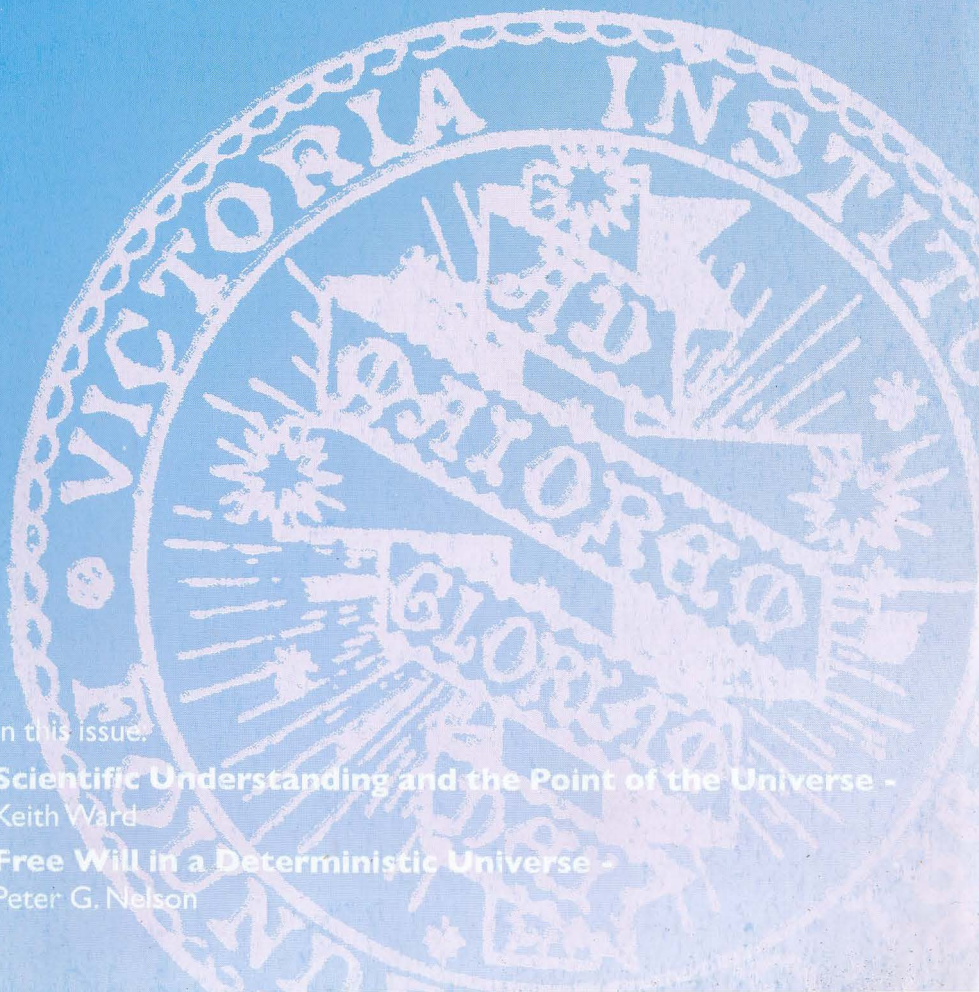
Faith&Thought

Relating advances in knowledge to faith within society
April 2008 No. 44



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FAITH and THOUGHT

Faith and Thought is the operating name of
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OFFICERS AND COUNCIL

EDITORIAL ADDRESS
Reg Luhman BD (Hons), MA, 110, Flemming Avenue, Leigh-on-Sea, Essex S

ADMINISTRATIVE ADDRESS
Rev. J.D.Buxton MA, 15, The Drive, Harlow, Essex CM20 3QD
E-mail: j.buxton@virgin.net

HONORARY SECRETARY
Brian H.T. Weller, 41, Marne Avenue, Welling, Kent DA16 2EY

BANKERS
Barclays Bank plc, Westminster Branch, 2 Victoria St. SW1H 0ND

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Editorial

We are pleased to include two articles in this edition. One of them is from the pen of the well-known and highly respected author Keith Ward, who was a professor of divinity at Oxford University and we are grateful to him for allowing us to include this. The other is a contribution from one of our members, Dr. Peter Nelson. In addition we have included notices and reviews that could not be included in our special editions published last October.

New Members

The Rev..Stephen Agilinko M.A.	London N17
Tony Bullett	London E18
Dr. Bruce Hardie Ph.D	London NW1
Dr. Steven Howell Ph.D	London N3
Dr. Matthias Klein Ph.D	London N1
Mr. James Lee	London N10
Mr. Edward Lodge M.A. B.D.	Aylesbury, Bucks
The Rev. Dr. Graham Monteith	Edinburgh
Mrs Rachel Pearson	Bury St.Edmunds, Suffolk
Dr. Samuel Pry	Texas, U.S.A.

Annual General Meeting : April 23 2007

The meeting was held at 3.15 p.m. at Methodist Church House 25 Marylebone Road, London NW1 5JR during the meeting of the Council of the Victoria Institute.

(a) The chair was taken by Mr.Terence Mitchell MA. Only one member was present in addition to the Council members and Mr.Brian Weller, The Minute Secretary and Mr.Reg. Luhman, the Editor of the Journal.

(b) The minutes of the previous AGM were agreed.

(c) The President, Vice-Presidents and Honorary Treasurer were elected for further terms of service as were Mr. T.C. Mitchell, MA, Dr. A.B. Robins, BSc, PhD, and Rev. M.J. Collis, BA, BSc, MTh, PhD, who formally retired, were re-election for a further period of service on the Council.

The Council also elected Mr.Reg.Luhman B.D.(Hons) M.A. , presently serving as Editor, as an additional member of Council.

(d) The Rev.John Buxton M.A.. presented the annual accounts , which are available upon application . The Chairman thanked the Hon.Treasurer for preparing these accounts.

F.F.Bruce

Following on from his recent book on British Brethren history, *Gathering to His Name*, Dr Tim Grass, Associate Tutor in Church History at Spurgeon's College, London, has been asked to write a biography of the Scottish biblical scholar F.F. Bruce (1910-90), who among many responsibilities was very involved with the Victoria Institute and served as its president from 1952-1965. He would be delighted to hear from anyone with relevant recollections, letters, copies of obscure articles, photographs, or manuscript material, and to learn about the impact which Bruce and his writings made on the lives of so many in various parts of the world. He would also like to know if you are willing to be interviewed regarding your recollections of Bruce, probably by e-mail unless you happen to live in the UK! Please contact him at: grass.family@tesco.net.'

Faith and Thought Prize Essay Competition

A prize of £500 is offered for the best essay on the subject

How Should the Christian View of Man Guide Medical Research ?

Closing date 31 January 2009

Competition Conditions:

1. Faith and Thought will own the copyright of the essay, though the author will normally be permitted to embody it in a later, more comprehensive work.
2. It should not exceed 7,000 words, excluding documentation, typewritten, with double spacing and 2 cm margins.
3. It should be submitted to the Honorary Secretary's address, accompanied by a brief synopsis of 200 words setting out which parts are claimed to be original, along with a sealed envelope with a motto outside, and the author's name and address inside.
4. As an encouragement to young writers, candidates, where applicable, may add to their motto the words, 'Under 25' or state their date of birth: neither is published.
5. Entries will be professionally refereed and if the referees consider the prize should be divided between two authors, the trustees' decision will be final.
6. If no submissions are deemed worthy, the right to withhold the prize and to publicise another competition thereafter will be exercised.
7. The prize is normally announced at the subsequent AGM.
8. Officers of the Victoria Institute may not participate.
9. Submission of an entry will indicate candidates' assent to all these conditions.

Honorary Secretary: Brian H.T.Weller 41, Marne Avenue, Welling, Kent DA16 2EY

FAITH AND THOUGHT

(THE VICTORIA INSTITUTE)

DO MIRACLES HAPPEN TODAY?

OPEN SYMPOSIUM

Saturday 18th October 2008

Miracles in Biblical and Historical Perspective	Professor Max Turner
'You Will Do Greater Things Than These'	Dr. Bill Lees
Claimed Contemporary Miracles	Dr. Peter May
Miracles in the Light of Science	Professor Colin Humphreys

10.00 a.m. - 4.30 p.m.

The venue will be in Central London. Further details will be sent out nearer the date

Registration fee £15.00 (Full Time Students £7.00) including coffee and tea.

Lunch: there are restaurants in the area; sandwiches are obtainable locally; a room will be available for packed lunches.

The registration fee will be refunded to anyone joining the Institute (FAITH AND THOUGHT) on the day of the symposium.

Booking: The Rev. J. Buxton, 15 The Drive, Harlow Essex CM20 3QD
Tel: 01279 422661 Email j.buxton@virgin.net

Obituary-Gordon Edgar Barnes (1920-2007)

Gordon Barnes was a long-standing member of the Victoria Institute and served as Chairman of the Council from 1969 until 1986.

He was a man of wide scientific interests, but also of great perception and understanding of the problems posed for Christians by scientific discovery and opinion. He was also well-versed in philosophy and, being a man of strong knowledge and understanding of the Scriptures, could apply these to such problems.

Gordon was the son of a farmer who hoped that he might follow him. He did in the sense of having a deep and affectionate understanding of animals. So, after graduation from Cambridge and a wartime of great courage as a fire warden in Liverpool he entered a career in zoology, becoming a Senior Lecturer in this subject at Chelsea College with a research interest in neurophysiology and was for a time Visiting Professor at Nsuka in Nigeria. He was involved with providing and importing animals and specimens for zoos, examinations and societies.

Alongside these attainments he was a most effective helper and encourager of young Christians who, with his wife Phyllis, used their open home as a place of fellowship, encouragement and apologetic understanding.

He had a gift for explaining awkward concepts in simple language (for instance his paper 'Teleology and the Causal Nexus' in this journal [95(1) 1966]). But his simple language conveyed understanding in depth and clarity, at times anticipating areas of debate which still occupy thoughtful discussion.

In retirement in Cornwall Gordon and Phyllis regained a surprising intensity of contribution and witness, aiding the survival of a struggling church fellowship with unexpected success by their personal and musical gifts.

We look back gratefully to a quietly confident and perceptive humble leader in Christian apologetics and Biblical competence.

(Prof.) Duncan Vere.

Book Reviews

Alister E.McGrath *The Order of Things.* 2006 Oxford Blackwell pb. £19.99. ISBN 1.4051.2555.1

How far the science-faith debate has moved on since the 'conflict metaphor'. Far from the antagonism that used to be imagined existing between science and belief, we now have many books written about 'scientific theology'. Perhaps it should remind us that theology was once considered the 'queen of the sciences'. Alister McGrath has done us all a great favour through his writings on these matters, the present work being an extreme example of this. It is worth bearing in mind that McGrath was, by his own admission, an atheist who came to faith at university and we can understand where writers such as Richard Dawkins are coming from. This current work has, in fact, a chapter entitled 'Engaging with Richard Dawkins'. Since the author published an earlier book (Dawkins' God (Blackwell 2005)) no further comment will be made on this particular chapter. It should be said, however, that the present volume presents a more vigorous treatment, with many references, than the earlier work, which was a more 'popular' exposition.

I found this book fascinating but nonetheless tough going. The first chapter is a review of McGrath's scientific theology by Benjamin Myers of Queensland, who refers to the 'basic' exposition by McGrath (A Scientific Theology 3 vols. T & T Clark 2001-3). This is regarded as the foundation work by McGrath and Myers examines the subject under McGrath's own sub-treatises, namely Nature, Reality and Theory. Myers emphasizes McGrath's determination to place revelation firmly in the Christian tradition, both ecumenical and evangelical. Before passing to review further I would like to make a plea for definition of terms which I stumbled over, like foundationalism, which may be unfamiliar to the reader and is never defined.

Passing over the chapter on Dawkins, already referred to, we find a university sermon on Natural Theology preached in Oxford in 2001. Indeed all the chapters of this work are essays, written at one time or another for future publication, for example one is on the effect of the Enlightenment on today's thought, which hopefully lays the foundation for a major work on this topic. The chapter of 'Stratification' draws particularly on lesser-known German philosophers and is tough-going for someone not well-versed in philosophical thinking. Stratification expresses the layers of reality from inorganic through organic to conscious and spiritual. In essence this chapter is a counter to reductionism and exposes its faults. McGrath summarises: 'the way things are determines how we know them and what can be know of them'.

The author calls one chapter, 'Evolution of Doctrine', a ground-breaking essay, in which he evaluates the biological analogies at the theologian's disposal. Does evolution, whether biological or doctrinal, show a tendency to converge on certain favoured outcomes i.e. contingency? This is examined in detail.

The theological significance of Jean Piaget forms the subject of another essay. In an attempt to formalize its beliefs the Church assimilates the Gospel to familiar ways of thinking. In the book McGrath is concerned to consider the beliefs of the church rather than those of the individual believer.

Two chapters consist of working papers which the author has been pressed to write in preparation for fuller treatment. The first is rather grandly entitled 'The Ordering of the world in a Scientific Theology' and traces order through Hebrew thought to the Early Church Fathers - a theological *leitmotif* the author claims. The second paper, 'Iterative procedures and closure in systematic theology' suggests that theology proceeds not so much in a linear fashion but by feedback and development - an interesting outcome of the author's investigations in biophysics applied here to theology. In the final chapter, McGrath uses the 'church as a starting point for scientific dogmatics' - we have come full-circle!

The author invites criticism of these essays, realizing that he is going somewhat counter to the usual view of science and faith discussions. The book has an extensive bibliography and has innumerable references on every page. It is not a book to dip into but one to study in depth - a trail-blazer for the future of science-faith discussion.

Reviewed by Dr.Brian Robins.

Keith Ward *Pascal's Fire: Scientific Faith and Religious Understanding* 2006 Oxford. One World pb £9.99 270 pp. ISBN 1 85168.446.8

Anyone who has heard Professor Ward lecture or has read any of his books will know he is a brilliant communicator. This book, based on a series of lectures, shows his ability to convey difficult concepts in a readily accessible way. It is a comprehensive little book and this review can only skim over its content. He takes the reader on a journey through the history of science stressing, contrary to much recent popular statements to the contrary, that there was never a conflict between science and religion as such but only between traditional views and new scientific discoveries. For instance Galileo dethroned the Bible as the authority on science but still believed that the cosmos was the expression of the divine mind. Isaac Newton similarly disenchanted nature, which had been viewed as sacred and instead showed that the universe could be understood in terms of laws, which came from a supremely wise creator. These laws existed in the mind of God before creation and show what nature really is, whereas the laws of physics only demonstrate how the universe operates. Ward points out that even Darwin, the darling of the materialist, was never an atheist. He never denied the possibility of a divine creator but doubted his benevolence. Ward shows that Darwin believed that evolution tends to progress towards perfection. Ward likewise believes that God guided but did not interfere with the process of evolution in order that ultimately conscious moral beings would emerge. In fact he argues that the evolution of humans on our planet is highly improbable without God.

The book is in three parts. The first, discussed above, is concerned with the formation of the scientific worldview. The second discusses the search for ultimate explanation and involves him in a discussion of the fine tuning arguments, the many-worlds theories, the mind-brain problem and the origins of culture and of morality. The final section is concerned with the God of Religion and investigates how, in the light of science we can understand the nature of God and how God works in the universe. He comments briefly on prayer and miracles and what it could mean to survive the death of this universe and live forever.

Taking his cue from the Copenhagen interpretation of quantum theory the author develops a view of God that closely resembles the God of Platonism and of Idealism. Although he obviously cannot say that science proves the existence of God, he rightly points out that, '...it has become increasingly clear to most scientists that the fundamental laws of the universe are elegant and subtly complex. They have produced the immensely improbable existence of seemingly free and rational personal beings with the capacity to understand and to act with purpose for goals deemed to be worthwhile and desirable.'(110) This can be best explained in terms of the existence of an ultimate mind which can envisage all possible worlds and who brings into existence actual worlds, including our own. This God of the scientist falls far short of the personal God believed in by many Christians - a disembodied benevolent person able to do anything and ensuring that all sentient beings are free from harm and will live for ever. However, he argues that the God of religion, if he is perfectly good, would want to create a universe that has values and evil must be subsumed under these ultimate good values. Such a God could ensure that his creatures could be resurrected into another universe where their potentialities could be realised. This, writes Ward, is a far more worthwhile goal for the universe, than the acceptance of the view of a number of scientist who argue that immortality of sorts could exist in the form of information-processing systems in sub-atomic particles in empty space.

This not a scholar's book with copious footnotes, but there is a useful bibliography. It is rather a book for the perplexed and honest enquirer, be they a believer or agnostic, who wants to enter the science-faith dialogue. This is a unique book that is both immensely readable and comprehensive, but also cheap enough for anyone to buy and cannot be recommended too highly.

Reviewed by Reg. Luhman

Mark. J. Cartledge (Ed.) *Speaking in Tongues: Multi-Disciplinary Perspectives* 2006 Carlisle Paternoster pb £17.99 238 pp. ISBN 1.84227.377.9

The fastest growing evangelical churches in recent year have been the Pentecostal and Charismatic Churches, which have been marked out by an emphasis on the 'gifts of the Holy Spirit' and, in particular, the gift of 'speaking in tongues'. In this volume a group

of scholars seek to evaluate the topic from a variety of disciplines including theology, philosophy, history, linguistics, sociology and psychology.

Professor Max Turner opens the discussion by examining the New Testament evidence and concludes that only at Pentecost is 'tongues speaking' an actual language (xenolalia) and elsewhere speaking in tongues is an 'unknown tongue' (glossolalia). Although there were parallels in the ancient world, Turner believes this was a new Christian phenomenon, which was not an ecstatic utterance, but given for private prayer and the building up of the church and, when interpreted, was a sign of God's immediate self-communicating presence. In his theological contribution Frank Macchia looks at the relationship of Pentecost to Babel and, contrary to the usual interpretation, does not view Pentecost as a reversal of Babel, but as its fulfilment. For him the tower of Babel represents the attempt by world powers to achieve centralisation and security by imposing one language on subject peoples. The tongues given at Pentecost represent the first ecumenical language, which allowed the poor and dispossessed (here the Jewish diaspora) to make a significant contribution. This view of tongues as 'resistance discourse' is taken up by other contributors who see them as not only resisting classification in linguistic terms, but also as resisting cultural norms and human institutions. They are the language of the marginalised and dispossessed, which resist the unjust structures of global capitalism.

There are several excellent essays charting the modern rise of tongues speaking and its function within the Pentecostal and Charismatic movements and articles which discuss the various interpretations put forward by sociologists and psychologists of the phenomenon and the Christians who are involved with it. The general conclusions reached are that Pentecostal ministers tend to be more extrovert and more involved with their congregations than those of other denominations. However, contrary to popular belief, research has not demonstrated that tongues speakers are neurotic, particularly susceptible to hypnosis, involved in trance states, show signs of psychopathology or are particularly dependent on authority figures.

For readers of this journal perhaps the most important question is the scientific analysis of the nature of speaking in tongues. In the early years of Pentecostalism it was believed that tongues were real languages, which had been given to believers in order to evangelise the world before the end came, because they believed they were living in the last days. However missionaries soon discovered that they could not speak in languages that they had not learned and this view was abandoned by the beginning of the twentieth century as was the default position that speaking in tongues was evidence of having been baptised in the Holy Spirit. All the contributors to this volume agree that modern tongues are not actual languages but they are, nevertheless, methods of communication. Several writers use modern speech-act theory to evaluate their significance. This analyses speech into the actual words (locution), what is intended (illocution) and the effect (perlocution). In the case of someone praying in tongues for another's healing the

words (locution) may not be a human language but are an indication of a dependence on God, with the desire to encourage faith in the one prayed for (illocution) and the desired effect that God should act (perlocution).

This volume is a comprehensive and well-documented account of a phenomenon practised daily by many believers, but which is often regarded as odd and unintelligible to other believers. It is wholeheartedly recommended to remedy this deficiency and to bring a greater awareness and understanding of the activity and of those Christians who are engaged in it.

Reviewed by Reg. Luhman

Scientific Understanding and the Point of the Universe

Keith Ward

For the theist, the purpose for which created persons exist may only be fully realized outside this physical universe, even if it is essential to them to begin their existence in this universe.

Most religious believers think that there is a God, a supreme being who created the universe, and whose existence does not depend upon that of the universe. Furthermore, in being a creator, God is thought of as free, conscious and active, as intentionally bringing about the universe for some consciously entertained reason. This means that such believers are committed against hard-line materialism. They are committed to the coherence of the idea of a non-embodied consciousness, which can formulate a purpose and implement it by creating a material universe.

Theists do not think that the universe somehow has a purpose inherent in itself. They think that there is a creator God, who exists independently of the universe, and who can create it for a purpose. God, for most believers, has knowledge of everything that is possible and actual. God is able to bring about, to make actual, sets of possible states. So God has knowledge and will. The primary object of God's knowledge and will is said by most classical theologians to be the divine being itself—as Aristotle put it, God's being consists in a "thinking upon thinking". God is aware of and wills or affirms the divine being as it exists in its own proper perfection. So knowledge and will do not, as such, depend upon some material substratum for their existence. Indeed, they are ontologically prior to all material existences. The primary form of being is something like what we know as non-material conscious agency. That is a basic postulate of theism, and it seems a perfectly intelligible one.

If God is already perfect in self-knowing and self-willing, why should God create any universe at all? For most theists God has the ability to actualize states which are not states of the divine being itself, and indeed to actualize beings like God, made in the divine image, insofar as they have knowledge and creative will, naturally to a limited degree. The reason God should actualize such beings is normally thought to be that it is good to do so. Such created beings can enjoy something of the enjoyment that God derives from knowing and willing, and so they increase the number of beings who enjoy, which is good. Perhaps, too, God can enjoy different sorts of actualities by co-operating and sharing experiences with such created personal beings. On some Christian interpretations, it is part of the divine nature to be essentially loving, which involves some form of relationship to other persons, and therefore some creation of such persons. Whether or not that is so, created persons are in the Jewish and Christian traditions said to be like God in having knowledge and will, though their knowing and willing is limited in a way that God's is not.

One implication of this is that if divine awareness and agency is non-material, created beings with awareness and agency are likely to possess as the most important part of their natures a non-material component. This component will be, as it is in God, a subject of awareness and agency, a subject which is non-material in that it does not essentially depend on the existence of particular forms of matter for its existence and functioning. This seems to be a straightforward and natural inference, but it is not of course a strict implication of the existence of God. What is a strict implication is that, for a theist, the primary form of knowledge and will, from which all other forms derive, is a non-material form.

Another respect in which theism is committed to a non-materialist view is that for a theist the primary sense of "identity" is not of continuous existence in space or time—a sense which does normally apply to physical objects in general. In God identity seems to be given by two main factors, a unity of experience by which all objects of knowledge are members of the same consciousness, and a continuous agency by which many things are brought about by the same causal agent. God is a being such that everything that can possibly be known by one being is a conscious element of the divine experience, and everything that exists is an effect of the divine agency, either directly or indirectly. One might say that divine identity is given by a (necessary) all-encompassing unity of experience and an equally all-encompassing conscious agency. God is whatever it is which experiences and causes everything other than itself. It would seem, by analogy, that the identity of finite persons would primarily consist in the extent to which there was a unity of experience, of co-conscious elements, and a unity of intentional agency throughout various causal chains of events. Such unities would naturally not be all-encompassing, and they might be fragmented or restricted in various ways. But one might expect to find personal identity, not primarily in the continuity of some physical body, but in unities of experience and continuities of intentional agency. One might incline to say that whatever has a conscious unity of experience and a continuity of intentional agency will so far be a person, created in the image of God.

This does not show that finite persons are immaterial beings. It does, I think, show that theists have strong reason to think that material embodiment is not essential to finite personal existence. Insofar as persons are truly created in the image of God, they are likely to be such that it is not absolutely essential to their existence that they are embodied in particular spatio-temporally continuous forms. Their very existence and continued identity as persons does not essentially depend upon their retaining some particular continuous form of embodiment. This suggests that they could survive the death of their particular bodies, even if it is proper to them to have some form of embodiment. For the theist, it must be an important consideration that the purpose for which created persons exist may only be fully realized outside this physical universe, even if it is essential to them to begin their existence in this universe. In other words, the universe may have a purpose—to bring about the existence of created persons of a

particular embodied sort, perhaps—but that purpose may point beyond itself to a greater goal, to be realized by persons only beyond the physical universe. Insofar as Christians believe the purpose of God for humans to be participation in eternal life, they precisely do believe this. All I am suggesting is that such a possibility seems to be implicit in the basic hypothesis of theism, and it will plainly affect any assessment of the sort of purpose this physical universe in itself has. The Christian will expect such a purpose to be incomplete or only partially exemplified, yet to point towards a fuller completion in a natural way.

It is not, of course, in dispute that human beings are embodied. They are physical organisms, animals with 46 chromosomes and a particular genome, composed of quarks and leptons, like everything else in this universe. It may be asked why that should be so. One possibility is that human agents are emergent parts of a developing cosmos, which generates within itself creative communities of conscious agents. One intelligible purpose for creating a universe like this could be to generate relatively autonomous materially embodied agents which come to understand their own structure and to direct their own future, by the co-operative action of communities of personal beings which are generated within the cosmos from its own inherent potentialities.

In the received scenario of modern cosmology, this universe began in a primal state of infinite energy and mass, exploding, expanding and cooling to produce successively more variegated and complex forms of matter or energy. The received model does not think in terms of the actions of a personal God. Instead, it postulates a set of supremely simple and beautiful general laws which operate in a quasi-eductive manner to produce sets of physical states. The model has become so familiar that its breathtaking intellectual audacity may be missed. Why should there be one set of simple laws, which can be understood only by sophisticated mathematical minds? In what sense are such laws supposed to exist, even before there is any complex material universe? How can one know that they will govern every physical event without exception, throughout the whole universe in every space and at every time?

The model is deeply Platonic, positing that beneath the space-time world of human experience there is a deeper, more beautiful and elegant reality, knowable only by intellect, which is the hidden causal basis of the apparent world. This is just about as far from common sense empiricism as one could get. It presents a view of experienced reality as causally dependent upon a realm of intellectual principles of supreme simplicity and beauty, of utter generality and universal scope, wholly determining all events in accordance with its own general laws. It would not be absurd to see this underlying reality as something analogous to a cosmic mind, though one which always acts in terms of general principles, and never adjusts the system to realize particular purposes, or enters into personal relationships with parts of the cosmos. It is a pure Intellect, without moral purpose—though it does possess at least one supreme value, that of intellectual beauty and rationality.

A good reason for not calling this reality "God" is that it does not have knowledge, in the sense of a conscious assent to true propositions, and it does not have will, in the sense of a purpose which it seeks to realize. There is a structure of laws, which operates in accordance with some inner necessity to produce the universe. So one may feel wonder at its intricacy and reverence before its beauty. But it will remain like a beautiful work of art rather than like a conscious personal being.

A theist will certainly recognize some important features of classical notions of God in this neo-Platonic concept. The idea that there is a first causal principle of being which has supreme beauty and wisdom, which in some sense exists by necessity, which is not itself composed of matter but upon which all the material complexity of the cosmos depends, is a fundamental part of the idea of God developed by Maimonides and Aquinas in the twelfth and thirteenth centuries. It is a far cry from the reductionist materialism of some popular writings on science. As Bernard d'Espagnat says, "Quantum mechanics...should help to dispel the illusion that a naive corpuscular picture can be elevated to an authentic description of that which truly is" (*Reality and the Physicist*, Cambridge University Press, 1989, p. 195).

Modern cosmologists may say that they are not speaking of some being beyond the universe, but of the universe itself, in its deepest structure. This, however, may not be the absolute difference from classical theism that it sometimes seems to be. If the deep structure of the cosmos is intelligible beauty, this is not entirely remote from Thomas Aquinas' definition of God as "*esse suum subsistens*", or the principle of self-existent Being. Modern cosmology seems to postulate a non-material aspect of reality which at least bears close analogies to some central features of classical notions of God. It often lacks, or denies, the idea of a separately existing conscious being with particular purposes. But followers of Aquinas, quite orthodox theists, as well as followers of Tillich, who was more orthodox in this respect than is always realized, are also often found to deny that God is "a being". It seems plain, nevertheless, that the concept of "purpose" is a crucial point of tension between classical theism and the neo-Platonic model of cosmology. Steven Weinberg says, "We shall find beauty in the final laws of nature, [but] we will find no special status for life or intelligence. *A fortiori*, we will find no standards of value or morality" (*Dreams of a Final Theory*, Vintage, London, 1993, p. 200). In a phrase of memorable clarity and bluntness, he also said, in *The First Three Minutes*, that "the more the universe seems comprehensible, the more it seems pointless," and he repeats this thought with apparent approval in Dreams.

I think there is a paradox in the very statement of these thoughts, and it is as follows. If you ask what the greatest values of human life are, what things are really worth valuing for their own sakes, many people (and certainly Steven Weinberg) would say: beauty and truth. If we can learn to appreciate beautiful things, then we can find great happiness and fulfillment in contemplating and perhaps in creating such things. If we can learn to understand more about the world we live in, our lives can feel greatly enriched. Indeed,

one recipe for a happy life is to learn to create and appreciate beauty, and to understand more about why things are the way they are. So beauty and comprehensibility are two of the greatest values known to human beings.

Steven Weinberg explicitly says that there is beauty in the laws of nature, and that the universe does seem to be comprehensible. It follows that the universe does exhibit two of the greatest values we can think of, and indeed it does so to a remarkably high degree. The paradox is to say that the universe exhibits these great values to a high degree, and at the same time say that the universe has no value, or is pointless. It is almost a self-contradiction. It would be extremely odd if I played you a Bach fugue, and said, "Of course it is very beautiful, and structured with supreme rationality, but it is also valueless and pointless." You would, I hope, quite rightly reply, "But its beauty and structure is the point. What other point would one want?"

For something to have a point is for it to be valuable for its own sake, or at least to lead to some such values. For something to have value is for it to be considered a worthwhile object of the attention and interest of a rational, intelligent being. So of course a Bach fugue has both value and point, even if it does not lead anywhere. It just exists for its own sake, and a good thing too. Could we not say the same about the universe, if it really does exhibit great beauty and rationality?

As a matter of fact it is precisely the amazing success of science in the twentieth century which shows that there is beauty underlying the apparent ugliness of much of human existence, and that nature is much more intelligible than we might have thought. It is science which brings out the beauty and comprehensibility of the universe, which are often hidden to the naked eye. It is therefore science which shows that the universe does have value and point, even if it does not lead anywhere (where would it be leading, anyway?). Its sheer existence, as a beautiful and comprehensible reality, is its value and point. So it is very paradoxical for Steven Weinberg to say that a beautiful and comprehensible universe is pointless. It is almost as paradoxical for him to say that it gives "no special status to life or intelligence." For all the beauty and intelligibility of the universe would be un-noticed and unappreciated if there were no intelligence, and there would be no intelligence if there was no life. We might even say that the beauty and intelligibility of the universe would be without actually realized value unless they were noticed and appreciated by some intelligence or other. The universe would no doubt be valuable in a sort of hypothetical sense, since "value" is the property of being a worthwhile object of the attention of an intelligent being, and the universe could possess that property even if there were no actual intelligent beings. But the actual state which is of value is the appreciating of beauty and truth. It would again be rather odd to say that the universe was of supreme value, even though there never existed an actual state which was supremely worthwhile. There is a strong link between value and intelligence, in that the greatest values require intelligence to appreciate them. Actual values, then, consist not just in the existence of beautiful and intelligible things, but in

states of apprehending and appreciating their beauty or intelligibility, that is, in states of some intelligent minds.

It was in accordance with this principle that Aristotle (in *Metaphysics Lambda*) defined God, the most perfect conceivable being, as a being which rested complete in the blissful appreciation of its own supreme beauty and intelligibility. Such a being, for Aristotle, would be "good", in realizing the most desirable state of existence possible. If it was possible to share in some part of the divine self-contemplation, to contemplate the being of God in what has been called "the beatific vision," that would be the supreme good of intelligent creatures.

Whether or not there is such a Supreme Good and the possibility of contemplating it, one can see that it would be one of the greatest possible goods for intelligent beings to contemplate beauty and intelligibility, as it is found in the cosmos. There is a link here, then, between intelligence, value and morality. It takes an intelligent being to actualize states of value. Since such an actualization is a great good, and morality is concerned with actualizing good states, it must be the case that a central concern of morality must be with making possible the actualization of states of appreciating beauty and truth.

There is, I think, a modern restriction of the concepts of "morality" and of "moral goodness" which may obscure this very clear point. The restriction is that morality is only concerned with one person's relations to other people, and moral goodness must lie in relating to others either altruistically or justly. That is, of course, part of moral goodness, but it can have the peculiar consequence that it leaves untouched the question of what things and states people should be aiming at, and helping one another to achieve (as Jeremy Bentham said, "Pushpin is as good as poetry"). On a more Aristotelian view of the matter, morality is concerned with the good life, and that is concerned with actualizing states of value. Of course one is to be concerned with their actualization in community, since it is a human good to live in community. But unless one clearly bears in mind that the most worthwhile values are those connected with beauty and truth (and, I would add, with Aristotle, friendship), morality may lack content. It is, contrary to what Weinberg explicitly says, but in fact following from his own central arguments, reasonable to hold that, if the universe is beautiful and intelligible, then it does give a special status to intelligence, since it generates out of itself beings which are capable of appreciating beauty and intelligibility, and so actually realizes those states of value which lie in such appreciation. The universe thereby also gives a special status to morality, since moral good lies in intelligences realizing states of value.

This does not prove that the existence of the universe has the purpose of realizing states of value. But I do think it gives initial plausibility to the hypothesis that there is such a purpose. The purpose would be to generate states of consciousness whose content is the beauty and wisdom of the universe. Consciousness, in itself immaterial, would have as its content the intricately structured material world in which it is properly,

though not essentially, embodied. Moreover, consciousness would not be an alien immaterial intrusion into a physical cosmos. It would be an emergent, if immaterial, property of the increasingly complex and organized structures which are generated by the autonomous processes of the natural world. There is no neutral, non-evaluative way of deciding whether there are sufficient states of high enough value in the universe for that to be considered a worthwhile goal of a rational creator. Nevertheless, it is a reasonable contention that there are. In particular, Christian belief in immortality opens the way to seeing this life as just part, though a very important part, of the development of sentient beings who can realize many states of value in their own unique and distinctive ways, in realms of being beyond this cosmos. That makes an important difference to assessment of the degree of actualizable value in the universe. For a Christian, then, the universe can plausibly be seen as purposively oriented to a goal of great value. But what about the process by which persons have emerged in this universe? If the universe is the creation of a wise and powerful God, one must postulate that the process is well adapted to its goal, that it is efficiently designed, given the nature of the goal.

On this postulate there can be, and is, dispute. Biologists like Stephen J. Gould argue strongly that the existence of persons on this planet is an accident, almost a freak event. If we ran through the evolutionary process again, he claims, it would come out quite differently, and human beings would probably not emerge. There is so much sheer chance in evolution, so many random mutations and environmental catastrophes, that it is amazing any complex conscious beings evolved. If some disaster had not wiped out the dinosaurs 65 million years ago, humans would almost certainly never have existed. So we owe our existence to an accidental disaster, perhaps an asteroid hitting the earth, and not to any careful plan.

Steven Weinberg seems to agree: "we will never be able to eliminate the accidental and historical elements" from our understanding of nature, he says (*Dreams*, p. 27). Now that may be true, as far as human knowledge and prediction go. Because we can never get a precise enough grasp of the initial conditions of any process, and because of the limitations placed by quantum theory upon our knowledge of all the properties of physical objects, many events will seem to us to be accidents, things that could very easily have been otherwise. But could they really have been otherwise?

Many physicists—and Weinberg himself, most of the time—are, or would like to be, physical determinists. That is, they would like to say, with LaPlace, that given the initial state of the universe, and a complete set of all the laws of physics, every subsequent state follows by necessity. We might not be able to predict every physical state, but every state is nevertheless necessarily determined to be what it is by the laws of nature operating on previous physical states.

I find this an utterly unconvincing hypothesis. It seems to me to be a perverse translation of the theistic thesis that everything happens in accordance with the sovereign will of

God. For some theists, if God is omnipotent, then God must determine every state of the universe to be just what it is, since God is the one and only cause of everything in the universe. This is not, of course, physical determinism, since it is God who determines every state, and not some "impersonal" laws plus previous physical states. God could break every law of nature, and still completely determine absolutely everything. I do not accept this theistic view, but one can see how belief in an omnipotent universal cause might easily lead to it. Take away the universal cause, however, and there seems little reason to think that all events are determined by some necessity, that there are "laws" which operate universally and unbreakably, and that nothing happens except in accordance with those laws. Why should that be? As David Hume pointed out, the idea of necessary connections in nature is a very obscure one, and it is hard to see how anyone could justify the assertion that such total determinism is true—that there will never, in the whole history of the universe, be an event that does not fall under some utterly general and universal law.

Nevertheless, it is obvious that a determinist cannot really accept that there are any "chance" events at all, in the real sense of events undetermined by past states and general laws. If the universe was run through again, a determinist must think that exactly the same things would happen again. Now if God set the universe up, it will be utterly obvious to God, and completely determined at the first moment of creation, what will happen throughout the process. Far from being a hazardous process, subject to all sorts of possible accidents, the history of the universe will be predetermined in all its details. So it may be that the process has been set up as a simple initial state plus a set of elegant general laws, so as to result inevitably in the existence of communities of rational agents and the values they embody. The existence of human beings will not be a freak accident at all.

Gould's view might be, however, that physical laws permit many alternative courses of action. Like the conservation laws of physics, they lay down limits on what may occur, but permit many possible combinations of events within those limits. As long as the momentum of a kinetic system is conserved, individual particles may move at any number of velocities. This seems to me a more plausible view. But it does not permit the existence of totally freak accidents, in the sense of things which are almost wholly improbable. On the contrary, it limits severely the sorts of things that can happen. The probabilities that exist can in fact be precisely quantified. Accidents can happen. But it seems most plausible to think that the parameters of physical systems lay down general patterns of change and development which, in the end, can be predicted to eventuate in macroscopically predictable outcomes.

Gould, however, affects not to see any happy medium between absolute determinism and the occurrence of completely random and arbitrary events, which no knowledge of the system could have predicted. He discounts the possibility that the overall development of a physical system is highly predictable, while particular occurrences

within the system remain to some extent open and unpredictable. Yet that seems to be just the sort of physical system that quantum mechanics suggests underlies all physical systems, and that could well apply to the atomic as well as to the sub-atomic world.

At this point one touches on one of the simplest and yet deepest questions about causality. What makes things happen as they do? If one says, "Nothing at all," one has a state of complete chaos, in which anything or nothing might happen at any moment, and there would be no reason to expect any sense in the universe at all. The model which seems to appeal most to scientists is a "determining law" view. There is some set of laws which makes events happen just as they do. That is to say, objects can only act in accordance with some pre-specified law. But how the laws make things conform to them, or in what sense the laws actually exist, remains quite obscure. The philosophical origins of this view lie, as I have suggested, in a view of God as all-determining sovereign, or in the Leibnizian reformulation of this view, in a belief that there is a sufficient and good reason for everything that happens.

There is an oddity about the Leibnizian view, however, which needs fuller investigation. He assumed, as Immanuel Kant did, that, if there was a reason for change, that must be a determining reason. It must be such as to allow no alternative. So this is the best possible world, and each law is the best possible universal principle. It has often, and I think rightly, been pointed out that the idea of one best possible world may be incoherent. Many possible worlds may be good in many incommensurable ways, so there is no overwhelming reason to create just one of them. Nevertheless, it would be false to say there is no reason to create any of them. There is good reason to create a good thing, even if there are many other good things one could create instead. Such a reason would not, however, be a determining reason. It would rather be an inclining reason. If one asks, "Why bring about a state of this sort?" a perfectly good answer would be, "Because it is a good state." But if asked, "Why bring about this precise state?" one might reply, "It was a free creative choice." Does that mean the choice is arbitrary? No, an arbitrary choice is one for which there are no reasons at all.

In the case of a choice by a rational creator, even when it is undeterminably free, there are reasons present. Most obviously, the state chosen must be a good one, and not markedly worse than alternatives. But also one might take into account such factors as the other things one has chosen, the possibilities of exercising imaginative creativity, and the generation of a general pattern of choices of which this is part. There is a vast difference between an event for which there is no reason at all, and an event which is chosen by a creatively free agent for the sake of its distinctive goodness. What is common to the two cases is that the precise choice, within a given range, is undetermined by any factor already existing before the choice is made.

One might amend the principle of determining reason, therefore, into a principle of inclining reason, which carries with it a principle of creatively free choice between a

specified range of goods. One can then say that one factor that makes things happen might be an undetermined and creative choice of goods, within a general structure of intelligible law. But that may not meet Gould's objection, since the undetermined factors in evolution (e.g. the random mutations,) do not seem to be choices of goods. They are often deleterious to the organism, and thus do not seem to be rationally choosable at all. That is no doubt why Gould allocates them to chance rather than to any underlying intelligence. What sort of God would allow so many harmful mutations to occur? This of course was the strength of the determinist view—there is simply no alternative to what happens, so you can hardly hold God responsible for it. But now if God allows undetermined events, why does God not simply determine them, if not for the best, at least for good? However, it turns out that the very formulation of this possibility contains the reply to the question it poses. If God determined all physically undetermined events, then there would be no undetermined events after all. We would be back to the case of complete divine determinism, even though we would have rejected physical determinism. So the real question is: is it a good thing to have complete divine determinism?

Many theists have unhesitatingly said yes to this question. Indeed, they often think that any omnipotent God must determine everything, since that is precisely what omnipotence is. However, many theists think that there is a good reason for God not to determine everything. This reason is basically that, if a relationship of freely responsive love is to exist between creator and rational creatures, that response cannot be determined by the creator. The creature must be able either to accept or reject the creator's.

Free Will in a Deterministic Universe

P.G. Nelson

Do human beings have free will? This question has long exercised philosophers and theologians. In earlier centuries, the problem was how to reconcile human freedom with God's sovereignty. Today it is also how to reconcile human freedom with the scientific picture of the universe, which is largely or wholly deterministic.

Here I briefly review previous attempts to reconcile human freedom with physical determinism, and then suggest an alternative.[1]

Previous work

Compatibilism Some philosophers solve the problem by defining free will as the ability of an individual to do what he or she wants to do.[2] As thus defined, free will is compatible with a deterministic universe. In such a universe, human beings can be aware of wanting things, even though their wanting is determined.

However, this definition does not make human beings responsible for their actions. This is because, on the Day of Judgment, they could say to God, 'You determined the wrong things I did by the way you set up the universe.' James insists, however, that no one can blame God when he or she sins (Jas. 1:13"15; cf. Ecclesiasticus 15:11"20).

A stronger definition of free will is the ability of an individual to determine whether or not to do something. This does make human beings responsible for their actions. (Some theologians worry that this kind of freedom impugns God's sovereignty, but I have shown elsewhere that he can allow human beings to have this freedom and still control the world.[3])

Logical indeterminacy Planck argued that it is possible for human beings to have free will even if the brain operates in a completely determined manner.[4] His argument was developed by Donald MacKay.[5] Planck showed that, even if a superscientist could predict a decision that a human being would make in the future, he could not communicate this prediction to the human being without making it invalid. MacKay argued from this that the superscientist's prediction could not be binding on the human being concerned, and that the latter was therefore free to act as he or she chose.

However, the freedom Planck and MacKay establish fails the test I applied in the previous section. If a superscientist can predict a human being's actions scientifically, they are determined in advance. If they are determined in advance, the human being can say to his or her Maker, 'You made me do what I did.' Planck and MacKay certainly established a necessary condition for freedom of action, but not a sufficient one.

Quantum indeterminacy Eddington located human freedom in quantum processes taking place in the brain.[6] According to Bohr, such processes are physically undetermined. Eddington suggested that a person's choice between two courses of

action corresponds in the brain to a process of this type, and that the person determines the outcome.

A major difficulty with this idea is that it is not at all clear how a human being can determine the outcome of a quantum change in his or her brain. Such mechanisms as have been suggested are very speculative.[7]

A second difficulty is that quantum changes may not be physically undetermined. While it is true that, for a given change, the quantum theory only gives the probabilities of different outcomes, these probabilities vary with time in a deterministic manner, suggesting that there is some underlying mechanism determining the outcome. This was Einstein's view.

Deterministic unpredictability Matt Ridley locates human freedom in the unpredictability of complex determined systems described by chaos theory.[8] This unpredictability arises because the behaviour of such systems is so sensitive to the initial conditions that scientists cannot specify these with sufficient accuracy to make definite predictions. However, the unpredictability of such systems does not make them any less determined. His freedom, therefore, again fails the test provided by James 1:13"15.

Bifurcations John Polkinghorne and others locate human freedom in 'bifurcation' or 'splitting' points in the working of the brain.[9] Such points arise in completely determined physical systems. They are points where only a very slight disturbance leads to one or other of two completely different outcomes.

Consider, for example, a ball rolling up a smooth mound. If the ball does not have sufficient energy to reach the top of the mound, it will roll back again; if it has more than enough energy to reach the top, it will roll over the top and down the other side. If it has just enough energy to reach the top, then when it gets to the top, it will stop, and a slight disturbance (e.g. a puff of wind) will make it either roll back again or down the other side.

Polkinghorne suggests, in essence, that a human being's choice between two courses of action corresponds to a bifurcation in the working of the brain, and that he or she determines the direction the brain takes. However, Polkinghorne does not explain how a human being does this. In ordinary physical systems, a disturbance is required at a bifurcation point to move the system one way or the other. Disturbances require energy, however small.

Nonreductive physicalism Nancey Murphy and others contend that the behaviour of a human being at a mental level cannot be reduced to processes at a physical level, even when these are completely determined.[10] She concludes that 'we ... can only make causal sense of a series of human actions by attending to the mental-level description which includes reason, judgment, and so on. Yet this is *compatible* with causal

determinism at the neurobiological level' (her italics).

This conclusion, however, is far from obvious. Complete causality at the neurobiological level would seem to rule out any causality at a mental level. For there to be causality at the mental level, that at the neurobiological level would have to be partial. I discuss this further below.

Dualism Some scholars favour some form of dualism to explain the relationship between the mind and the brain.[11] Dualists take the mind and the brain to be independent, and to act on each other. Free will arises from the ability of the mind to act on the brain. On this view, the scientific description of a human being has to be supplemented by a mental ingredient.

A problem with this approach is that it leaves unanswered questions. How does the mind act on the brain? Where does the mental ingredient of a human being come from? How does it get into the brain? These need to be explained.

Emergent dualism William Hasker has suggested that the mind 'emerges' out of certain configurations of the brain and nervous system.[12] 'Emergence' is when elements of a certain sort are assembled in the right way and something new comes into being. An example is when molecules come together to form a crystal. He further supposes that the mind exchanges energy with the brain. However, he does not explain how the mind emerges, and there is no experimental evidence that it has its own energy.

An alternative solution

Here I present an alternative solution to the problem of free will. This is based partly on the work of Polkinghorne, and partly on my own.[13]

Suppose that I have to decide between two courses of action, A and B. Suppose further that my brain, body, and environment comprise a physical system, made up of components interacting and moving according to fixed laws. Then the sequence of thoughts that I have in making my decision corresponds to a series of configurations of the physical components of my brain.

Suppose now that a superscientist is able to observe these configurations, and predict from the laws of physics how they will change. Two results are possible. The first is that the superscientist correctly predicts what I will choose. In this case, the thoughts encoded on my brain must follow a sequence that is determined equivalently by their content and the laws of physics. Thus if my thoughts lead to 'I will do A', the physics of my brain must lead to the configuration corresponding to 'I will do A'.

This must certainly be what happens when I carry out an arithmetic calculation (e.g. 123 + 456). In this case, my thoughts must follow the logic of the method that I use, and the configuration of my brain must follow a sequence corresponding to this, established when I learned the method.[14]

Many of my decisions are doubtless predictable. Given a choice between a savoury morsel and a sweet one, I usually choose a savoury one. Many of my moral decisions may also be predictable. Having chosen to serve the Lord, I endeavour to keep to his commandments. However, not *all* my moral decisions (including my decision to serve the Lord) can be predictable, otherwise I could blame them on the way God set up the universe, as I discussed earlier.

The second possibility is that the superscientist predicts that the assembly of physical components in my brain reaches a bifurcation point between two configurations, one corresponding to 'I will do A' and the other to 'I will do B'. A quantum-mechanical calculation gives a 50% probability of the assembly proceeding to the first configuration and 50% to the second.

How then do I make my decision? One possibility is that a small perturbation from outside the system considered by the scientist, or a quantum fluctuation, tips my brain in the direction of doing A or B. This again means that I can blame my choice on the way God made the universe. An alternative is that *my thoughts themselves* determine the outcome at this point. As we have seen, when I make a predictable decision, my thoughts follow a sequence that is determined equivalently by their content and the laws of physics. At a bifurcation point, however, the physics is undetermined. In this case, the outcome must be determined by the content of my thoughts alone. In other words, *I* make the decision, and am answerable to God for it.

If this is so, what happens in the world is determined, not only by physics, but also by the choices human beings make under the conditions I have just described. As noted earlier, this does not mean that God ceases to control the world, but it does mean that human beings are responsible for many of their actions, and in measure determine the kind of persons they are, as encoded on their brains.

Origin of mechanism

If this mechanism is correct, its origin can be explained as follows.

As a child grows, its brain develops by cells multiplying and differentiating according to the child's genes, and by the whole structure interacting, through the nerves and sensory organs, with the rest of the body and the outside world. This leads eventually to activity among the neurons that the young person experiences as an awareness of having to think about and make a decision. So far, this is a bottom-up process, determined by physics and chemistry.

Once this point has been reached, a top-down process becomes possible. This is when the young person's consideration of the options facing him or her gives rise to a bifurcation point in the brain. In this circumstance, the young person's thoughts themselves, by proceeding along one line rather than another, determine the direction the brain takes. This then constitutes a free choice.

Discussion

My model throws light on some of the previous explanations of free will that have been proposed. Firstly, it removes the difficulty with Polkinghorne's bifurcation mechanism. Because the content of a person's thoughts carries his or her brain through the bifurcation, no disturbance at this point is required. The process, in other words, takes no energy, as Polkinghorne originally supposed.[15]

Secondly, my model makes sense of Nancey Murphy's approach. She argues for causality at both the physical and the mental level. My model shows how this can arise. Causality at the mental level arises when there is a hiatus in the determinacy at the physical level (i.e. two equally possible outcomes).

Thirdly, my model informs the debate between monists and dualists. On my model, a human being has a monistic constitution as an embryo and a dualistic one as an adult. The non-physical component is not, however, implanted, but arises naturally as a baby grows and interacts with its surroundings. The dualism is therefore 'emergent' as Hasker suggests, but no new energy is involved.

The non-physical component resides in *patterns* among neurons, not in the neurons themselves. Part of what is encoded is dependent on the body (e.g. the sense of having arms and legs), part is not (e.g. the sense of being a person). The latter can continue to exist after the death of the body, in patterns in the *psuchç* (Rev. 6:9), and in the brain of a new body (1 Cor. 15:35"37, 2 Cor. 5:1"4).[16]

Finally, David Siemens has pointed out that a scientific description of a human being has to be consistent with the Incarnation.[17] On my model, the Incarnation can be understood as follows. To become a human embryo, the Son had to empty himself of his personality (cf. Phil. 2:6"7). He did this, I suggest, trusting that his Father would overrule in his growth and development as a human being so that he would acquire the personality he had before he came. This overruling took place particularly in his home, the synagogue at Nazareth, and the temple in Jerusalem. Luke gives us a glimpse of the process when Jesus was twelve (Luke 2:41-52), and of its completion when he was about thirty (3:21-22). This makes the kenosis of the Son even more remarkable than in traditional theology.

Conclusion

Human beings indeed have free will, of a kind that makes them responsible for how they use it.

(Footnotes)

1 P.G. Nelson, 'Neuroscience, Free Will, and the Incarnation,' Perspectives on Science and Christian Faith 58 (2006), 86-87; 'Free Will and Incarnation,' ibid., 334.

2 See, e.g., Paul Helm, The Providence of God (Leicester: Inter-Varsity Press, 1993), 66"68.

3 P.G. Nelson, God's Control over the Universe, 2nd edn. (Latheronwheel, Caithness: Whittles,

2000), Chap. 5.

[4] Max Planck, The Universe in the Light of Modern Physics, 2nd edn., tr. W.H. Johnston (London: George Allen and Unwin, 1937), Sect. 7.

[5] Donald M. MacKay, Freedom of Action in a Mechanistic Universe (Cambridge University Press, 1967), and other writings.

[6] A.S. Eddington, The Nature of the Physical World (Cambridge University Press, 1928), Chap. 14.

[7] Danar Zohar, The Quantum Self (London: Bloomsbury, 1990); Frank J. Tipler, The Physics of Immortality (New York: Doubleday, 1994), Chap. 7.

[8] Matt Ridley, Genome (London: Fourth Estate, 1999), Chap. 22.

[9] John Polkinghorne, Science and Providence (London: SPCK, 1989), Chap. 2, and other writings.

[10] Nancey Murphy, 'Nonreductive Physicalism: Philosophical Issues,' in Whatever Happened to the Soul? , ed. Warren S. Brown, Nancey Murphy and H. Newton Malony (Minneapolis: Fortress Press, 1998), Chap. 6.

[11] E.g., Karl R. Popper and John C. Eccles, The Self and its Brain (Berlin: Springer, 1977); Richard Swinburne, *The Evolution of the Soul* (Oxford University Press, 1986).

[12] William Hasker, The Emergent Self (Ithaca: Cornell University Press, 1999), and other writings.

[13] God's Control , Chap. 4.

[14] Cf. Nancey Murphy, 'The Problem of Mental Causation: How Does Reason Get Its Grip on the Brain?', Science and Christian Belief 14 (2002), 143-157.

[15] Science and Providence, 32.

[16] Cf. Reg Luhman, 'Christian Belief in the Afterlife in the Light of Science and Philosophy,' Faith and Thought 41 (2007), 6"16.

[17] David F. Siemens, Jr., 'Neuroscience, Theology, and Unintended Consequences,' Perspectives on Science and Christian Faith 57 (2005), 187-190.

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Editorial Address:
R S Luhman, BD (Hons), MA,
110 Flemming Avenue,
Leigh-on-Sea,
Essex SS9 3AX
Tel. 01702 475110
Email: reg.luhman@talktalk.net

Administration Address:
Rev J D Buxton
15 The Drive,
Harlow,
Essex CM20 3QD
Tel. 01279 422661
Email: j.buxton@virgin.net

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