Introduction

Carlo Cogliati

BACKGROUND TO THE VOLUME

Creatio ex nihilo is a foundational teaching in Judaism, Christianity and Islam. It states that God created the world out of nothing – from no pre-existent matter, no space or time. This teaching is the linchpin for classical accounts of divine action, free will, grace, theodicy, religious language, intercessory prayer and questions of divine eternity – in short, the foundation for any account of a scriptural God who acts in history but yet remains the transcendent Creator of all that is.

This book is the planned outcome of a workshop on '*Creatio ex Nihilo* Today' held at Castel Gandolfo, Italy, on 9–15 July 2006, and sponsored solely by the Vatican Observatory. That consultation brought together some fourteen leading scholars of all three Abrahamic faiths to reflect on the metaphysical and theological ideas of the doctrine of *creatio ex nihilo* in light of contemporary developments in modern sciences. Each speaker was directed to a particular topic by the organisers – Bill Stoeger, S. J. (Vatican Observatory), Professor Janet Soskice (Cambridge) and Professor David Burrell, C. S. C. (Notre Dame) – and all followed their brief in presenting more questions than answers. After the conference, all participants were asked to reflect and to elaborate on the discussions their topic had raised among the delegates, and to produce a scholarly article. This collection is the final product; it explores how we might now recover a place for the doctrine, and with it a consistent defence of the God of Abraham in philosophical, scientific and theological terms.

The very involvement of Jewish and Muslim researchers, as well as Christians, in a volume of this sort is unique. The chapters cover the early patristic background, the medieval debate, modern science, and the sticking points for contemporary theology and the science/religion discussion. They can be broadly divided into three areas – historical, scientific and theological – although all the chapters aim to be in dialogue with each other

in terms of different faith traditions, and across different disciplinary boundaries.

SUMMARY OF THE CHAPTERS

In 'Creation *ex nihilo*: early history', Ernan McMullin argues that the doctrine of creation from nothing only gradually took shape over more than a thousand years. He proposes to sketch in broad outline some of the main features of that long gestation period. In the Old Testament the primary focus was on salvation history, on Yahweh's covenant with Israel, and not on cosmogony or on Yahweh's role as the cosmic creator. The theologians of the early Christian Church had to face a challenge that the biblical writers had not been presented with. Various philosophical views took the presence in the world of evils of all sorts as a premise for a dualism that would set limits on God's creative power. The Fathers gradually came to realize that implicit in the Scriptures lay a rejection of any such limits. Relying primarily on the Bible, they formulated a doctrine of the Creator as all-powerful, and rejected the view that over and against Him there had been from the beginning an ungenerated principle – matter – independent of Him (the Neoplatonic view), or lesser perfect beings that were responsible for the imperfections in the world (the Gnostic view). It is with Augustine, McMullin claims, that the biblically inspired metaphysics of creation came to be fully *ex nihilo*: there is nothing that could serve as material for it; God is the Creator of all things together, to create is to create from nothing.

Janet Soskice's chapter draws our attention to the Jewish and Christian origins of the doctrine of creation *ex nihilo*. It shares McMullin's view that the Book of Genesis and the Hebrew Scriptures are little concerned with questions of metaphysics and of cosmology. The creation narratives are more concerned to establish the relationships of the people of Israel to God and to each other than to lay down a philosophical or physical account of the origin of the universe. Soskice argues that the doctrine is a response by Jewish and Christian writers of the first and second centuries AD to the Greek consensus that 'from nothing nothing comes', which threatened not only the biblical understanding of origin, but also the teaching on divine freedom and sovereignty. She shows how Hellenistic Judaism, and in particular Philo of Alexandria, plays a crucial role in such a response by repeatedly linking the metaphysical account of the creation of the world out of non-being with the biblical account of Exodus 3 where God names Himself to Moses as Being-itself.

In his chapter, David Burrell investigates the theological consequences of the act of creation by discussing Aquinas' strategy on this very matter. He shows how Aquinas invokes the Neoplatonic distinction between essential and participated being to give everything but the Creator the stamp of created: 'All things other than God are not their own existence but share in existence.' However, creation is not a mere overflow from the One, it is rather an intentional emanating, and so a gracious and gratuitous gift. For Burrell the notions of participation and analogy play a key role in understanding Aquinas' doctrine of creation, and the consequent relation between the Creator and the *creatum*. The author finds the notion of 'non-duality' very helpful to explicate such a relation: '[Every] subsistent effect is dependent on its cause for its very existence as a subsistent entity, whereas the cause is in no way dependent on the effect for its subsistence.'

Alexander Broadie's contribution, 'Scotistic metaphysics and creation *ex nihilo*', asks whether the religious claim that God created the world out of nothing is compatible with the Enlightenment claim that we human beings are world-makers. On the one hand, the author turns to Scotus to show that the world is a performance executed by the will of God and, like any performance, it lasts for only as long as the performer wills it to continue (i.e., there is no distinction in reality between creation and conservation). On the other hand, he turns to the insights of Hume and Kant to claim that certain of our mental powers have a mediating role in the process of the creation (i.e., we co-operate with God in the production of our world). The two claims – the doctrine of creation *ex nihilo*, and human beings as world-makers – are shown not to be mutually exclusive in so far as our world is the outcome of the exercise of our mental apparatus in response to a divine idea presented to us.

Daniel Davies discusses the Jewish tradition, and in particular Maimonides and Crescas. The author explains some of the common themes that run through their attitudes towards creation and the sciences. First, he argues that both thinkers subscribe to the doctrine of creation *ex nihilo* and place great importance on the notion that everything in existence depends upon God, and that dependence is non-reciprocal since God is in no way dependent on anything at all. Second, he shows that Crescas rejects Aristotelian science when certain claims (e.g., that place and space are equivalent) cannot be established with sufficient clarity, and bases his beliefs concerning what is physically possible, much more so than Maimonides, on ideas taken from theology. Finally he claims that there is, however, a common methodological approach: both are concerned to accept only theological positions which they can prove to be scientifically acceptable

on science's own terms. Their attitude of respect for scientific enquiry may serve as a relevant model today in many discussions between science and religion.

Three chapters cover the Islamic tradition. Rahim Acar describes Avicenna's account of creation as one explaining the existence of the whole universe. The prime mover, first cause of motion, becomes the necessary being, first cause of existence. For Avicenna, creation as the existential relationship between God and the universe contradicts the idea of beginning to exist after non-existence. The author shows how this claim is supported by Avicenna's conception of the relationship between causes and effects (the principle of co-existence) which holds between the Creator and the *creatum*, and by his conception of the nature of things with regard to duration (the sempiternity of the universe). He then tries to show that this position, which favours the eternity of the world, may be compatible with the modern cosmological account of the Big Bang. The question of compatibility between the doctrine of creation *ex nihilo* and alternative accounts of the origin of the universe is explicitly addressed by Pirooz Fatoorchi's contribution. He examines four different conceptions of creation among Islamic philosophers and *kalam* theologians (temporal-historical, essential non-temporal, objective meta-temporal and substantive temporal non-historical). He then asks whether each of those conceptions is consistent with seven different accounts of the origin of the universe (five philosophical/theological, and two physical). The responses to those questions are the findings of his chapter. Ibrahim Kalin discusses the debate in the Islamic philosophical tradition of questioning why God created the world. According to the necessitarian model of creation, God created out of necessity in the sense that a perfect and infinitely good being cannot be conceived of existing only by and for itself. According to the libertarian or voluntarist model, God created because He chose to, and there is no further explanation to be offered. The author suggests that this dichotomous framework of necessity and volition can be overcome if we turn to Mulla Sadra's account of creation in terms of monistic theophany, an ontology of creation that begins with existence and ends with it. Both permanence and change are reduced to one single principle – existence – through a sophisticated and structured ontology to guarantee the present world order in which God acts as the direct agent of existentiation and as indirect agent of change through intermediaries.

In 'Trinity, motion and creation *ex nihilo*', Simon Oliver offers a very interesting account of creation out of nothing building on considerations of motion in relation to the divine processions and to the process of

emanation. He argues that for Aquinas the principle of natural motion is analogically related to the eternal dynamism of the Trinity. Motion is not a wedge between *creatum* and Creator, but the means of creation's participation in the divine. He then shows that von Balthasar moves beyond Aquinas in describing both motion and creation as related by analogy to the eternal kenosis within the Trinitarian Godhead. Finally, he contrasts this understanding of motion, creation and Trinitarian life with the theology and cosmology of Newton. The author of the *Principia Mathematica* cannot conceive a creation out of nothing because he subscribes to an understanding of God as a single, monadic deity devoid of any relationality. The consequence is that creation – as a metaphysical and theological doctrine – stands outside the realm of reason, whereas the natural sciences are the instantiation of an inscrutable divine will and the subject of natural philosophy. This also entails a clear-cut separation between faith and reason, which had much influence in the years to follow, continuing right up to modern times.

William Stoeger, in 'The Big Bang, quantum cosmology and *creatio ex nihilo*', aims to show that the doctrine of creation out of nothing is a complementary, and not an alternative, understanding to the scientific origin of the universe, and of reality in general. First, he briefly describes the basic ideas and findings about our universe which astronomers have uncovered in recent years. Second, he argues that physics and cosmology as we know and practise them can shed a great deal of light on many questions having to do with the origin of the universe, but they are in principle incapable of providing ultimate explanations of existence and order. Lastly, he claims that such explanations are provided by the metaphysical doctrine of creation *ex nihilo*. The Creator is the fundamental source of all being and order, in whom all existing things participate. He is the necessary condition for everything, and the sufficient condition for nothing. Events and changes occur only through the created, or secondary, causes which the Creating Primary Cause sustains. Thus, Big Bang theory, quantum cosmology and creation *ex nihilo* contribute complementary and consonant levels of understanding of the reality in which we are immersed.

Simon Conway Morris asks the following question: 'What is written into creation?' Although creation *ex nihilo* as metaphysical doctrine is simply not open to scientific explorations, he argues that we are entitled to look for consistencies, such as the Big Bang and the anthropic principles of fine-tuning. He then suggests that all attempts to understand one of the most difficult and complex realities, consciousness, from a purely scientific, naturalistic or reductionistic perspective will fail. However, if we accept

the proposal that there is a mental world and that the brain is 'the antenna' that makes first contact with it, then not only do we have access to new realities, but we find a world where theological discourse is not divorced from, but integral to, scientific enquiry. A world that accepts the supernatural both visible and invisible (to us), and one that is only explicable by the agency of creation *ex nihilo*.

The issue of double agency is addressed by James Pambrun. The author aims to develop a way of approaching the question of dual causality (i.e., how can we have two agents causing the same effect?) that allows an encounter to take place between theology and science with respect to the doctrine of creation *ex nihilo*. First, some historical considerations of the three main stages in the development of scientific inference – deductive, inductive and retroductive inference – can provide a more critical precision to the notion of causality. Second, the notion of verified intelligibility can further enrich the notion of causality as structural explanation of our world: the world is what is affirmed in light of the fulfilling conditions to be met given the form of intelligible relations configured by a scientific discipline. Finally, scientific enquiry and theological discourse meet when the very foundation, the very intelligibility of reality, becomes a topic for consideration in its own right. Thus, the metaphysical notion of creation *ex nihilo* speaks to the inherent intelligibility of existence as a property of every created thing in a constructive dialogue with both science and theology.

In his chapter, Thomas Tracy investigates the theological implications of the doctrine of creation *ex nihilo* for the relation of God's creative action and the diverse activity of created things. Creation out of nothing seems to entail that God alone is causally efficacious, and that the activity of creatures serves only as the occasion for divine action. If so, then it appears that there is no role for finite causes in accounting for the way things are. The challenge of this 'occasionalism' (defended both by certain Islamic and by certain Christian thinkers) can be met by the traditional distinction between primary and secondary causality. The author shows that this distinction, although helpful, needs to be modified to deal with a more complex picture of the world God has made, one which includes some events that occur by (ontological) chance. Creation out of nothing seems also to preclude creaturely freedom. On the one hand the answer offered by theological incompatibilism (human action is not free if it is determined by God) raises questions about God's sovereignty; on the other hand the answer by theological compatibilism (human action can be both free and determined by God) makes God the agent of all evil. Tracy suggests that creation *ex nihilo* may point to a third way, one which does not treat God as part of the

causal nexus in which we worry about determinism and freedom, but considers God as the transcendent agent who continuously brings into being both determining efficient causes and chance events and free rational agents. In this way, a single event can simultaneously be ascribed to the activity of God and that of a free agent without raising any theological worries.

In the last contribution of this book, Eugene Rogers suggests approaching Aquinas through the topics which interest him most: a theology of science based on how human beings 'come to know'. For Rogers, Aquinas develops an account of science as discovery not from Aristotle's *epagoge*, but from his ethics, which contains his account of learning from contingency, even failure, and error. Christianity – the author claims – needs to recover a sense that natural sciences can be regarded as a religious activity. Science becomes a metaphor for heaven, a participation in the divinity. Science is a habit, a disposition of the mind. Imperfect science obtains when the earthly habit learns from contingency; perfect science obtains when the heavenly habit knows with God's own vision. The transformation from one to the other depends on the incarnation of the Son and the Grace of the Holy Spirit. Hence, the Trinity brings human beings into participation with its own activity when they come to know. That 'the invisible things of God can be known from the things God has made' warrants arguments both in cosmology and in Christology. For both, the more revealed it is, the more scientific it is. All science considers inaccessible things made accessible. And so, even the doctrine of creation *ex nihilo* has a Trinitarian deep structure: it expresses the intimacy of God to things He has created without compromise, as befits the incarnation of the Word.

INTRODUCTORY REMARKS

As we will see from the chapters in this volume, *creatio ex nihilo* was not a concept available to Greek philosophy. Aristotle thought the idea was incoherent. His conviction that 'from nothing, nothing comes' led him to insist that the universe was everlasting. His 'God' was not personal, but indifferent to human affairs, or rather, not capable of being interested in the world of chance and change. Aristotle's God was an Intelligence, a source of intelligibility but entirely incapable of awareness of, and concern with, the affairs of the created world.

Creatio ex nihilo was the product of the confluence of biblical teaching and Hellenistic Judaism, and was the means by which theologians of the early Church defended the God they saw to be revealed in Scripture: loving,

living and active. The doctrine was embraced by both Jewish and Islamic medieval thinkers, and refined by Aquinas. It is understood as the ultimate ontological dependence of the existence of all things upon God as its cause, of all that which is created out of nothing upon the Creator. It is also understood as a relation:

> Creation puts a reality into a created thing only as a relation. For to be created is not to be produced through a motion or mutation ... Creation in the creature is left just as a relation to the Creator as the origin of its existence ... In its active sense creation means God's action, which is his essence with a relationship to the creature. But this in God is not a real relation, but only conceptual. The relation of the creature to God, however, is real.[1]

Thus, *creatio ex nihilo* is a metaphysical concept, not a physical event; it accounts for the existence of things, not for the change in things. This understanding of creation as a non-reciprocal relation of dependence – real from the creature's side, conceptual from God's side – allows one to reconcile the passive and the active meaning of the creative act. It establishes a true link between the finitude and the contingency of the *creatum* and the infinity and the necessity of the *Creator*, between the temporality of the world and the eternality of God. This link is rooted in Aquinas' metaphysics of being upon which the existence (*esse*) of all creatures, and their essence (*essentia*), become an 'actual existing' in relation to the Creator (*esse ad Creatorem*). By means of this existential act (*actus essendi*), God can be in an intimate relation with the created universe because 'for all things He is properly the universal cause of existence, which is innermost in all things. For this reason in sacred Scriptures the workings of nature are referred to God as to the one who works within it: "*Thou hast clothed me with skin and flesh: Thou hast put me together with bones and sinews*."'[2,3] 'All things other than God are not their own existence, but share in existence'[4] not denying, but rather affirming His sovereignty.

The doctrine was largely taken for granted until the early modern period, when it became simply ignored or misunderstood by both scientists and philosophers, as theologians shied away from metaphysics in order to align themselves with empirical science. More recently, Darwin's theory of evolution has been taken to contradict the biblical account

[1] Aquinas, *Summa Theologiae* I.45.3; cf. also *Summa contra Gentiles* II, ch. 18; *De Potentia* III.3.
[2] Job 10:11.
[3] Aquinas, *Summa Theologiae* I.105.5. In a similar way, the Qur'an describes God as 'closer to you than your jugular vein'.
[4] Aquinas, *Summa Theologiae* I.44.1.

of creation, since its cause, natural selection, is a random process which leaves no room for divine action or intelligent design in nature. In response, certain scientists and theologians have claimed that there are certain features of life which are 'irreducibly complex', and which could not possibly be caused by natural selection. These life forms and these gaps in nature – they continue – lead us to affirm the existence of an intelligent designer and of a special act of creation. Evolutionism on the one hand and creationism on the other have come to stand for two opposing and mutually exclusive world views.[5] For some, to subscribe to evolutionism is to assert a purely scientific and secular stance. For others, to support creationism is to express religious fundamentalism and blind fideism. From the chapters in this volume it will become clear that this contrast is the result of a common confusion. Reductive evolutionists fail to distinguish between biological and philosophical explanations. And creation is first of all a metaphysical doctrine, not a scientific theory. Supporters of intelligent design and special creation argue that divine agency will manifest in the gaps of nature. But gaps of nature are still within the domain of the natural sciences, whereas the creative act ought to be seen in a proper theological perspective. Such a contrast can be overcome if we integrate the insights of *creatio ex nihilo* with our scientific understanding of life. That God created all things out of nothing leaves open the possibilities of evolutionary mechanisms like random mutation and natural selection. God's project of creation can be carried out through secondary causes, without having to posit some miraculous intervention in this or that direction to fill the gaps of nature. No biological explanation of any evolutionary theory can undermine the biblical account of creation. God's creative act exemplifies divine omnipotence and gratuitous love, and at the same time it affirms the integrity and the autonomy of the created world.

In a similar fashion, the Big Bang theory, with its idea that the universe emerged about 14 billion years ago, has been taken to confirm scientifically the revealed truth that the world has a temporal beginning in need of a divine outside agency. The physical sciences seem therefore to warrant theology. But, once again, there is a misunderstanding of the very terms in play. Creation accounts for the existence of things, not for the beginning

[5] For a detailed and illuminating discussion of these issues, see William E. Carroll, 'Creation, Evolution, and Thomas Aquinas', *Revue des Questions Scientifiques* 171:4 (2000), pp. 319–347. Here I just recall some of his findings.

of things. For Aquinas, that the universe depends for its existence upon a primary cause which is not prior in time but prior in the order of things is the conclusion of a demonstrative argument: 'Not only does faith hold that there is creation but reason also demonstrates it.'[6] But that the created world began to exist (*in principio*) or that it has always existed (*ab aeterno*) cannot be resolved demonstratively.[7] No valid inference about the nature of something in its original stage can be made from the way it is in its final form, and we only have knowledge of the final state of the world. In other words, Aquinas (following Maimonides) offers a demonstration of the undecidability of the age of the universe. And if the age of the universe is not a decidable claim, then there is no contradiction in saying that the world is either temporally or eternally created. It is by faith, and not by reason, that one knows that the world has a temporal beginning.

It becomes obvious then that the doctrine of *creatio ex nihilo* does not contradict evolutionary biology in any way, nor does it receive confirmation from contemporary cosmology. Recent developments in both disciplines raise questions of ultimacy and purpose, neither of which can be answered by science in principle. In fact all the sciences encounter similar limits – in that nothing they investigate completely explains itself. The point here is that contemporary culture, though dominated by the natural and the physical sciences, has rediscovered the need for a metaphysical account which complements our best scientific understanding of the universe we live in. The aim of this volume is to identify such an account with *creatio ex nihilo*, which we find to be also consonant with the biblical revelation of the God of Abraham.

[6] *Scriptum super libros Sententiarum* II.1.1.2, solutio. [7] Aquinas, *Summa Theologiae* I.46.1–2.