like Bonaventure realized, underlying the exegetic argument was another more persuasive one, left largely unexpressed. Augustine saw the transcendent Creator as one who would not defer essential tasks until later, to be accomplished only by supplementing, by way of miracle, the natural processes already set in place at the beginning. He and Aquinas, as we saw earlier, agree that in the first constitution of the order of nature, "we must not look for miracles." From this principle it would follow that the potentiality for all the kinds that would come later *would* be contained in the matter of the first beginning, capable of bringing those kinds to be "in accordance with nature." Once this be accepted, the task is to reconcile that insight with Scripture and that is what Augustine set himself to do, while at the same time respecting another of his principles: in case of actual conflict, the Scripture must come first. He would say, of course, that there is no conflict here.

The import of all this for the Christian today is clear. The fundamental insight of the Christian doctrine of creation that goes back to Augustine and beyond is that the order of nature was complete from the beginning. Not only does this not conflict with the contemporary evolutionary understanding of cosmic origins, it requires a solution along those very lines. Augustine struggled to fend off the objection that the first in a line of complex animals could not possibly come to be in a single step and in a natural way from a seed-principle locked in the earth. As we now know, there is no such way. That he should even consider so implausible a suggestion testifies to his confidence that the Creator would somehow find a way. The Creator did. . . .

Darwin and his collaborators pointed to that way: it was not to be accomplished in a single step but in descent with modification through a countless series of living ancestors. Augustine would surely have been thrilled could he have known that his confidence that there *had* to be a way was not misplaced. In that respect, Darwin without realizing it had

gone a long way toward securing the eventual validation of the core belief animating that other Christian tradition.

NOTES

1. It may be relevant to note that contemporary biblical scholars would ask, just as Augustine did, how these obvious differences are to be explained. Their answer comes from an approach to the biblical text remote from the norms that guided Augustine's inquiry. They would say that the two chapters were written centuries apart, the second and the following chapters emerging from the concerns of early Israel, from the tenth century kingdom of David and Solomon, the first from the trauma of the sixth-century Exile, reminding the people of God's ability to bring order even out of catastrophic disorder (Bergant and Stuhlmüller 1985). They would later have been brought together by an editor who naturally placed the more general Six-Day account first and was evidently unworried by the differences between the two.

2. Augustine sets much store by this text from Sirach, quoted in the Old Latin translation on which he relied. The preferred translation today would be: "He made all things without exception."

3. He returns to this topic frequently elsewhere and most especially in the famous pages of his *Confessions*, Book XI.

4. This leaves him, of course, with a question to answer. What, then, is the point of the division into seven days? His answer, he emphasizes, is tentative: the "days" are the stages in the progression of the angels' knowledge of the created universe: "Whoever does not accept the meaning that my limited powers have been able to discover. . . let him search and find (his own) solution with God's help" (Augustine [415] 1982, 4, 28, 45).

5. Augustine speaks of them also as *rationes primordiales*, *primordia causarum*, *causales rationes*, *quasi semina futurorum*. It is difficult to find a single English equivalent to convey this complex notion. The last of these terms: quasi-seeds of things to come is perhaps the most expressive.

6. Augustine frequently refers to "numbers" when referring to the properties that specify how things naturally behave, calling on Wisdom, 11: 21: "Thou hast ordered all things in measure, number, and weight."

7. Scripture is so specific about the formation of the first woman that Augustine is content from the beginning to allow that this was a miraculous event ([415] 1982, 9, 13, 23).

8. That the soul could not, in his view, develop from matter raises a difficulty for him here that he never discusses. The living body for him is not sufficient to constitute man: God has first to infuse a soul into that body. But if this is the case, how can one say that man is really present in the first creation? The presence of a seed-principle for the development in time of a human body would not, for him, be sufficient to warrant the presence of man. God's (miraculous) infusion of soul into each human body to make up a human being proper raises a real difficulty for Augustine's argument, which depends on the seed-like presence of the (whole?) man in the first creation.

9. To critics who argued that this account of the creation unduly diminished the role of the Creator, Thierry's colleague, William of Conches, responded that to explain in this way was to exalt, not to denigrate, the power of God who could confer such powers on matter.

10. See Kretzmann (1998, 190–193). Aquinas agrees there also with Augustine in taking the six-day divisions to mark the progression in the angels' knowledge of the creation, describing this view as "subtle and congruous."

11. Aquinas's matter-form distinction does not readily lend itself to Augustine's seed metaphor.

12. See, for example, Nicholas Steneck's work (1977) on Henry of Langenstein (d. 1397), 108–9.

13. The Dominican, Melchior Cano (1509–1560), and the Jesuit, Luis de Molina (1535–1600), held, with Augustine, that all was made in a single day but avoided this objection by allowing that on that day time had passed (book I, XII, 2). It was important to Augustine's original argument not to allow this. Suarez deals separately with Cano and Molina, finding other arguments against their claim.

14. Suarez in part misrepresents Augustine's argument here by supposing that the latter includes episodes described in Genesis 2 (like the making of the animals and birds, fully formed, as well as of Adam and Eve in their proper natures) in his claim that all happened together on the first day. It was precisely to avoid saying this that Augustine introduced his notion of *rationes seminales*.

15. Suarez's own appeal to the argument from authority is implicitly threatened, however, by the fact that three of the leading Catholic theologians of the sixteenth century, Cajetan, Cano, and Molina, lean to Augustine's side, all three of whom Suarez is thus forced to include in his critiques.

16. Augustine's own explanation of the choice of the Seven-Day format by reference to the progression in the angelic knowledge, Suarez argues: "is difficult to credit because of its excessive obscurity and subtlety. It is not likely that God would have inspired Moses to expound, as necessary for the faith of the whole people, the history of the creation of the world in terms of 'days' whose meaning would be hard to discover and even more difficult to believe" (I, 11, 42).

17. Interestingly, in his commentary on Genesis (c. 1400), Henry of Langenstein, when discussing Augustine's *rationes seminales*, already noted the difficulty in conceiving how design could develop in a natural way from the original seed-like principles (Steneck, 1977, 161).

18. Darwin was incensed by Mivart's critique, regarding it as biased, and in the sixth edition of *Origin* added a chapter addressing this critique in particular (Brooke 2009, 271–72). According to him, Mivart concentrates mainly on the problems with natural selection, whereas he had himself striven to give a balanced assessment of both strengths and difficulties. (Darwin [1859] 1959, 242). Mivart gives the impression that Darwin had not even considered other mechanisms than natural selection whereas Darwin had pointed to several, notably the role of environmental factors. Above all, the abrupt changes and the goal-directed forces that Mivart calls for verge on the miraculous (Darwin [1859] 1959, 241, 266–67).

19. The passage referred to is not quoted but is said to oppose "those who maintain the distinct creation of the various kinds – or substantial forms – of organic life" (31). Huxley will later show that this is a misreading.

20. Huxley's celebrated exclamation sotto voce: "The Lord has delivered him into my hands" during his exchange with Wilberforce in Oxford ten years before (now generally regarded as a later invention, Lucas [1979]) would have been an even more appropriate reaction on his realizing the gift Mivart had handed him by his incautious reference to Suarez!

21. We have seen that, although Bonaventure was well-disposed to the Augustinian view, he finally opted for the more literal alternative.

22. Cardinal Henry Noris (1631–1704) was an influential Augustinian of English descent, head of the Vatican Library, who in agreement with Augustine finds that the literal interpretation of the Genesis chapters faces "the gravest difficulties" (Noris 1673, 182).

23. In his voluminous exposition of Augustine's theology, Giovanni Berti (1696–1766), defends the proposition that "Augustine's doctrine of simultaneous creation is not only immune to all criticism, it is probably true and almost certain" (1739–45, 11, c. 2).

24. It may be worth noting that the theologian, Joseph Ratzinger, later elected Pope Benedict XVI, is among the more prominent critics at the present time of the "baroque distortions" of theology (as they see them) that they trace back to Suarez in particular. In his Habilitation dissertation, Ratzinger strongly criticized Suarez for treating revelation as a series of dogmatic propositions instead of as a personal encounter with Christ. So severe were his criticisms, indeed, that he was advised to excise some of the more anti-Suarezian sections of the dissertation! See Rowland (2010).

25. Aubrey Moore, "Darwinism and Christian faith" in his *Science and the Faith* (Moore 1889, 162–221, at 175). I am indebted to David Livingstone for this reference and also for recalling James Dana, an evangelical geologist, who argued that the Genesis use of the phrase "bring forth" suggests a form of evolution, citing Augustine on this point to show that evangelical support for Darwinism was not just a matter of capitulating to pressure from the Darwinian side (Livingstone 1987, 76).

26. Initial reactions to both works among leading Roman theologians, especially those linked with the influential *Civiltà Cattolica*, were on the whole quite negative: the literalist approach to the Genesis narrative had been too long unquestioned at that point to allow much flexibility

(Artigas, Glick, and Martinez 2006, chapter 4). The theologians objected, in particular, to the suggestion that man's body had evolved and to "transformism," that is, rejection of the fixity of species, a long-held philosophical axiom. They were, apparently, unpersuaded by Augustine's arguments, while minimizing the references to Aquinas. After a good deal of debate, Leroy and Zahm were asked to withdraw their books, which they did. But neither work was added to the Index of Prohibited Works nor was there any formal condemnation of Darwinian ideas, suggesting perhaps that a lesson had been learned from the Galileo contretemps.

REFERENCES

- Aquinas, Thomas. 1998. "The Nature of Theology: Commentary on *Sentences* 1, Prologue," and "The Work of the Six Days of Creation: Commentary on *Sentences* 2.2, d. 12." In Thomas Aquinas, *Selected Writings*, edited and translated with an introduction and notes by Ralph McInerny, 51–104. Harmondsworth: Penguin.
- . 1920. *Summa Theologica*. 2d, rev. ed. Translated by the Fathers of the English Dominican Province. 22 vols. London: Burns, Oates & Washbourne, 1912–36; reprinted in 5 vols., Westminster, Md.: Christian Classics, 1981.
- Artigas, Mariano, Thomas Glick, and Rafael Martinez. 2006. *Negotiating Darwin: The Vatican Confronts Evolution, 1877–1902*. Baltimore, MD: Johns Hopkins Press.
- Augustine, Aurelius. [415] 1982. *The Literal Meaning of Genesis*, transl. and ed. John H. Taylor, Vol. 1, New York: Paulist Press, 1982.
- . [c. 399–422] 1887. "De Trinitate." In *Nicene and Post-Nicene Fathers*, transl. A.H. Haddan. Buffalo, NY: Christian Literature, revised K. Knight, online.
- Bergant, Dianne and Carroll Stuhlmueller. 1985. "Creation according to the Old Testament." In *Evolution and Creation*, ed. Ernan McMullin, 153–75. Notre Dame, IN: University of Notre Dame Press.
- Berti, Giovanni. 1739–1745. *De theologicis disciplinis*, Rome.
- Bonaventure. 2006. *Commentaria in quatuor libros Sententiarum*, transl. Alexis Bugnolo. <http://www.franciscan-archive.org/bonaventura/sent.html>.
- Brooke, John Hedley. 2009. "Laws impressed on matter by the Creator?" In *The Cambridge Companion to "The Origin of Species"*, ed. Michael Ruse and Robert J. Richards. Cambridge: University of Cambridge Press.
- Cajetan, Thomas de Vio. 1539. *In quinque libros Mosis juxta sensum literalis commentarii*, Rome.
- Calvin, John [1554] 1847. *Commentary on Genesis*, ed. and transl. by John King. Calvin Translation Society. <http://www.iclnet.org/pub/resources/text/m.sion/calvgene.htm>.
- Darwin, Charles. [1859] 1959. *Origin of Species*, Variorum edition, ed. Morris Peckham. Philadelphia: University of Pennsylvania Press.
- Desmond, Adrian. 1982. *Ancestors and Archetypes*. London: Blond and Briggs.
- de Dorlodot, Henri. 1921. *Darwinisme et la Pensée Catholique*; transl. E. C. Messenger as: *Darwinism and Catholic Thought*. New York: Benziger, 1923.
- Harrison, Peter. 1998. *The Bible, Protestantism, and the Rise of Natural Science*. Cambridge: Cambridge University Press.
- Huxley, Thomas Henry. 1871. "Contributions to the theory of natural selection: Darwin's critics." *Contemporary Review* 18:443–77.
- Kretzmann, Norman. 1998. *The Metaphysics of Creation*, 190–93. Oxford: Clarendon Press.
- Leroy, Dalmace. 1887. *L'évolution des espèces organiques*. Paris: Perrin. Revised and enlarged as: *L'évolution restreinte aux espèces organiques*. 1891. Paris: Delhomme et Brigueat.
- Lindberg, David. C. 2007. *The Beginnings of Western Science*. Chicago: University of Chicago Press.
- Livingstone, David. 1987. *Darwin's Forgotten Defenders*. Grand Rapids, MI: Eerdmans.
- Lucas, J.R. 1979. "Wilberforce and Huxley: A legendary encounter." *The Historical Journal* 22:313–30.
- Lyon, John. 1972. "Immediate reactions to Darwin: The English Catholic press's first reviews of the *Origin of Species*." *Church History* 41:78–93.
- McMullin, Ernan, ed. 1985. *Evolution and Creation*. Notre Dame, IN: University of Notre Dame Press.

- . 2010. "Creation *ex nihilo*: Early History." In *Creation and the God of Abraham*, ed. David Burrell, Carlo Cogliati, and Janet M. Soskice, 34–58. Cambridge: Cambridge University Press.
- . 2011. "Darwinism and Augustine." In *The Oxford Guide to the Historical Reception of Augustine*, eds. K. Pollmann and W. Oten. Oxford: Oxford University Press, to appear.
- Messenger, Ernest C. 1932. *Evolution and Theology*. New York: Macmillan.
- Mivart, St. George. 1870. *The Genesis of Species*. London: Macmillan.
- . 1871. "Evolution and its consequences: A reply to Professor Huxley." *Contemporary Review* 19:168–97.
- Moore, Aubrey. 1889. *Science and the Faith*. London: Kegan Paul.
- "R.S." (Richard Simpson) 1860. "Darwin on the Origin of Species." *The Rambler*, 2 n.s., 6:361–76.
- Robbins, Frank. 1912. *The Hexaemeral Literature; A Study of the Greek and Latin Commentaries on Genesis*. Chicago: University of Chicago Press.
- Rowland, Tracey. 2010. *Benedict XVI: A Guide for the Perplexed*. London: Continuum.
- Steneck, Nicholas. 1977. *Science and Creation in the Middle Ages: Henry of Langenstein (d. 1397) on Genesis*. Notre Dame, IN: University of Notre Dame Press.
- Suarez, Francisco. [1622] 1856. *Tractatus de opere Sex Dierum*. Paris: Vives. *Opera omnia*, vol. 3, online.
- . 1868. *Metaphysica*. Paris: Vives, vol. 1, *Disputationes*.
- Waterworth, J. transl. and ed., 1848. *The Council of Trent*. London: Dolman.
- Zahm, John. 1896. *Evolution and Dogma*. Chicago: McBride.

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