

Book Reviews

Nicholas Agar

Liberal Eugenics: In Defence of Human Enhancement

Oxford: Blackwell, 2004. viii + 205pp.
pb. \$21.95. ISBN 1-4051-2390-7

The *liberal* eugenics of the title is about extending reproductive freedoms to include the freedom to choose certain of your children's characteristics. The author, Nicholas Agar begins by making a case for the rehabilitation of eugenics (Gk *eugenēs* 'well-born'), a term first introduced by Francis Galton in the nineteenth century to describe the science of improving the quality of the human stock, but most often associated with the horrific racist *Lebensborn* project of Adolf Hitler's Nationalist Socialist (Nazi) Party. However, as Agar points out, it should also be remembered that before the Nazis came to power in pre-war Germany, negative eugenic policies, including the enforced sterilisation of individuals on the grounds of criminal behaviour and severe learning difficulties, had already been introduced in some US states. From the outset, Agar dissociates himself from the *authoritarian* eugenics that allowed the state actively to restrict the reproductive freedom of certain individuals and reached its nadir with the genocidal policies of Hitler. The only role of the state in *liberal* eugenics would be to 'foster the development of a wide range of technologies of enhancement ensuring that prospective parents were fully informed about what kinds of people these technologies would make'(5). Unlike the monistic view of the human ideal promulgated by the Nazis, liberal eugenics is pluralistic and has no specific view on what characteristic should be enhanced; that is down to individual (parental) choice.

The scientific knowledge we have today, what the author calls *enhancement technologies*, such as cloning by somatic

cell nuclear transfer and IVF with pre-implantation genetic diagnosis (PGD), would allow parents to choose their children's characteristics. In experimental animals, genetic enhancement has resulted in the *Doogie* mouse, with significantly improved acquisition and retention of learning associated with an extra copy of the gene coding for the GLU_{N2B} (NR2B) subunit of the glutamate NMDA (N-methyl-D-aspartate) receptor protein, and the *Schwarzenegger* mouse with another copy of the gene for IGF-1 (Insulin-like Growth Factor), a myotrophic protein. More memory and extra muscle strength have already been created in the laboratory by currently available molecular biological techniques but this does not mean that the creation of super-intelligent and super-strength humans lies just around the corner.

The author is no genetic determinist and fully acknowledges the complexity of the polygenic nature of, and environmental contributions to, the human phenotype. He also discusses the moral implications of genetic biotechnology and acknowledges the gap that has opened up between so-called value-free (value-neutral) science and its practitioners. So, while some governments may legislate against state funding for particular research programmes, others finance them. Besides, there will always be sufficient money available in the private sector to support the more speculative and ethically questionable science. However, the rapid developments in cloning technologies means that we need to engage in the ethical debate now rather than later, when the science and its applications have overtaken the moral implications.

So is genetic enhancement wrong? According to Agar, it is essentially no different from environmental manipulations like the provision of additional academic tuition, music lessons, sports activities and museum visits to increase our

children's future opportunities. Additional copies of the GLU_{N2B} or IGF-1 genes are unlikely to turn children of average intelligence or physical prowess into geniuses or world-class sportsmen/women but they may enhance such characteristics in those with innate abilities. An additional question to consider is who is most likely to benefit from this technology and the answer, as is often the case, are those with the money to pay for it. Will this then lead to a new genetic underclass, similar to the 'invalids' envisioned in the 1997 science fiction film *GATTACA* (interestingly subtitled: *There are no genes for the human spirit*). Or alternatively, if somehow money were no object and everybody could be enhanced, would this lead to a loss of diversity. *Polarisation* and *homogenisation* lie at the opposite ends of the genetic enhancement spectrum and possible future for humanity. Agar also raises the subject of the possible use of this technology to eradicate racism and homophobia by manipulating the genes that control skin colour and sexual orientation. If genetically modified human beings were all white and heterosexual you might succeed in eliminating the sources of bigotry on which racist homophobes are fixated but what about the many other differences that give rise to irrational prejudice?

The book raises a lot of important issues and while some of the speculations may seem far-fetched today, the pace of the developments in science and technology should alert us to the real possibilities of what has been described as our 'post-human' future. The only specific mention of God is in connection with religious opposition to enhancement because it is like 'playing God' and therefore negates his role (88). We do well to remember that the opportunity to 'be like God' was the temptation that led to the Fall (Gen 3:5). However, Agar also notes that secularists argue against enhancement in a similar way but substitute the term 'evolutionary process' for God. Each of the eight chapters is extensively refer-

enced and there is a comprehensive bibliography. As the author is an academic philosopher, there is a tendency for the philosophical discussion to dominate the bioscience and this in my opinion can impede the flow of the narrative. The book is written in a balanced and non-alarmist way but at the same time will succeed in provoking some interesting discussions amongst those who choose to read it.

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Michael Artheron
Mountains on the Moon

Bromsgrove: Crossbridge Books, 2004.
xvi +234pp. hb. £9.99. ISBN 0-09543573-7-X.

This collection of biographies begins with the author's invitation to examine the natural world with scrutiny and wonder. The ensuing chapters present the lives of forty-three scientists, some religious and some not, as examples of such scientific scrutiny of and wonder at nature. Every six chapters there is an interluding commentary which wanders about in natural theology.

The most serious failing of this book is that its superficiality robs the reader of sufficient information to enjoy fully the rich complexity of the natural world which the author is so concerned to make known. With large print and only three or four pages per scientist, one does not learn enough about the scientists' investigations to gain any substantial appreciation for their natural revelations. The footnotes often testify that a few of the best secondary sources have been consulted, but the wealth of information within them is not communicated in these biographical sketches. More importantly, the author has often made little or

no effort to read the scientific publications of these scientists – the very place where their most profound ideas are to be found.

The didactic style also tends more to interrupt the book than to enhance its religious force. Biblical quotations are interspersed throughout, either as chapter epigrams or within a particular biography. The author often draws parallels between scientific ideas and biblical texts, with no recognition of the context on either side. For a book that is evidently written for Christians, it is unclear why the author digresses more than once into didactic evangelism. A dust jacket quotation from the back advertises the book as a 'brilliant synthesis of science and the Christian faith'. I must respectfully disagree and say that there is no synthesis between the two whatsoever to be found in this book. Science and religion have entirely separate existences. Ramming in a Bible verse here and there is not a synthesis, but instead perpetuates the common feeling that science and religion really are worlds apart. *Mountains on the Moon* clearly has no intention of dividing science and religion. In fact, it speaks quite explicitly in opposition to this perspective. However, it forces the two together in a way which is neither informative to Christians, nor persuasive to those who are not.

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Christopher Belshaw
10 Good Questions About Life and Death

Oxford: Blackwell Publishing, 2005.
178pp. pb. £9.99. ISBN 1-4051-2604-3

Frank discussion of life and death questions is a risky business. At one level it fascinates us all, at another it must nav-

igate its way around an abyss of denial and morbid fascination. Belshaw ventures on to the ground where many fear to tread and pretty well succeeds in avoiding these pitfalls. This is a lively, well illustrated and profound philosophical exploration of issues such as the sanctity of life, life after death, identity, reality and meaninglessness that is both readable and engaging. I would venture that it is a book that is a worthy read for both academics and lay readers in philosophy.

The strength of the book is undoubtedly its readable delivery. It brings philosophy into the public domain with the use of examples and interpersonal constructions that bring the subject matter from lecture hall theory to real experiences that the lay reader can grapple with. The book naturally encourages useful thinking and debate of issues and would serve as a useful reader and discussion starter for all those looking for a heated and well informed argument. What gives us our identity? What makes life sacred? Is it bad to die? Is being immortal actually a worthy aspiration? There is no shortage of material in this book!

However, while Belshaw provides an enjoyable and thought provoking journey down the road of ultimate questions, its weakness for me (as one unschooled in philosophy) was that too many of the outcomes left me short of ultimate destinations. Belshaw is commendably careful in not undermining religious belief as one such destination, except where he argues on good grounds for doing so. At no point does he present his own overarching philosophical position or his religious convictions. His consistent and overriding question seems to be 'Does it make any difference?'

For example, the discussion of meaning is illuminating. Belshaw argues that meaning is found in relationships, a plan/project and a good life. He admits that religion can aid all of these, but argues that it is not necessary for them

and therefore ultimately inconsequential (128). On the question of life after death: we can't rule it out – but we can't rule it in (76). Therefore does it matter to our present existence? The reality of the existence of God makes no immediate difference to our experience, though our belief in him does make a difference – therefore in that sense experience matters more than reality (159). The inference in all of these discussions is that religion is sidelined in a philosophical pursuit that appears to elevate experience to the pinnacle of what we can know.

At the risk of caricaturing what I consider to be a useful piece of work, the phrase that came to mind as one that summed up the book was 'don't worry – be happy'. In one sense, such a positive review is quite an achievement for a book about life and death. Perhaps it says more about the reader's superficiality than anything about the author or the book, for the material it contains actually serves to get the reader to grapple with big issues rather than defer to simplistic statements. Certainly I would recommend the book as a valuable read. While I remain unconvinced about the relationship between reality and experience, others will find other questions and answers in this book worthy of discussion. If you are happy with 10 good questions then begin with this book. If you require 10 good answers you may need to continue the search even after you have read it.

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Mario Biagioli
***Galileo's Instruments of Credit:
Telescopes, Images, Secrecy***

Chicago: University of Chicago Press,
2006. 302pp. hb. \$35.
ISBN 0-226-04561-7

By mid-1609, low-power telescopes originating from the Netherlands had made

their way as far south as Italy. Among the many who had by that time encountered or heard about them, one man was able within a year to secure a virtual monopoly on their use to reveal new wonders in the skies. How did Galileo do it? In his handsome new book, Mario Biagioli tackles this question with zest. His dissection of the goings-on in the tumultuous years separating Galileo's first astronomical discoveries in 1609 and the proscription of Copernicanism in 1616, displays an admirable command of historical detail.

Those goings-on lend themselves in a special way to the distinctive approach of 'science studies' to the history of science, already on notable display in Biagioli's earlier *Galileo Courtier* (1993). To my mind, that approach works rather better in this new book where its characteristic concern with science as a human activity rather than as a body of knowledge brings to life one of the most colourful, as well as most significant, episodes in the entire history of science. This reviewer finds the jargon now *de rigueur* in the science-studies field often rather off-putting, itself an obvious candidate for dispassionate self-study. But Biagioli's use of it here does allow him to approach familiar episodes in novel and illuminating ways.

The 'instruments of credit' of the book's title are the factors that enabled Galileo to seize a quick advantage in the entirely novel field of telescopic astronomy. Biagioli argues that geographical distance played a crucial role in the early stages: the distance that separated Galileo in Padua from his potential patron in Florence, Galileo from Kepler in Prague, and more generally, Galileo from his readers, scattered as they were over Western Europe. A second factor was Galileo's earlier experience in instrument making and his consequent skill in producing telescopes that for a time no one else could rival. A third was his success over the first few crucial months in keeping secret from those who might prove rivals the details of how his telescope was built,

allied with his practice of distributing telescopes of his own manufacture to princes and potential patrons but not to others who might replicate his results. There was also the prestigious association he gained as the de Medici ruler's 'mathematician and philosopher'. And finally there was his ground-breaking use of sequences of printed images to convey the changes over time in the lunar shadows, the satellites of Jupiter, and the sunspots.

Up to this point the focus of the book is on the rapid rise of Galileo's star. But the final chapter shifts from the ways in which he built up credit to the responsibility that came with his new-found fame as the acknowledged spokesman for the new astronomy. Its Copernican implications were raising alarm among theologians: how should Galileo respond? Biagioli's narrative turns here to analysis of argument in the manner of traditional history of science. He appears to take the Book of Nature metaphor to be the linchpin of the case that Galileo makes in order to save Copernicanism from theological censure and subjects it to acute analysis, concluding: 'Galileo's book of nature stretched the metaphor of the book so thin that it started to fall apart at the seams.' (242) The 'book' after all has no pages, no letters, no meaning; it is not written nor is it read.

The point that Galileo hoped to make with the aid of the metaphor was, however, a relatively simple one. Scripture and Nature are alike the work of the Creator. Because Scripture is written in human language, it is inevitably in need of interpreters, the theologians who have the required competence. Nature on the other hand is constructed along geometrical lines; the language of geometry is in contrast unambiguous, requiring only a competence in geometry for its understanding. A case of non-overlapping magisteria, therefore, to draw on Gould's by now familiar phrase. I am not convinced that Biagioli's extended critique undermines the force of this consideration.

Be that as it may, it is not where my misgivings with this chapter mainly lie. I am troubled by the emphasis the author attaches to this metaphor as though it were the key to Galileo's case. It nowhere appears in the *Letter to Castelli* which is the document that the consultors of the Holy Office had before them in 1616 and which, so far as we can tell, furnished the documentary grounds for the admonition Galileo received to abandon the Copernican 'opinion'. There is no evidence for their having seen the Letter to the Grand Duchess where Galileo develops the disputed metaphor. So if the issue is the merit of the case that his judges actually had before them, the shortcomings of the book-metaphor are moot.

But even if we were to take into consideration the fuller case that Galileo would have liked to present but was never given the opportunity, it seems clear that it did not depend to any serious extent on the eloquent rhetoric he expended on the book metaphor in the *Letter to the Grand Duchess*. Already in the *Letter to Castelli* he advanced two arguments, either of which he hoped, if accepted, would be sufficient to make his case. First was the traditional exegetical principle of accommodation: that the language of Scripture is clearly, and for good reason, accommodated to the capacities of its original audience; hence the references to the sun's motion and the earth's immobility should not be understood literally. The second was the unlikelihood of Scripture's being intended to serve as a textbook of astronomy. (As it happens, both arguments would be regarded as valid by the exegetes of today.)

It is important to be clear as to what the issue was for Galileo in these theologically-inspired debates. It was not at this point the merits of the case for Copernicanism itself; he knew he could not produce the demonstration that would, in theory at least, settle the matter. Rather, the primary function of the two *Letters* was to show that this did not matter, that the Scripture was simply not

relevant to the Copernican debate in the first place. (Biagioli takes Galileo's failure to mention the Tyconic alternative to be a weakness of the case he is presenting in the *Letters*. But though this would be true were the issue to be the *Dialogue* of 1632, it was not true of the earlier debate.) So though the chapter-length excursus on the book metaphor makes interesting reading, the shortcomings, such as they are, of that metaphor do not significantly affect the case that Galileo was so desperately trying to make in those portentous years.

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Michael J. Buckley, SJ
Denying and Disclosing God: The Ambiguous Progress of Modern Atheism

New Haven and London: Yale University Press, 2004. xviii + 173pp. hb. \$37. ISBN 0-300-09384-5

This book (an expanded version of the author's D'Arcy lectures given in Oxford in 2000) is an exploration of the internal contradictions of theism as it has developed in the modern era. Its starting point is the conclusion of his earlier work, *At the Origin of Modern Atheism*, that atheism was generated dialectically from contradictions in theism.

The first chapter of the book, 'The New Science and the Ancient Faith', is perhaps the most directly relevant to the interests of this journal. Here Buckley sets out to demolish the popular conviction that atheism arose out of the antagonism of the new sciences to religion. He does so by examining three ways in which the new sciences embraced religion. The way of Galileo was to see them as separate enterprises. Kepler, by contrast, reduces them to a single Neopla-

tonic enterprise: 'a deduction of what is likely and appropriate within the universe from the triune nature of God and the suggestion or the confirmation of that deduction from observation and mathematics' (23). Finally Newton's universal mechanics offers an inferential base for religion.

But if early modern science embraced religion so enthusiastically, what led to the emergence of atheism in modernity and the apparent hostility between science and religion? Chapter 2 explores aspects of this question by examining 'A Dialectical Pattern in the Emergence of Atheism' with particular reference to three early modern theological experiments – Lessius's 1613 apologetic against atheism (then understood as the opinions of certain ancient philosophers); Cotton Mather's use of science in religious apologetics; and the internal philosophical wrangling of seventeenth-century French Catholicism. What these various experiments have in common is an unacknowledged denial that interpersonal religious experience has any cognitive cogency. The subjective dimension of religion is effectively bracketed out in favour of a range of inferential approaches.

In an important essay published in 1946 Paul Tillich traced this turning away from experience towards inference back to the work of Thomas Aquinas. Buckley's third chapter takes the form of a close reading of specific passages of the *Summa*, from which he concludes that 'For Aquinas, God is *given* initially or *primordially* in his effects, rather than simply *inferred* from his effects. God is a presence, not simply a conclusion' (68). Thus the *Summa* pointed in a radically different direction from that taken by seventeenth and eighteenth-century rationalism.

Chapter 4 explores the radical shift in the evidential basis for theism that occurred in the nineteenth century. The secular autonomy of the sciences, Kantian epistemology and the rise of evolutionary explanations of design in nature

conspired to force the apologists of theism to look increasingly to human nature. The human being became the implicit absolute and God was reduced first to a function in modern philosophy and then to a mere projection.

But, for Buckley, this is by no means the end of the story. The dialectical process may not be arrested at this point. Rather, the initial negation must be allowed to generate its own further negation. So, in the fifth chapter, he explores two different paths taken by the negation of religious experience: atheism and negative theology. Both accept the liability of religious discourse to projection. But while Freud and Feuerbach stop here and call for the disclosure of the authentically human through the deconstruction of the divine, St John of the Cross goes beyond to the negation of these projections in the classic night of the soul.

Finally, the author proposes one way of passing over the atheistic negation of a theism in which primacy has been given to inference and 'scientific evidence'. He calls for religious experience to be restored to its proper place; 'not a flight into the irrational or the enthusiastic, but the retrieval of a specifically religious intellectuality' (xv). His concluding paragraph is worth quoting in full:

This book argues that inference simply cannot substitute for experience. One will not long believe in a personal God with whom there is no personal communication, and the most compelling evidence of a personal God must itself be personal. To attempt something else as foundation or as substitute, as has been done so often in an attempt to shore up the assertion of God, is to move into a process of internal contradictions of which the ultimate resolution must be atheism.(138)

While *Denying and Disclosing God* is a valuable supplement to Buckley's important earlier work, to see it only in those terms would be to undervalue it. This

closely argued and elegantly written set of lectures will be immensely helpful to anyone who wishes to enter into a serious dialogue with modern atheism.

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Roy Clouser

The Myth of Religious Neutrality: An Essay on the Hidden Role of Religious Belief in Theories

Notre Dame, Indiana: University of Notre Dame Press, 2005. 397pp. pb. £19.95. ISBN 0-268-02366-2

Every so often along comes a book that is paradigm shaking – this is one such book. Not least, it challenges the idea that science and religion are independent. Roy Clouser, professor emeritus of philosophy and religion at The College of New Jersey, Trenton, has produced, to use a cliché, 'an important and seminal work'; in Clouser's case this is not an exaggeration. He shows the general relationship of religious beliefs to theories. This book is a revised and updated version of his 1991 book.

Clouser's main thesis is that theories are controlled by religious beliefs, which guide and direct the use of reason in all of life. After a brief introduction (Ch 1), Part I looks at 'Religion'. Chapter 2 examines 'What is religion?', and Chapter 3 identifies the main types of religious belief, concentrating on three types: pagan, pantheistic and biblical. For pagan belief, the divine is some part, aspect, force or principle in creation; for the pantheist belief, the non-divine is a subdivision of the divine. The biblical viewpoint, however, denies that there is one continuous reality, claiming that the creator is distinct from the creation.

Part II puts 'Theories' under the scalpel. After considering 'What is a the-

ory?' (Ch4), Clouser looks at the general relationship between religion and theories. He identifies four basic possibilities: religious irrationalism, religious rationalism, the biblical and the Scholastic synthesis of the biblical with the rationalist (Ch 5). The first sees religion and reason as two distinct realms: the two 'have nothing to do with one another... [so] neither is capable of passing any judgment on the other' (p 89). The second, religious rationalism, accepts the neutrality and the supremacy of reason. Reason is the final court of appeal able to decide on all matters; consequently, religious beliefs are optional and a logical conclusion of reason. Reason shapes religious beliefs. The biblical position reverses this: religious belief shapes reason; reason is not neutral but is controlled by religious beliefs. It is this biblical position that Clouser defends and advocates.

Part III is a 'casebook' of illustrations. By examining theories in mathematics (Ch 7), psychology (Ch 8) and physics (Ch 9), Clouser shows that religious beliefs not only influence theories by acting as presuppositions, but also that they are basic presuppositions... religious beliefs act as guiding presuppositions to theorising (pp 127-128). This part culminates in chapter 10: 'The need for a new beginning'. This is perhaps the most controversial and closely argued chapter. Clouser examines the problems in the Augustinian, Anselmian and Aquinasian view of God (the AAA view). He demonstrates that this view is inconsistent and illogical: it means that humans would have to be (partly) divine – as they share some of the attributes of God, such as goodness and justice – and it requires the cosmos to be understood reductionistically. The AAA view of God's attributes is in need of an overhaul. In its place Clouser looks to the Cappadocians and Reformers' (the C/R view) view of God. This view provides a sounder basis on which to build a non-reductionist theory of reality.

Part IV attempts a reconstruction and develops non-reductionistic theories of

reality (Ch 11), society (Ch 12) and the state (Ch 13). Here Clouser develops and expounds the ideas and theories of the much neglected and misunderstood – particularly in the UK – Dutch Christian philosopher Herman Dooyeweerd. Dooyeweerd's own writing can be extremely opaque; fortunately, Clouser has provided an excellent, clear and readable introduction to some of them.

This revised edition is more nuanced than the original – the typeface is also smaller, but much clearer and it has 33% more pages. There are 49 pages of end notes and an improved 17-page index. Even if you have the first edition, it is well worth investing in this one.

This book should be required reading for all those involved in any academic disciplines but especially for those involved in the biological and physical sciences – to paraphrase Luke 22:36: '*if you don't have a Clouser, sell your cloak and buy one.*'

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Paul Davies

The Goldilocks Enigma: Why is the Universe Just Right for Life?

London: Allen Lane, 2006. xvi + 350pp.
hbk. £22. ISBN 0-713-99883-0

Paul Davies is renowned as one of the world's leading cosmologists. Until recently he was Professor of Astrobiology at Macquarie University, Sydney, and has now taken up a new post to establish a centre on the foundational questions of science at Arizona State University. He is also a prolific author with a lively and accessible style, and in this latest book he does not disappoint. He returns to the fundamental question raised by the now well-documented 'fine-tuning of the universe'. Why is Goldilocks's porridge just right? Why is the universe just right for us to be here?

In his opening chapter Davies raises head-on some of the 'Big Questions' about the mystery of existence. He then gives a superb overview of the discoveries of modern cosmology and particle physics. Then he describes the fundamental mystery to be explained: why the parameters of physics are seemingly fine-tuned for life. For example, as Fred Hoyle discovered, the ratio of the strong nuclear force to the electromagnetic force has to be just right for the building blocks of life, carbon and oxygen, to be manufactured in stars. Most critically the cosmological constant has to be 10^{120} times smaller than the natural value yielded by quantum vacuum calculations in order for life to be possible. Why so?

Davies offers a number of solutions to this problem which he presents very fairly, and not shying away from the problems which each in turn presents. Though it is not his preferred solution he does not come with an anti-religious agenda opposed to divine design, as found in Leonard Susskind's recent book *The Cosmic Landscape: The Illusion of Intelligent Design* for example. On the contrary, Davies sees strength in the idea of God as the necessary being grounding creation, since this provides an ultimate explanation where others do not. Perhaps this even-handedness is to be expected from a Templeton prize-winner and member of the International Society for Science and Religion.

Other explanations include the idea that there is a final Theory of Everything which will determine the parameters uniquely – they couldn't be otherwise; and the diametrically opposed view of a multiverse – the parameters can be different and are different in a vast ensemble of physically existing universes and we just happen to be in the one right for us. If the former of these is true it seems highly fortuitous that the unique universe should be life-bearing. With the latter, the question arises as to why *this* multiverse should exist as opposed to another. That is particularly relevant to

Susskind's string theory landscape idea in the book referred to above. Davies sees the problems with string theory, notably lack of contact with experiment or observation, though again he is more positive in his assessment than, for example, Peter Woit in his recent *Not Even Wrong: The Failure of String Theory and the Continuing Challenge to Unify the Laws of Physics*. One of the paradoxes which arise in many multiverse theories is that it ends up much more likely that we inhabit a fake universe than a real one since fake universes (simulations) are energetically vastly easier to produce once intelligent life arises somewhere. There is also the problem for human identity of replicas of ourselves existing in vast numbers elsewhere in the multiverse.

Davies sees merit in Max Tegmark's maximal multiverse in which all mathematical structures have physical existence. This avoids the selection problem and can be regarded as in a sense simple (Swinburne and the present reviewer would disagree about that). Nevertheless it too possesses problems, e.g. concerning self-referential sets and the limitation to mathematics.

Davies's own preferences, which he explores as the book draws to an end, involve placing life and mind at the centre. He rightly recognises Chalmers's 'hard problem' of consciousness, to explain qualia, and discusses a 'life principle' which constrains the universe to evolve life and mind – though surely such teleology is far better motivated by theism. He also seems to favour Wheeler's interpretation of quantum theory whereby reality, including past history, is brought into existence by the observer. This notion can be utilised to produce a kind of self-existent loop of causality. To my mind it is still fraught with problems and it is doubtful whether Wheeler's interpretation can hold water. Backwards causation is highly problematic. And then there is still the old question, why does the self-existent loop exist?

The problems Davies finds with the divine design explanation include (a) God is ad hoc or arbitrary and doesn't therefore explain anything; and (b) why aren't there many gods? Christians would of course say that God is much more than the necessary being invoked as explanation for anthropic coincidences. He is also the God and Father of our Lord Jesus Christ and an exploration which looks at only the Book of Nature and not the Book of God's Word, and starting from outside the community of faith, will inevitably only give limited knowledge about him. The problem of many gods, which goes back to Hume, is perhaps more readily addressed philosophically by appeal to the uniformity of the laws of nature we

observe and the simplicity of the hypothesis of one.

I can thoroughly recommend Paul Davies's book. It shows how physicists and cosmologists are driven by their subject matter to ask ultimate questions and it is brimming with the excitement of that quest. It also gives an idea of the speculative lengths to which many are prepared to go to avoid what to most readers of this journal would be the much more natural theistic position!

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Christians in Science and the American Scientific Affiliation



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