

GENETICS AND CHRISTIAN ETHICS

In the immediate future we are likely to witness significant developments in human genetic science. It is therefore of critical importance that Christian ethics engages with the genetics debate, since it does not just affect the way we perceive ourselves and the natural world, but also has wider implications for our society. This book considers ethical issues arising out of specific practices in human genetics, including genetic screening, gene patenting, gene therapy and genetic counselling, as well as feminist concerns. *Genetics and Christian Ethics* argues for a particular theo-ethical approach that derives from a modified version of virtue ethics, drawing particularly on a Thomistic understanding of the virtues, especially prudence, or practical wisdom, and justice. The book demonstrates that a theological voice is highly relevant to contested ethical debates about genetics.

CELIA DEANE-DRUMMOND (FRSA) is Professor in Theology and the Biological Sciences at the University of Chester. She is Director of the Centre for Religion and the Biosciences, and her publications include *Brave New World? Theology, Ethics and the Human Genome* (ed.) (2003) and *The Ethics of Nature* (2004).

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Christian ethics has increasingly assumed a central place within academic theology. At the same time the growing power and ambiguity of modern science and the rising dissatisfaction within the social sciences about claims to value-neutrality have prompted renewed interest in ethics within the secular academic world. There is, therefore, a need for studies in Christian ethics which, as well as being concerned with the relevance of Christian ethics to the present day secular debate, are well informed about parallel discussions in recent philosophy, science or social science. *New Studies in Christian Ethics* aims to provide books that do this at the highest intellectual level and demonstrate that Christian ethics can make a distinctive contribution to this debate – either in moral substance or in terms of underlying moral justifications.

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Celia Deane-Drummond
Frontmatter
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Celia Deane-Drummond
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[More information](#)

*To my wonderful daughter Sara Elisabeth, who teaches me
the meaning of maternal love*

Contents

<i>General Editor's preface</i>	page xi
<i>Acknowledgments</i>	xiii
<i>Introduction</i>	xvi
1 A recovery of virtue for the ethics of genetics	I
2 Theological principles	29
3 Living in the shadow of eugenics	55
4 Genetic testing and screening	76
5 Genetic counselling	101
6 Gene therapies	124
7 Gene patenting	160
8 Women and genetic technologies	191
9 Genetics and environmental concern	220
<i>Postscript: Concluding remarks</i>	245
<i>Bibliography</i>	259
<i>Index</i>	273

General Editor's preface

This book is the twenty-fourth in the series *New Studies in Christian Ethics*. There are many points of mutual concern between this monograph and others within the series. Like Kieran Cronin's *Rights and Christian Ethics*, Michael Northcott's *The Environment and Christian Ethics*, Stanley Rudman's *Concepts of Person and Christian Ethics* and Susan Parsons' *Feminism and Christian Ethics*, it provides an expert critical overview of a complex area of secular discussion from a well-informed theological perspective. It also makes creative use of another monograph in the series, Stephen Clark's challenging *Biology and Christian Ethics*.

Celia Deane-Drummond's *Genetics and Christian Ethics* is well written, up to date and well informed. It covers a very full range of genetic issues and shows expert knowledge of both British and US developments. Using her own scientific background in this area, she provides detailed discussions of genetic testing and screening, genetic counselling, gene therapies, gene patenting and genetics and the environment. In each of these sub-areas changes are rapid and complex. Doubtless, particular scientific and technological developments will happen in each over the next few years. As she herself shows, the whole area of gene therapies, for example, has changed dramatically over the last decade, with scientists now being considerably more cautious than they were earlier. However, in each of these sub-areas she identifies ethical issues that are likely to abide whatever new developments take place.

A particularly helpful feature of this new monograph is the critical discussion of the distinctively theological principles that have been used by other Christian ethicists engaged in this area. In contrast to many others, Celia Deane-Drummond frames her own analysis in a suitably modest theology based upon virtue ethics. Theologians can all too often appear uncomfortably shrill (especially those without scientific training) when engaging in areas of novel science and technology.

This text will be invaluable to students and professional academics alike. It admirably fulfils the two key aims of the series as a whole – namely, to

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Frontmatter
[More information](#)

xii

General Editor's preface

promote monographs in Christian ethics which engage centrally with the present secular moral debate at the highest possible intellectual level and, secondly, to encourage contributors to demonstrate that Christian ethics can make a distinctive contribution to this debate.

ROBIN GILL

Acknowledgments

First thanks for the genesis of this book goes to Kevin Taylor at Cambridge University Press and the series editor, Professor Robin Gill, who first invited me to contribute to this series in an area relating science and ethics. In the course of our discussions it soon became clear to me that an area of unprecedented significance for our current generation is that of genetic science, with its important social and political ramifications, as well as for its purely scientific issues.

I had the privilege of trying out sections of the chapters on environmental concern and women and genetic technologies in papers given at the Association of Teachers in Moral Theology, in May 2003 and November 2004. I am grateful for the detailed feedback and suggestions offered on both of these occasions. In March 2003 I presented a public lecture to Portsmouth University on 'Human Genetics: Perspectives from the Christian Wisdom Tradition'. I also had the opportunity to give a paper entitled 'Forbidden Knowledge: A Theologian's View' at a conference entitled 'Does the Future Need Us? Christian Faith and the Prospect of Post-Human Evolution' at the Garrett Evangelical Seminary in Evanston, Chicago, in April 2003. I gave a short paper called 'Putting Preimplantation Genetic Diagnosis in its Context: A Christian Ethical Response' at the Science and Religion Forum September 2003 Conference, entitled 'The Place of Humans in the Universe – World Faith Perspectives'. In November 2003 I presented a paper at St Mary's University, Halifax, Canada, entitled 'Fabricated or Fabulous Humans? Human Genetics and the Christian Wisdom Tradition'. In June 2004 I presented a paper at the Manchester University Contextual Theology Seminar entitled 'To Be or Not to Be? A Preliminary Analysis of Media Reporting of Stem Cell Research: A Theologian's Perspective'. In July 2004 I gave a paper entitled 'Fabricated Humans: Human Genetics, Ethics and the Christian Wisdom Tradition' at the Ian Ramsey Centre conference entitled 'Our Posthuman Future'. I am grateful for the invitations to give all these public lectures and also grateful for the feedback and discussions with

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Frontmatter
[More information](#)

colleagues, both those known to me and those who were members of informed audiences, all of whom have helped to shape my thinking in this area. I am grateful to individuals who have read and commented on different parts of this book, in particular to Julie Clague for her comments relating to the chapter on genetic patenting, and to four anonymous reviewers who commented on the chapters on environmental concern and theological principles. I am also grateful to Gerard Manion for commenting on the chapter on eugenics, and to Neil Messer and Amy Laura Hall for many stimulating conversations. In February 2004, in the course of writing this book, I was co-opted as a member of the Ethics and Law committee of the Human Fertilisation and Embryology Authority (HFEA). While the discussions that have taken place in these meetings have helped to inform my views, the position adopted in this book is entirely my own and should not be taken to represent the views of the committee.

While preparing this book, I edited and published a volume in 2003 entitled *Brave New World? Theology, Ethics and the Human Genome*. This latter book arose out of ideas discussed at a colloquium of contributing authors and other participants held at St Deiniol's Library in March 2002. The current book builds on some of the ideas discussed there, but takes many new directions. I have also had the opportunity to develop and teach a module in 'Medicine and Christian Ethics' at University College Chester (now the University of Chester). I am grateful for discussions with my students and with the Very Revd Professor Gordon McPhate, Dean of Chester Cathedral and Visiting Professor at the University of Chester, who has also contributed to the teaching of this module. I should name my doctoral students working in the field of genetics and ethics, who have all helped to stimulate my thoughts in this area, namely the Revd Stephen Bellamy, Dr Lisa Goodard and Anne Marie Sowerbutts. Anne Marie has also enabled me to spend more time on research through her efficient contribution to the administration of the Centre for Religion and the Biosciences, of which I am Director. In this regard I am especially grateful to the Christendom Trust, who have generously given financial support to the Centre for Religion and the Biosciences since its launch in February 2002. This support has enabled more research to be undertaken in line with the mission of the Centre, including the writing of this book. The public outreach of the Centre was further expanded by its affiliation as a Local Society Initiative, supported by Metanexus in Philadelphia, USA.

St Deiniol's Library remains, as always, a place where I can focus on my reading and research and I am particularly grateful for their support. The University of Chester generously provided me with sabbatical leave in the

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Celia Deane-Drummond
Frontmatter
[More information](#)

Acknowledgments

xv

first semester of 2004–5, which enabled me to complete this volume. I would like to thank Professor Robin Gill, and Dr Kate Brett at Cambridge University Press, for their support and encouragement. I would like to thank Gillian Dadd, assistant editor at Cambridge University Press, and Jo Bramwell, copy-editor, who skilfully contributed to the final form of this book. Finally, I would like to thank my husband, Henry, for his support, and my lovely four-year-old daughter Sara, to whom this book is dedicated; her life has been intimately interlaced with mine in the course of the writing of this book, and without her this book would no doubt have taken a very different course.

Introduction

Perhaps one of the most fascinating facets of genetics is its place in the biological sciences, situated at the boundary of evolutionary biology and molecular biology. Such a juncture immediately raises historical questions about human origins, but also possibilities for further manipulation of human genes. Questions such as ‘Where do we come from?’ and ‘Where are we going to?’ are as much theological and philosophical as scientific. Hence, the subject of genetics has opened up swathes of associated debates in the humanities, as well as discussions in a purely scientific context of technical knowledge and possibilities. New scientific research and technological achievements are reported almost daily in the media, reflecting another point: that genetic research is of public and social interest, as well as scientific and ethical interest.

Bioethics has tended to look simply to medicine as a context for its discussion. However, the issues raised by genetics show up the limits of approaches that refer simply to medical frameworks and possibilities, defined by given principles of good practice. There has also been a tendency to split the evolutionary view of the gene, perceived as a discrete unit of inheritance, from more molecular models that are becoming increasingly sanguine about the possibility of defining clearly what the scope of gene function might be. For example, the discovery that humans had only around 20,000–30,000 genes, contrary to expectations, showed that there was more to genetics than simply analysing one-to-one gene function; the expression of these genes and their regulation could also have a profound effect on characteristics of both a species and an individual. Hence, it is not always enough to suggest that we share 98% of our genes with our primate cousins. It only takes a moment’s reflection and a dose of common sense to realise that we are far more than 2% different from the apes.

Are specific ethical issues raised by evolutionary research? There are, perhaps, areas of theological concern. The fascinating discovery of *Homo floresiensis*, a new species of human discovered on the island of Flores in

Indonesia, was announced in October 2004.¹ This human species, nicknamed ‘Hobbit’, was smaller than its ancestor, *Homo erectus*, and adapted to the particular living conditions of its island home. The species was only a metre tall when adult, and, according to the fossil record, lived on the island from 70,000 to 18,000 years ago.² The point is that these humans were alive well into the time when *Homo sapiens* existed. Hence, mythological stories about yetis or other human-like creatures coexisting with humans may be based on the real possibility of their existence at some time in human history. The discovery certainly challenges a naïve view that humans emerged from the primates in a linear way, with each emerging *Homo* species developing new powers and characteristics.

Does this discovery challenge the idea of human uniqueness? Certainly, our own species *Homo sapiens* was not unique in evolutionary history, but it did clearly out-compete its rivals, even if this happened relatively recently in the geological record. Does such a discovery undermine the meaning of humans as made in the image of God, *imago Dei*? I suggest that the meaning of image-bearing needs to be able to take into account such research, but at the same time it is important to note that the biblical record was never intended to be a scientific document. It was, rather, a mythical narrative about human origins and the relationship of humans to the Creator God, rather than a scientific account of how humans emerged. If we believed the latter, then women would have come from a male rib, and humans simply arrived from dirt, rather than from an evolutionary process. A literalist view is quite simply nonsensical. Hence, it is a somewhat naïve approach to theology to presume that such scientific discoveries undermine the validity of human image-bearing, or religious understandings of the human.³ It does, nonetheless, call into question any arrogance about our privileged status as humans.

Human image-bearing has been associated in the Christian tradition with particular abilities, such as reasoning, or with particular functions, such as stewardship of the earth. The former, taken to its extreme, would exclude those who have no reasoning powers, while the latter would exclude those who were not able to fulfil these functions. A more satisfactory account of image-bearing is a relational one; that is, those who bear the image are in a special relationship with God through revelation and grace.

¹ Gee, ‘Flores, God and Cryptozoology’.

² These figures are approximate only; they may have lived earlier than this, or somewhat later as well.

³ Henry Gee, for example, believes that this discovery questions ‘the security of some of our deepest beliefs’: ‘Flores, God and Cryptozoology’. But this is only really the case if Genesis is equated with scientific accounts of evolution, which clearly it should not be.

Did *Homo floresiensis* have such a relationship with God? Such a question is answerable only by God, rather than by us, in much the same way that we cannot claim to know for certain whether other creatures of the world will share an eschatological life with human beings. Some theologians have argued that image-bearing should also be less anthropocentric for this reason, and include other creatures of the earth as well.⁴

Genetics, in looking to our evolutionary origin, has also raised important questions about human behaviour, some of which are linked to primate studies. The evolutionary history of a so-called ‘warrior’ gene, for example, has now been traced to primates. It is equally clear that complex behaviours such as aggression are the outcomes of much more than simply one-to-one genetic correspondence. However, bearing this in mind, researchers have still been able to identify an allele that predisposes both men and apes to aggressive, often violent behaviour.⁵ The genetic variant arose about 25 million years ago in a monkey ancestor, surviving in the population originally because of an enhanced ability to catch prey or detect threats. The molecular chemistry of the gene relates to its ability to code for monoamine oxidase, which breaks down neurotransmitters in the brain. The gene exists in polymorphic form, that is, it has several repeats, leading to more expression the higher the number of repeats. When the gene has fewer of these repeats or is missing altogether, then neurotransmitters such as dopamine and serotonin build up, and this can account for the aggressive behaviour.⁶ Men who have the short allele are more likely to commit violent crimes such as rape, robbery and assault, especially if they were mistreated as young boys themselves. In primate ancestors, the gene would be subject to what is known as ‘balancing selection’, where the two or more forms are maintained in a population. A gene that simply led to extreme violent behaviour would not be favoured in evolutionary terms; as such a male would be unlikely to survive in order to reproduce.

While this gives important insights into the genetic origins of some forms of behaviour, it would be facile to claim that all inappropriate behaviour is simply caused by genetic variants. Rather, it is always the combination of environmental conditioning *and* genetic predisposition. It is also clear that claiming that violence of any kind is ‘natural’ might give the impression that it is justifiable, or even good. There is, undeniably, evidence that genetic

⁴ R. Page, ‘The Human Genome and the Image of God’, in Deane-Drummond (ed.), *Brave New World*, pp. 68–86.

⁵ Gibbons, ‘Tracking the Evolutionary History of a “Warrior” Gene’, pp. 818–19.

⁶ The gene is X-linked, and, while women also carry this gene, it is easier to study in males, where there is only one X chromosome.

factors are implicated in such violent behaviour. Yet their evolutionary origin should not at the same time give a warrant to affirm their ethical acceptability. It is one reason, perhaps, that many feminist writers have objected so strongly to sociobiological explanations about the 'naturalness' of 'rape'. Such tendencies for violence should be seen as a sign of a *disorder* in the human community, one that needs to be tackled at the level of social support, hence addressing the environmental facets of the problem, and perhaps medical intervention where appropriate.

Other heated debates about the so-called 'gay gene' may also be simplistic where they give the impression that such behaviour is inevitably tied up with genetics. Researchers have found that women who have homosexual sons are more likely to be fertile, which is one explanation why the tendency for homosexuality has survived for so long, against an apparent selective disadvantage.⁷ Yet such a discovery should not leave the impression that homosexuality is *inevitable* in such families; rather, there is a genetic component to the expression of homosexuality, alongside cultural and environmental factors. The researchers are also quite ready to admit that their results are only partly successful in giving an explanation, and account for only about one fifth of the cases that they have studied.

Other areas of human behaviour that are reported to have a genetic component are mood-affective disorders, such as depression and obesity.⁸ The tendency towards an essentialist understanding of behavioural genetics is a recognisable cultural phenomenon, and it would be as well to be extremely wary of naming human behaviour as too closely related to genetic data. On the other hand, where gene effects have a profound impact on particular disease, especially where that disease is from birth, it could also be argued that in these cases genetics actually shapes that person's experience of life and, arguably, their sense of identity. In navigating the complex issues associated with genetics, it is important to distinguish between (on the one hand) the use of genetic techniques and the ethical issues associated with this practice, and (on the other) the ethical implications of explaining particular human behaviours through analysis of genetic traits. Both areas have vast scope in terms of intersection with medical, anthropological and evolutionary discourse. Genetics is also much more than simply a discussion of human species, for it reaches out to include all species that carry genetic information from one generation to

⁷ Hopkin, 'Mother's Genetics Could Influence Sexual Orientation'.

⁸ For discussion see Kaplan, *The Limits and Lies of Human Genetic Research*, pp. 122–50.

the next. It is obvious that the scope of a book on all the possible issues in genetics and ethics would be virtually unmanageable.

For this book I have chosen to focus more specifically on ethical issues in human genetics, but this is not intended as a slur on the significance of ethical issues in the wider non-human community.⁹ In chapter 9 I attempt to situate a discussion of human genetics in the context of the wider community of creatures. I have also chosen to focus more specifically on ethical issues arising out of current medical practice and debates in bioethics, rather than commenting in detail on current debates in evolutionary psychology. These latter debates are important, but they are perhaps of less immediate concern to medical practitioners and policy-makers. In addition, I try here to set out a case for a particular way of approaching ethical issues in genetics. Such an approach might equally be applied to evolutionary psychology debates in further work; thus the scope of this book is intended to be illustrative, rather than exhaustive.

The first, introductory, chapter reviews the current status of bioethics and the scope of ethics and genetics under discussion. What are the key issues raised by genetic science from a secular and religious perspective? What specific areas might be covered by genethics, or the ethics of genetics? I argue that priority needs to be given to a virtue-ethics approach, compared with other approaches to bioethics, such as those based on principle, utilitarianism or case study. In the past, virtue ethics has contributed to bioethical debates in abortion, euthanasia and the practice of healthcare rather than to genetics as such. I suggest that this lacuna needs to be rectified, as virtue ethics brings with it particular areas of ethical concern that are omitted by the other approaches to the ethics of genetics. In addition, I suggest not only that virtue-ethics is compatible with Christian theology, but also that a modified version of virtue ethics offers a particular contribution to the debates. I suggest that virtues such as prudence, justice, fortitude and temperance are also crucial for a Christian understanding of virtue ethics. Such modifications counter the common criticism of virtue ethics that it suffers from narcissism, or that it is concerned only about self-advancement.

The second chapter argues for the place of theological principles as an important ingredient in discussions of the ethics of genetics. The idea of principles at all might seem incompatible with a virtue-ethic approach that stresses the character of the agents, rather than rules as such. I will argue

⁹ See, for example, Deane-Drummond, *Theology and Biotechnology*; Deane-Drummond and Szerszynski (eds.), *Re-Ordering Nature*; Deane-Drummond, *The Ethics of Nature*.

that some framework is needed in order to define more clearly what the virtues mean, without succumbing to the temptation to subsume the virtues under a set of principles. I compare and critique the theological underpinning to Christian ethics that is either explicit or implicit in discussions about genetics. Dogmatic ethics, for example, which takes its cues from the theology of Karl Barth, is in sharp contrast with process thinking and the like, which assimilates Christian reflection to scientific practice. A third approach is to run alongside strands in the Christian tradition after prior consideration of scientific concepts. While the first is unlikely to be heard in a secular context, the second and third options might seem to make little practical difference. I suggest that all three approaches suffer from some difficulties. I draw particularly on the work of Michael Banner, Oliver O'Donovan, Philip Hefner, Ted Peters, James Peterson and Thomas Shannon. I argue, instead, for an alternative ethic rooted in wisdom as the *theological* ground for an ethics of virtue.

The third chapter sets out to explore the historical dimensions of theological reflection on genetics, and in particular the way genetics was abused in the practice of eugenics in the last century. I suggest that a historical sense of the uses of genetic technologies gives deeper insights into the temptations before us in the present, though the scope and scale of genetic intervention are much more apparent today. I will also explore some of the social issues that have contributed to the rise and fall of eugenics, in particular following the experience of Nazi Germany. I will examine the way public attitudes to genetic engineering have been shaped as a result of this phase of history. Paul Ramsey's work will be discussed in this context and in the light of the previous discussion on virtue ethics.

The fourth chapter examines the social and political issues associated with genetic screening and the current status of screening practice in the United Kingdom. It explores the medical rationale for screening for genetically inherited diseases. It also explores the ethical issues associated with the testing of children, and screening programmes either *in utero* or prior to implantation. It asks, in particular, how far public policy on genetic screening has taken ethical concern into account. It examines the particular case of the UK biobank, which has been set up by the government in order to monitor environmental and genetic components of disease incidence. This chapter sets the scene for further ethical analysis that will be developed in later chapters.

In the fifth chapter I explore the specific ethical issues associated with genetic counselling following screening for genetic disease or familial

knowledge of propensity for disease. I examine the public perception of risk in relation to genetic results and offer a critical appraisal of the risks associated with genetic testing. I will argue for a greater emphasis on a requirement to welcome those with disabilities from a Christian perspective, to counter other trends in secular practice that tend to associate those who depart from the norm as 'unfit', even if under the rhetoric of choice. I explore Hauerwas's concept of suffering presence and argue for a recovery of the classic notion of prudence in counselling practice.

The sixth chapter summarises the current trends in gene therapy and the use of genetics in medical science. In particular, pharmacological genetics, which produces drugs through genetic means, can be distinguished from somatic ethics, which modifies cells of the body, or from inherited genetic therapy, which affects the sex cells responsible for the next generation. What does the drive for all kinds of 'therapies' say about our own valuation of ourselves as unique individuals, made in the image of God? Is therapy fostering dreams of self-aggrandisement, or, worse, becoming the means of controlling others? What might be the limits for genetic interventions? This chapter argues for a recovery of prudence, justice, fortitude and temperance in socio-political arenas associated with genetics.

In the seventh chapter I explore the knotty questions associated with genetic patenting, in particular the legal arguments for patenting and some examples of the way this has been used to further genetic research. I discuss the ethical implications of patenting, and ask who are the beneficiaries. Patenting broadens the remit of genetics into the animal and plant worlds as well as the human sphere. Justice in the Aristotelian sense means distribution according to merit. Patent law seems to follow this principle. I suggest that while aspects are compatible with a Christian understanding of virtue, some modification of the principle of justice is required. In particular, a Christian understanding of justice according to virtue ethics offers advocacy for the underprivileged, hence it is necessary to probe more deeply into ethical approaches based on this model of justice.

In the eighth chapter, on women and genetic technologies, I explore the questions associated with the new genetic technologies from a feminist perspective. I examine particular feminist approaches to ethics, such as an ethic of caring and postmodern critiques of science practice. I ask how the challenge of genetics is influencing debates among feminists about science practice. I explore how far any genetic intervention is compatible with feminist principles. I argue that a Christian virtue ethic is compatible with a holistic understanding of ethics and is more realistic compared with other feminist approaches.

The penultimate chapter explores the broad issues associated with genetic intervention in the community of life. The purpose of this chapter is to situate the discussion in previous chapters, which has largely focused on intervention in the human community, in the wider society of animals and the natural world. This chapter develops this idea further with reference to a communitarian understanding of virtue in the human community. I ask, in particular, how far other creatures can be seen as ‘other’ in relation to humans, but also an inclusive part of a covenant community. I suggest that friendship is integral to an understanding of Christian virtue ethics, and that a modified understanding of friendship can be extended to include non-human creatures. This leads to consideration of how far genetic intervention in the non-human world expresses the virtues of charity and wisdom. Hence I challenge the idea that virtue ethics is inevitably ‘anthropocentric’, though it does call to account a deeper understanding of ‘human being’ as underlying ‘human agency’.

The concluding remarks explore the particular implications of a Christian virtue ethic for the practice of genetics in all its ramifications. It draws the different strands of the book together and argues that our future depends on a revaluing of science, not just in terms of its utilitarian benefits, but also in terms of a Christian virtue ethic. In particular, what kind of science can we expect if we focus more on humans as agents, and less on humans as producers of the new technologies?

I am conscious that while the areas discussed in this book are wide-ranging, some readers might have preferred me to discuss areas that have not been included. I have, for example, woven the discourse about stem cells and cloning into the debates, rather than devote specific chapters to these questions. I have also decided not to cover evolutionary psychology and Darwinism in any detail, while referring to key examples where these are relevant to current practice. Nonetheless, my impression is that those areas I have tried to cover in this book have not received sufficient attention by ethicists and theologians, and this volume is an attempt to remedy that gap. My hope is that it will be useful not only for theologians, ministers, teachers and ethicists, but also for medical practitioners and those who are engaged in policy-making.