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A Scientist's View of Religion

This article is based on the Priestley Lecture given to the Royal Society of Chemistry in September 1989. The triennial Priestley Conferences, sponsored by BOC Ltd. and organized by the Royal Society of Chemistry, include one Priestley Lecture, which is concerned with some theme associated with Joseph Priestley (1733-1804) himself. This lecture was first published in the Conference Proceedings, entitled Separation of Gases (RSC, 1990) and we are grateful for permission to reproduce it here for the benefit of a wider readership.

(Summary:) The interaction between scientific and religious views of the world is considered in relation to seven issues: (1) the intelligibility of the physical world; (2) the anthropic principle; (3) the interplay of chance and necessity; (4) the openness of physical process; (5) the ultimate futility of the universe; (6) the idea of resurrection; (7) the problem of miracle.

Key Words: anthropic principle, chance and necessity, chaos, consonance, evil, intelligibility, miracle, personal knowledge, providence, resurrection.

It is an honour for me, which I greatly appreciate, to give this year's Priestley lecture. I am also grateful for the ecumenical gesture of inviting a physicist to address an audience of chemists.

Joseph Priestley was a man of serene temperament, insatiable intellectual curiosity, and great clarity of mind. He was, perhaps, the most distinguished product of the eighteenth century dissenting academies, those remarkable educational institutions which more than made up for the barring of non-members of the Church of England from the Universities of Oxford and Cambridge. There is much to admire in Priestley but, like most of us, he had the defects of his qualities. They were nowhere more evident than in his religious opinions. He is associated with a form of belief which is usually called Rational Dissent. Its characteristics are a certain narrowness of vision about possibility and an undue reliance on what can be considered a priori reasonable. The history of science since Priestley's day provides us with many examples of how strange and unexpected the way-things-actually-are turns out to be; how limited are our powers of intellectual prevision, which often stand in need of what David Park has called 'universe-assisted logic'—that is, the prompting of our recognition of new and beautiful forms of rational structure which would not have occurred to our unaided imagination.

Priestley's Enlightenment-encouraged confidence in the power of reason, narrowly construed, led him to reject much of traditional Christianity. He failed to recognize that the mysterious but exciting doctrines of the

Incarnation (that God has made himself known in the plainest possible way by living the life of a man in Christ) and of the Trinity (that God is complex and superpersonal in a way that transcends human experience of isolated individuality) arose, not as rash and ungrounded metaphysical speculations, but as the result of centuries of struggle to come to terms with what the Church believed to be its essential and undeniable experience.¹ Theological doctrines are as much the consequence of reflection upon experience, and the search for its adequate understanding, as are the theories of physical science.

But—you may well say—how much more successful have been the latter than the former! Since Priestley's day we have learnt, and can agree that we have learnt, much about the gases that he discovered, even to the level of seeing them as made up ultimately of quarks and gluons and electrons. Yet in the religious sphere there has been no comparable growth of agreed understanding. Rather the reverse, for the varieties of belief and unbelief have greatly multiplied since the eighteenth century, to the point where Priestley's dry unitarianism, at the time considered dangerously radical, might be held by a neutral observer to occupy a place much closer to the centre of the spectrum of possible opinion. And isn't it just that last word—opinion—that sums it all up? Science deals with a public world of fact and trades in real knowledge. Religion is concerned with a private world of opinion, where we are all entitled to our personal views but these are incommensurable and nothing can adjudicate between them.

I want to try to explain why I emphatically reject that option for the peaceful coexistence of a universal science with an individual religion. I believe my concern as a physicist and my concern as a theologian are both with the search for truth—not just 'truth for me' but 'truth' tout court. My scientist's view of religion is that it is the exploration of aspects of reality complementary to those which we encounter in our scientific investigations. In fact, religion is the encounter with Reality (with a capital R) the One who is the ground of all else that is. The substantiation of that claim demands much argument, some of which I shall attempt to sketch within the confines of this lecture.

But first I must try to say something about why theology does not display clearly that cumulative and progressive character which is so impressive a feature of science. At root the answer is that science is easy. Most of you will probably give a wry smile at that, conscious of the formidable difficulties that your own investigations have to overcome. Of course I know that too, but what I mean is that in our exploration of the physical world we enjoy some formidable advantages. We transcend that world, in the sense that we can interrogate it and put it to the test. We have the weapon of experiment, a weapon whose value I, a theoretical physicist, gladly attest. There are many realms of human experience in which we lose that probing power. It is so in all forms of personal encounter. If I am

1 Polkinghorne J. C. *The Way the World is*, Triangle (1983) chapter 9.

always setting little traps to see if you are my friend, by the very lack of trust that I display I shall destroy the possibility of true friendship between us. Even more so is that true of the encounter with God. It is no use saying 'If there is a God let him strike me down dead'; he doesn't play that sort of silly game. In the realm of the personal the ability to test is replaced by the necessity to trust.

Impersonal knowledge, such as that which is the staple of science, is lowest-common-denominator knowledge. It is concerned with general features of the situation which can be present time and again and it is able to dispense with the consideration of many idiosyncrasies, such as the colour of the experimenter's hair or the state of his digestion. This essential repeatability permits predictability, one of the most impressive features of science's success. On the other hand, every personal encounter is unique. We never hear a Beethoven quartet the same way twice, even if we play the same record. Only in the event itself is its meaning to be found, nor can any casual bystander say what it is. Someone who seeks wholeness in the experience of serious illness may find it in the restoration of health or in the acceptance of the imminent destiny of death. No one can say beforehand which it shall be and only the person involved can say whether it has been found.

Impersonal science makes great strides by taking things apart but in personal encounter we must accept things in their totality. There must be many people here who could give in chemical terms an exhaustive account of a Rembrandt self-portrait, specifying the composition of every speck of paint, but I am sure that there is no one here so foolish as to suppose that a Rembrandt self-portrait is just a collection of specks of paint.

If Einstein had not discovered the General Theory of Relativity, then no doubt, in due course and perhaps piecemeal, others would have hit on the possibility of a gravitational theory framed in geometrical terms. No one, not even the greatest genius, is indispensable to science. Personal knowledge, however, cannot escape from the scandal of particularity, the irreplaceability of the individual. Only Bach could have written *The Mass in B Minor*. In the sphere of religion it is not inconceivable that the fullest knowledge of God was in the possession of a wandering carpenter in a peripheral province of the Roman Empire, far away and long ago.

These contrasts between impersonal science and personal religion, between testing and trusting, predictability and idiosyncrasy, generality and particularity, help me to understand why theology cannot enjoy the degree of collective and cumulative agreement achieved by science. The contrast between the two is not absolute, however. There are the great religious traditions which exemplify a shared and developing understanding of the divine, but their irreducibly personal character means that they can only be evaluated from the inside by participation, and not from the outside by dispassionate inspection.

Let me emphasize that the contrast is between the impersonal and the

personal, not between rational inquiry on the one hand and a stubborn and incorrigible fideism on the other. The religious man is not someone who believes twelve impossible things before breakfast. It is as natural for him as for the scientist—and, of course, for many of us the two are the same person—to ask the question What is the evidence? What makes you think that this might be the case? The difference lies in the kind of evidence which is relevant and the consequent manner in which we engage with it. It is also the case that the kind of questions that are addressed point in somewhat different directions. It is a commonplace to suggest that science asks the question How? and is concerned with process; religion asks the question Why? and is concerned with purpose. There is some truth in that, though the two questions are not as separable as one might at first suppose. The tone of theological discourse has certainly been affected by the realization that humankind did not appear ready-made some few thousand years ago but has emerged as the result of a long and subtle evolutionary process. To suppose that our perception of human worth must be modified by the insights of evolutionary biology would be to embrace what philosophers call the genetic fallacy (that the origin of something determines its nature), but we certainly think differently about the world as the result of Darwin's great discovery.

In fact, if I am right in my view of religion as being as much embedded in experience, and as much concerned with the quest for understanding, as is science in its own domain, then the two must have some degree of impact upon each other. For convenience we may talk about personal or impersonal encounter with the world that we inhabit, but it is still that one world about which we are speaking. Science and religion view it from greatly differing perspectives but their accounts cannot be totally independent of each other and where there is an intersection we must seek consonance between what each has to say in its own appropriate idiom. I want to devote the rest of this lecture to the brief exploration of seven points of contact between the world views of science and of Christian theology.

1. The first thing to note is that science is possible; that we can understand the world. We have benefitted so much from this that we tend to take it for granted. In my view it is a non-trivial—a mathematician's word for highly significant—fact about the world. I am principally referring to what Eugene Wigner, in a famous phrase, called 'the unreasonable effectiveness of mathematics'. Time and again it has proved to be the case in fundamental physical science that the successful theories are those which are economic and elegant in their formulation, which, in a word, are mathematically beautiful. So much is this so that if you want to upset one of your friends working in, say, elementary particle physics, you have only to say to him or her 'That latest theory of yours looks a little ugly and contrived to me'. You will be asserting that it lacks the character, so highly prized by people like Paul Dirac and Erwin Schrödinger, and repeatedly found to be present in empirically successful conclusions, of yielding

beautiful equations with an almost self-authenticating character to them, making one think 'That must be right'.

When we use mathematics in this way, as the key to unlock the secrets of the physical universe, something odd is happening. After all, the beautiful patterns of mathematics are mental artefacts, dreamed up by our pure mathematical friends in the privacy of their studies. What I am saying is that some of the most beautiful of these patterns are actually found to be instantiated in the structure of the physical world around us. In other words, the reason within (mathematics) and the reason without (fundamental physics) appear to be in 'perfect consonance with each other. That is an intriguing fact. It even puzzled Einstein, who said 'the only incomprehensible thing about the universe is that it is comprehensible'.

Now, it is always possible to shrug one's shoulders and say 'Well, that's the way it is, and good luck to you chaps who happen to be smart at maths'. My instincts as a scientist are not to be content with that. After all, it is the desire to understand as fully as possible which motivates our scientific labours. That quest is not to be given up prematurely. Yet physics is powerless to explain its own founding faith in the mathematical intelligibility of the world. If we are to make sense of that we must look elsewhere.

Easy, you say. Evolutionary biology will do it for us. If there were no consonance between the workings of our minds and the way things are we would have perished long ago in the struggle of life. That must be true, but only up to a point. What counts for survival is everyday experience (the world of rocks and trees) and everyday thought (at the most mathematically, arithmetic and the geometry of Euclid). For sure, if those did not match, we would not be here. But I am not talking at that pedestrian level. I am thinking of way-out physical experience, such as the counterintuitive behaviour of the quantum world, and highly abstract and sophisticated mathematics, such as gauge field theories. I cannot believe that quantum field theory is a spin-off from the evolutionary struggle to survive.

The natural way to explain why the reason within and the reason without fit together so perfectly would be if they had a common origin in a deeper rationality. Theism is able to provide just such an explanation, for it sees the rational will of the Creator as the sustaining ground of all our experience, both physical and mental. The universe is rationally transparent, and beautiful in its transparency, because there is a Mind behind it.

I do not present that as a knockdown argument. In the realm of fundamental metaphysical belief there are no such logically coercive arguments at the disposal of anyone, believer or unbeliever alike. I do present it as a coherent rational possibility, made more economic and attractive for me because I believe that there are many other grounds for believing that there is a God who is the Creator of the world.

I also proffer that insight as a typical illustration of the way that theology and science relate to each other. I do not think that in its own domain

science needs any augmentation from theology. We have every reason to think that scientifically posable questions will prove to be scientifically answerable, however difficult it may sometimes be to find those answers. To believe the contrary would be to invoke that pseudo-deity, the god of the gaps, popping up as the 'explanation' of the currently inexplicable and ever in danger of vanishing with the next advance of knowledge. If there is a God he cannot just be associated with the intellectually murky bits of the universe. He is to be found, not within science, but beyond it. From our scientific investigations there arise questions which are not scientific in character, and so are not scientifically answerable, but which nevertheless insistently demand a response. The intelligibility of the physical world is an example. These metascientific questions point us, I believe, in a theological direction. For me, theology provides the most profound and comprehensive setting within which to pursue the search for total understanding. Such a view of theology's role has been a continuing tradition, at least since the time of Thomas Aquinas. A distinguished Thomist philosopher-theologian of this century, Bernard Lonergan, put the matter in lapidary form. He wrote 'God is the all-sufficient explanation; the eternal rapture glimpsed in every Archimedean cry of Eureka'.

2. Rather similar considerations apply to the next point of contact between science and theology. It concerns the Anthropic Principle. I am sure that its insights are familiar to many of you. Let me summarize the matter this way. Suppose God lent you the use of his universe-creating machine. As you approached this no doubt formidable piece of machinery, you would find that it was furnished with a row of knobs that you could adjust in order to specify the universe you wished to bring into being. One would be labelled 'gravity' and by turning it up or down you could increase or diminish the strength of that fundamental force in your world. There would be knobs for the other fundamental forces and, perhaps, for other particular specifiable circumstances. For example, how big would you like your world to be? Like ours, with a hundred billion galaxies each with a hundred billion stars, or just a cosy cosmos the size of the Milky Way? You choose, pull the handle, and out comes your selected universe. You then have to be patient and wait a few billion years to see what will happen. Our understanding is that unless you had finely tuned those knobs to settings very close indeed to those corresponding to a universe like this, a very boring world would result. It would not produce in the course of its history anything so complex and interesting as you and me.

I won't take time to attempt to explain in detail how we reach this fascinating conclusion. The matter is very thoroughly discussed by John Barrow and Frank Tipler in *The Anthropic Cosmological Principle*. I am more concerned with inquiring what we make of the scientific recognition that a world capable of producing men and women is not 'any old world' but one that is 'finely tuned' in its given law and circumstance.

Once again, one can shrug one's shoulders and say 'We're here because we're here, and that's that'. Such intellectual sluggishness does not com-

mend itself to me. Science itself cannot help us, for it does not explain its own law and circumstance but must treat them as its given starting point of explanation. It has been suggested that maybe there are many different universes and if that were indeed the case then it would not be altogether surprising that one, just by chance, was sufficiently well-tuned to produce life—and of course that's the one we live in because we could not turn up anywhere else. This rather prodigal suggestion has sometimes been defended by an appeal to the many-universes interpretation of quantum theory. I am not persuaded by this, both because I am highly sceptical of that interpretation and also because, even if it were correct, the multiplicity of universes to which it refers arises from the varieties of possible outcomes of quantum events and in no way refers to variations in the underlying physical laws, such as would correspond to altering the strengths of gravity or electromagnetism.

The 'portfolio of different universes' proposal to explain this universe's anthropic fruitfulness should be recognized for what it is: a metaphysical speculation. Scientifically we have reason alone to speak of this universe. I am not at all against metaphysical speculation, acknowledged as such, but I regard the alternative metaphysical speculation of the existence of God as being equally coherent, more economic and more widely supported by other considerations. Then this universe would indeed not be 'any old world', but a creation endowed by its Creator with the necessary physical laws and circumstance to produce the fruitfulness which is in accordance with his purpose for it.

3. That fruitfulness manifests itself in the way that a universe, initially extremely simple and almost homogeneous, has become, in the course of fifteen billion years, highly differentiated and, in parts, highly complex. Yet that process—whether we are thinking of the fluctuations of matter density which initiated the condensation of the galaxies, or the currently unknown biochemical pathways by which amino acids aggregated to produce the seeds of life, or the biological story of the evolving complexity of life—all these developments may be characterized as resulting from the continuing pattern of the interplay of chance and necessity. Chance (by which I mean the uncorrelated instances of happenstance) is the source of novelty. Necessity (by which I mean the reliable laws of nature) provides the means to sift and preserve the offerings of novelty. Does not the unforeseeable role of chance—so that what will be cannot be read out of what is—subvert the religious claim that there is a purpose at work in the world's process? Jacques Monod expressed this view with passionate Gallic rhetoric when he wrote that 'pure chance, absolutely free but blind, lies at the base of the stupendous edifice of evolution'. The crucial word here is 'blind'. For Monod the universe is a tale told by an idiot. In the face of it, the only conceivable stance is that of heroic defiance.

One does not need to see it that way. In particular one must not lose sight, as Monod so often seems to do, of the essential role of necessity in all its anthropic fruitfulness. Let me put an alternative view in the

following way. With respect, one might feel that God faced a dilemma when he came to create the world. The God of faithfulness will surely create a reliable world, but then there is the danger that its regularity will be so rigid that it is no more than a home for automata. The God of love will surely create a world endowed with freedom, but there is then the danger that the very openness of such a world will degenerate into licence and chaos. The universe that we actually perceive, with its balanced and fruitful interplay of chance and necessity, novelty and regularity, is a world that one might expect as the work of a Creator both loving and faithful, for it incorporates his twin gifts of freedom and reliability.

4. I have spoken of the openness of the universe. In the eighteenth century, following on Newton's great achievements, it seemed as though we lived in a world of mechanism. Joseph Priestley himself was a necessitarian, regarding even human life as the unfolding of an inexorable chain of consequence. I believe such a view to be inconsistent with our basic experiences of choice and responsibility. I also believe it to be self-destructive. Rational discourse would be abolished and replaced by the mouthings of automata. In practice, even the most fervent necessitarian exercised a tacit disclaimer on behalf of his own thought and argument. Yet a century which constructed orreries, those mechanical models of the solar system in which the turning of a crank caused the planets to circle with relentless regularity, was almost bound to take a rigid view of physical process.

All that has dissolved away in the twentieth century. Not only has quantum theory revealed our apparently clear and determinate world to be cloudy and fitful at its atomic roots, but also we have become aware of how special and untypical are those predictable systems of planets or pendulums on which we cut our dynamical teeth as students. For sure, there are some clocks around but most of the physical world is made up of clouds. Before such an audience as this I do not need to go into details about the exquisite sensitivity displayed by complex dynamical systems, which makes them intrinsically unpredictable. The modern theory of chaos—that subtly structured randomness—is a development of very great significance.²

The picture presented to us is that of a system of underlying equations which are determinate but whose solutions are so precisely and critically sensitive to exact initial conditions as to make them inaccessible to prediction. In other words the immediate and widely agreed consequence is *epistemological*, concerned with what one can know. If one goes on to speak, as I have done, of a genuine openness of the future, then one has moved to making an *ontological* statement, concerned with what is the case. That is a more controversial matter, but one which, I believe, can be defended as being a natural step to take.

I do so on two grounds. The simplest one is that such openness accords

² A good account in Gleick J. *Chaos*, Heinemann (1988).

with our own experience as human beings and it is a gain to physics to be able to describe a world of which we can conceive ourselves as inhabitants. The second ground is more philosophical. Like almost all scientists I am a realist, that is to say I believe that our investigations lead us to reliable knowledge about aspects of the physical world as it actually is. That claim, so natural to a scientist (for why else should we go to all the immense trouble that doing science involves?) has been hotly contested by many philosophers of science. This is not the place to refight that battle; I shall simply assume victory.³ For a realist, what we can know (epistemology) and what is the case (ontology) are intimately connected. Thus it is wholly natural to move from unpredictability to openness. We have seen it happen before. Heisenberg's analysis of the uncertainty principle—the gamma-ray microscope and all that—was epistemological, for it was concerned with what could be measured. Almost all quantum physicists have gone on to embrace an ontological interpretation, asserting an intrinsic indeterminacy in the simultaneous position and momentum of quantum entities.

Therefore I believe the apparently determinate equations of classical physics to be themselves approximations in the description of a more flexible and subtle physical reality. Mere mechanism is dead; the future is not a tautologous spelling out of what was already there in the past; we live in a world of dynamic becoming as well as static being.

I have already associated our room for manoeuvre as persons with aspects of this openness of physical process. I do not think that we exhaust it. There will also be a freedom for the whole universe to explore and realize its own potentiality. And I do not see why God, that universe's Creator, should not have reserved some part of that openness for himself in his interaction with the world. In other words, the providential relationship of God to his creation seems to me to be a coherent possibility. Such interaction would be hidden within the cloudy unpredictability of complex systems. It would not be demonstrable by experiment but would be discernible only by faith.⁴

The picture I am offering seeks to steer a course between two unacceptable theological extremes. It eschews the deistic picture of a God who simply keeps the world in being but who has no particular relation to what is going on within it. Equally, it eschews the picture of God as Cosmic Tyrant, making the whole of his creation jump to his tune alone. That creation, and ourselves within it, enjoy a genuine freedom. God respects that, but not to the point of enforcing his own total impotence.

There are many issues here which need detailed consideration. Let me be content to draw attention to just one. The greatest problem of all for the theist is the problem of evil. I do not need to spell it out for you, for we all know how grievous it is in this post-Holocaust, disaster ridden, world. If God is good and powerful, why does he allow such things to happen?

3 Polkinghorne J. C. *Rochester Roundabout*, Longman (1989), chapter 21.

4 Polkinghorne J. C. *Science and Providence*, SPCK (1989).

There are two sorts of evil. One is moral evil, the chosen cruelties of humankind. There is no simple answer to them, but many have felt that some insight is to be had through what is called the free-will defence; that it is better to have a world of freely choosing beings, however disastrous some of their choices may be, than to have a world of perfectly-programmed automata. Our reluctance to countenance coercive measures such as the castration of persistent sex-offenders shows that we feel some force in that argument.

It does nothing to explain physical evil. Clearly illnesses and earthquakes are not caused by humankind. If I am right in thinking that God gives freedom to all his creation (and not just to men and women), then the free-will defence needs augmentation by what one might call the free-process defence. Austin Farrer asked himself what was God's will in the Lisbon earthquake, that great disaster during Joseph Priestley's lifetime which killed fifty thousand people in one day. He concluded that it was that the elements of the Earth's crust should behave in accordance with their nature. It is a hard reply, but I believe it is a true one. God does not will the incidence of a cancer anymore than he wills the act of a murder, but he allows both to happen in the free world that he sustains in being.

5. How will it all end? As you know, taking the broadest and longest view: badly. Science suggests that the universe will follow one of the two possible scenarios: either collapse (as the galaxies fall back into the melting pot of the Big Crunch) or decay (as they continue to separate for ever but themselves degenerate into a low energy plasma). Thus it seems that ultimately the universe is condemned to futility. What does that imply for the religious claim that there is a purpose at work in the world?

I think that the answer is that it throws it back upon the only possible source of lasting hope, which is God himself. It has never been part of classical Christian thinking to subscribe to an evolutionary optimism, seeking fulfilment within physical process alone. The problem of the decay of the universe, on a time scale of billions of years, is not all that different to the problem of the decay of ourselves, on a time scale of tens of years. In both cases, if there is a continuing destiny, its basis must be the faithfulness of a loving God. I therefore go on to consider whether the Christian hope of a human destiny beyond death is still credible in a scientific age.

6. Joseph Priestley did not believe in the soul as an independent spiritual component of humanity, capable of surviving the death of the body. In his view, when the brain died the mind died and it remained dead until resurrected at the end of time. It may surprise you to know that my own views are quite close to those of Priestley.

If we are to talk of an individual destiny beyond death, we have first to decide what is the real 'me' that we are talking about. Obviously it is not the atoms making up my body, for they are changing all the time. I personally

believe that the real me is the almost infinite information-bearing pattern in which those transient atoms participate at any given time. It is that pattern, in its developing continuity, which is the true meaning of the soul. We are not apprentice angels, spiritual beings temporarily trapped in a fleshly prison, but psychosomatic unities—as the Hebrews knew long ago. At death that pattern is dissolved but it seems to me to be an entirely coherent possibility that the pattern is remembered by God and recreated by him in some unimaginable future environment of his choosing. In other words, I embrace the Christian hope of death and resurrection, depending for its conviction on the faithfulness of God, and not a hope of survival, depending upon the intrinsic immortality of a purely spiritual soul. I do not think that scientific advance has in any way made that Christian hope incredible.

While the actual realization of resurrection lies for us beyond present time, it is part of the Christian faith to believe that that eventual human destiny has been anticipated within history for one man, in the resurrection of Jesus. That brings me to my final issue.

7. Christianity's assertion of the resurrection of Jesus as one of its central beliefs raises inescapably the question of whether miracle (that is, marvellous and wholly unprecedented occurrence) is still credible in a scientific age? After all, we are deeply impressed by the regularity of the workings of the world that has been revealed to scientific inquiry. Joseph Priestley found himself quite unable to accept the resurrection of Christ.

I am not so sceptical. It is important to recognize that the problem of miracle is basically theological rather than scientific. By its very nature, science is badly placed to adjudicate on the unique and unrepeatable. The difficulty that theology faces is that God's relationship with the world must surely always be characterized by utter consistency. It is theologically incredible that he should ever act as a celestial conjurer, today doing a turn to impress someone or to help a particular friend, while yesterday he had not thought of it and tomorrow he will not be bothered to repeat it. In the face of claims of the miraculous, theology has to explain how it is that a particular astonishing happening is consistent with God's continuing faithfulness; why Jesus was raised from the dead whilst it is our common experience that dead men stay dead.

I think that the physical notion of a new regime provides a helpful analogy. We all know how underlying regularity of physical law can be combined with startling changes in the consequences of that law, for instance at a phase change from one kind of regime to another. Similarly, if it is true, as Christians believe, that God was present in Jesus in a way in which he has not been present in any other man, then it is at least a rationally coherent possibility that that new regime that Jesus represented should be accompanied by new phenomena. Obviously, very much more needs to be said before a belief in the resurrection could be justified. In my view, there is evidence to which one can point in building a case for that

belief, but it would not be appropriate to pursue that here.⁵ I simply want to assert that the possibility is not ruled out from the start, for we do not possess a knowledge of what may be possible in unprecedented circumstances. My understanding of the resurrection (or any other claimed miracle) is that it is never just a divine *tour de force* of brute power, but that it is always related consonantly to God's consistent and continuing action in the world. In other words, I see miracle as unexpected providence in unprecedented circumstance.

My lecture is almost at an end. It has been concerned principally with the border between the scientific and theological world views. I stand before you as someone who is both a physicist and a priest and who seeks to take with equal seriousness the insights of both kinds of experience. I have tried to sketch how they may be held together, not without puzzlement at times, but without dishonesty or compartmentalism and, indeed, with some degree of mutual benefit and enlightenment. I have only touched on some aspects of our scientific understanding. Equally, I have only touched on some aspects of Christian belief. Central to my own faith is something I have not spoken of, the encounter with Christ in scripture, in the Church and in the sacraments. Let me conclude by giving just one example of how that central ground of Christian experience can provide a more profound response to one of the problems we have looked at together. I refer to the problem of suffering.

Even if the free-will and free-process defences offer some insight, they do not operate at levels sufficiently profound to meet fully the agonizing challenge of evil. We encounter it in the depths of our being and it demands a more than cerebral response. It is central to my own religious belief that the Christian God is not just a spectator of the world's suffering, however benevolent, but that he has also been a participant. In that lonely figure, hanging in the darkness and desolation of Calvary, the Christian sees God himself opening his arms to embrace the suffering of the strange world that he has made, and by that act of acceptance offering the hope of an overcoming. That is an insight that moves me most profoundly.

5 Ref. 1, chapter 8.

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