Globethics Repository



Religious Perspectives on Embryo Donation and Research

This page was generated automatically upon download from the Globethics Repository. More information on Globethics see https://www.globethics.net. Data and content policy of Globethics Repository see https://repository.globethics.net/pages/policy.

Item Type	Article
Authors	Sachedina, Abdulaziz;H Kerridge, Ian;Benson, Rod;F C Jordens, Christopher
Publisher	The Royal Society of Medicine Press Ltd
Rights	With permission of the license/copyright holder
Download date	2026-11-02 04:06:52
Link to Item	http://hdl.handle.net/20.500.12424/184185

Religious perspectives on embryo donation and research

Ian H Kerridge*, Christopher F C Jordens*, Rod Benson†, Ross Clifford† and Rachel A Ankeny*‡ with commentaries by Damien Keown, Bernadette Tobin, Swasti Bhattacharyya, Abdulaziz Sachedina, Lisa Soleymani Lehmann and Brian Edgar

*Centre for Values, Ethics and the Law in Medicine (VELiM), University of Sydney, Camperdown, NSW 2006, Australia; †Morling College, Sydney, Australia; ‡School of History and Politics, University of Adelaide, Adelaide, Australia
E-mail: kerridge@med.usyd.edu.au

Abstract

The success of assisted reproductive technologies (ARTs) worldwide has led to an accumulation of frozen embryos that are surplus to the reproductive needs of those for whom they were created. In these situations, couples must decide whether to discard them or donate them for scientific research or for use by other infertile couples. While legislation and regulation may limit the decisions that couples make, their decisions are often shaped by their religious beliefs. Unfortunately, health professionals, scientists and policy-makers are often unaware of the way in which faith traditions view ART and decisions concerning the 'fate' of surplus embryos. In this paper scholars representing six major religious traditions provide a commentary on a hypothetical case concerning the donation or destruction of excess ART embryos. These commentaries provide a rich account of religious perspectives on the *status* of the human embryo and an insight into the relevance of faith to health and policy decisions, particularly in reproductive medicine, ART and embryo research.

The increasing availability and utilization of assisted reproductive technologies (ARTs) has led to an accumulation of frozen embryos that are surplus or excess to the needs of those for whom they were created within fertility clinics worldwide. Couples who have succeeded in becoming parents and have no further desire to reproduce are then faced with a difficult choice about the use of their frozen embryos – to discard them, or donate them either for scientific research or for use by other infertile couples.

While relevant legislation and regulation may guide (or limit) the options open to couples in this situation, other considerations may influence the decision that couples make, including the desire to avoid regret, to

Ian Kerridge is Director and Associate Professor in Bioethics at the Centre for Values, Ethics and the Law in Medicine at the University of Sydney and Staff Haematologist/Bone Marrow Transplant physician at Westmead Hospital, Sydney, Australia. He is the author of over one hundred papers in peer-reviewed journals and five textbooks of ethics, most recently *Ethics and Law for the Health Professions* (Federation Press, 2009).

Christopher Jordens is a senior lecturer in bioethics at the Centre for Values, Ethics and the Law in Medicine at the University of Sydney, Australia. He is also a clinical research fellow at the Centre of Clinical Research Excellence, Infection and Bioethics in Haematological Malignancies, Westmead Hospital, Sydney. He was a founding editor of the *Journal of Bioethical Inquiry* and has written widely on topics related to cancer, bioethics and communication in health care.

Rev Rod Benson is Ethicist and Public Theologian at the Tinsley Institute, Morling College, Sydney, Australia and Public Affairs Director for the NSW Council of Churches. He serves as Secretary of the Social Issues Committee, Baptist Union of NSW, and consultant ethicist for the Baptist Union of Australia. He represents Baptists on the NSW Ecumenical Council and the National Council of Churches in Australia. He has published numerous popular articles and papers on ethics and public policy, as well as pastoral and theological issues, short stories and poetry.

Rev Dr Ross Clifford is the Principal of Morling Theological College, Sydney, Australia. Prior to entering the Baptist ministry, he practised as a solicitor and barrister. He is the author of eight books and numerous articles. He is the past President of the Baptist Union of Australia, a former President of the NSW Council of Churches and he is Chair of the Commission on Christian Ethics, Baptist World Alliance. He lectures in ethics and his academic qualifications include an MTh (University of Sydney) and ThD (Australia College of Theology).

Rachel A Ankeny has degrees in Philosophy, Bioethics, and History and Philosophy of Science. She is associate professor of history at University of Adelaide, Australia. Her research interests include the roles of models and case-based reasoning in science, the philosophy of medicine, the history of contemporary life sciences, and ethical and policy issues in genetics, reproduction, women's health, and embryo and stem cell research, among other topics.

DOI: 10.1258/ce.2009.009046

Robert and Sue are the parents of three healthy children, all conceived following *in vitro* fertilization (IVF). After many years of coping with infertility, they feel that they have now completed their family and do not wish to have any more children. They have four embryos remaining in cryopreservation (frozen storage). Their obstetrician offers them three choices: disposing of the embryos that they judge to be excess to their needs; donating the embryos to another couple; or donating the embryos for research. They are also advised that their embryos cannot remain cryopreserved indefinitely and that they will be destroyed after five years according to legislation in their state.

Sue, in particular, finds this a terrible decision to have to make, as she feels a great deal of responsibility for her embryos and is acutely aware that her children – Tom, Jessica and Elise – were all once embryos themselves. She and Robert discuss donating the remaining embryos for research as they do not feel comfortable either destroying the embryos or donating them to other couples. Sue is particularly interested in donating them for research into infertility to help others who want to have children and are facing the difficulties that she and Robert experienced. They are uncertain, however, how a decision to donate their embryos for this type of research, which destroys the embryos in the course of experimentation, would be viewed within the context of their faith.

advance scientific knowledge, to avoid 'wasting' embryos and to help other infertile couples, and to act in accordance with their beliefs regarding the value and appropriate ends and means of scientific research, and the moral status and potentiality of embryos.[1–3] Each of these considerations may, in turn, be shaped by the beliefs, values and practices of a couple's faith community. In light of this, it is important that health professionals, scientists and policy-makers are aware of the ways that religious beliefs and practices may impact upon decisions to donate or destroy embryos and develop an understanding of the principal differences between, and within, the major religious traditions with respect to the status of the human embryo.

To this end, we solicited commentaries on a hypothetical case from scholars representing six major religious traditions. The commentaries do not attempt to exhaustively survey the relevant discourse or views within these traditions, and other members of these traditions may well draw alternative conclusions from the same or different authoritative sources. The commentaries do, however, offer the considered responses of leading experts from each religious tradition and each are grounded in the key texts and in scholarly and popular interpretations of the respective doctrines.

A Buddhist perspective

Professor Damien Keown *is Professor of Buddhist Ethics at Goldsmiths College, University of London, UK. His main research interest is Buddhist ethics, especially theoretical foundations and normative applications, with particular reference to medicine and biotechnology. He has published widely on Buddhist ethics and related subjects.*

There is no orthodoxy among Buddhists on the questions raised by this scenario. The subject has been little studied and there is little in the way of position papers by Buddhist groups or statements by authoritative teachers to guide the laity.[4–6] In general, in Asia, Buddhist monks avoid commenting on lay matters, particularly those involving reproduction, regarding them as inappropriate for celibate practitioners who have renounced worldly life. In the West, both Buddhist monks and lay Buddhists are more prepared to venture an opinion, but there is still very little in the way of informed comment. In general, bioethics remains a field of mainly Christian expertise, and Asian religions have contributed very little to the contemporary debate.

The mainstream Buddhist view, as set out in the oldest recorded scriptures such as the Pali Canon (committed to writing in the first century BCE), is that individual human life begins at fertilization and that any interference with its development from that point on is a breach of the First Precept, which forbids causing harm or injury to living creatures (human and other). Since Buddhists believe in reincarnation, the new life that comes into being at fertilization is simply an old one being recycled. This makes it difficult to ground arguments to the effect that moral protection should only be afforded from a subsequent point of embryonic development when further capacities, such as sentience, for example, are present. Given the clarity of the Buddhist position on embryology and its emphasis on non-violence (*ahimsa*) as a basic moral principle, the general stance it adopts on reproductive medicine is a conservative one.[5]

Applying these observations to the scenario in question, the first general comment would be that as Buddhists Robert and Sue should not have embarked on a course of IVF treatment, which envisaged the creation and destruction of spare embryos as part of the programme. There is no Buddhist objection to IVF as a technique in itself: since Buddhists do not believe in God they do not see the creation of life in the laboratory as raising theological problems. Indeed, if all fertilized embryos were implanted it would be hard to see any Buddhist objection to the technique. However, since this is rarely the case, as in the present instance, Robert and Sue now face a dilemma which cannot be resolved within the moral teachings of their faith.

As regards the options that are now available to the couple, the problem is to determine which of the three provides the 'least worst' solution. Option one, destroying the embryos, is ruled out by the First Precept. In terms of Buddhist teachings – clearly stated in authoritative commentaries – there is no moral difference between destroying an embryo and taking the life of an adult. Regarding option three, while Sue's compassionate motive of helping other couples through the research is commendable, it would not justify the deliberate destruction of life as a means to achieve her good end. This leaves only option two, donating the embryos to another couple. This must be the preferred option here since it does not involve taking life. However, it is not an ideal

solution since the separation of children from their genetic parents destroys a natural bond, and children have a right to expect to be brought up in a loving family cared for by the parents who conceived them. From a Buddhist point of view, furthermore, there is a teaching well attested in scripture that the family into which one is born may be determined by karmic causes. Thwarting one's karmic destiny is regarded as unwise, and so in normal circumstances it would be seen as preferable for children to be raised by their genetic parents rather than given up for adoption.

The above represents the traditional position. Some schools of Buddhism, typically those belonging to the Mahayana tradition prevalent in the countries of North Asia such as Tibet, China, Japan and Korea,[6] may allow the virtue of compassion (*karuna*) to attenuate the strictness of the First Precept and regard experimentation for humanitarian reasons as permissible. It is difficult to generalize, and the majority would probably not adopt this interpretation. A more liberal reading of the ancient teachings is not uncommonly promulgated by Western lay Buddhists. Some of these have sought to justify abortion along these lines, so it would not be surprising to see similar arguments employed in the context of embryo research. However, the weight of tradition on the whole is against such liberalization.

A Catholic perspective

Associate Professor Bernadette Tobin *is Director of the Plunkett Centre for Ethics at St Vincent's Hospital, Sydney, Australia, and Reader in Philosophy at Australian Catholic University. Dr Tobin is Honorary Ethicist at the Children's Hospital at Westmead, Honorary Associate Professor in the Faculty of Medicine at the University of Sydney, and Conjoint Associate Professor in the School of Medicine at the University of New South Wales.*

We are not told whether Richard and Sue sought advice about Catholic teaching on IVF before they decided to use it to have children. This teaching, as it applies to their circumstances,[7] can be summarized as follows. The Church first reminds Catholics that the *desire* for children forms only a part of what needs to be taken into account in the moral evaluation of any form of IVF. The *process* of procreation cannot 'borrow' its moral quality from that desire: it must also be evaluated *in itself*. The Church then teaches that the process of IVF, in which fertilization 'is brought about outside the bodies of the couple through actions of third parties whose competence and technical activity determine the success of the procedure establishes the domination of technology over the origin and destiny of the human person' and that this 'relationship of domination is in itself contrary to the dignity and equality that must be common to parents and children'. The Church concludes that only the 'act of conjugal love' is a 'setting worthy of human procreation'. In short, a child should be the fruit of an act of marital sexual intercourse.[8] It should be noted that some Catholic theolgians challenge this application of traditional Catholic teaching to the so-called 'simple case' of IVF.[9]

Robert and Sue would hardly need to be told that their three children are the 'gifts' and 'blessings of God'.[10] But perhaps they do need reminding that this is also true of their four remaining embryos (an idea that Sue seems intuitively to discern for herself in her 'acute awareness' that her three children were all once embryos themselves). When the Church speaks of the inviolability of an innocent human being's right to life from the moment of conception until death, it inevitably addresses the question of the status of the embryo. But the emphasis of the teaching is on how the human embryo ought to be respected and treated – as a *person*. So a Catholic adviser would certainly try, with (it is to be hoped) sensitivity to their current circumstances, to help Robert and Sue to reflect on the grave ethical dilemma their actions have generated, to which there is no unproblematic solution. Reconsidering their view that they have completed their family and asked to consider having the embryos implanted, over time, in Sue's uterus, would require further indignities to the embryo involved in IVF procedures. But continued cryopreservation would fail to respect the personhood of the embryo.

Although Sue's wish to help others who suffer from infertility is admirable, a Catholic adviser would encourage her to see for herself that the worthy goal of scientific research into infertility ought not to be sought by any available means, in particular that it ought not to be sought by activities that destroy human embryos. The end does not justify the means, the adviser might say.

So what are Robert and Sue to do? Giving up the embryos for adoption by another couple or couples who are prepared to bring them to birth and look after them as their own children would have the merit of saving these embryonic children and demonstrating reverence for their lives. But the adviser would have to admit that it is currently a matter of debate among Catholic theologians whether it is legitimate for another couple to adopt 'orphan' embryos.[11]

Most Catholic thinkers would argue that the only other option that truly honours the personhood of these human embryos that is now available to Robert and Sue is to have the embryos thawed, rehydrated, returned to their natural living state, and given appropriate marks of human and religious respect as they succumb to death. In so doing, Robert and Sue would not be seeking to destroy the embryos, but would be allowing them to die in circumstances in which there is no ethically sound way of maintaining their lives.[12] In fact, Robert and Sue should insist that they will not permit any deliberate destruction of these embryos, not even as they die.

A Hindu perspective

Dr Swasti Bhattacharyya *is Assistant Professor of Philosophy and Religion in the School of Social Science, Philosophy and Religion at Buena Vista University, Storm Lake, Iowa, USA. She is author of* Magical

Progeny, Modern Technology: A Hindu Bioethics of Assisted Reproductive Technology *(State University of New York Press, 2006), and has contributed articles and chapters to various books and journals.*

Like most religious traditions, Hinduism is not monolithic. Indeed, it is important to remember that the term 'Hinduism' was originally used as both a geographical and a religious indicator for those who lived east of the Indus River, a natural border in Northwest India. From the very beginning, theological unity, a central leader, or a text were not elements that defined Hinduism. However, there are a number of principles shared by many of those who self-identify as Hindu that can provide insights into Sue and Robert's case.

Just like Sue and Robert, central characters within the *Mahabharata*[13] – Kunti and her husband King Pandu, and Gandhari and her husband King Dhirtarashtra – struggle with infertility.[14] Like Sue and Robert, these mythical characters also take action to circumvent their inability to have children. Kunti gives birth to sons by utilizing a special mantra given to her; a mantra that obligates the gods she calls upon to come and impregnate her. Gandhari's children are also born thanks to extraordinary actions. Having been pregnant for two years, Gandhari delivers a dark, solid mass of flesh. Following orders, she sprinkles the products of conception with water, and the mass falls apart into 100 embryos, each of which are the size of a thumb joint. Each is incubated in clay pots filled with *ghee* (clarified butter).

In Kunti and Gandhari's stories and other texts such as *Bhagavad Gita* and the *Laws of Manu*, we find central principles that contextualize human actions that are relevant to Sue and Robert's case. First, there is a regard for society, attention to how our actions relate to the needs of society as a whole. Second, within this context of society, there are the responsibilities and flexibility of *dharma*. While *dharma* is multifaceted and context-specific, it ultimately relates to our actions, roles and responsibilities within our community. *Dharma* may not provide universal guidelines for everyone, but it does guide each individual to carefully examine a particular situation and determine what might be the best course of action. Finally, while some may fear that the non-universal, context-specific nature of *dharma* leads to an irresponsible 'anything goes' attitude, the theories of *karma* and a commitment to *ahimsa* (non-violence) actually hold each person to the highest level of accountability.

While *karma* is often understood as fatalistic or negative, it is neither. *Karma* is action, actions that are followed by results. The *Bhagavad Gita* calls on us to act while not being attached to our actions or to the fruits of our actions.[15] Acting without attachment becomes a guiding principle that directly influences how we *ought* to act. Greedy, self-centred actions are impossible to perform if we are not attached to our actions. Additionally, by acting out of a commitment to *ahimsa*, we again find guidelines for how we are to act.

As we apply to Sue and Robert's case the above 'Hindu' principles as illuminated through the *Mahabharata*'s stories, we find a number of parallels. There is an acceptance of human creativity, of technology if you will, as suggested by Gandhari's machinations. There is an understanding of the desire, or *dharma*, to have children and be parents, as we see Kunti and Pandu utilize the mantra to fulfill their desire to have children. However, their use of the mantra was tempered with their societal responsibilities. Since they knew that the god Dharma, the god of order, merit and righteousness, would refuse to participate in their plan if it was unlawful and against societal norms, they called upon him first. So too should Sue and Robert consider the needs of society as they move forward.

The principles of *dharma*, *karma* and *ahimsa* acknowledge the difficult struggle regarding what Sue and Robert should do with the remaining embryos. The couple understands these embryos are not mere tissue, but potential humans, for the three children they now have were once embryos. A commitment to *ahimsa* places value on life, in its variety of forms, and aims to do the least amount of harm possible. To this end, Sue and Robert are hesitant to simply destroy them. Sue's desire to donate them for infertility research to help others is considering the larger societal needs while at the same time doing the least amount of harm. The principles discussed here would also not preclude them from donating the embryos to another infertile couple. Indeed, if Sue and Robert were to act without attachments, they could donate the remaining embryos both to other couples and for further research.

An Islamic perspective

Professor Abdulaziz Sachedina *is Professor of Religious Studies at the University of Virginia, USA. His PhD is from the University of Toronto. He has been visiting professor at Wilfrid Laurier, Waterloo and McGill Universities in Canada, Haverford College and the University of Jordan, Amman. He has lectured widely in East Africa, India, Pakistan, Europe and the Middle East. He contributed to* Human Rights and the Conflict of Cultures: Western and Islamic Perspectives on Religious Liberty *(University of South Carolina Press, 1988) and has authored* Islamic Roots of Democratic Pluralism *(New York: Oxford University Press, 2001). He is author of a chapter titled 'Human Clones: An Islamic View' in* The Human Cloning Debate, *edited by Glenn McGee (Berkeley, CA: Berkeley Hills Books, 1998). He is presently working on a major study on* Islamic Law for Muslim Physicians: The Spiritual Foundations of Biomedical Ethics in Islam *(forthcoming 2012).*

Islamic legal–ethical tradition is based on scriptural sources that include the Qur'an and the Tradition (*sunna*). In order to deduce any prescriptive ruling, Muslim scholars search for a precedent in these two sources. When these sources are silent on a matter, then two principles are applied to deduce a ruling. These are *maslaha* (Public Good) and *la darar wa la dirar* (no harm no harassment). Consideration of public interest or the common good has long been utilized by Muslim jurists

for accommodating and incorporating new issues confronting the community and is used as a rational principle to derive new rulings out of concern for the interests and welfare of the community. This is justified on the ground that it is provided for in the revealed text where the objectives of the sacred law – the Shari'a – are: protecting the people's religion, lives (*nufus*), reason (*uqul*), lineage (*nasl*) and property (*mal*).

In relation to what advice should be given to Robert and Sue about what they should do with their 'surplus' IVF embryos, Muslim jurists' primary concern is the ethical–legal status of the embryo prior to implantation in the uterus. While rulings relating to this question are generally deduced from the precedents that deal with fetal sanctity, the legal–ethical status of the preimplantation embryo remains unclear as there is no clear definition of embryo or fetus in the Muslim juridical tradition and ARTs have succeeded in making possible what is impossible in nature, creating entities and situations previously unaddressed by Muslim scholars. These new technologies have, therefore, raised challenges not only to human dignity and respect for the sanctity of life, but for Muslim rulings on the embryo, fetus and attainment of personhood (which is established much later in the gestational period). The questions await responsible treatment by Muslim scholars.

Donating a fertilized 'surplus' embryo to another couple is out of the question as the child must be connected to the biological parents. The preservation of proper lineage, as stated above, is one of the main purposes of the Shari'a. Guaranteeing a child's untainted identity through legitimate conjugal relationship between a man and a woman in marriage is so essential in Islam and Muslim culture that it is regarded as a child's inalienable right. Proper lineage in Muslim culture, as we learn from several rulings prohibiting or questioning different forms of ARTs outside proper (legal Muslim) marriage, is critical in forging an appropriate relationship between the parents and the child, and in claiming rights that accrue to the child in the Shari'a.

There are, however, issues other than lineage that may determine how Muslim scholars would rule in relation to embryo donation, which relate to the hermeneutic possibility that life begins following 'ensoulment' (usually after first trimester). Qur'anic references to the embryonic 'journey' to personhood suggest a later ensoulment, leading many jurists to conclude that at the conception the conceptus is less than a 'full human' person. Moreover, when it comes to protection and rights of the embryo, it is generally 'the implanted zygote' that is accorded the status of rights bearer. Many prominent Muslim scholars do not apply sanctity of life principles to embryos outside of the womb and juridicial rulings may, therefore, argue on the basis of 'public good' that frozen embryos are not 'rights bearers', and stem cell research is permissible since it provides the possibility of discovering cures for incurable disease. The donation of embryos for research therefore is acceptable.

Issues relating to lineage, to the 'placement' of the embryo within a family and to the 'ownership' of an embryo also become important in relation to the possible use of frozen embryos by a woman following the death of her husband. It is unclear whether the frozen embryos are really 'property' in the usual sense of the word. For while there is no doubt that when both father and mother are alive, both have a right to determine the use of their embryos, it is unclear what happens when one party dies. Indeed, it could be argued that following the death of the husband, the contract of the woman wedded to him becomes invalid and she is no more his wife. Hence, the newborn could not use his name as part of her/his identity.

Indeed, as the Qur'an and the Tradition regard perceivable human life as commencing at *later* stages in the biological development of the embryo and fetus, and (before, at least, the first trimester of pregnancy) there is hardly any consideration given to the moral culpability of embryo destruction, Muslim jurists tend to ignore perceived ethical dilemmas concerning the donation of embryos for research purposes. Furthermore, the silence of the Qur'an regarding the criterion for moral status of the fetus allows jurists to make distinctions between a biological and moral person, and between the frozen IVF embryo and the *in utero* embryo enabling the donation of 'surplus' embryos for use in stem cell research.

A Jewish perspective

Dr Lisa Soleymani Lehmann *is the Director of the Center for Bioethics at Brigham and Women's Hospital and Assistant Professor of Medicine at Harvard Medical School, USA. Dr Lehmann is a graduate of Cornell University and the Johns Hopkins University School of Medicine. She completed her residency training in internal medicine at Johns Hopkins Hospital and a PhD in Philosophy at Johns Hopkins University. She studied Talmud at Midreshet Lindenbaum and Drisha Institute. Her research is focused on empirical and philosophical analysis of contemporary ethical issues in medicine. She is an active member of the Brigham and Women's Hospital Ethics Consultation Service and Ethics committee.*

The case of Robert and Sue raises a series of challenging ethical questions that confront infertile couples. In this commentary I present what I believe to be the dominant Jewish perspective on these questions, while noting the diversity of opinions that exist within Judaism. I shall argue that (1) Judaism not only permits the use of ARTs, but that when a couple cannot conceive a child through sexual intercourse, ARTs are encouraged; (2) the majority opinion within Judaism does not assign significant moral status to an embryo prior to 40 days of gestation and prior to implantation within a uterus; and (3) Judaism would encourage couples who have spare embryos to donate their embryos to other infertile couples.

Judaism places a very high value on having children and all Jewish men have a biblically rooted obligation to procreate that is fulfilled by having two children. Couples are, however, encouraged to have as many children as possible for children are also considered a blessing. Although Judaism generally encourages ARTs, not all

approaches to infertility are considered equally permissible. From a Jewish perspective IVF would be most acceptable when it used Sue's eggs and Robert's sperm to overcome their infertility. The concern with this scenario is the method by which Robert's sperm is obtained. There is a minority position that masturbation in order to obtain sperm for ARTs is a violation of the prohibition 'not to destroy seed in vain'.[16] Most rabbinic authorities, however, argue that procuring sperm for the purposes of creating a child is not 'in vain'.[17] Those who disagree with this interpretation of 'in vain' prefer that sperm be collected from a woman's vaginal canal after intercourse. The use of ARTs with donor sperm is more controversial. Questions arise about whether such a procedure constitutes adultery and the possibility of incest between children of the same sperm donors who have different mothers. Despite these concerns, prominent authorities permit the use of donor sperm.[18]

To guide Robert and Sue on the question of what to do with their spare embryos, it is first necessary to understand the moral status of an embryo within Judaism. In Jewish law, an embryo is considered to be 'mere water' until the 40th day of gestation.[19] This view of an embryo leaves room for the use of some embryos for research.[20] Furthermore, an embryo that is outside of a uterus cannot develop into a human being and thus it is not owed the same respect as an embryo that is implanted within a uterus.[21]

Since Robert and Sue's embryos exist outside of a uterus, from a Jewish perspective it is morally permissible to use these embryos for research even though that research will lead to the destruction of the embryos. As I understand it, however, Robert and Sue have four options of what to do with their embryos. They could destroy them, cryopreserve them, donate them for research or donate them to an infertile couple. From a Jewish perspective all of their options are not ethically equivalent. In Judaism there is a general biblical prohibition against waste, *bal tashchit*.[22] Destroying embryos that could be used for life-saving research or that could be used to produce life would clearly be a violation of this prohibition. The alternative of cryopreservation would be preferable to the immediate destruction of the embryos. Although Robert and Sue believe that they have completed their family, they should be counselled on the possibility of a change of heart. They might confront the tragic situation of one of their living children dying or needing a life-saving bone marrow transplant. They might consider creating another child who could be a perfect match for their ill child. Although this scenario raises other ethical questions, from the perspective of Jewish law it would be permissible. It is possible that they should keep their options for another child open until they approach the five-year limit and at that time make a decision to either donate the embryos to another couple or to research.

The third alternative of donating the embryos to research is a laudatory choice and one that would be ethically permissible.[23] The use of embryos for research holds the promise of disease prevention, improved treatment and the possibility of curing disease. The potential of this research to alleviate human suffering and save life is understood as religious duty. The alleviation of human suffering through the advancement of scientific research, however, is not imminent. It will take years before the advances from embryo research are translated into clinically significant implications for patients. Robert and Sue have the opportunity to immediately alleviate the human suffering of other infertile couples by donating their embryos to other couples. From a Jewish perspective, donating embryos to other infertile couples is the preferable option. This option is consistent with the general belief within Judaism that children are a blessing. Robert and Sue would thus be doing an act of *chesed*, loving kindness, by assisting other infertile couples to have children. The donation of embryos to other couples would result in the immediate relief of human suffering and in so doing would help couples fulfil their religious obligation to procreate. The centrality of having children within Judaism and the opportunity to relieve human suffering while helping others fulfil a religious duty to procreate are reasons why the option of donating embryos to infertile couples is preferable to donating embryos to research.

There is no doubt that some couples will find the option of donating their embryos to infertile couples difficult. The idea of having genetically related offspring with whom Robert and Sue do not have a relationship may create a host of psychosocial issues. These concerns should be discussed within the context of an understanding of the *chesed*, which Robert and Sue are doing by helping infertile couples. Although Judaism would encourage the donation of embryos to other couples, this would not be obligatory. Thus, couples who are uncomfortable with this option should be encouraged to donate their embryos for research.

An Evangelical–Protestant Perspective

Rev Dr Brian Edgar *is Professor of Theological Studies at Asbury Theological Seminary in Wilmore, Kentucky, USA. He is a Fellow of The Institute for the Study of Christianity in an Age of Science and Technology and a member of the World Evangelical Alliance Theological Commission. Brian was previously Director of Public Theology for the Australian Evangelical Alliance and lectured in theology and ethics for 18 years at the Bible College of Victoria where he was also Academic Dean. Dr Edgar is the winner of three Templeton awards for published writing in the area of science and theology. He lives in Wilmore, KY and Melbourne, Australia.*

Protestant perspectives on the ethical issues which Robert and Sue are facing will be derived from principles and convictions derived from three fundamental Reformation principles: *sola scriptura*, *sola fidei* and *sola gratia*.[24] Robert and Sue have chosen to utilize ARTs to develop their family. It should be pointed out, firstly, that a biblical evaluation of marriage does not reckon childless couples to be inferior in any way. Nonetheless, the use of technology to allow a marriage to achieve the good of procreation is not necessarily considered as an

instance of an unwarranted 'playing God' but rather as a form of 'stewardship' and an appropriate use of technology to overcome a physiological failure that inhibits the good of procreation.[25]

It appears that Robert and Sue have not previously considered all the implications of the use of ARTs. The good that is achieved for the family requires an acceptance of the appropriateness of the loss of embryonic life (in research and the reproductive process) as well as a decision about 'excess' embryos. The loss of embryonic life may be justified analogously with the loss of embryonic life in natural conception but some will not find that acceptable, given the moral status of the embryo.

At the level of *individual* life there are significant concerns about the embryo which is, undeniably, a stage in development of a human being. Some will see a distinction between personhood and physical form and thus will approve of destructive research up to, often, 14 days (which is the time of formation of the primitive streak – the precursor of the central nervous system). But just as there is no scientific rationale for saying that the embryo becomes a new entity at implantation, there is no theological justification for believing embryos to be fundamentally morally transformed at that, or any other, point. To define embryos purely from a scientific point of view as merely a collection of cells or a genetic entity produces an impoverished view of humanity. There is no understanding of humanity apart from the birth, life, death and resurrection of Jesus Christ. As a being made in the 'image of God' (Genesis 1:26) and ultimately being conformed to the image of Jesus (Romans 8:29), the embryo exists in relationship with God. An embryo may not have 'personality' but it has 'personhood' in the sense of that quality or attribute, which constitutes the fundamental identity of every human entity. It should not be treated merely as a means to an end.[26] Although it may at times receive differential treatment (when, hypothetically, in conflict with the life of the woman carrying it) it ought to be exempt from that utilitarian cost–benefit analysis, often associated with justifying destructive research at up to 14 days (which, if utilized, also necessarily justifies research well beyond that point).

At the level of the *family* there are concerns about the use of technology to re-form family structures. Approval of the use of ARTs in Robert and Sue's family situation does not necessarily imply endorsement of the use of other (e.g. donor) forms of ARTs. The use of donated embryos is not analogous to adoption, where the intent is to provide families for children, rather than children for families. Some will justify donation as an instance of profound grace and love (a), a generous gift from one couple to another, and will define families in terms of the inner depth of relationships (b) (love, care, companionship and commitment) rather than in terms of a fixed structure of relationships (genetic relationship, man–woman, parent–child). It may also be seen as another example of the redemptive healing of infertility (c).

However, it can be argued[27] against (c) that this is not healing so much as finding an alternative, compensating solution[28] which, contra (b), disrupts families by introducing a connection with another couple who cannot easily be divorced from legitimate interest (concerning genetic history, family relationships, welfare, etc.) in the child, except by the complete commodification and depersonalization of the embryo. In addition, (a) focuses on the needs of the parents and does not address the good of the children who are no longer the good that is sought (as in normal procreation) but have become the means to the good of the infertile couple. In such a situation, it is only logical that such children are formed in such a way as to maximize the good of the parents at end. This actually begins immediately with the selection of the best embryos for implantation and ends, ultimately, with 'designer children'. The 'excess' embryos are best treated like those that naturally pass away in the process of conception, rather than as a means to some other end.

In countering the modern emphasis on the rights of the individual (either the embryo or the parents), it is also important to reflect on the broader *social* implications of the technology.[29] On the one hand, technologies can operate redemptively, but they can also seduce us into putting our real trust in human ingenuity and mastery of nature. Having created technology to shape the world it then turns and shapes our society, our values and our relationships. The problem is the absence of an agreed philosophical or theological framework on which society can adequately consider the implications of these new developments. This is more the result of a failure of theology to captivate the minds of people, and the failure of the church to model a way of life that is a genuine alternative to the technique-ism so powerfully present in modern society.

Sue and Robert should ensure that they become fully informed and, while being aware of cultural trends and legislative principles, their primary need is to take seriously their responsibility as Christians. They should pray and seek wisdom, examine their motives, listen to counsel and make themselves aware of the corporate wisdom of the church – even if it is somewhat varied. In particular, they need to be formed in their view by biblical principles and virtues.

Discussion

Our world view helps us to make sense of our experience and relationships on a personal level, and it also shapes attitudes and moral responses to issues of public importance. For many people, spiritual or religious beliefs are a major feature and a major determinant of their world view; they are a fundamental part of both personal and social existence, and they are brought to bear in decisions about medical and scientific issues of moral import. In pluralist societies, health-care professionals and policy-makers should understand that religious beliefs, values and practices may vary within and between religious traditions. It also helps to understand how religious approaches to medicine, health policy and bioethics may differ from secular approaches. This is no simple task,

however, as many religious traditions are inaccessible to other world views and are not structured to address – and do not speak with clarity or precision about – specific ethical issues arising from the application (or potential application) of medical science and modern technology to human needs and experience, such as infertility. They rely instead on the nuanced application of general principles or analogies, or interpretations of sacred texts. The commentaries in this article provide clues as to how one may better appreciate the relevance of faith to health and policy decisions and understand the points of commonality and tension with contemporary medicine and secular bioethics.

Perhaps the most obvious difference between medicine and faith traditions with regards to ART is the degree to which they accept its use to overcome infertility. In most liberal democracies, ART is a well-accepted response to infertility – to the extent that most debate concerns not its intrinsic morality but the extent to which it should be funded from the public purse. In contrast, the Catholic and Buddhist perspectives are highly antipathetic to the use of ART. The Protestant perspective is open to the use of ART but contests the moral basis of donor gametes. The Jewish perspective accepts ART so long as certain prohibitions are observed. The Hindu perspective is open to the use of this (and most other) biomedical interventions. Finally, the Islamic perspective leaves ART as an open question awaiting a response from Muslim scholars. These differences are fundamental to consideration of the issues surrounding the donation of 'excess' ART embryos for research, as they provide the broad context in which such decisions are made and indicate the cultural dynamic that may surround Robert and Sue.

But it is also clear from these commentaries that religious perspectives on ART share with medicine, and with secular bioethics, an account of ART that takes into consideration more than simply the moral status of the embryo. In each case a complex range of considerations influence the way that decisions about ART and embryo donation are evaluated. In medicine, empirical research has clearly demonstrated that a number of psychological, social, economic, cultural and moral concerns influence the decisions that women make about the fate of excess embryos.[1–3] Bioethics, in turn, no longer sees reproductive issues simply in terms of the moral status of the embryo/fetus or as conflict between a women's right of bodily authority and an embryo's or fetus's right to life.[30] Likewise, it is clear from these commentaries that while religious traditions emphasize the moral status of the embryo they also share a number of other concerns, or features, including reference to distinct cosmologies, reference to scriptural and religious authorities, incorporation of specific norms relating to the family, and the use of particular moral concepts that take the form of both prohibitions and positive exhortations.

Unsurprisingly, perhaps, the commentaries differ markedly with regards to the moral status of the embryo. The Buddhist commentary rests on an explicit ontological claim – human life begins at fertilization (although it does not begin so much as continue through reincarnation). The Catholic commentary appears not to rest on an ontological claim, for the embryo should be treated as a person from conception, and whether the embryo is a person or a being with a soul is (we are told) a point on which the Catholic church has no formal teaching. The Protestant perspective similarly appears to turn not on what the embryo is, but on how it should be treated (i.e. not as a means). In both cases, however, these moral norms conceal a basic ontological claim that emerges from Christian cosmology, as embryos should be treated in some ways and not others because of what they are (i.e. divine gifts fashioned in the image of god). According to the Islamic perspective, 'ensoulment' occurs after first trimester, so before this event the embryo is less than a full person. Its moral status is also affected by its location, as outside the womb it has less moral status than it does *in utero*. The Jewish perspective is similar, both in terms of the importance attributed to location, and to the biological threshold of personhood, which in Jewish faith is crossed at 40 days' gestation. In the Hindu perspective the embryo is described simply as a 'potential' human being.

Each of the normative positions arrived at by our commentators, particularly those relating to the moral status of the embryo, can be linked to religious cosmologies. This is most explicit in the Buddhist perspective: the concepts of reincarnation and Karma, the moral status of the embryo and the prohibition on destroying it are all clearly linked. Similarly, in the Islamic perspective, there is a clear link between the concept of ensoulment and what actions are or are not allowed with respect to embryos. In the Hindu commentary, the concept of *dharma* (which has cosmological significance) is used to explain the motivation to have children in the first place. The normative position with respect to the case under discussion is established chiefly with reference to moral concepts of non-violence and non-attachment, however, rather than linking the case to Hindu cosmology. The Protestant commentary references cosmology through the Christian story of creation (Genesis) and the life of Christ, which dictates how we can or cannot treat an embryo. The Catholic perspective invokes the beneficence of a Christian god by construing children as 'loving gifts of divine goodness'. Again, this is what dictates how they ought to be treated, so there is a link between cosmology and normative conclusion. The cosmological link in the Jewish commentary perhaps needs to be inferred: Jews are said to have a 'Biblically rooted obligation' to procreate, which presumably relates to their status as a chosen people.

The religious perspectives also differ according to the emphasis they place on particular loci of authority (scripture, tradition and social roles and reasoning). The Buddhist commentary refers to the Pali Canon, the Catholic commentary to the official teachings of the Church, the Hindu commentary to a story from the *Mahabharata* (which is used not so much as a source of moral prescriptions and prohibitions as a narrative that

models culturally valued ways of behaving), the Islamic commentary to the Qur'an, the Jewish perspective to the Old Testament and the Evangelical Protestant to the Bible and to the principles of the Protestant reformation.

At the same time that they reference scriptural authorities, the commentaries all refer to non-scriptural authorities and/or to social functionaries or social roles. So, for example, the Buddhist commentary refers to monks, the Catholic commentary to the roles occupied by theologians, clerical authorities (chiefly the Congregation of the Doctrine of the Faith) and 'Catholic advisors', the Islamic commentary to the Muslim scholars and jurists responsible for Shari'a law, and the Jewish commentary to Rabbinic authority. In contrast, the Evangelical Protestant perspective is partly founded on the rejection of clerical authority, although it urges couples to make themselves aware of the 'corporate wisdom of the church'. Notably, there is also no mention of religious roles in the Hindu commentary.

Each of the commentaries also ground their positions with regards to embryo donation or destruction on moral concepts constructed as exhortations, or, more commonly, as prohibitions. The Buddhist commentary foregrounds the First Precept (*ahimsa*), which proscribes violence towards all other forms of life. The Hindu perspective also refers to the principle of non-violence (*ahimsa*) and to the principle of non-attachment. The Catholic and Protestant perspectives invoke prohibitions on using human life as a means rather than an end in itself. The Catholic perspective also explicitly proscribes deliberate destruction of human life. In the Islamic perspective, we find a prohibition that is described as 'no harm no harassment'. And in the Jewish perspective, we find reference to prohibitions on masturbation, incest, adultery and waste. As well as telling you what you *can't* do, each of the religious traditions described in these commentaries encourages the faithful to be, or to act, in a certain way. The Buddhist perspective mentions *karuna* (compassion) in connection with the Mahayana tradition. The Catholic perspective emphasizes respect for personhood, which includes positive actions (e.g. 'bringing to birth and looking after') as well as prohibitions. The Hindu commentary alludes to 'regard for society', *dharma* (manifesting as desire to produce children and parent them) and action (*karma*). The Islamic commentary invokes *maslaha* (public good) and the Jewish commentary mentions an exhortation to undertake acts of loving kindness (*chesed*). The Protestant commentary lists a set of positive Christian obligations such as praying, seeking wisdom, taking council and listening to your church.

While the characteristics described above may come as no surprise, it is, perhaps, less obvious that the six commentaries all inscribe social norms about families, and inscribe these with differing degrees of strength. In the Buddhist commentary they are inscribed very strongly: separation of children from genetic parents destroys a natural bond, as children have a right to expect to be brought up by parents who conceived them. (Under this norm, one would expect that, as a means of creating a family, adoption would be as problematic as embryo donation.) In the Islamic perspective, norms about the family are established through biological parenthood and patrilineal descent. The child should be born from a 'legitimate conjugal relationship between a man and woman in marriage' and remain connected to its biological parents. If the marriage ends (e.g. by the death of the father), the line of descent is broken and the name of the father may not be used to identify the child. The Catholic commentary stipulates that 'a child should be the fruit of an act of marital sexual intercourse'. Like the Buddhist and Islamic perspective, this prescribes a very specific notion of family as a social formation composed of biological parents and offspring. This is of particular relevance to ART as this technology has made possible many other social formations, formulations that clearly fall foul of these norms. Norms about families are somewhat less strongly articulated in the remaining commentaries. The Jewish perspective makes it clear that couples *should* procreate. While the Protestant perspective states that the Bible does not evaluate childless couples as inferior, it does show a concern for the separateness of families that is 'disrupted' by multiplying the parents. The Hindu perspective is the least prescriptive about norms of the family, but it stresses that social norms need at least to be negotiated in accordance with *dharma*. The fact that faith traditions connote particular normative ideas about family, gender relations and procreation is highly relevant in relation to ART as it is these ideals and norms, rather than any particular value or meaning ascribed to the embryo, that may determine what decisions may or may not be made about embryos and fetuses.

If one takes all of these considerations into account, it is possible to suggest that from a religious perspective, the deliberate destruction of excess ART embryos appears to be the most problematic option available to Robert and Sue as it is acceptable only from one of the six perspectives. Donation for the purposes of research appears to be an option for those who identify with Hindu, Islamic and Jewish faith traditions, but this is a highly problematic option for those within Catholic and Buddhist communities (insofar as the latter engage with such issues at all). Donation of spare embryos for reproduction is most problematic in Islam, and is subject to ongoing consideration by Catholic authorities and by Catholic organizations, some of which promote the 'adoption' of surplus embryos to prevent their destruction.[31] This option would, however, appear to be acceptable in Hindu and Jewish communities, and may be regarded as the 'least worst' option from a Buddhist perspective (although the resulting family would transgress strong norms).

Each of our commentators has addressed how faith traditions would 'deal' with embryos that are judged to be 'surplus' to a couple's reproductive needs. In this regard, it is worth noting that the case study provides no indication of any discussions with Robert and Sue prior to their use of ART about the possibility of having 'surplus' embryos or the options that would be available to them in that case. From the available literature on counselling associated with ARTs, it seems clear that omission of

such discussions is fairly common. As the commentaries underscore, practitioners should foster open and tolerant discourse beginning from the earliest stages of ART and include discussion of the social, cultural and religious factors that might influence a couple's decision-making with regard to the fate of surplus embryos. The insights provided by our commentators are invaluable in understanding the importance of faith in shaping world views, including the way that believers may confront decisions about the treatment of infertility. It is essential that health professionals do not assume, however, that knowing the faith tradition that a person identifies with is sufficient to predict their specific beliefs, practices and decisions. Religious traditions are often enormously complex and heterogeneous and vary across different cultures. In addition, there may be a discontinuity between the official teaching of a religious tradition and the personal convictions of adherents to that tradition with respect to specific issues or situations. For these reasons, while health professionals should be aware of, and sensitive to, the beliefs and values of their patients, this can never be a substitute for open, ongoing and tolerant discourse.

References and notes

1 McMahon CA, Gibson FL, Leslie GI, Saunders DM, Porter KA, Tennant CC. Embryo donation for medical research: attitudes and concerns of potential donors. *Hum Reprod* 2003;**18**:871–7

2 Choudhary M, Haimes E, Herbert M, Stojkovic M, Murdoch AP. Demographic, medical and treatment characteristics associated with couples' decisions to donate fresh spare embryos for research. *Hum Reprod* 2004;**19**:2091–6

3 de Lacey S. Decisions for the fate of frozen embryos: fresh insights into patients' thinking and their rationales for donating or discarding embryos. *Hum Reprod* 2007;**22**:1751–8

4 Keown D. *Buddhist Ethics: A Very Short Introduction*. Oxford: Oxford University Press, 2005

5 Keown D. *Buddhism and Bioethics*. London: Palgrave, 2001

6 Harvey P. *An Introduction to Buddhist Ethics: Foundations, Values, and Issues*. Cambridge: Cambridge Universtiy Press, 2000

7 The Catholic Church distinguishes 'homologous artificial fertilization' (in which conception is brought about *in vitro* with the gametes from a married couple whose resulting embryo is then transferred into the body of the woman) from 'heterologous artificial fertilization' (in which human conception is brought about *in vitro* with gametes taken from at least one donor other than the married couple). Robert and Sue have used 'homologous artificial fertilization'

8 'Instruction on Respect for Human Life in its Origins and on the Dignity of Procreation' [*Donum Vitae*], Congregation of the Doctrine of the Faith, 1987, 2.b.5

9 The so-called 'simple case' is generally described as IVF in circumstances in which it is the only way that a married couple can conceive children, the gametes are supplied by the couple themselves, and any embryos thus formed are transferred to the woman's body without interference or rejection. See McCormick RA: *Notes on Moral Theology. Vol. 1: 1965–1980*. Washington, DC: University Press of America, 1981(a). See also references cited in Fisher A. *IVF: The Critical Issues*, Collins Dove, 1989, 301. and William Daniel SJ, In vitro fertilization: two problem areas. *Australian Catholic Record*, 1986;**53**:21–31

10 *Donum Vitae*, 2.a.1

11 *Donum Vitae* sets out the Church's reasons for teaching that heterologous *in vitro* fertilization is illicit. However, in view of the many thousand frozen human embryos around the world who are now at risk of being abandoned or destroyed, a debate has arisen amongst Catholic scholars as to whether it would be legitimate for couples to adopt 'orphan embryos'. See Geach M and Watt H. Are there any circumstances in which it would be morally admirable for a woman to seek to have an orphan embryo implanted in her womb? In: Gormally L, ed. *Issues for a Catholic Bioethic*. London: The Linacre Centre, 1999:341–52. See also the symposium on this subject in *The National Catholic Bioethics Quarterly*, Vol. 5, No 1, Spring 2005

12 Catholics recognize traditional morality's distinction between deliberately killing a human being and letting a human being die in circumstances in which life-prolonging treatment would be futile, overly burdensome or not reasonably available without disproportionate hardship to others. See *Code of Ethical Standards for Catholic Health and Aged Care Services in Australia*, Catholic Health Australia, 2001

13 The *Mahabharata*, though not 'sacred' scripture, is a mammoth epic that encapsulates the whole of Indian life and plays a formative role within it. The text claims for itself 'whatever is here, on Law, on Profit, on Pleasure, and on Salvation, that is found elsewhere. But what is not here is nowhere else'. Although this text does not speak directly to IVF or other forms of reproductive technology, true to its claim, it does reflect 'Hindu' insights into the current case before us

14 The conception and birth of Kunti's children is in *MBh*. I.110-114; Gandhari's story can be found in *MBh*. I.107

15 *Bhagavad Gita* III.5, 8–9

16 Neusner J. *The Babylonian Talmud: A Translation and Commentary*. Tractate Niddah 13a. Massachusetts: Hendrickson Publishers, 2006

17 Schwadron SM. *Responsa Maharsham*. Vol. 3 no. 268. Jerusalem: Makhon Da'at Torah, 1994

18 Feinstein M. *Responsa Iggrot Moshe*. Even Haezer 1 no. 71. New Jersey: Ktav Publishing House, 1996

19 Neusner J. *The Babylonian Talmud: A Translation and Commentary*. Tractate Yevamot 69b. Massachusetts: Hendrickson Publishers, 2006

20 Breitowitz Y. The Preembryo in Halacha. See http://www.jlaw.com/Articles/28 (last checked 12 February 2009)

21 Sinclair DB. Conference: religious values and legal dilemmas in bioethics: assisted reproduction in Jewish law. *Fordham Urban Law J* 2002;**30**:71–106

22 *Tanakh: The Holy Scriptures*. Deuteronomy 20:19. Pennsylvania: Jewish Publication Society of America, 1985

23 Tendler MD, Dorff EN. *Ethical Issues in Human Stem Cell Research. Vol. III Religious Perspectives*. Maryland: National Bioethics Commission. 2000. See http://www.georgetown.edu/research/nrcbl/nbac/stemcell3.pdf (last checked 18 February 2009)

24 *Sola scriptura* does not preclude listening seriously to the voice of church tradition, the results of rational thought or the cumulative weight of experience, but nonetheless defines Scripture as the fundamental source of authority for matters of faith and practice. *Sola fidei* connects salvation to a life lived through faith alone and to the priesthood of all believers and the role of the individual conscience (as well as the guidance of the church) in making moral decisions. *Sola gratia* is the conviction that salvation is achieved and life is lived though God's initiative and power and in accord with a fundamentally gracious (loving, forgiving, caring, merciful and kind) attitude

25 See 'Theological foundations for bioethics' pages 3–22 of Chia R, Cooper D, Thobaben J, Fergusson A, Kilner J, eds. *Bioethics: Obstacle or Opportunity for the Gospel*. Lausanne Occasional Paper No. 58, Lausanne Committee for World Evangelization, 2004

26 For an alternative view see Roy Enquist 'Protestantism (Lutheran)' in Robert Nelson J, *On the New Frontiers of Genetics and Religion*. Grand

Rapids: Eerdmans, 1994; 152–63, and in the same volume, Gerald P. McKinney's 'Protestantism (Reformed)', pages 163–6

27 For other material see Kilner JF, Cunningham P, Hager WD, eds. *The Reproductive Revolution: A Christian Appraisal of Sexuality, Reproductive Technologies, and the Family*. Grand Rapids: Eerdmans, 2000

28 O'Donovan O. Begotten or Made? (Oxford: Clarendon Press, 1984

29 For other material see James C. Peterson, *Genetic Turning Points: The Ethics of Human Genetic Intervention*. Grand Rapids: Eerdmans, 2001

30 See, for example, Ethics and stem cell research: shifting the discourse. Reid L, Johnston J, Baylis F, eds. *J Bioethical Inquiry*, 2006;**3**:1–119

31 Berkman J. Adopting embryos in America: a case study and ethical analysis. *Scott J Theol* 2002;**55**:438–60