

Do Science and Religion need each other?

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Discussion

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<http://www.st-edmunds.cam.ac.uk/cis>

Brief Biography

Roger Trigg is Professor of Philosophy at the University of Warwick. He is the author of numerous books, including 'Rationality and Science' (Blackwell, 1993); 'Rationality and Religion' (Blackwell, 1998); 'Ideas of Human Nature' (2nd edition, Blackwell 1999); and 'Understanding Social Science' (Blackwell 2nd edn, 2001). His most recent book is 'Philosophy Matters' (Blackwell, 2002). He was the Stanton Lecturer in the Philosophy of Religion at the University of Cambridge in 1997. Professor Trigg is a past President of the Mind Association and was Founding President of the British Society for the Philosophy of Religion. He is also currently Chairman of the British Philosophical Association.



The Religious Roots of Science

Cambridge can lay a fair claim to be the cradle of the European Enlightenment. It was here in the seventeenth century that a conception of human reason as a source of knowledge was stressed. It was here that the foundations of modern science were laid by Newton and Boyle, amongst others. Reason gradually broke free of doctrinal and theological constraints. Through human experience and, more specifically, through the experimental method of the modern physical sciences, it gradually acquired the autonomy we expect of science. It is its own master. The picture is very much one encouraged by some interpretations of John Locke's work. At the beginning of his famous *Essay Concerning Human Understanding* he referred to the scientific work of Boyle and others, including the 'incomparable Mr. Newton', and said 'Tis ambition enough to be employed as an Under-Labourer in clearing the ground a little, and removing some of the rubbish, that lies in the way to knowledge'. This is, in effect, the credo of so-called analytical philosophy, which has dominated British philosophy for more than half a century. Science sets the agenda, and makes the discoveries, while philosophy clarifies and interprets the results. Philosophy is thus typically concerned with epistemology, the theory of knowledge. It investigates how we can know what we do know. It itself makes no discoveries, nor produces new knowledge. It follows science and does not sit in judgment on it. Metaphysics,



The Wren Chapel at Emmanuel College, Cambridge. In the middle of the seventeenth century the college was a stronghold of the Cambridge Platonists who believed reason was the 'candle of the Lord'.

the idea of any reality beyond the scope of science in general and physics in particular, is to be avoided.

Empiricism, the view that reality is to be defined in terms of human experience, makes sure that talk of inaccessible realities, of a transcendent or supernatural kind, is to be ruled out. General claims have to be cashed out in terms of the differences they make to our experience and the way we live. At this point, empiricists join forces with pragmatists in losing patience with talk of realities (such as the 'Absolute') which scientists cannot get test or measure in some way. They often appear to be wheels turning without turning any other wheel. The verification theory of meaning, championed by logical positivists and popularised by A.J. Ayer, dismisses references to God and spirits on the grounds that the use of such words cannot be publicly checked. It is as meaningless as talking of a 'heffalump' in my

garden. When asked what it is, or how I can recognise when one is there, I have no answer. There then seems to be no difference between one being there and one not being (apart from, perhaps, my own attitude).

William James, the nineteenth century pragmatist, gave another graphic example. When camping in upstate New York, he returned to his friends to find them having a furious argument. A squirrel had dodged round the back of a trunk a tree, and, as squirrels do, as they circled the tree, so did the squirrel, keeping on the other side from them. The vexed question was whether they were going round the squirrel, as they went round and round the tree. James thought all this was a typical example of a futile metaphysical argument. The answer made no difference in the world, and nothing hung on it. In his later philosophy, Wittgenstein showed a similar impatience with metaphysics, and asked of religious beliefs what difference they made to the way people lived. The meaning of religious language depended, he thought, not on what it purported to be about but on the part it played in people's practices. It was its function in their way of life that gave it its significance.

Locke's reference to under-labouring talks of knowledge and, by implication, epistemology. It makes no mention of theology, and Locke is often regarded as a science-orientated philosopher, keen to uphold the autonomy of science, and to make human reasoning dependent on our experience. The picture is of a progression in the seventeenth century from the darkness of superstition, of talk of spirits and magic, to the light of scientific reasoning. Implied and sometimes made explicit, is the corresponding judgment that this was possible because theology was abandoned. Metaphysics was to be scorned. Science grew out of the ashes of primitive, pre-modern, thinking. Locke, in particular was the philosopher of the new scientific age, a precursor of the sceptical empiricism, which found its fruition in Hume. Yet the imagery of the light of human knowledge, which is an integral part of the so-called European Enlightenment, has an older pedigree.

Locke was an Oxford philosopher. However, it sometimes seems as if his legacy has been moulded to suit the epistemological prejudices of modern Oxford philosophy rather than the other way round. He was no logical positivist, and his empiricism did not extend to ruling out metaphysics. Indeed, in his view of natural philosophy, as evidenced at the end of the *Essay Concerning Human Understanding*, he was willing to entertain the possibility of knowledge not just of matter and body, but of spirits, and of God. It is no coincidence that in earlier ages, a very influential work of Locke was entitled *The Reasonableness of Christianity*. In it, he most significantly referred to reason as "the candle of



John Locke (1632-1704) whose influential writings included *Essay Concerning Human Understanding* and *The Reasonableness of Christianity*.

the Lord'. This was one of the slogans of the Cambridge Platonists, the group of theologians who flourished in Cambridge in the middle of the seventeenth century. They provided the philosophical and theological context in which Newton and Boyle started their work, and their influence on Locke's thought has been underrated.

Science, in the modern era, did not appear in a vacuum. Why did a modern stress on experimental reasoning replace the previous penchant for more speculative reasoning? Instead of working out (perhaps through geometry) how the world had to be, scientists began to investigate how it actually is. There was a growing recognition of the contingency of the physical world. God, it was thought, did not have to create the world in any particular way. Boyle, for instance, believed that the laws of nature were totally dependent on the will of God. He was not constrained by anything beyond Himself. It followed that human reason had to be used to see how in fact the world has been created. Yet because, it has been created by a divine mind, there is an underlying order, and design, present. The physical world behaves, through God's will, in a regular, and hence normally predictable manner. Given, too, that God has given us our reason we can expect to find the world intelligible to us. We should not forget that, even if the world behaves in regular ways, (as perhaps it would have to in order to support life), it need not follow that these are very intelligible, at any more than the most superficial level. Humans may need a certain amount of understanding to survive. None of us needs to have a firm grip on particle physics to do so. It should, too, remain perennially surprising that the fundamental behaviour of the universe should be such that human reasoning can grasp it. There are always two points here, first that the world has to be ordered, and second that it can be understood by the



Two of the leading Cambridge Platonists as pictured in the stained glass windows in Emmanuel College chapel. Benjamin Whichcote (1609-83), considered the founding father of the movement, later became Provost of Kings College. Peter Sterry (1613-72) was chaplain to Oliver Cromwell.

human mind. Neither should be taken for granted.

At the beginning of the Enlightenment, human reason was not regarded as self-sufficient and autonomous. It was valuable not because it set itself up against revelation and any belief in a world beyond the natural order, but because it reflected the rationality of the Creator. There was no question of humans getting above themselves as a result of this, because our reason is a pale and flickering thing, compared with the light of God's wisdom. Nevertheless it was sufficient to enable us to cast light on things, and to gain some knowledge. There was plenty of room for error and partial knowledge, but we were, it was thought, made in the image of God and could obtain a glimmer of understanding through science, and other operations of the unaided human mind. Yet, according to this view of reason as rooted in God, human rationality was not unaided. It was, in a general sense, as much entitled to be considered revelatory of God's will and purposes, as the more specific revelation taught by Christianity. It may be true that now 'we see through a glass darkly' in contrast to facing God beyond this life. The Platonism of the Cambridge Platonists was well able to cope with the contrast with our uncertain and wavering knowledge here and now, and perfect knowledge in another realm. That higher reality is, however, reflected in our physical world. This world, with its structure and order, depends for its meaning on a higher form of existence



Robert Boyle (1627--91) one of the founders of modern science. In 1690 he wrote *The Christian Virtuoso* to argue that the study of nature was a central religious duty.

Science and Materialism

These ways of talking are anathema to empiricists and pragmatists. The very idea of 'different levels of reality' would be scorned. There is only one reality, we will be told, and that is the one available to human reasoning through scientific method. What cannot be checked by science cannot exist. Yet at this point we are back again with the repudiation of metaphysics which has been such a feature of contemporary philosophy. Ironically all too many philosophers seem intent on demonstrating the fundamental uselessness of their own discipline. Philosophy has contributed to the assumption made by many, both philosophers and scientists, that science does not need any metaphysical justification. It is grounded in nothing beyond itself. This is a very dangerous assumption, not least because the blind faith in science from which it is derived itself is not innocent of metaphysics. The idea that what exists has to be accessible to human beings and their reason through the methodology of science is clearly intended to limit the nature of reality. Spirits, and other phenomena which cannot be dealt with in a scientific laboratory, are ruled out as non-existent.

Science may be right to take this view. It may be argued that it has progressed precisely because it has always preferred physical explanations to ones that attribute agency to ghostly realities that are the product of speculative reasoning and not scientific experiment. Yet this is a substantive belief in the kinds of thing that can exist. Matter does, and spirits do not. In other words, it is a form of materialism. The trouble with this from the standpoint of theism is that while it may be wise not to be too credulous about non-physical explanations, ruling them out must also remove any possibility of God's existence too. Science can gain its autonomy, but it does so not by repudiating metaphysics, but by espousing a very definite metaphysical position. It may consider that if it does not look for physical causes, it will never find them. That methodological stance is, however, very different from proclaiming that such causes have to be found, because there is no non-material reality.

As the Enlightenment developed, human rationality tended to forget its theistic roots, even though they gave a guarantee for at least the partial reliability of our understanding. It gave up its metaphysical grounding, and concentrated on how we know. Yet epistemology without a metaphysical focus becomes aimless. It forgets the reality that gave a point to its activities. It becomes anthropocentric. Indeed, instead of trying to understand an independent, objective, reality, 'reality' becomes merely a projection from what people happen to believe, and take to be 'knowledge' at any given time. We begin to lose our grip on the idea of truth and to slip into a morass of relativism. It is no coincidence that the reaction against modernity going under the name of post-modernism stresses social context as a formative factor in belief. Science itself is no longer seen as body of knowledge, but as one human practice amongst many. There seems no more reason to become a scientist, or to respect the findings of science than there is to join any other human practice. Astronomy or astrology are on an equal footing. This is inevitable if there is no idea of any reality acting as a constraint on our beliefs. There is no way of being wrong, but that just means that there is no way of being right either. We can believe what we want, and that gives us no reason for believing anything. Post-modernism is the result of the neglect of metaphysics and the concentration on epistemology. Knowledge without a target becomes futile. Science was for a long time carried on by its own obvious successes. It had thrown off the religious beliefs that had made it possible in the first place. It glorified in the power and achievements of human reasoning without pausing to remember what had been thought to make it all possible. Yet this could not last. We need a firm conception of an objective reality if science is to have a job to do. It is in the business of discovery, not of construction, let alone that of castles in the air.

Once, however, we return to the idea of a world whose workings have to be understood, the problem of the character of that world returns to haunt us, as should the issue of our ability to grasp it ourselves. Empiricism has always carried with it the seeds of scepticism. Once we concentrate on our own experience as humans, we seem to be trapped in a cocoon of our own making, with no guarantee that our purported experiences are actually of anything. When Locke's philosophy is robbed of its theistic underpinning, we arrive at Hume's inability to trust experience, or to believe in any dependable world order. We can never be sure that the world,

as experienced, will go on behaving in any regular or dependable pattern. It is just that, through custom, we cannot help believing that things will go on in the future as they have in the past.

The world cannot be forgotten, or somehow translated into the fact of human experience. This begs the question of what is validating that experience. It is perhaps a truism to say that we all live in one world, or to stress the unity of reality. Yet these are not insignificant doctrines. They mean that science and religion must each confront the same world. Their claims cannot therefore be irrelevant to each other. Of course, a materialist will immediately claim that only science has access to that world. Religion can tell us nothing about any reality. At best, it is a form of a storytelling, perhaps encapsulating people's subjective 'values'. At worst, it is just plain false. This is an instance of metaphysics at work, determining what kind of things can exist. A more open attitude to reality, which is unwilling to legislate on what must exist, may well be ready to accept that empirical science, and religious claims about a transcendent reality, may actually support each other.

We have already seen how a belief in a Creator can actually underpin science. Without a prior belief in the order of the world, it will always be impossible to judge whether science is built on actual regularities and real cosmic processes, or on a series of local coincidences, which give us a deceptive appearance of regularity and order. Similarly, a religious belief in a Creator who is the source of reason and knowledge can embrace the discoveries of science. If they really do provide knowledge, they cannot conflict with any thing that is believed to be genuine revelation. If human reason is indeed grounded in the rationality of the Creator, as the Cambridge Platonists believed, it should indeed itself be seen as a form of revelation. The later Enlightenment came to hold that reason was the enemy of religion, and in France, at least for a brief period, churches become atheist 'Temples of Reason'. Reason became associated with modern science, as its greatest exemplar, and religious faith was, quite erroneously, somehow seen as having nothing to do with rationality. 'Faith' floats free of reason. Yet faith is itself always faith in something or somebody. Without reason, we cannot specify what it is we believe in. Once we do, we are back with the necessity of integrating it with what else we know about the world. A view that segregates religion in its own compartment, away from the ravages of reason, may appear to make it impregnable to assault from outside. It does so at great cost, because it becomes some kind of subjective commitment of a basically arbitrary kind. It cannot provide any justification without being forced back into the realm of rationality. Reasons must be connected with the one world we all inhabit. The world of science is not a different one from that of religion. If there is a God who created matter, faith in God should be as relevant to investigations of its behaviour, as to any other facet of reality.

Yet all this presupposes a two-way traffic between science and religion. Rationality is exemplified in both, and both are concerned with reality. They have their distinct methods and subject matter, but that does not mean that each can be locked away from the other. The existence of a Creator would tell us something about the nature of the physical world. The nature of the physical world may teach us something of the glory of the Creator. That at least was what seventeenth century scientists thought.

This mutual dependence, and willingness to learn from each other, is not, on the whole, part of contemporary thought. Some scientists aggressively use scientific arguments to rule out any religious understanding. Others such as the late Stephen Jay Gould, are happy to be tolerant and let religion have its own sphere. The catch is that it must have nothing to do with science. He talks of so-called 'non-overlapping magisteria',⁽¹⁾ cleverly reserving the realm of 'fact' for science. Religion is left, in a positivist split, with what are clearly subjective values, outside the influence of reason. Science gains a monopoly over that. Yet, unless science can itself be underpinned by reason, rather than simply defining it through its own methods, there is no way of answering the question as to why anyone should do science. In Gould's case, there is also the not inconsiderable task of explaining where he is standing to make his sweeping claims about science and religion. He is certainly not speaking as a scientist, but appears himself to be invoking some extra-scientific rationality to make his distinctions. In fact, he is implicitly admitting that science can only function against a prior philosophical background.

Dualism and the Supernatural

Not only scientists want to give priority to science in determining the nature of reality. It is surprising how many theologians lose their nerve in facing science. They too easily assume that it provides us with knowledge, and that religion (and theology) will be in a constant process of retreat. Anything else will appear too much like a pathetic faith in a 'God of the gaps', according to which religious faith relies on a temporary inability of science to explain something. The supernatural then becomes something that merely fills in gaps, which will one day be closed. Arthur Peacocke, for example, despite the title of his book *Paths From Science Towards God*, sees science as setting the standard for knowledge. He says: ⁽²⁾ 'What characterises science is a method that is manifestly capable of producing reliable public knowledge about the natural world, sufficient for prediction and control and for producing coherent, comprehensive, conceptual interpretations of that world. The mere existence of such a method and of such a corpus of reliable knowledge resulting from it is a challenge to traditional religious attitudes'. Yet, as we have seen, this itself begs a lot of questions.

No doubt, as a sociological fact, science does have a lot of authority. What, however, justifies that? How can we be sure that science does give us reliable knowledge? The danger is that these questions are answered in a circular fashion. Reliable knowledge is defined as that given by scientific method, and it is then not very surprising if science gives us that knowledge. Peacocke goes on to ask whether religion can 'learn to outgrow its reliance on claimed authorities and the popular image of a God who acts and reveals by supernatural means – the 'laser beam' God rightly caricatured by David Jenkins, former Bishop of Durham'. Yet why should religion conform to scientific demands? Ruling out the supernatural is by definition what 'naturalism' demands, and it is hard to see the naturalist faith in science as anything other than a modern version of an ancient materialism. Certainly, once we start questioning our right to talk of the

supernatural, the implication is that only the 'natural', however defined, actually exists. As a metaphysical thesis, this tends to ride on the coat tails of the success of science, but it is still a metaphysical position of considerable magnitude. Once we abolish the idea of a God who can intervene in the processes of the world through supernatural means, we are well on the way to removing any possibility of talking about the supernatural. The very notion of a transcendental God becomes problematic, and indeed the temptation will be to succumb, if not to atheism, then to some form of pantheism.

Peacocke himself makes considerable concessions to naturalism, by being sceptical about the existence of a 'supernatural' world. He says (3): 'That supposed world, by manifesting an ontological category of immaterial 'spirit', appeared to provide a channel along which divine influences could supposedly operate to manipulate matter and human beings'. His reaction is to say crisply that 'such dualism is not intellectually defensible today, and has few supporters, not least with respect to human nature'. Counting heads is hardly a substitute for philosophical argument, and arguments about various forms of dualism are more pervasive than Peacocke recognises. He does go on to allude to the problem (which is a rather considerable one) that, of its very nature, theism is committed to dualism. A naturalist opposition to any ontological separation of mind and matter, or spirit and matter, can never fully break free from an underlying materialism. What really exists is matter, and everything comes from that base. Complex systems, with emergent properties, are ultimately material. To admit any other category is to commit the crime of 'dualism'. Yet theists, who wish to talk of God, are going to be committed not just to the ontological independence of God from the created world, but to a difference in ontological category of the kind deplored by naturalists. God is not a material object, and, however much sophisticated naturalists may rule out any spiritual realm, God, it seems, must be regarded as Spirit.

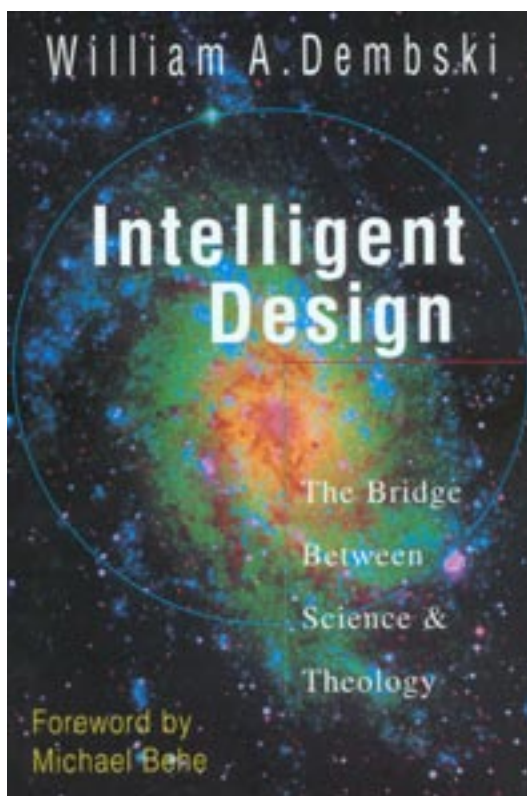
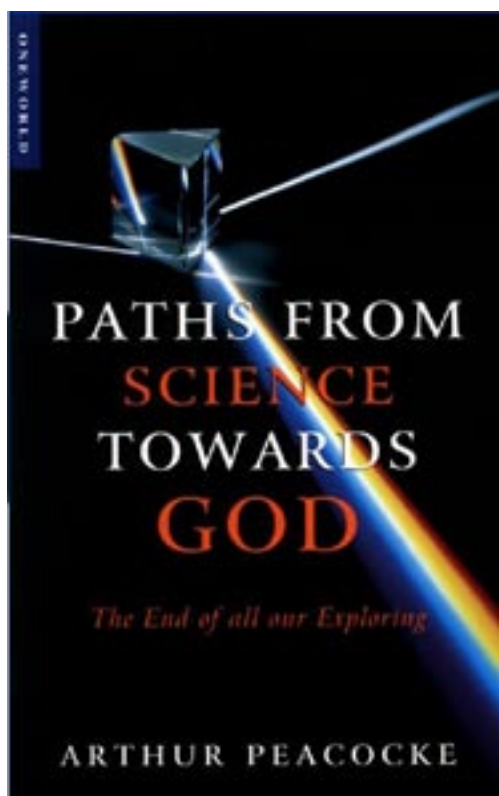
There are ways of evading the question of the dualism inherent in theism. The obvious one is, in fact, the normal naturalist reaction. Science deals with the natural world, and whatever is, by definition, beyond its reach is not part of that world, and does not exist. Theism and naturalism are incompatible. Indeed the explicit motive of many who preach naturalism is not just to deny the possibilities of ghosts, or minds, but to deny the possibility of God's existence. If reality is defined by science, God can have no part of that reality. It is, however, worth remarking that science is always human science. It seems very curious that reality (even reality 'for us') should be circumscribed by 'our' current, or even potential, abilities, to find things out. That is to make reality anthropocentric. It is to restrict reality to what we can know. It is to concentrate on epistemology, and on what is within the grasp of humans. It is to ignore metaphysics, or the theory of what there is.

Science is always revisable and tentative. It always has to be measured against a reality that often behaves in a surprising way. Reality, even that part of it accessible to science, always surpasses our current understanding. It is indeed part of the motive for doing science, and for the idea of progress in science, that we only have a partial knowledge, and at times may be misled. Tying reality down to what science says at any one time is bound to be self-defeating.

As a result, the very idea of naturalism becomes unclear. If it is tied to science as it is, it becomes far too restrictive. If it is connected to science as it might one day become at some far off scientific millennium, it becomes vacuous. Why should not a transformed science one day even be able to accept the existence of 'spiritual' realities? Only a metaphysical decision now that such things cannot exist would suggest that that is impossible. The question is whether we are concerned with the nature of reality, or with the validity of a scientific method tailored to current human capabilities.

Another reaction is possible to the perceived threat of a dualism of world and God. That is to reinterpret what we mean by 'God' in light of a metaphysical prejudice against an ontological category of immaterial spirit. 'God' can refer to the whole material world in a pantheist mode. This is not much better than being a materialist, with a special attitude of reverence to 'nature'. It is perhaps significant that Peacocke himself subscribes to 'panentheism', with a stress on the immanence of God in the world. God is, as he puts it, (4) 'the immanent creator creating in and through the processes of the natural order'. There is thus something approaching an identity between God, and physical processes. Nevertheless the point about panentheism is that in Peacocke's own words about 'all-that-is', 'God's Being is more than it and is not exhausted by it'. It is not clear from this how far God's existence is ontologically separate from the physical world. Peacocke takes embodied personhood as his model, whereby the person 'emerges' from the physical substratum'. Since he does not see this as license for any dualism between mind and body, perhaps he is trying to avoid the ultimate dualism between God and the world. Yet without this, theism (and certainly what Peacocke dismisses as 'classical philosophical theism) falls to the ground. It is worth noting that some forms of panentheism see the world as somehow included in the nature of God, and have in the past had the effect of 'spiritualising' the world. Peacocke's version, however, takes matter as basic, with all else emerging from it. Instead then of the possible unreality of matter (a problem by faced by some Platonist views) Peacocke, by starting with the physical world, as investigated by science, and by making matter prior, raises the question of the independent reality of God.

In particular, the underpinning of science by a belief in a God who created the world in an orderly and rational manner would seem to be put in jeopardy. Peacocke, and others like him in the debate about science and religion, give priority to contemporary science, in decisions about what there is, and what there can be. They start with our present understandings, and draw metaphysical and ontological conclusions from that. Yet they do not stop and ask what makes the success of science possible in the first place. They take it for granted, and then draw large conclusions. It is, however, very questionable to operate in this way. Science needs a metaphysical justification. We have to have some warrant for thinking that its apparent successes are real and not illusory. We may be lucky to live in an island of apparent order in a fundamentally disordered universe. If we do not believe this, why not? The historical reason is that scientists believed they were investigating the work of a divine Creator. We live, they thought, in a universe that is ultimately organised by the same underlying principles, and they are derived from the mind of a Creator who is ontologically separate from the contingent world



Arthur Peacocke and William Dembski offer differing viewpoints on the completeness of a naturalistic explanation of all phenomena.

so created. In other words, our physical world was designed. Yet any identification, partial or whole, between the Creator and the processes inherent in Creation, risks removing this fundamental insight. Indeed, without a metaphysical category of a Reality beyond the physical world, it is hard to see how God can provide any explanation for anything. Again, the difference between theist and atheist would seem to be more a matter of attitude to the same world than a difference about what kinds of reality there are.

Underlying all these arguments lies the philosophical position of materialism or naturalism. Even some theologians try to make sense of their faith within what some call a 'physicalist' framework. In other words 'what there is' is defined by physics. We start, it seems, with our present knowledge, and work outwards. It is hardly surprising that we then find it difficult to justify our knowledge, or that some see it as merely a sociological phenomenon, of what certain people happen to believe in a given society. The result can also be a constricting view of what can count as science. Naturalism, tied to views of what is acceptable to present-day science, then raises objections to anything that challenges current orthodoxy. Instead of an open-minded approach to the nature of reality, decisions are made about what can exist, and what kinds of explanations are admissible. Sometimes, it is accepted that people can be free to have their own beliefs, but they must not be allowed to impinge on science. There is, as we have seen, the underlying idea that science deals with facts, and anything else is a matter for individual taste. It cannot claim truth or be admitted to the public sphere. Indeed it may not even, it seems, be a fit subject for the classrooms of our schools.

The Challenge of ‘Intelligent Design’

Nowhere are arguments more acute at the moment than in biology. So-called ‘creationism’ has tried to masquerade, in a disastrous manner, as science. It has made it easy for atheists to brand any reference to God, as an explanation, as creationist, and therefore wildly mistaken. Creationists go against our most basic knowledge in science concerning the age of the earth and evolution, by relying on a simplistic interpretation of biblical texts. In particular, they rely on a literal interpretation of Genesis. There is, however, a much more subtle danger in this area. Religion must always learn from science, once theories have become more than tentative hypotheses, but the process need not be only in one direction. Unless we adopt naturalism, and in effect jettison any idea of a Creator as an explanation for how things are, there is always the possibility that science can learn from religion. Science has to look for natural explanations, without turning too easily to the supernatural. Otherwise, it would never have made the most elementary discoveries of modern science, and would, for instance, have attributed gravity to some spiritual influence. The deeper issue is, however, whether science has to adopt a naturalistic metaphysics. Is it going to assume that the world must be a closed physical system, which cannot be influenced by any non-material reality? In other words, science may not be able to treat divine action as part of its subject matter. Does that mean, though, that it has, as a matter of principle, to rule out the possibility of divine action in the world? Scientists may feel that this takes them outside the realm of empirical science. Yet a decision in favour, or against, naturalism can affect the way empirical science is done. To return to the vexed issue of creationism and evolution, there is no doubt that, for many biologists, the very idea of leaving room for divine action, or the idea of design, in reference to the development and nature of organisms is anathema. This is not an issue of whether to look for mechanistic causes or not. They are assuming that, in principle, evolutionary explanations could never prove inadequate. No room could ever be left for an explanation in terms of design.

This issue has become prominent recently as interest in the possibility of so-called ‘intelligent design’ has increased in the United States. The programme of this movement is summed up by William Dembski when he writes: (5)

‘What has emerged is a new program for scientific research known as *intelligent design*. Within biology, intelligent design is a theory of biological origins and development. Its fundamental claim is that intelligent causes are necessary to explain the complex, information-rich structure of biology and that these causes are empirically detectable.’

He means by the latter point that there are well-defined methods, he says, for ‘reliably distinguishing intelligent causes from undirected natural causes.’ Just how radical a challenge to conventional Darwinism this can be is illustrated by the confident claim of Michael Behe, that ‘the fact of design is easily seen in the biochemistry of the cell.’ (6). He does add that it might be difficult to identify the designer by science, and indeed intelligent design is merely compatible with theism. It is not saying that the designer is, say, the Christian God. It is not doing theology and vehemently claims to be science. Nevertheless, it leaves room for a

religious explanation. This, of course, is precisely what enrages many scientists, who want to classify it with fundamentalist creationism.

Intelligent design does not repudiate any scientific knowledge. It does not, for instance make ludicrous claims about the age of the Earth. It is merely challenging the idea of random mutation that lies at the heart of neo-Darwinism. It allows for the possibility of purpose and design. This is highly controversial, and should be dealt with through scientific argument. The opposition it engenders, however, suggests that much more is at stake. Scientists are not just defending their theories. They are taking positions over what reality has to be like. 'Intelligent design' challenges the idea of metaphysical naturalism. It goes even further by suggesting that a science closed to the possibility of non-natural explanations is itself deficient. In other words, it challenges methodological naturalism, as a proper part of scientific method. Whether it has any good scientific grounds for doing so is obviously a moot point. A common reaction is, however, that, in principle it could not. The American Association for the Advancement of Science quite properly points out (in a resolution approved in October 2002) what it sees as the 'lack of scientific warrant' for intelligent design. It goes, however much further than that. Instead of being content to challenge the theory on scientific grounds, it opposes the theory being taught, or discussed at all, within science classrooms. Instead the A.A.A.S. Board says it should be kept separate 'in the same way that creationism and other religious teachings are currently handled.' In other words 'Intelligent Design' is not bad science. It is not science at all. The implication is that it does not deal, rightly or wrongly, with facts that can be examined, but with private, subjective, religious attitudes. In the United States, at least, they are not counted as being appropriate material for public education.

Why, however, is 'Intelligent Design' to be dismissed as science, despite its protestations that it is making scientific, and not theological, claims? The answer can only be that it is willing to entertain the possibility that reality is more than a closed physical system. Non-physical explanations, even in terms of mind and purpose, may then be appropriate, even though such explanations may not be the kind that science can cope with. Scientific imperialists, who believe that the methods of empirical science are our only source of human knowledge, will obviously find that possibility repugnant. They are, however, making a philosophical and metaphysical commitment. Refusing to accept that, in principle, science could ever allow space for non-material, even theistic, explanations demands philosophical argument, not an assertion of the supremacy of science. The obscurantist refusal to allow the theory of Intelligent Design to be even discussed in a scientific context can only be the product of a deeply-ingrained materialism, even atheism.

Intelligent Design may still be deeply misguided. That is not the point. It is open to scientists to make scientific objections to it. The A.A.A.S., however, prefers to think that those who allow any room for purposive design or the idea of Creation must be as irrational as the most simple-minded Creationist. Yet that is to say that human reason cannot embrace the possibility of the transcendent or the supernatural. Science cannot even ask a question to which a theistic answer might be given. It is all a far cry from the Cambridge Platonists, and the

production of modern science from a belief in God-given order, to be understood by a God-given reason. In the seventeenth century, religious belief was a precondition for the development of science. Now it is made to appear to be the antithesis of a scientific attitude. Perhaps it is not so very surprising that, thanks to post-modernism and social constructionism, nihilist gales are blowing, and science itself is being challenged as a source of knowledge. Cut off from its roots, it floats free as a method, but it has forgotten that it must above all be governed by the nature of the reality that it is investigating. That reality may be richer and stranger than current science is at present inclined to admit.

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For further discussion about philosophical problems concerning contemporary forms of materialism see my *Philosophy Matters* (Oxford: Blackwell, 2002).



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