The created world no longer exists

Creationists and evolutionists alike interpret the world in a way which is at odds with appearance. But if a theory is false to appearance, it is likely itself to be false. Philip Gosse addressed the problem in the 19th century and Richard Dawkins addressed a corresponding problem in the 20th, neither of them satisfactorily. Is a solution possible which avoids these two extremes?

Just how old is the Earth? In a civilisation accustomed to measuring and quantifying everything, that is a question we naturally want to ask. We know the distance from London to New York, we also know the distance between one molecule and another in a drop of water. Can we not also know the distance between the present and the beginning of time?

In the ancient world no one would have asked such a question. There would have been little point. How would you have dated a lump of rock, or an ocean of water? The only way of dating the Earth would have been to count the number of human generations from the present back to the Creation, and that would have been possible only if the Earth was young enough for a complete genealogical record to have been kept and there had still existed such a genealogy. In practice, the only people who even purported to have a genealogy going back that far were the Israelites.

James Ussher, Archbishop of Armagh.

Measuring and quantifying everything began to become normal in the 17th century, at which point some people did begin to ask how old the Earth was. One such was James Ussher (1581-1656). He answered the question by counting up the years in what seemed to be a complete genealogical record, from Abraham all the way back to Adam. Since Abraham, Israel's forefather, could be dated at least roughly to the late third millennium (Ussher dated his birth precisely to 2008 BC), it followed that the age of the Earth was less than 6,000 years. A civilisation preoccupied with numbers had wanted a complete chronology of the world, and Ussher came up with one. In time, however, his chronology for the prehistoric period became increasingly difficult to uphold. Unconvinced that the Bible provided a short-cut to the age of the Earth, many preferred to reason the other way: the Earth was certainly older than 6,000 years, and either the genealogies in Genesis were not complete or (the more common suggestion) the five days of Creation preceding Adam were not literal days. Possibly both.

The discoveries which prompted this change in thinking were primarily geological. The earliest geologists had sought to make sense of phenomena within a biblical framework, where God had created all things in six days and the only globally significant event thereafter had been Noah's Flood. That was not how phenomena, interpreted without that framework, now appeared. Meditating on the continual erosion of rocks into the sea, James Hutton (1726-97) concluded that the Earth went through cycles, where the destruction of one continent was balanced by the production of another and it was impossible to say how long such cycles had lasted. William Smith (1769-1839) showed that fossils followed a predictable stratigraphic order, so that if one knew enough about the fossil content of a formation one would be able to

place it in that overall sequence and assign it a relative date. Georges Cuvier (1769-1832) also recognised an extended chronological sequence, punctuated along the way by multiple flood-like 'revolutions' that caused whole categories of animals to go extinct. Each new age was recolonised by animals that had survived the disaster. Cuvier himself made no attempt to interpret the succession within a biblical framework, but Robert Jameson, who translated one of his works, identified the last such revolution with the deluge in the time of Noah. Charles Lyell (1797-1875) argued that catastrophes were not necessary to explain geological change at all; past phenomena could be adequately explained on the assumption that the agents of change were of the same kind and operated at the same rate as those observable today. As time passed, the organisms fossilised in its rocks became progressively more like modern fauna and flora and represented a succession of ages, none of which could be identified as ending with a global inundation. The Earth must be millions of years old.

The strata of England and Wales as mapped by William Smith.

Those who accepted the authority of Genesis but recognised the strength of the evidence that now indicated much longer stretches of time than Genesis seemed to allow for were in a dilemma. What the Bible told them about the world should have been at one with what the world itself was telling them, but it wasn't. What were they to do? Denounce geologists as enemies of the truth, interested only in undermining the Bible's trustworthiness? In 1857 the naturalist Philip Gosse published what he thought was a better solution: *Omphalos: An Attempt to Untie the Geological Knot*.

Gosse saw that, if the world was created in six days, there was a profound philosophical problem. Plants and animals, by their very nature, move in a cycle of birth, reproduction and death. An organism created instantaneously would appear as though it were somewhere along that cycle and had gone through a prior period of development: it would have an appearance of history, a false appearance, albeit an inevitable one. When God created Adam, he created an apparently mature man, in an apparently mature garden. Adam might even have had a navel (*omphalos* in Greek).

Before Gosse, the appearance of age was a problem philosophers were prepared to live with. 'God might have created, and doubtless did create, the world with all the marks of antiquity which it now exhibits,' wrote Chateaubriand in 1802. This applied to inanimate things as well as animate. When the waves of the ocean first beat upon the land, they crashed upon rocks that ostensibly might have been in existence for ages; it would have been impossible to deduce directly, from their nature, that they had been formed by divine fiat. Gosse now bravely went the whole hog. Not only, he suggested, was the Earth created with stratified rocks and living organisms that had the appearance of age, but, in keeping with that appearance, strata might also have been created with the remains of dead organisms. Fossils were simply the organic complement of strata that appeared to have petrified long ages, the inevitable corollary of believing that the world had entered time as a fully functioning whole.

The suggestion was greeted with unanimous disapproval. This was to cut, not untie, the Gordian knot. Charles Kingsley, author of *The Water Babies* and one of the first clergymen to express support for Darwin's theory, summed up the problem in a footnote (Krause 1980):

> It seems to me that such a notion is more likely to make infidels than to cure them. For what rational man, who knows even a little of geology, will not be tempted to say: If Scripture can only be vindicated by such an outrage to common sense and fact, than I will give up Scripture, and stand by common sense.

Omphalos was the creationist position pushed to its extreme. If the only choice was between believing that God had so created the Earth 6,000 years ago as to make it look older than it was and believing that it really was older, churchmen were bound to join the rest of educated society in preferring the latter.

Unwittingly, Gosse had prepared the way for Darwin's *Origin of Species* (published two years later) quite as much as Charles Lyell had. To attach to the Bible the doctrine that the Earth had been created only 6,000 years ago was manifestly to attribute to God an 'enormous and superfluous lie'.

Back from the grave

With John Whitcomb and Henry Morris's publication of *The Genesis Flood* in 1961 the philosophical corpse (David Krause's phrase) was disinterred – the whole creationist package, not just the problem of created antiquity. But the package was not quite the same. Whitcomb and Morris accepted that the genealogies probably did contain gaps; the issue was whether there were few or many. They concluded that there were few, for to allow even 5,000 years between the Flood and Abraham was to stretch Genesis 11 'almost to breaking point'. Another difference was their attempt to revive an interpretation that, already decades before Gosse, had been rejected as geologically untenable: the idea that a large part of the geological record could be attributed to the Flood. In their view, fossil-bearing strata were not illusory artefacts of Creation but the real outcome of historical, catastrophic processes that could, in principle, be investigated and explained scientifically.

Nonetheless, somewhere below the Flood-deposited strata lay a basement going back to the Creation. Fossils older than the Cambrian could be from the Flood, from before the Flood, or they could have been created by God. The problem of created antiquity had therefore not gone away. Since this tripartite division of the rock record is still the creationist position, it still has not. In a recent paper Kurt Wise and Andrew Snelling discussed whether God might have created the stromatolites of the Kwagunt Formation in fossil or living form. (Stromatolites are layered mounds that build up as grains of sediment adhere to mats of bacterially produced mucus.) The question was of some personal consequence, for the authors had previously come to differing conclusions about Precambrian stromatolites, with Wise arguing that most were formed on the second day of Creation and Snelling that they formed during the Flood.

They approach the problem by considering an analogy: the moment when Christ turned water into wine at a wedding feast – wine that tasted so good that it seemed like the real thing, as for all intents and purposes it was. Real wine has a history of having been matured in bottles or skins containing must that has been pressed from grapes harvested from a vine that has grown for many years in the soil. It gets its distinctive character from the particular qualities of grape and soil. At the wedding, by contrast, a natural product was brought into existence

supernaturally, and by that very fact it had a false appearance of age. Wise and Snelling took the miracle as equivalent to that of creating Adam in the garden of Eden. Wine, the end-product of a process that began with a vine growing in the soil, would be an example of 'a fully functioning terminus of a unidirectional development process', like Adam's body, with wine functioning in the sense that it can be consumed as drink. The authors therefore saw nothing problematic in the idea that God might have made wine supernaturally at Creation.

Having considered what God might have created, they turned to the question of what God would have created. The answer seemed clear: organisms, and the natural cycles necessary to provide resources for them. Thus far, the conclusion was similar to that reached by Gosse:

> All steps of all provisional cycles were also created with apparent age and history. Plants, for example, require soil. However, plants deplete soil. So there is a cycle of soil eroding sediments, sediments forming rocks, and rocks eroding into soil to continually replenish the original soil. By definition this cycle – called the rock cycle – must generate soil very much like the original soil, or plants would die. Therefore, in the creation, fully functioning soil was created *and* the process to generate more soil was created *and* every step in the process of generating soil was also created.

The false appearance of age and history, in certain cases, is considered inevitable. On the other hand, God would not have created a record of animal death, i.e. animal fossils, because death was not in the world before the Fall. The authors appear to overlook the point that the creation of a fossil would have involved only the appearance of an animal having died, not its actual death. There might have been a moral difficulty with creating a gratuitously false appearance, but that is not discussed. They simply note that stromatolites would not have constituted a record of animal death anyway because bacteria are not animals. Moreover, according to their own rule, God would not have created the stromatolites because they were not organisms, and they were not part of a cycle which provided nourishment for organisms.

The critical issue is not function, however, but the question whether creating something with apparent age – be it a living organism or the entire rock cycle – involves a measure of deception. And here, cycles of life and death need to be distinguished from rock cycles. Organisms, so far as we know and observe, cannot evolve themselves into being, and animal organisms specifically require the breath of life, which comes from God (e.g. Gen 2:7, 7:22). When God created the first human couple, there would have been no question of their appearing to each other as if they had a history of birth and growing up, of origination from some prior couple and ultimately of an evolutionary origin from 'some warm little pond'. They were told how they came into existence, and only later did they acquire a knowledge of age and biological cycles. Nor would it have been biologically necessary that they should have had a navel – the simulation of a knotted umbilical cord – or growth lines in their teeth.

Rocks, by contrast, can form naturally, and erode into soil and sand naturally. As Hutton famously observed, they show 'no vestige of a beginning, no prospect of an end'. It is therefore difficult to feel comfortable with the suggestion that God might have created a loamy field, or a sandy beach, or a sequence of rock strata supernaturally. Regardless of the fact that the first couple had no geological knowledge, an instantly created beach, with grains and pebbles, would have looked identical to one that had been deposited at the end of a cycle of magmatism, erosion, transport and re-deposition. By its very nature, it would have implied processes that never happened.

Miocene reef, Cariatiz, SE Spain.

Nor is it only at the Creation that creationism is open to such objections. Once one commits to the position that the Earth is only 6,000 years old and that Noah's Flood produced nearly all its fossils (opinions on chronology having hardened in recent years), arguments along the lines that things did not happen the way they appear to have happened become standard. Usually the problems are ignored, but examples where an explanation has been offered include:

- organic reefs that appear to have formed *in situ* (whether in the Cambrian or any later period) must have been torn from the pre-Flood ocean floor and transported to the place where they are now found;
- hardgrounds encrusted with fauna that attached themselves to the seafloor (such as oysters, sea lilies, archaeocyaths, bryozoa, barnacles, sponges) or that were bored into by acid-secreting organisms all formed in a few days, even hours;
- dinosaur tracks, a common feature of Jurassic and Cretaceous surfaces, were made by animals that had survived the initial onslaught of the Flood and now, many kilometres up the Flood-deposited rock pile, found a temporary landing place where they walked about searching for food (successfully, one infers from the millions of droppings they left behind), laid their eggs and reared their young.

Thus the belief that fossil-bearing strata formed during the Flood is little different from the belief that they formed in one day, during the Creation. The credibility of the Flood is saved only by imagining supernatural processes of fossilisation, supernatural rates of organic growth, and supernatural abilities of survival. Sometimes the call to think in this way is explicit. In a book publishing the interim results of research into the problem of radioisotope dating, the Institute of Creation Research concluded that radioactive decay must have speeded up during the Flood. In itself such a hypothesis might not be unreasonable, especially if one were to admit that the cause of accelerated decay was unknown and needed to be investigated. However, in the view of one of the authors (Humphreys 2000),

> We should avoid the pitfall of insisting on completely naturalistic explanations for accelerated decay. Instead, my approach is to push the science we think we know as far as is reasonable, but remain ready at every point to see that God has intervened, and is intervening.

The thinking is characteristic, for creationists are used to a disjunction between how things appear and what they 'know' must have happened. If they cannot provide an explanation for a natural phenomenon, they can invoke God to fill the gap, an advantage which Darwinism in its purest form cannot avail itself of. As Ken Ham, president of Answers in Genesis, once declared:

> The Bible is a revelation from our infinite Creator, and it is self-authenticating and self-attesting. I must interpret Scripture with Scripture, not impose ideas from the outside!

If the outside world tells you that the Earth is older than 6,000 years, you should not believe it, because the self-attesting Bible plainly attests that it is.

In reality Scripture does not interpret itself; human beings interpret it, and if they are to do so accurately, they need to be aware that interpretation is a two-way process. How we understand the world inevitably affects how we interpret the Bible, even if we believe that the Bible is a revelation from God. We should be slow to quote the scripture "Let God be true and every man a liar" in defence of human interpretations that leave common sense outraged.

The unseen hand of God?

It might be supposed that Gossean contradictions are the fate only of those who insist that everything was created in six days. They are in fact more prevalent. The most common response to *The Origin of Species* in the 19th century was not outright rejection of the Genesis account, but the drawing of a distinction between its apparent, literal meaning and its actual 'spiritual' or 'theological' meaning – a Gossean distinction that reflected what seemed to be a Gossean world. Acceptance of Darwinism did not necessarily mean the end of the doctrine of creation. It could have been that God providentially used natural selection to achieve his ends, having embedded certain laws in nature that gave rise of themselves to the great diversity of living things. In his closing words Darwin had suggested exactly that:

> To my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and death of the individual. When I view all beings not as special creations, but as the lineal descendants of some few beings which lived long before the first bed of the Cambrian system was deposited, they seem to me to become ennobled.

The 'laws' he had in mind were:

> Growth with reproduction; Inheritance which is almost implied by reproduction; Variability from the indirect and direct action of the conditions of life, and from use and disuse; a Ratio of Increase so high as to lead to a Struggle for Life, and as a consequence to Natural Selection, entailing Divergence of Character and the Extinction of less improved forms.

From these laws the production of the higher animals directly followed. The Creator was the first cause of all existence; the biological laws that he created were secondary causes.

In Darwin's mouth this was a somewhat sophistical argument (quite apart from the suggestion that growth, inheritance, variability etc were laws on a par with physical laws), since he had long since ceased to believe in a Creator. But it went down well. The distinction between primary and secondary causes was a point borrowed from theology and, as formulated by Thomas Aquinas in the Middle Ages, it was not contentious. God had created a world that was autonomous and self-existent, inasmuch as the causes of events and actions inhered in the properties of nature itself. But God upheld the created order, and ultimately he was sovereign

over it and immanent in it. 'The differing metaphysical levels of primary and secondary causation,' he wrote, 'require us to say that any created effect comes totally and immediately from God as the transcendent primary cause and totally and immediately from the creature as secondary cause.' (Carroll 2000)

This, in a nutshell, is the theory of 'theistic evolution'. Life evolved from single-celled organisms, just as modern Darwinians maintain, but the process was ordained by God. Most Protestants went over to this view soon after Darwin's theory became public, and it was later adopted by most Catholics. In the words of the present Pope:

> Many neo-Darwinian scientists, as well as some of their critics, have concluded that, if evolution is a radically contingent materialistic process driven by natural selection and random genetic variation, then there can be no place in it for divine providential causality…. According to the Catholic understanding of divine causality, true contingency in the created order is not incompatible with a purposeful divine providence. Divine causality and created causality radically differ in kind and not only in degree. … In the Catholic perspective, neo-Darwinians who adduce random genetic variation and natural selection as evidence that the process of evolution is absolutely unguided are straying beyond what can be demonstrated by science. Divine causality can be active in a process that is both contingent and guided. Any evolutionary mechanism that is contingent can only be contingent because God made it so.

Opinion polls indicate that some 40% of Americans take this view, as do a similar percentage amongst American scientists (Scott 2000).

A reconciliation of Genesis and reality is effected that is as Gossean, in its own way, as the creationist position is. God created the living world in such a way that it appears to have created itself. Instead of the false appearance of antiquity, we have the false appearance of having come into existence without a Creator at all.

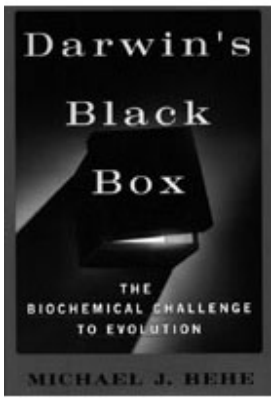
In private correspondence, Darwin was clear that God had been rendered superfluous by his theory. As he said in a letter to Lyell in 1861:

> Astronomers do not state that God directs the course of each comet and planet. The view that each variation has been providentially arranged seems to me to make natural selection entirely superfluous, and indeed takes the whole case of the appearance of new species out of the range of science. . . . Why should you or I speak of variation as having been ordained and guided, more than does an astronomer, in discussing the fall of a meteoric stone? He would simply say that it was drawn to our earth by the attraction of gravity.

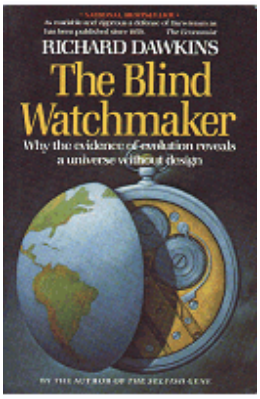
The activity of God could not be inferred from what we knew about the history of life, for the simple reason that God did not appear to have acted in it and there was no reason to think that he ever did.

Much the same problems arise when we probe behind the concept of 'intelligent design'. As Eugenie Scott points out, some of its proponents

support a 10,000-year-old Earth; others accept the Big Bang, an old earth, and radiometric dating, but reject biological evolution's core idea that living things descended with modification from common ancestors.



Still other proponents, such as Michael Behe, do not reject the idea of common descent but believe that 'evolution was guided by God'. Behe is well known for his book *Darwin's Black Box*, where he argued that many biological systems are impossible to explain as having originated by a process of incremental evolution. Rather, the first cell four billion years ago contained all the systems whose irreducible complexity invalidate the theory. But this no longer seems to be his view, since in a letter to the journal *Science* (Behe 2000) he aligned himself with Roman Catholic teaching and said that incremental evolution is just how they should be explained.



On the opposite side of the fence Richard Dawkins also has a Gossean problem. 'Biology,' he writes in *The Blind Watchmaker*, 'is the study of complicated things that give the appearance of having been designed for a purpose. … All appearances to the contrary, the only watchmaker in nature is the blind forces of physics, albeit deployed in a very special way.' The language of design is rife in biological literature, even though, to make the concept acceptable, the Designer is called 'Evolution', or 'Nature'. Daniel Lieberman, professor of biological anthropology at Harvard, provides a representative example in a review of a book that is all about engineering marvels:

> The physical world poses many basic challenges, such as gravity, viscosity and pressure gradients, to all living creatures, which in turn have evolved an astonishing array of solutions. Many of these, such as paddles, valves and hydrostats, are so widespread that we rarely notice them. Others perform so well that we marvel at their superiority to human-made devices. Did you know that fleas can accelerate at 2,000 m s-2 – that's 20 times greater than the space shuttle during launch? That silk has a tensile strength similar to that of steel? Or that oak trees can generate pressures of 500,000 Pa through evaporation? Nature is a pretty impressive engineer.

Evolutionists are as accustomed as creationists to a disjunction between how things appear and what they 'know' must have happened. Some say that life evolved of itself, by purely natural mechanisms, despite appearing to have been designed. Others say that it appears to have been designed for a purpose, notwithstanding that it evolved by purely natural mechanisms. The problem of false appearance – whether of age, youth, evolution, or design – affects all current explanations of Earth history.

Is that, then, inevitable? Has God deceived us?

Genesis 1

The answer is no. Rather, creationists have misinterpreted the Bible. The situation is not one where God is a liar except when confined in the box of his own book (Scripture interpreting Scripture). Far from creating the problem of created antiquity, Genesis actually solves it – and

in the only way that, were we to think about the options afresh, the problem could be solved. Contrary to what Ussher assumed, the text declines to tell us how old the Earth is, or how much time was taken to create it. It simply says, 'In the beginning God created the heavens and the Earth.' The opening statement both introduces and summarises the story of Creation, and insofar as it tells us what God did first, it simply says that God created the Earth 'in the beginning'. That initial period preceded the 6 days of Creation whose beginnings and endings are all explicitly defined. Each day begins with the statement 'And God said,' followed by a command, and ends with the statement, 'And there was evening and morning, one day' (or a second day, a third day, and so on). No command is ever given for the planet itself to be created. Before the first day the Earth already exists:

> And the Earth was without form and void, and darkness was upon the face of the deep; and the Spirit of God was moving over the face of the waters.

As with the day of Christ's return, it is not given to humanity to know anything about the original coming into being of the heavens and the Earth.

The planet as it was prior to the six days is described in one brief sentence. Then on the third day God commands that the waters be gathered into one place and that the pre-existing land emerge from them. Certainly this event would have left its mark. The elevation and dewatering of the land would have produced a great variety of topographies, from craggy hills and mountains to catastrophically eroded valleys and canyons, and many of them would have continued to form long after God pronounced his work finished. But again, when the first human beings looked at these phenomena, what they saw was not a false appearance of age, but the effects of an event that they knew had been supernatural, preceded by processes of creation that had taken place in the indeterminate beginning. They could have looked at a sandy beach or a sequence of rock strata without any sense that such sights were telling them a different story from the one God himself had told them.

The whole point about the Creation is that in the course of it God exercised his supernatural power to create only that which nature itself could not have produced. There was therefore no possibility of mistaking his creative acts for evolutionary processes. Conversely, whatever could have evolved of itself, did evolve of itself. Present-day scientists who wish to explore the possibility that this or that phenomenon had a natural, evolutionary origin are free to do so.

We can illustrate this key principle by considering the evolution of stars. 'Stars', according to Genesis, were created on Day 4, but the sense of the English word has changed, as astronomers have become able to distinguish between different kinds of heavenly object. The word is an appropriate translation only when understood in its general sense, as denoting any celestial point of light, be it a wandering star (planet), shooting star (meteor) or a fixed star. In the context of the other objects created on Day 4, the most likely meaning here is planet.

Stars in the modern sense may not have been created on any of the days. If our knowledge of the world is not prohibited from influencing the way we interpret the Bible, we may acknowledge that astronomers have found abundant evidence of galactic star-forming regions. What they have not observed, however, is the formation of the massive ultraluminous fireballs at the centre of galaxies. The process of galaxy formation is not well understood, and it could be that they formed through the expulsion of matter from a proto-galactic centre rather than (as Big Bang cosmology assumes) through matter collapsing inwards. The arms of spiral galaxies, blue-white regions of active star-formation, appear to have been thrown outwards,

Barred galaxy NGC 1300.

like sparks from a Catherine wheel, after creation of the original mass. In that case we may postulate that the command, 'Let there be light,' was to energise the heavens so that the galactic nuclei blazed. Billions of times more luminous than any star, these nuclei lit up the entire universe, including the Earth, which was lit by the fireball at the centre of what is now the Milky Way galaxy. The bars and spiral arms of galaxies formed only later, by natural processes, as plasma was ejected from the nuclei and condensed into stars.

Since the Sun is a created object, it follows that the Sun must be unlike other stars in the universe. It is a unique object that could not have formed by natural processes (for example, by condensing from the gas and dust left by the explosion of an older star in the Milky Way). This is a prediction of creation theory. But scientists are free to explore the possibility that the solar system did have a natural, evolutionary origin. Research into the one is implicitly research into the other, for (as the philosopher Karl Popper pointed out) a scientific theory must be a theory that can be falsified. If it could be shown that the solar system could have had a natural origin, the theory of a supernatural origin would be falsified.

We can also illustrate by considering biological evolution. On the basis that whatever could have evolved did evolve, we do not have to postulate that God directly created the countless millions of plant and animal species that now exist. Rather, he created a small number of kinds, each of which became the progenitors of a great diversity of species. They were each engineered with the potential for evolutionary variety.

Evolution in the sense of genetic change – whether through systems that at appropriate times in Earth history switched genes on and off (just as when individuals develop) or through other ingenious mechanisms – has been going on since the beginning of creation. So has the random mutation of genetic material. What creation theory rules out is the possibility that functional, complex biological systems could have arisen from random mutation; it predicts that attempts to demonstrate this will fail.

Finally, while we cannot say when creation began, we can say when it ended. The introductory summary at the beginning is balanced by this closing summary:

> Thus the heavens and the earth were finished, and all the host of them. And on the seventh day God finished his work which he had done, and he rested on the seventh day from all his work which he had done. … These are the generations of the heavens and the earth when they were created.

The corollary of the principle that God created only that which nature could not itself have created is that, having been 'set up' in this way, nature was self-existent and operated according to the laws which God had established for it. After the sixth day events took their natural course. The corollary does not rule out 'miracles' – interventions that demonstrate his supernatural power – but it does rule out the idea that God ever intervened in order to achieve something he could not otherwise have achieved. A miracle reveals the power of God. An

intervention to sustain a purportedly scientific theory detracts from his power, since it suggests that the only way he could achieve his purpose was by breaking his own rules. The harder thing is to 'program' future events from the beginning. For example, it would be harder to pack into the original genome of a single pair of beetles the potential to generate, over time, 350,000 species of beetle than it would be to create all 350,000 species at the beginning, each with their fixed, slightly different genomes. The same applies to the effects of 'the Fall', the cause of the Cataclysm, and the plagues of the Exodus. We should insist that these all had natural causes, inherent in the world as it was created.

Nothing is impossible with God, as the life cycle of a butterfly reveals quite as clearly as Scripture does. Consequently, we should be reluctant to set *a priori* limits on how much evolution might have occurred in Earth history. In relation to any particular question of whether taxon A in the fossil record evolved into taxon B, the question is not whether it could have happened, but whether it did happen. In principle, creation theory is not against the proposal that a fish might have evolved into a tetrapod. If we conclude that it did not happen, it is because the proposal is not supported by the palaeontological evidence rather than because the Creator could not have been the first cause of such a thing. A frog goes through something like the fish-tetrapod transition in a single life-time.

Genesis 6-7

Creation theory is not complete, however, without a recognition that the world in its original, created state no longer exists. Genesis tells the story of how it soon ceased to be a fitting dwelling place for its Maker. On earth humanity became corrupt and in heaven the sons of God became corrupt. Eventually God was sorry that he had made man.

> For all flesh had corrupted their way upon the earth. And God said to Noah, "I have determined to make an end of all flesh; for the earth is filled with violence through them; behold I will destroy them with the earth. … I will bring a cataclysm of waters upon the earth, to destroy all flesh in which is the breath of life from under heaven. … Every living thing that I have made I will blot out from the face of the ground."

So the planet returned to the condition in which it began, enveloped in water, void, the land shattered and destroyed.

The scarred and cratered surface of Saturn's icy moon Enceladus.

Everything that we have discovered about the solar system in the past forty years suggests that the undoing of creation was not limited to the Earth. In copulating with human beings the sons of God had violated the division between Heaven and Earth, and the opening of windows in the sky to let asteroids crash through from outer space was an expression of wrath that answered to the violation. Entire planets exploded. Those that remained – Mercury, Venus and Mars, as well as our own Moon – were entirely resurfaced, first by volcanic melting and subsequently by bombardment from the exploded fragments (the origin of meteoroids and asteroids). The moons orbiting the gaseous planets, from Saturn to Neptune, show that they too were not exempted.

Nor, on the evidence of supernovae, gamma ray bursts, ejections from quasars and other violent events, was the rest of the universe. Our telescopes look upon a world that was permanently changed, and has been constantly changing ever since.

From where we are, we cannot go back all the way to the Creation, so that the problem of the appearance of age does not even arise. The rocks of the original Earth do not exist – a point which, to be fair, geologists in the 19th century and most of the 20th were in no position to appreciate. It was only with the radioisotope dating of meteorites and of rocks brought back from the Moon that we began to understand that the Earth must have had a history extending further back than the date of its own oldest rocks. And it is only in the last few years that we have been able to deduce, from minute crystals of zircon, that our planet had both seas and dry land at that time. But even those zircons are not the remains of rocks from the Creation, any more than the oldest lunar rocks are – the igneous anorthosites that clearly also have an evolutionary history. As Mark Harrison and colleagues recently put it, the Earth's 'original crust was largely recycled back into the mantle'.

After the cataclysm a new beginning had to be made, this time by means of 'the laws impressed on matter by the Creator', through secondary causes, not fresh acts of creation. The land that emerged from the waters emerged as a result of natural processes, erupting, cooling, accumulating, evolving, just as – apart from their inflated timescale – geologists say that it did. God had already shown his eternal power and deity as the Creator of the world. Now the creation was demonstrating that his power was even more amazing than we could ever have imagined, its laws having all been designed in such a way that the world would both destroy itself and regenerate itself. God had foreseen all things from the beginning.

> I am the first and I am the last;
> besides me there is no God.
> I form light and create darkness,
> I make weal and create woe,
> declaring the end from the beginning
> and from ancient times things not yet done,
> saying, 'My purpose shall stand,
> and I will fulfil what I intend.

Those words are from the prophet Isaiah. What God in the present century is saying to us through biology, geology and palaeontology is not essentially different.

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