

ROGER TRIGG

A Christian Basis for Science

Why is science to be trusted? Many now challenge it. Modern science grew out of a belief in the orderliness of the physical world, which could be relied upon because a rational Creator had made it. Empiricists swept aside the theistic assumptions that made science possible, and they have been succeeded by a postmodernism which challenges the idea of reason and of an objective world. Postmodernism cannot escape the charge of relativism, and it removes all possibility of providing an intellectual basis for science. Yet science needs a metaphysical grounding if it is to be defensible. It can find this in the notion of an ordered Creation and a God-given rationality.

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1. Why trust science?

Modern science prides itself on its independence from any form of religious dogma. It considers that it is part of its very nature to investigate facts about the physical world without any preconceptions, let alone any religious commitment. The facts will speak for themselves, and will be the same for an atheist as for a theist. Science is the epitome of human rationality. It is dispassionate, detached and objective, untainted by particular viewpoints, unsullied by prejudice. Indeed, it has often been thought to provide the only hope for human progress, previously held back by battles, real and intellectual, between different religious communities.

This was essentially the picture encouraged by the later Enlightenment in the eighteenth century. It focussed on human reason and its capabilities, and discouraged appeals to metaphysics, which appeared to be insoluble. It stressed the crucial role of human experience, and helped to spread the philosophical doctrine of empiricism, according to which reality is a construct of what human beings can experience. We start with our experience, rather than with the nature of the world we are investigating. In other words, the emphasis has swung from the character of what there is to the way in which it can be known. After all, it may be asked, how can we decide to talk about the world as it is instead of our knowledge of it? Being absorbed with what we do not know, rather than with what we do, does not seem a very productive way of living. We are then being guided by ignorance, not knowledge, or as some would unkindly put it, by faith and not science. It is significant that in the English language, 'science' has acquired a much narrower meaning than the Latin 'scientia', or even the contemporary German 'Wissenschaft'. It means empirical knowledge, arrived at by a distinctive method, rather than human knowledge as such. Many have for a long time stopped distinguishing the two.

However, the distinction between the way the world is and whether, and how, we can know it, is a crucial one. Concentrating on what appears to be human knowledge may seem very sensible, but it begs the question as to how we can be sure it is well-founded. Philosophical arguments about whether we can know anything may make those imbued with ‘commonsense’ impatient, but it is vital that we question the basis of our knowledge. Reality and our knowledge of it are very far from being the same thing. As Socrates was fond of pointing out, to the annoyance of his contemporaries, many people think that they know when in fact they do not. When this point is applied to modern science, it means that it is foolhardy to take scientific knowledge at face-value. Just because science appears to ‘work’ does not remove from us the obligation to consider why. What is the justification for our trust in science? This is not an idle question, since many in our society are openly questioning whether science should set the standard for everything – or indeed for anything. Whereas once the growth of science seemed to be synonymous with human progress, now all too often it seems a threat to some, while so-called postmodernists openly question its right to claim truth.

All this means that the questions of whether physical reality can be known, and whether human minds are able properly to grasp its nature, are important. Some philosophers have adopted John Locke’s belief in the seventeenth century that they should merely follow in the footsteps of master-builders such as Boyle and Newton. He famously regarded himself as a mere ‘under-labourer in clearing ground a little and removing some of the rubbish that lies in the way to knowledge’.¹ Philosophy, it seems, is the servant, not the master, of science. It is easy to see why an empiricist philosopher should think this, because of an insistence on the priority of experience. Clearly, scientists are particularly in the business of gathering, ordering and systematising human experience. Scientific method is built on the idea of empirical investigation. Yet Locke himself realised that this raised questions about the nature of the world that is being investigated. Why should we assume that it is ordered, and not chaotic, intelligible to the human mind and not an impenetrable mystery?

Locke made no secret of the fact that he was writing as a Christian philosopher, and on such issues as the ‘coherence and continuity of the parts of matter’ he says unambiguously that ‘we cannot but ascribe them to the arbitrary will and good pleasure of the Wise Architect’.² God was free to create the world as he wished, so pure reason could not discover its necessary nature. We have to look and see, experiment and test, to discover how in fact it is. In other words, a belief in the contingent nature of the world was combined with a view of reality as intrinsically ordered, with an inherent rationality, endowed by the Creator. The answer to the further question as to how mere humans can hope

1 Nidditch, P.H. (ed.) *John Locke: An Essay Concerning Human Understanding*, Oxford: Oxford University Press (1975), p.10.

2 *ibid.*, p.500

to understand this through their experience comes from a conception of reason as itself having its source in God. Locke did not believe we were born with any innate ideas, but he did accept that reason came from the Creator. It was, in a phrase much loved in the seventeenth century, the 'candle of the Lord'. This was used by Locke, but was in fact the slogan of the 'Cambridge Platonists', who stressed the role of reason and its origin in God. It gives a theological underpinning to the idea of reason in general, and to empirical science in particular. At the same time, it warns us that reason may only give us a flickering and partial light with which to see into the nature of things. The world is seen in the pale glow of a candle, and we do not attain the bright certainty given by a world illuminated by a powerful searchlight.

The Cambridge Platonists were active in Cambridge at the time of the English Civil War, and influenced the outlook of such scientists as Newton and Boyle. They were to be found amongst the founders of the Royal Society. No doubt they looked to reason as a way of resolving the horrendous disputes and violence of the times they were living through. Most certainly they can lay claim to being amongst the founders of the European Enlightenment. The significant fact, however, is that this was not a secular view of reason, inclining people to the materialism of the French Enlightenment in the eighteenth century. Instead it suggested that science was only possible because of a belief in an orderliness in the physical world that could be relied on because a rational Creator had made it like that. Science was only able to read the Book of Nature because it had a heavenly Author, who was the ultimate source of the laws of nature.

2. Science without religion

The success of science made it all too easy to forget the theistic assumptions that made it possible. This was at a philosophical price, as the work of David Hume illustrates. He stressed the role of experience in building up a scientific view of the world, but gave up the theistic setting that gave it sense and purpose. As a result, even induction, the generalising from one time or place to another on the basis of observed instances, can no longer be given a justification. It is just something which, as humans, we are accustomed to do. There is then no longer any way of giving an intellectual grounding to science. Empiricists try to avoid this problem by stressing that order is discovered in the world. The uniformity of nature is the result of a picture built up by empirical science, rather than the very presupposition that makes science possible. Hume himself, however, had the honesty to see that this was too easy a solution. At any given point, whatever uniformity and order there appears to be, we have to face the problem as to why it should be typical of the whole. Why should future discoveries follow the same pattern? How can we be sure that the whole universe behaves in the same regular way? However much we have discovered, we will always be haunted by the problem that the future may not be like the past, the unseen may not conform to the seen, 'there' may not be like 'here'.

Without a metaphysics that governs our expectations we must always be floundering.

Analogous difficulties have always accompanied those who wish to put their philosophical trust wholly in the empirical outcomes delivered by science. In the twentieth century, when logical positivism proclaimed that all problems that could be meaningfully formulated were soluble by science, it produced the 'verification principle'. According to this, statements gained their meaning through the empirical methods by which they could be verified. By definition, we could not understand what was said if we did not know how to go about testing it. This conveniently ruled out at a stroke all metaphysical and theological claims. The position had many flaws, but the most glaring one was the status of the verification principle itself. Where were verificationists standing in order to make such claims? Like all such global views about science, people have to be making such assertions from beyond science. A scientist cannot claim that science can explain everything, as this is a statement about science; it cannot be made from within science. It is a global, metaphysical claim, not something that can be verified through experience. 'Everything' will always by definition outstrip the experience of all of us. A.J. Ayer, one of the central figures of twentieth-century positivism, suggested that the verification principle could be treated as an axiom, but axioms do not have to be adopted, and he was still left with having to explain why this particular axiom was a necessary one, especially when it ruled out much that humans find valuable. Moral and aesthetic statements were in as much difficulty as any piece of metaphysics.

Ayer himself confronted the issue of the 'uniformity of nature' as an underpinning for induction in his classic *Language, Truth and Logic*, first published in 1936. He interpreted the principle not as a metaphysical one about the order inherent in the physical world, but as a statement about experience. He thought it amounted to the claim that 'past experience is a reliable guide to the future'. As this is a restatement of induction, he himself pointed out that it merely begs the question. Ayer's conclusion was that there is therefore no possible way of solving the problem of induction. In this he was following in the footsteps of Hume, although he went further than Hume in saying that it was not a genuine issue. He claimed that the problem of induction 'is a fictitious problem, since all genuine problems are at least theoretically capable of being solved'. Since the only genuine solutions were for Ayer empirical ones, this also begs a very large question. It is easy to dismiss philosophical views about the relation of reality to experience because they are not the result of experience. This, however, assumes that experience is our sole source of knowledge, which is the very point at issue. It is also all too easy to dismiss difficult problems as fictitious, merely because a proper answer to them requires recourse to assumptions that a blinkered empiricist cannot make.

Ayer went on to provide a reason for still trusting scientific method, without any philosophical basis for doing so. It is probably the most popular one that

tends to be given, namely 'success in practice'. He said³ that 'we are entitled to have faith in our procedure just so long as it does the work it is designed to do – that is, enables us to predict future experience, and so control our environment'. This is also the argument of the pragmatist, and many are content with it. Science 'works'. Ayer admitted that we cannot have any reason for trusting that this will continue, apart from past experience. We have no right to rely on the physical world, beyond stumbling on in the unjustifiable hope that things will continue in the way that they have turned out so far. As a basis for human exploration into the nature of things, it seems sadly insubstantial. We have been successful, so we probably will be. Why, though, should this be? What is the character of the physical world that allows us to acquire reliable knowledge in this way? Why is the world ordered? Ayer's response was to say that because we cannot give a ready answer, or an answer he would welcome, we must forget the question, and even pretend we cannot understand it. It is perhaps not surprising that in the ensuing generations, positivism has been challenged, and the underlying issue keeps reappearing. Empiricists, such as Ayer, have always preferred to start with the fact of human experience. Their philosophy is explicitly anthropocentric, and can never make assumptions about the character of reality. That is always viewed as something constructed by humans through their experience. As a result, general claims about the physical world that go beyond human experience are impossible. A theist, however, is in a position to make wide-ranging assumptions about the nature of the physical world before it is investigated empirically. If God created the world, it can be assumed that His rationality is reflected in that world. Indeed, this justifies our expectation that it makes sense to make scientific observations and perform experiments. We can discover regularities and can generalise from them. This is not a matter of blind faith but follows from the very nature of God. Theism can underpin and justify inductions about the nature of the physical world. We can rely on its regularity, order and consistency in ways that can justify generalising going from 'here to there' and 'now to then'. The nature of the physical is not going to change arbitrarily in major ways, since God is to be trusted.

3. Theism and the world

Despite the chill winds of logical positivism, and the prevailing atheism of much of twentieth-century philosophy, voices could still be heard at intervals through the century, pointing to a need for a more substantial basis for science. For example, M.B. Foster published in 1935 a seminal article relating Christianity to the rise of modern natural science. He claimed⁴: 'The method of natural science depends upon the presuppositions which are held about nature, and the presuppositions about nature in turn upon the doctrine of God.' Empir-

³ Ayer, A.J. *Language, Truth and Logic*, 2nd edition, Gollancz (1946), p.50.

⁴ Foster, M.B. 'The Christian Doctrine of Creation and the Rise of Modern Natural Science', *Mind* (1935) 43, 463.

ical observations can only be made and correlated on the assumption that they typically sample what physical reality is like. We can only keep to a belief in the stability and orderliness of nature by supposing that its order is not a chance, local occurrence. The world has been made like that.

Some twenty years later, a leading physicist wrote⁵: 'That common search for a common truth, that unexamined belief that facts are correlatable, i.e. stand in relation to one another and cohere in a scheme: that unprovable assumption that there is an order and constancy in Nature... all of it is a legacy from religious conviction.' Science was, in other words, able to progress because it had absorbed in its infancy in the modern era theistic assumptions about the nature of the world. A world created by God could be taken to be reliable, rationally structured and put together in a coherent way. All this is so taken for granted by contemporary science that it seems obvious that this is the way things are. Perhaps, as the anthropic principle in physics has indicated, we could not have existed in any other type of world. Yet that does not explain why we do exist. Put like that, it is plain that questions about the foundations of science are very likely to be traversing the same ground as religious issues.

These issues have not gone away in the second half of the twentieth century. Yet science itself has not gone unchallenged. One of the most striking movements in recent years has been a reaction against so-called 'modern' views of rationality, as expressed in science. The result has been that science has been called upon to justify itself. The very fact of science's origins in a theistic view of the world has been used as an argument against its conception of the world and of reasoning about the world. Richard Rorty was one of the first to attack the idea that the physical world somehow had a fixed nature, waiting to be understood by means of human rationality. He wrote:

'The very idea that the world or self has an intrinsic nature...is a remnant of the idea that the world is a divine creation, the work of someone who had something in mind...To drop the idea of languages as representation, and to be thoroughly Wittgensteinian in our approach to language, would be to de-divinize the world.'⁶

This is postmodernism, a view that challenges the so-called 'Enlightenment' view of reason. Indeed, Rorty is quite right to see that the roots of that view lay in a belief that the world was a product of a divine mind. It had been made in a particular way, and we, made in the image of the Creator, had the ability to see that. There is a structured reality, which has its own nature, regardless of how it is conceived by anyone. Nevertheless human reason had the God-given ability to inquire into its nature. Scepticism about the possibility of human knowledge could therefore be ruled out. Many in the modern era, like Ayer and other empiricists and pragmatists, have chosen to ignore these roots of science.

5 Coulson, C.A. *Science and Christian Belief*, London: Oxford University Press (1955), p.55.

6 Rorty, Richard *Contingency, Irony and Solidarity*, Cambridge: Cambridge University Press (1989), p.21.

If they have been acknowledged, it has been only to dismiss them as intellectually irrelevant. They may have provided the occasion for the rise of science, just as the political aftermath of the English Civil War no doubt had something to do with the establishment of the Royal Society under Charles II. That may make an interesting historical footnote, but it can have nothing, it will be claimed, to do with the inner character of science.

Postmodernists have seen the matter differently. They themselves have not been writing from a religious standpoint. Indeed, as the usual conclusion of what they say has been that there can be no 'grand narrative', no claim to global truth, they are removing the very basis of theism. The trouble, though, is that any rational basis for science itself has been thoroughly challenged. It becomes just one amongst many perspectives, and there can in principle be no reason for adopting it. 'Reason' itself becomes something rooted in time and place. In fact it becomes a creature of the Enlightenment, historically situated, and limited to one particular historical context. Science itself can all too easily be defined merely as 'Western science', one amongst many possible ways of looking at the world.

Postmodernism glories in diversity and extols pluralism. It typically moves attention away from the nature of reality. As we have seen from Rorty, the idea that there is such a thing is to be dismissed. We are no longer to be thought in the business of forming beliefs about entities that have fixed characteristics and exist independently of the way we think about them. Such 'realism' is exposed as having its roots in theology. Indeed this is a theme that itself has surfaced regularly since the time of Nietzsche, so that the very idea of objective truth is dismissed as being theological in origin. This is far too extreme a reaction, as without such a notion there can be no distinction between what is and is not the case about anything. Even the difference between atheism and theism cannot be expressed without an appeal to the difference between there being a God and there not being one. Although there is plenty of room for dispute over what precisely is at issue in that debate, it may seem a little quick to maintain that the very possibility of the objective truth of atheism shows there must be a God as the ground of the distinction between truth and falsity.

There are those like Rorty, however, who associate so strongly the idea of an objective, structured world with a theological origin that they are quite ready to dispense with any distinction between truth and falsity, or fact and fiction. Everything becomes a matter of 'story' or 'narrative', historically situated and contextually bound. The alleged universality of reason is derided as itself a belief that arose in the context of the European Enlightenment. Difference and variety is extolled at the expense of any 'totalising' (even totalitarian) view of a truth that is the same for everyone everywhere. In fact, what happens is that our attention is deliberately moved away from the object of our inquiry or the content of our beliefs. Rorty complains that language should not be thought of as representational. It is not 'about' anything, let alone holding up a mirror to an independently existing world. His reference to the later Wittgenstein shows

his eagerness to look at how language is used in different contexts, not just at the way it labels 'things'. Yet the result of so doing is to focus on the fact of different human practices, or to stress the fact that people have certain beliefs, which go to make up a way of life. Religion is then viewed as a social practice to be judged in its own terms, in a way that can insulate it from any criticism or onslaught from bodies of belief beyond it. Similarly, science can no longer be thought of as a body of knowledge about the world, built up carefully and cumulatively through the generations. Instead it is what scientists do. It is hardly surprising that in the eyes of some sociologists of science the activities of scientists are a similar object of study to the practices of remote tribes. Indeed, since there are very few tribes so remote that they are untouched by contemporary life (or out of reach of satellite television), sociologists and anthropologists may well find scientists a more rewarding focus for their investigations.

4. Postmodernism and relativism

Sometimes theorists about religion are themselves seduced by postmodernism. They use a postmodern critique of modernity to attack any idea of objective truth or universal rationality. They see such views as products of the Enlightenment, all too often serving to legitimise science at the expense of religion. It seems reassuring to deny science any chance of dismissing religion by it claiming a monopoly of truth for itself. If nothing can be objectively true, then science can be in no better position than any religion. To quote one writer about religious studies⁷, postmodernism has not only dislodged the autonomous subject, but 'it has also undermined the false claims of a disinterested objectivity'. In other words, we cannot assume a rationality that can lay claims that should apply to everyone. We cannot claim objective truth, it seems, although it is interesting that in the same sentence the writer is able to assert that such claims are (objectively) false.

We cannot, it is alleged, abstract ourselves sufficiently from our social context to talk about what is true, as opposed to what we are conditioned to think as a result of our gender, or our social situation. Such claims to truth merely reflect, in particular, the patriarchal structures in society, under which the interests of males are pursued. The same writer continues that 'today such an outlook has given way to a constructionist outlook whereby the certainty of knowledge is replaced by an ongoing process of interpretation'. As a result there are no final and definitive positions. Instead, she says, 'all are open to revision, to further development and dynamic change'. In one sense, this could be perfectly acceptable. Those who saw reason as a small candle, and not a great burst of light, realised only too well that what passes for human knowledge is provisional and tentative. Science itself forgets this at its peril, as gen-

7 King, Ursula 'Is there a Future for Religious Studies as We Know It? Some Postmodern, Feminist and Spiritual Challenges', *Journal of the American Academy of Religion* (2002) 70, 371.

uine progress often involves the reappraisal of apparently well-established theories. In religion, a comparison of the finite nature of human minds with the infinite nature of God must always give us a genuine humility.

A stress on the partial and tentative nature of all human knowledge is one thing. Removing the whole possibility of any knowledge is quite another. Once we arrive at this point, we are immersed in the muddy waters of relativism. Religion and science appear merely to be constituted by typical practices. Neither are characterised by beliefs about an independently existing world. They are not the kind of thing that could be true or false, nor do they need any form of justification or grounding. It follows that there can be no pretence that they grow out of common roots, or that they have anything in common. There is nothing against which they can be both calibrated. The 'world' as seen from the perspective of one need have nothing in common with that of the other. In fact it is no exaggeration to say that, according to this view, religious people and scientists live in different worlds. It ought to be embarrassing to views like this that the same person can be a scientist and a religious believer, but it would be held that such people just switch practices and perspectives depending on their context. There is no contradiction in a cricketer also playing golf. Wittgenstein's own example of seeing a 'duck-rabbit' drawn first as a duck and then as a rabbit offers another parallel. We can perceive different aspects of the same picture. It can be seen in different ways, but there is no answer to the question as to what it really is.

The ambiguous drawing can provide a common point of reference. The true relativist will see everything as internal to the practice or body of belief in question. Nothing can be agreed as forming a common starting point. There is no 'world' waiting to be interpreted. An interpretation, and the 'object' of interpretation, cannot be prised apart. The postmodernist will not allow any idea of an uninterpreted world. It follows that all references to reality are to be seen as the construction, or projection, of those set in particular social contexts at a particular time. Truth can then never be objective, or have a universal claim. It is associated with what sets of people happen to believe at a particular time. Since, by definition, there is nothing beyond the beliefs against which they can be judged, the mere fact they are held becomes a sufficient guarantee of their truth. Agreement and convention constitute truth. It is, however, from a traditional viewpoint, an odd kind of truth, since the beliefs can only be 'true' for those who hold them. In other words, talking of the truth of a belief is just another way of saying that it is held. There can be no question of giving reasons why it should be held or of justifying it to others. The norm for belief is the collective agreement of the social group to which one belongs. The only reason for doing science is that scientists agree about the character and methods of their practices. The analogy with games holds. Cricket is ultimately defined by the collective agreement of those playing the game as to what the rules should be. There is no cosmic justification of the game. Even the most ardent cricket lover would hesitate to suggest that the character of the game reflects some ultimate facet of reality, or that playing the game can be justified because

the particular beliefs underlying it are true.

The great problem is that once a ‘constructionist’ view has been adopted, and ‘dynamic change’ becomes the norm, the question arises why anyone should change their views or reinterpret their position. If all is interpretation, any interpretation is as good (or bad) as any other. There is nothing against which it can be judged, nor indeed any reason for making a judgment. Everyone is immersed in the prejudices and presuppositions of a particular society. Nothing can be true, and nothing false. The exploitation of women by men may be a feature of a particular society, or even of all societies, but there would seem nowhere for anyone to stand to make a rational protest, or even to describe the situation dispassionately. Even the academic study of social differences has to be ruled out, because it presupposes that academics can detach themselves from their own surroundings sufficiently to make dispassionate and unprejudiced judgments about the way a society works. The sociology of science becomes a contradictory exercise. Either science is a rational pursuit of knowledge of the truth or it is not. If it cannot be, the sociologist cannot pretend that he is capable of what the physical scientist is not, namely of investigating an independently existing reality. If physicists are caught up with the prejudices of their society, and cannot talk of reality as it is, so must be the sociologist. The latter cannot talk disinterestedly about a social reality without conceding that the former can do so about a physical reality.

Postmodernism cannot escape the charge of relativism and, since the time of Plato, relativists have been accused of incoherence. All arguments and assertions have to presuppose the idea of truth, since otherwise they would be unable to distinguish between what is and is not the case. This is bound to apply equally to ‘second order’ statements about the status of other statements and beliefs. Saying that truth is not an objective matter, but is relative to the believer, is bound itself to be a claim to truth. Unless it is a claim to objective truth, which demands universal acceptance, it can make no impact, but would be a mere autobiographical or ethnocentric remark. The remark quoted earlier about ‘the false claims of a disinterested objectivity’ is typical. In espousing relativism, it simultaneously denies it. The remark only has cogency if it is being maintained that such claims are objectively false (for everyone). It only deserves respect if it is intended itself as a ‘disinterested’ remark, as opposed to the dogmatic claim of invincible prejudice. All relativists find themselves eventually in the embarrassing situation of saying implicitly, or explicitly, that it is objectively true that there is no such thing as objective truth.

5. A grounding for science

In addition to the issue of its internal incoherence, relativism in its contemporary forms removes all possibility of providing an intellectual basis for science. This is largely because it prohibits reference to any reality existing independently of the way ‘it’ is judged or interpreted. Any idea of an objective world, with

its own characteristics, has to be discarded, and all we are left with is an ongoing flux of opinions and beliefs. Yet because they no longer have any clear focus outside themselves, there is no way of providing them with any justification. None can be said to be better than any others. Any scientific belief is as good as any other, and any practice can be as good as 'Western' science. There seems little point in doing science, and no way of defending it against its detractors. It might be said to be just there, as a 'social fact', except that no postmodernist can consistently talk of social facts apart from particular interpretations. In such an intellectual climate, science can no doubt survive for a time as an ongoing practice. Since, however, it is denied the rational resources to defend itself, or to justify itself, it may find its position increasingly insecure. It will be at the mercy of the fickle winds of arbitrary fashion.

Another facet of relativism, and of all similar views which stress the separate identity of different practices and forms of life, is that the comparison of different ones becomes impossible. They each set their own internal standards, but have by definition no external point of reference. This becomes of particular importance when the relationship of science and religion is raised. Each sets its own criteria, and just as it seems science cannot be judged according to the demands of religious faith, so the latter need not conform to the standards of the physical sciences. It has always been a problem to determine what counts as a practice. Should we think of physics, or of science in general? Should we talk vaguely of religion, or specifically of Christianity? Indeed the issue of the relationship of the sciences with each other becomes problematic if they cannot be understood as being about the same reality, and thus have to tell a consistent story about it. The relationship of the different religions is equally a crucial question, and relativism becomes particularly attractive to those who refuse to accept that one might have greater validity than another.

Beyond these issues, however, is the temptation to keep religion and science separate so that each has to be understood by its own criteria and cannot impinge on the other. This can be an explicitly relativist programme, but it need not be. Indeed, more than a generation ago, C.A. Coulson imported from quantum physics the idea of 'complementarity' to describe what he saw as their relationship. He referred to how Niels Bohr applied his notion more widely than in its original context in physics, in dealing with quantum phenomena as both waves and particles. He further claimed that many intellectual struggles should be seen as examples of this kind of duality. Bohr's use of the idea of complementarity involves the use of contrasting pictures which are incompatible with each other, but each seems to say something true; it is just that they cannot be combined. As Coulson says⁸ of this kind of case, 'both are right, but they have no contact with each other'. It is easy to see how this analysis could apply to debates between science and religion. Each deals with different kinds of issues, and thus is never in a position to contradict the other. To put it simply,

8 C.A.Coulson, *op.cit.* (5), p.72.

one might say that science tells us 'how', and religion 'why' physical events occur.

This is a constant temptation. Followers of Wittgenstein are likely to talk of religion and science as different forms of life and, very recently, the late Stephen Jay Gould argued powerfully that science and religion form what he called 'non-overlapping magisteria'. He insisted that 'they remain logically distinct and fully separate in styles of inquiry.'⁹ Enlarging on this, he said: 'The net, or magisterium, of science covers the empirical realm: what is the universe made of (fact), and why does it work in this way (theory)'. The magisterium of religion extends over questions of ultimate meaning and moral value. These magisteria do not overlap.'¹⁰ Such an account can be attractive to those who want to appear tolerant of religion, without allowing it actually to affect anything. It suits the traditional American separation of church and state, so that religion can be left to the private sphere, and science can dominate the public arena. It can fit in with an old-fashioned positivist agenda regarding facts as the province of science. 'Subjective' values can then be left to the province of religion.

The trouble with this stance is that it either becomes relativist (and even subjectivist), or it gives pride of place to science. 'Real' explanations are then to be regarded as scientific, and religion is left with people's personal attitudes. Science is about truth, and religion can be left with issues about 'meaning'. The latter may seem important, but all too often what is being claimed is that science has a monopoly of insights into the nature of reality, leaving religion with individual decisions about how to view life. Science then has no need to imagine any conflict with religion, since it has by definition claimed the high ground, and is able to have the last word on the nature of the world. Religion has to be content with whatever is left (and that is not in fact very much). Thus an apparent relativism, stressing the different kinds of criteria appropriate in different domains, can become inverted into what looks like an old-fashioned materialism, stressing the role of scientific method in defining the nature of reality. Unless we are satisfied with the incipient epistemological anarchy encouraged by postmodernism, the temptation will always be to stress the differences between scientific and religious ways of thinking in a manner that ultimately downgrades religion.

Relativism and contemporary forms of materialism appear to offer the main choices for those who want to make sense of the relations between science and religion¹¹. Faced with those who simply take it for granted that science can explain everything, it is perhaps not surprising that some would-be defenders of religion retreat to postmodernism. The latter may stop science claiming truth at the expense of religion, but only by destroying any idea of objective

9 Gould, S.J. *Rocks of Ages*, New York: Ballantine (1999), p.58.

10 S.J.Gould, *ibid.*, p.6.

11 See my *Philosophy Matters* (Oxford: Blackwell, 2002) for a further discussion of contemporary forms of materialism and relativism.

truth. Without the right to claim truth, any religion has itself been eviscerated. Yet there is a serious problem for science as well. Obviously any science that is stopped from making claims about reality cannot justify itself, and relapses into being one social practice amongst many. What is often not appreciated, however, is that the strong 'materialist' view of science as the sole source of knowledge has to face the same criticism. How can science be a justifiable practice? This is a philosophical question demanding a philosophical, and even metaphysical, answer, one which can transcend science and put it into a wider context. To be given a scientific answer to questions about the very legitimacy of science merely begs the question at issue: why can human science, the vehicle of human reason, uncover the secrets of the universe? Appealing to evolution as the source of our mental capacities, by saying that we could not have survived and flourished without them, calls into play a scientific theory. Yet the status of all scientific theories (of which the theory of evolution through natural selection is one) is being challenged. What is at stake is the capability of human rationality to recognise and understand the workings of the physical world. Our ability to conceive of evolution is as much in question as anything else.

We are thus brought full circle to the assumptions made by many of the founders of modern science in the seventeenth century. They were not relativists, nor materialists, and they believed that their attempts to explain the workings of the material world rested on an ability to understand the regularities and orderliness given the world by a Creator, who had also given them the pale, but adequate, light of reason. For them, rationality was not a human construction, but a God-given gift. As such, it was not surprising that it provided the means of finding intelligible the created world. The subsequent success of science enabled many to forget the intellectual sources from which it had come. By so doing, however, all science has left itself vulnerable to challenge. Unless one has blindly accepted it and made it the only source of truth by definition (as the positivists did), there has seemed no way of giving it any legitimation.

The empirical success of science led many to despise metaphysics in general, and theology in particular. Yet that left no grounding for science, and no way of defending it. The doctrines of Christianity have provided fertile soil for the growth of science. Many postmodernists, following thinkers such as Nietzsche, have concluded that without Christianity, notions of objective truth must be discarded. Perhaps an alternative argument might be that the idea of truth is but one of several crucial notions for the successful pursuit of empirical science, which all derive from Christian doctrine. Perhaps rather than being in retreat from the onward march of science, Christian doctrine itself is indispensable to it. Certainly, without the idea of an ordered Creation, and a God-given rationality, it is difficult to see how science can be provided with the metaphysical grounding it so clearly needs.

Roger Trigg is Professor of Philosophy at the University of Warwick.
