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Christian Responses to Challenging Developments in Biomedical Science: The Case of In Vitro Fertilisation (IVF)

The emergence of in vitro fertilisation (IVF) in the late 1970s and early 1980s was met by mixed responses within Christian circles, from outright hostility amid fears to guarded acceptance. As we look back on those responses, what have we learned and what might an appropriate theological response be today? I shall argue that the responses fall into five categories: A, embryo centred – categorical; B, embryo centred – precautionary; C, embryo centred – human control; D, child and family centred – addressing infertility; E, desire centred – overcoming human limitations. While embryo centred categories (A-C) predominate among conservative Christians, there are distinct differences within these categories pointing to a variety of presuppositions. Overall, however, they place far more ethical and theological weight on the embryo than on those seeking assistance to ameliorate clinical fertility problems (D). The desire centred category (E) is common within secular thinking although there is morphing of D into some elements of E. Together they point to the multiplicity of ways in which traditional ethical boundaries have been challenged by some applications of the artificial reproductive technologies (ARTs). I suggest that Christian approval of the ARTs will be a circumspect approval, and will seek to grapple with questions of motivation, limits on ways in which the ARTs will be employed, the centrality of human relationships for decision-making, and the role of legitimate scientific investigation in understanding early human development. These considerations bear upon how Christians function in the public arena.

Key words: IVF, Robert Edwards, human embryo, infertility, Roman Catholic responses, Protestant responses

The emerging world of IVF

In vitro fertilisation (IVF¹) is a textbook example of a procedure that initially was regarded as outrageous, but has now become part of routine medical treatment. There is still disagreement in some quarters, but on the whole it is generally accepted.¹ The disagreements have been scien-

¹ Pew Survey 21 March - 8 April 2013, 'Abortion viewed in moral terms: fewer see stem cell research and IVF as moral issues', Pew Research Religion and Public Life Project, <http://www.pewforum.org/2013/08/15/abortion-viewed-in-moral-terms/> (accessed 9 September 2013). According to this survey, 12% of Americans consider IVF to be morally wrong; 33% morally acceptable; 46% not a moral issue (Protestant 13% morally wrong; 31% morally acceptable; 45% not a moral issue).

tific, ethical and theological, with representatives from all three areas contributing to the many ongoing debates.

Central to most of these debates in the UK was Sir Robert Edwards, the pioneering physiologist, who paved the way against a welter of opposition on all fronts. Edwards, the ‘creator’ of the first IVF baby in 1978, was a stimulating thinker and experimenter who was regarded in some quarters as a controversial figure.² He received the Nobel Prize in 2010 and was knighted in 2011. He died in 2013 at the age of 87.

Edwards changed the world. The five million individuals alive today as a result of IVF would not have existed, and the number is growing daily. In many countries two to four per cent of all births result from IVF.³ It is a procedure that has brought happiness and fulfilment to many infertile couples, who are intensely grateful for what Edwards and subsequently many other fertility specialists have made possible.⁴

Its social effects are legion. Older women flock to use it, the donation of eggs and sperm, let alone embryos, in conjunction with IVF has become commonplace; pre-implantation genetic diagnosis (PGD) for the detection of genetic defects in embryos depends upon the use of IVF.⁵ The benefits and drawbacks of each of these procedures continue to be ardently debated, as questions about the moral status of the embryo have moved out of academic debating chambers into everyday clinical practice. Looking ahead, we see that IVF makes possible the application of next-generation sequencing (NGS) to check the embryos for abnormal chromosomes.⁶ The next step is whole genome sequencing to read all the DNA of IVF embryos before choosing which to implant.

Edwards’s dominance in the UK was such that he set the tone for most of the early controversies surrounding IVF. However, with the birth of children following IVF from 1978 onwards, the debate extended beyond

2 Edwards, R. & Steptoe, P. *A Matter of Life*, London: Hutchinson (1980); Edwards, R. *Life Before Birth: Reflections on the Embryo Debate*, London: Hutchinson (1989); Catholic News Agency, Prof Robert Edwards and Dr Jose-Maria Simon Castellvi, 8 August 2012, <http://www.catholicnewsagency.com/news/vatican-health-experts-dismayed-by-nobel-prize-for-ivf-co-developer/> (accessed 8 August 2012).

3 HFEA 2013, Latest UK IVF figures: 2010 & 2011, www.hfea.gov.uk/ivf-figures-2006.html (accessed 16 December 2013).

4 Brian, K. ‘IVF pioneer Robert Edwards will never be forgotten by those he helped’, *The Guardian*, 11 April 2013. <http://www.theguardian.com/commentisfree/2013/apr/11/robert-edwards-ivf-pioneer/print> accessed 5 March 2014.

5 Kamel, R. M. ‘Assisted reproductive technology after the birth of Louise Brown’, *Journal of Reproduction and Infertility*, (2013) 14(3), 96-109. See also Jones, D.G. & Whitaker, M.I. ‘IVF and the embryonic revolution: Bioethics in the making’, in Luppici, R. (ed.) *Handbook of Research on Technoethics*, Hershey. New York: Information Science Reference (2008), pp. 609-622.

6 Sample, I. ‘IVF baby born using revolutionary genetic-screening process’, *The Guardian*, 7 July 2013, www.theguardian.com (accessed 16 December 2013).

him and was subsequently intensified with the appearance in 1984 of the report of the Warnock Committee of Inquiry.⁷ It was this report with its focused recommendations that elicited a welter of theological responses.

Initial forays into IVF: the contribution of Robert Edwards

Robert Edwards began working in human reproduction in the mid-1950s, before teaming up with gynaecologist, Dr Patrick Steptoe, in the 1960s. By 1969 they had provided the first compelling evidence that fertilisation could take place outside the human body.⁸ Nine years later in July 1978, Louise Brown was born. The work had been carried out mainly with support from the Oldham Health Authority. The Medical Research Council (MRC) refused to support the work in these early stages.⁹ With the move to Bourn Hall in Cambridge in 1980 the successes came swiftly and by 1985 the number of Bourn Hall pregnancies passed the 1,000 mark. By this time IVF births were also occurring in many other countries, clearly demonstrating that the procedure was relatively safe.¹⁰

Thirty-five to forty years on the public scandal and outcry that accompanied IVF continue to resonate. Protests stemmed from a very wide variety of concerns: from overpopulation to the involvement of masturbation in obtaining sperm; from concerns about the triumph of human design over natural processes to perceived threats to the dignity of procreation and of conjugal union; from fears that the children would be abnormal to the evil of adopting a procedure that bypassed rather than 'cured' infertility.¹¹

The research nature of IVF in the 1980s meant that Edwards and colleagues had to come to grips with fundamental issues of terminology and ethics. These included the criteria employed to define embryos, the legitimacy of donating sperm, eggs and/or embryos, and of freezing embryos, deciding how to treat embryos with extra chromosomes, and the need for ongoing research on embryos. He was encountering embryos that were

7 Warnock, M. *Report of the Committee of Inquiry into Human Fertilisation and Embryology*, London: HMSO (1984).

8 Edwards, R.G., Bavister, B.D. & Steptoe, P.C. 'Early stages of fertilization in vitro of human oocytes matured in vitro', *Nature* (1969) 222, 632-635.

9 Johnson, M.H., Franklin, S.B., Cottingham, H. & Hopwood, N. 'Why the Medical Research Council refused Robert Edwards and Patrick Steptoe support for research on human conception in 1971', *Human Reproduction* (2010) 25, 2157-2174. Referees and the Clinical Research Board saw the institutional set-up in Cambridge as problematic with respect to clinical facilities and patient management; it gave infertility a low priority compared with population control; and it assessed the interventions they proposed as purely experimental rather than potential treatments. There were also concerns about safety and it was thought there should be primate experiments first. It also appears they may have been antagonised by the applicants' high media profile.

10 Edwards *op. cit.*, (2), p. 11.

11 *ibid.*

clearly abnormal. He considered these could be very valuable for research, since this was little different from the then accepted practice of using tissues from aborted fetuses.¹² This highlights the place given by Edwards to the drive to assist the infertile and further an understanding of infertility. For him the needs of the infertile were paramount.

Edwards was not just a scientist; he was a crusader who was seriously interested in ethics and who did his best to instigate ethical debate. In the eyes of many he was attempting to do something that was impossible scientifically and untenable ethically. Edwards, however, was motivated by one simple dictum: 'the most important thing in life is having a child'.¹³ For Edwards, the infertility specialist, it was the ever-present stimulus that drove him on. In this quest, Edwards combined the fascination of the basic scientist to understand more about human fertilisation, the drive of the applied scientist to help those with infertility issues and a serious commitment to ethical debate. In each area he challenged accepted thinking and attitudes.

In his 1989 book: *Life before Birth*, he reflected on the debate raging over the work he was doing, and the opposition he had encountered. His thinking even then extended well beyond IVF as he tackled issues to do with the moment of fertilisation, embryo donation, embryo freezing, the prenatal diagnosis of genetic defects, sex selection, stem cells and research on embryos. The extent of his involvement in ethical debate was unusual for a practising scientist, and even more so as he engaged with politicians, philosophers and theologians. He wanted society to take informed decisions, but was constantly disappointed: 'all we've produced so far is acrimony, arguments, amendments, confusion'.¹⁴

As early as 1971, seven years before the birth of Louise Brown, Robert Edwards and David Sharpe, a lawyer, wrote a prescient piece in *Nature* on the reproductive research then being undertaken or likely to develop, and the ways in which it might impinge on social and ethical values and regulation.¹⁵ They touched on the production of chimaeras, nuclear transfer and clones, work that was then taking place in mouse models. They assessed the potential social implications of these processes in humans, in far more realistic ways than many non-scientific writers then and subsequently. He and Sharpe argued for the establishment of an organisation to advise and assist biologists and others to reach their own decisions, to

12 *ibid.*, p. 82.

13 This statement was frequently quoted, especially when he received the Nobel Prize and in his obituaries – e.g. 'Professor Sir Robert Edwards', *The Telegraph*, 10 April 2013, <http://www.telegraph.co.uk/news/obituaries/medicine-obituaries/9984988/Professor-Sir-Robert-Edwards.html>, accessed 18 December 2013.

14 Edwards *op. cit.*, (2), p. 180.

15 Edwards, R.G. & Sharpe, D.J. 'Social values and research in human embryology', *Nature* (1971) 231, 87-91.

frame public debate and to act as a watchdog. Crucially, however, they did not want such a body to interfere with the independence of science.

Edwards spoke repeatedly on the issues as he saw them and in 1974 a book appeared as a result of a workshop of leading politicians, theologians, doctors and scientists (including Edwards) to consider IVF and related matters. It appeared as *Our Future Inheritance: Choice or Chance?*.¹⁶ However, IVF was still regarded as lying in the future. Even the reviewer of this book in the *Journal of Medical Ethics* in 1975, R.V. Short, a well-known reproductive biologist, noted that ‘in-vitro fertilization . . . is an interesting area for discussion, if only because it has already engendered a great deal of Press publicity and public debate, and people have adopted entrenched views’.¹⁷ In commending the working party behind this project his hope was that they would turn their attention to more pressing problems, such as euthanasia, abortion, homosexuality and drug addiction.¹⁸

In 1999 Edwards told an International Fertility Conference in France: ‘Soon it will be a sin for parents to have a child that carries the heavy burden of genetic disease. We are entering a world where we have to consider the quality of our children.’¹⁹ In 2003 he told a reporter: ‘I wanted to find out exactly who was in charge, whether it was God himself or whether it was scientists in the laboratory.’ His conclusion: ‘It was us.’²⁰ Publicity like this further muddied the ethical and theological waters. He also had eugenicist tendencies, having served on the council of the Eugenics Society (later named The Galton Institute) in the UK on a number of occasions.²¹

Edwards was not an ethicist but was very widely read and estimated that he wrote one paper on ethics for every three to four scientific papers. For instance, in 1974 he wrote a substantial paper on moral, ethical and legal issues associated with the fertilisation of human eggs.²² He was aware of the ethical implications of the work he was undertaking and he ensured that ethics committees were established in every place he worked.

16 Jones, A. & Bodmer, W.F. *Our Future Inheritance: Choice or Chance?*, Oxford: Oxford University Press (1974).

17 Short, R.V. ‘Review of “Our Future Inheritance: Choice or Chance?”’, *Journal of Medical Ethics* (1975) 1, 107-108.

18 *idem*.

19 Quotation from Robert Edwards at International Fertility Conference in France in 1999; quoted in *The American Feminist* (1999-2000) 6(4), 22.

20 Quoted in ‘IVF pioneer Robert Edwards RIP’, *Bioedge*, 13 April 2013, from ‘God is not in charge, we are: IVF pioneer looks back’, *The Times*, 24 July 2003.

21 Obasogie, O.K. ‘Commentary: The eugenics legacy of the Nobelist who fathered IVF’, *Scientific American*, 4 October 2013, <http://www.scientificamerican.com/article.cfm?id=eugenic-legacy-nobel-ivf>, accessed 18 December 2013.

22 Edwards, R. ‘Fertilization of human eggs in vitro: morals, ethics and the law’, *The Quarterly Review of Biology* (1974) 49, 3-26.

In 2007 he wrote a paper with the revealing title: 'Reminiscences on learning about morals and ethics in biomedicine', in which he wrote: 'We were determined to achieve this first birth and decided to maintain our ethical stance unless something seriously wrong emerged from our work.' And again: 'Our adoption of the clinical imperative and the inalienable rights of couples to have their own child convinced us that our ethical stance was legitimate provided we did no harm.'²³

Edwards wrote provocatively about the ethical implications of his work and attempted to integrate his scientific expertise with an appreciation of the ethical dimensions of what he was doing. Those who critique his work from a theological perspective should do so with an understanding of the scientific and clinical dimensions of infertility research along with any preconceived theological notions, and aim to integrate the two.

In the UK much of the theological reaction to IVF had to await the publication of the Warnock Report in 1984.²⁴ The central recommendations were that infertility is a condition that merits treatment and that IVF should be considered an established form of treatment. Of major importance for subsequent debate was the Inquiry's stance on the status of embryos, namely, that they have a special status necessitating limited protection in law. This allowed research to be carried out on embryos up to fourteen days after fertilisation.

These original recommendations set the scene for so much that has, to varying degrees, been accepted by one society after another, and also strenuously objected to by Christian writers as well as others. The Inquiry, therefore, substantially vindicated the research conducted by Edwards and the assured place of IVF within modern reproductive medicine.

Roman Catholic responses

These date from the dogma enunciated by Pope Pius IX in 1869, when he removed the distinction between unanimated and animated fetus from the Code of Canon Law.²⁵ This action dealt not with theology, but with discipline, and merely made uniform the punishment for abortion carried out at any stage. The Pope removed the distinction in order to support the Church's stance that life and ensoulment both begin at conception.²⁶ This did away with the distinction between an unanimated and animated fetus, based allegedly on advances in scientific knowledge.²⁷

23 Edwards, R. 'Reminiscences on learning about morals and ethics in biomedicine', *Reproduction BioMedicine Online* (2007), 14 (Suppl. 1), 7-11, p. px.

24 Warnock *op. cit.*.

25 *Codicus Iuris Canonici Fontes*. 9 Volumes. Rome, 1923 to 1939, specification number 552.

26 Clowes, B. American Life League, 1995. *Pro-Life Activist's Encyclopedia*.

27 Catholics United for the Faith, Steubenville, Ohio, 1997.

The earliest document to appear specifically addressing IVF and related procedures was *Donum Vitae* in 1987.²⁸ According to this, unconditional respect is to be given from the moment of conception, since the zygote is a human being and is to be respected and treated as a person from that time: it is inviolable. Against this background *Donum Vitae* condemned the voluntary destruction of human embryos obtained *in vitro* for research purposes. Researchers are, it asserted, usurping the place of God, since they are choosing which embryos will be allowed to live and which will be 'sent to death'; 'defenceless human beings' are being 'killed'.

The freezing of embryos is condemned because, it is alleged, this exposes them to grave risks of death or harm and also deprives them of maternal shelter and gestation. In this way 'life and death are subjected to the decision of man, who thus sets himself up as the giver of life and death by decree'. These actions are made possible by an abortion mentality and 'man's domination over the life and death of his fellow human beings'. This, in turn, may lead to what is described as radical eugenics. IVF is viewed negatively since it gives to biomedical scientists power over the life and identity of embryos, 'leading to the domination of technology over the origin and destiny of the human person'.

The Pontifical Academy for Life, meeting in 2004, reinforced the official Roman Catholic position that the ARTs 'constitute an unworthy method for the coming forth of a new life'.²⁹ For the Academy, a child obtained in this way is on the same level as a product whose value depends upon its good quality.

The most recent pronouncement from the Congregation for the Doctrine of the Faith was in the 2008 publication entitled *Dignitas Personae*.³⁰ This was intended to bring *Donum Vitae* up to date and to downplay its previous emphasis on the artificiality of IVF. *Dignitas Personae* seeks to defend the dignity of the human embryo on the grounds of its being personal from conception onwards. It objects to intracytoplasmic sperm injection (ICSI), the freezing of embryos and oocytes, PGD, and the donation of embryos on a variety of grounds.

While there may be some movement in the documents, the principal reasons for rejecting the whole gamut of the ARTs constitute a consistent system of thought. These centre wholly on the embryo and on its status

28 Congregation for the Doctrine of the Faith, *Donum Vitae: Instruction on Respect for Human Life in its Origin and on the Dignity of Human Procreation* (1987).

29 Pontifical Academy for Life, 'Final Communiqué on "the Dignity of Human Procreation and Reproductive Technologies. Anthropological and Ethical Aspects"', 2004. <http://www.vatican.va/roman_curia/pontifical_academies/acdlife/documents/rc_pont-acd_life_doc_20040316_x-gen-assembly-final_en.html> accessed 3 April 2013.

30 Congregation for the Doctrine of the Faith, *Dignitas Personae: on Certain Bioethical Questions* (2008).

as fully human from fertilisation. With this in place there can be no serious possibility of allowing any manipulation of embryos, or of choosing between them. Embryos are sacrosanct, thereby leaving no room for any technological interference or human control over them or the reproductive processes. In light of this the Vatican's position cannot contribute in any substantive manner to ethical or theological discussions on detailed practical issues, including PGD and embryo donation.³¹

However, there are alternative Roman Catholic perspectives and these have been present throughout the many years in which the artificial reproductive technologies have been discussed. Some of these (Charles Curran and Karl Rahner) suggested that the embryo does not become an individual until four to six days after fertilisation, during which time the embryo is worthy of respect, though not as great as that accorded the mature human individual. In the early 1980s there were also discussions about the moral significance of the timing of brain development.³²

Kevin Kelly widened the horizons of the Roman Catholic debate with his 1987 book *Life and Love*.³³ Fully aware of the official Roman Catholic stance that IVF and other technological processes threaten totally accepting love, he set out to examine whether this is as inevitable as implied. For Kelly, moral evaluation of IVF depends on its implications for:

- a) the good of marriage itself as an institution;
- b) the good of the particular marriage;
- c) the welfare of the prospective child.

He then enquired what might be a true expression of Christian love, by asking:

- 1) Does IVF contradict our responsive love to God by going beyond the limits of human dominion placed on us by God?
- 2) Does IVF seriously harm the God-given love of the parents?
- 3) Is it unloving in seriously harming the child that is itself precious to God?
- 4) Is it unloving in harming people in general by causing irreparable damage to marriage as a God given-institution?

For Kelly question 1 is essentialist in nature, whereas questions 2-4 are consequentialist.

31 Peters, T., Lebacqz, K. & Bennett, G. *Sacred Cells? Why Christians Should Support Stem Cell Research*, Lanham, Maryland: Rowman & Littlefield (2008) chaps 10-12.

32 McCormick, R. A. *How Brave a New World? Dilemmas in Bioethics*, London: SCM Press (1981), pp. 147-148.

33 Kelly, K. *Life and Love: Towards a Dialogue on Bioethical Questions*, London: Collins (1987).

Question 1 has established itself as crucial in a Roman Catholic context, with its insistence that there be no separation of procreation from sexual intercourse, but Kelly queries whether this is indeed a boundary beyond which we should not go. Possibly of greater significance for the integrity of human relationships are love, marriage and parenthood, and these cannot be enshrined within a physical act. Kelly is unwilling to ignore the plight of women and the importance of family care, and he stresses the importance of dialogue – of listening to the other person. He also underlines the importance of making a clear distinction between a person's intention or motivation and the actual rightness or wrongness of the act itself.

For Kelly reverence may 'allow, and perhaps even require, human kind to alter and improve on the natural processes of reproduction, if this is considered to be humanly beneficial'.³⁴ In other words Kelly's stress on the welfare of the family and the priority of human relationships dominates, and opens the door to the possibility of employing the ARTs.

More recently, in response to *Dignitas Personae*, some Roman Catholic scholars have criticised the traditionalism represented by it. For instance, Celia Deane-Drummond³⁵ is concerned with the gap that has opened up between official pronouncements and the pastoral care needed for those faced with infertility. She advocates an alternative approach, one based on a recovery of prudence that takes account of feminist concerns, and especially an ethic of feminist care. For her, caring is to be especially directed towards those with disabilities, including genetic disabilities.

In her criticism of *Dignitas Personae* Ann Marie Mealey³⁶ focuses on its reliance on what she perceives as an outdated physicalist version of the natural law, and on the document's excessive concerns with a 'eugenic mentality'. She would like to have seen it reflect upon what values we ought to be prioritising in the face of current discussions about procreative procedures and stem cell research. For Mealey the document merely succeeds in reiterating and reaffirming older teachings rather than attempting to lay the groundwork for ways of responding to developments in genetics and for means of protecting the 'common good'.

Complementing these contributions have been those of Thomas A. Shannon and James J. Walter.³⁷ In their book, *The New Genetic Medicine*, they seek to reinterpret Roman Catholic tradition in the light of contem-

34 *ibid.*, p 153.

35 Deane-Drummond, C. 'Bodies in glass: A virtue approach to ethical quandaries in a cyborg age through a recovery of practical wisdom', in Jones, D.G. & Elford, R.J. (eds.) *A Glass Darkly: Medicine and Theology in Further Dialogue*, Bern: Peter Lang (2010), pp. 61-79.

36 Mealey, A.M. 'Dignitas Personae', in Jones, D.G. & Elford, R.J. (eds.) *op. cit.*, (35), pp. 111-129.

37 Shannon, T.A. & Walter, J. J. *The New Genetic Medicine: Theological and Ethical Reflections*, Lanham, MD: Rowman & Littlefield (2003).

porary scientific concepts. They conclude that an individual is not present until two to three weeks into gestation, when the embryo can be deemed a physical individual and by which time individuality has been attained. Only then, they argue, can the embryo be treated as a person with the claim to undisputed protection. Up to this point the embryo has 'pre-moral' value, deemed to be worthy of some but not absolute protection.

In their different ways these alternative Roman Catholic approaches take broader views of the early embryo and its relationship to the other parties in the reproductive process, allowing them to analyse afresh a number of significant issues. These include i) the boundaries within which humans can legitimately act at the commencement of human life as God's instruments in creating new life, including the role of science and technology; and ii) the integrity of human relationships in marriage and family life, including taking into account the grief of infertility and genetic disease, and particularly the burden these place on women.

Protestant responses

While there were few theological responses prior to 1978 (or even before 1984), there were some significant ones. It was Princeton theologian, Paul Ramsey, who spearheaded the Protestant response in the 1970s. His commitment to ethical debate on the nascent reproductive technologies was exemplary for its farsightedness. He was almost alone in sensing some of the crucial aspects of the future debate, even if his position was very cautious and sceptical about the scientific developments then afoot.

Driving his concerns was the view that experiments on the unborn were unethical, since there was no way of knowing what mishaps would occur and what harm would be caused to fetuses involved in the first trials. By definition, there was no way of knowing this without conducting these experiments on hypothetical or unborn children.³⁸ To make matters worse, these experiments were, in Ramsey's opinion, being imposed non-therapeutically on the child-to-be without its consent and with the goal of treating an adult's desires.³⁹ Weighed against the prospect of producing a damaged human being, the plight of the infertile couple does not, Ramsey argued, justify IVF.⁴⁰ Further ahead, he foresaw that IVF may damage marriage and the family, and lead to the exploitation of women, to the

38 Ramsey, P. *Fabricated Man*, New Haven: Yale University Press (1970), p.113; see also Ramsey, P. 'Shall we reproduce? 1 The medical ethics of *in vitro* fertilization', *Journal of the American Medical Association* (1972) 220, 1346-1350; 'Shall we reproduce? 2 Rejoinders and future forecast', *Journal of the American Medical Association* (1972) 220, 1480-1485.

39 Ramsey, P. 'On *in vitro* fertilization', *Studies in Law and Medicine*, no. 3, Chicago: Americans United for Life (1978); reprinted in Lammers S.E. & Verhey (eds.) *On Moral Medicine*, Grand Rapids: Eerdmans (1987), pp. 339-345, p. 341.

40 *ibid.*, p. 339.

design of our descendants and ultimately to the substitution of laboratory generation for human procreation.⁴¹

A second objection raised by Ramsey touched on the power of modern science to overcome certain disabilities. In 1972 he envisaged a situation whereby genetic advance may destroy our concern that even genetically defective lives are to be cared for.⁴² This highlights tension in his thinking between the increasing power of scientific manipulation and human design, and the role of God in upholding and sustaining through illness and infirmity.

Similar to Ramsey, although not coming from a Christian standpoint, was Leon Kass. Basing so much of his thinking in the early 1970s (and subsequently) on the position that natural reproduction is superior to anything artificial, he contended that the laboratory production of human beings is no longer human procreation; it is a degradation of parenthood.⁴³ IVF, therefore, is unacceptable since it takes away the biological dimensions of procreation, marriage and the family. By introducing a laboratory side to reproduction, IVF no longer engages us bodily and spiritually as well as rationally, and so loses the all-encompassing nature of a human activity. However, while Kass opposed the introduction of IVF, after 1978 he treated seriously the issues raised by ongoing research and clinical work and concluded that IVF could be legitimate when enabling a married couple to have a child of their own from their own flesh.⁴⁴

The tenor of much of this early debate displays some striking differences from what has been prominent in later periods. Ramsey's concern was with damage to the fetus/resulting child rather than to embryos. He was writing before IVF had entered clinical practice, although his lack of emphasis on embryos is still noteworthy. His unease at the growing power of science and the changing character of medicine has been mirrored in some more recent commentators, as have the negative repercussions he predicted for society. In assessing Ramsey's input it has to be asked whether his rejection of IVF principally represented a theological perspective or an ultra-conservative approach to scientific developments in reproductive biology.

41 Ramsey, P. 'Genetic therapy: a theologian's response', in Hamilton, M.P. (ed.) *The New Genetics and the Future of Man*, Grand Rapids: Eerdmans (1972), pp. 157-175.

42 *ibid.*, p. 175.

43 Kass, L. 'Making babies – the new biology and the "old" morality', *Public Interest* (1972) 26, 18-56. See also 'New beginnings in life', in Hamilton, M.P. (ed.) *The New Genetics and the Future of Man*, Grand Rapids: Eerdmans (1972), pp. 15-63.

44 Kass, L. 'Making babies' revisited', *Public Interest* (1979) 54, 32-60.

Evangelical contributors in the 1970s were few and far between and represented a range of viewpoints.⁴⁵ Overall, these discussions tended to derive their guidelines from previous debate on birth control and abortion. An exception may have been my own paper in 1974 in which I stressed the importance of ongoing animal experiments, the needs of infertile couples and the welfare of any resulting children, and the restriction of IVF within the family.⁴⁶ I accepted that such developments would allow inroads into human control over reproduction, but that humans have been given this responsibility by God.

Other sources suggest that theological reflection was influenced in the 1960s and 1970s by general trends of concern at those times, including population explosion, genetic deterioration and eugenic considerations. For instance, Hughes was concerned that 'eugenic' programmes designed to improve the quality of mankind would lead to dissolution of the family, the confinement of parenthood to an elite few, mass sterilisation and the production of babies from sperm and ova banks.⁴⁷ These conclusions led many Christians to question the rampant march of technology since they were pessimistic about the foundations on which it was built.

However, Donald MacKay, neuroscientist and Christian thinker, took quite a different approach. While not discussing IVF, in the 1970s he provided a helpful perspective on biomedical manipulation.⁴⁸ In seeking a biblically based approach he looked to humans as creative beings with powers of foresight, planning and action, who are responsible to their creator and are to use their freedom wisely. From this it follows that they are fellow workers with God, wholly dependent upon him and fully answerable to him. Significantly, MacKay noted that: 'Nowhere in the Bible is technological achievement disapproved, except where it expressed human pride and vainglory.'⁴⁹

However, being fully aware of both human sinfulness and human finiteness, he had no illusion either about the hubris that can accompany technological achievements nor the unforeseeable risks that may accompany experimentation. On the other hand, it is not impious to attempt to improve on things, since 'it cannot honestly be said that the Bible proscribes

45 Spitzer, W.O. & Saylor, C.L. (eds.) *Birth Control and the Christian*, Wheaton, Ill.: Tyn-dale House (1969); also Bird, L.P. 'Dilemmas in bioethics', in Henry, C.F.H. (ed.) *Horizons of Science*, New York: Harper and Row (1978), pp. 131-155.

46 Jones, D. G. 'Making new men: a theology of modified man', *Journal of the American Scientific Affiliation* (1974) 26, 144-154.

47 Hughes, P.E. *The Control of Human Life*, Phillipsburg, New Jersey: Presbyterian & Reformed Publishing Company (1973), pp. 51, 52.

48 MacKay, D.M. 'Biblical perspectives on human engineering', in Ellison, C.W. (ed.) *Modifying Man: Implications and Ethics*, Washington DC: University Press of America (1977), pp. 67-90.

49 *ibid.*, p.74.

all thought about improving either the individual or the race by artificial means'.⁵⁰ For MacKay, improvement meant enhancing human's capacities for improving relationships at an individual level, in family and corporate relationships, and towards God, and went well beyond physical attributes and external performance.

In light of these considerations, MacKay argued that it is important to distinguish between contentment with the unalterable and complacency with the alterable. Allegiance to the status quo as the fall back position when faced with any new development is far from glorifying to God; it may represent the way of disobedience. For MacKay the bottom line was Christians' obligation to God as fellow workers or procreators; in that way he wanted to place technological approaches within the sphere of our responsibility for bringing children into existence – regardless of the means employed. We are procreators and as procreators have responsibilities towards those we bring into existence, whether by natural or artificial means. This throws the spotlight onto human relationships and prompts us to ask how our actions impact upon others, what the possibilities are for good or evil, what motives lie behind our actions, what possible consequences there might be for the subjects of our interventions, and whether we are acting out of love for God.

Following the birth of Louise Brown the tenor of Christian writing changed as it became evident that IVF was a viable medical procedure ('After her birth, most of the hostility vaporized; it seemed heartless to say that a bonny IVF baby should never have been born.').⁵¹ It came to be realised that there were both theological and pastoral implications. Was this an acceptable path for Christian couples, and what became of the myriad arguments about the value of human embryos? And there was the increasing number of ways in which IVF could be employed to produce children for those who were not married, let alone couples of any description.

Overview and analysis

The literature from the 1980s onwards falls into two clearly delineated responses to IVF: the *negative*, with its suspicion of IVF and in some cases rejection of it; and the *positive* with its stress on the needs of the infertile and openness to acceptance of IVF. While these two categories can be further subdivided and while the reasoning will vary in each, this broad subdivision highlights the predominant interests and concerns of most writers. The arguments of those who are negative towards IVF pay particular attention to protection of the embryo, in contrast to those who are positive where the emphasis is on the needs of the infertile.

⁵⁰ *ibid.*, p.77.

⁵¹ Gosden, R. 'Robert Edwards: Pioneer of *in vitro* fertilization', *Nature* (2013) 497, 318.

It is against this background that I propose the following five categories of responses as a basis for further discussion. These categories are not meant to be definitive and it is not my intention to pigeon-hole responses or their proponents. There is undoubtedly some fluidity between them (see my 1987 book, *Manufacturing Humans*⁵² for a fuller account of evangelical literature in the 1980s).

Category A: embryo centred – categorical

While it will have become evident from the previous discussion that Christians vary in their stance on the moral status of the embryo, there are many Christian voices that contend that ‘human life commences at conception (fertilisation)’ in the sense that human embryos have full human status from conception (fertilisation or day one of gestation). Consequently, they are to be treated as having value equivalent to that due to all other human beings.⁵³ From this it follows that we are to ensure, as far as we can, that all embryos are protected and under no circumstances should their lives be sacrificed for any end other than that of their own survival and flourishing.⁵⁴ As they are the weakest and most vulnerable of human beings a Christian ethic will seek to protect them.⁵⁵ (I have assessed the accuracy of these assertions elsewhere.)⁵⁶

If taken at face value these views clash with the development of IVF since the late 1960s and its ongoing clinical practice. They run counter to a procedure that some regard as nothing less than an act of mastery that inevitably depends upon the ‘killing’ of innocent human life.⁵⁷ It also follows that this view of embryos will not allow one embryo to be selected over another, whether on the ground of satisfactory versus unsatisfactory cellular division (as employed routinely in fertility clinics), or on genetic grounds (the presence or absence of the gene for cystic fibrosis and use of PGD). Viewing all embryos as ‘inviolable’ negates a procedure such as the production of excess numbers of embryos, since this opens the way to

52 Jones, D.G. *Manufacturing Humans: The Challenge of the New Reproductive Technologies*, Leicester, Inter-Varsity Press (1987).

53 Cameron, N.M. de S. ‘The Christian stake in the Warnock Debate’, in Cameron, N.M. de S. (ed.) *Embryos and Ethics*, Edinburgh: Rutherford House Books (1987), pp. 1-13; Iglesias, T. ‘What kind of being is the human embryo?’, in Cameron, (ed.) *op. cit.*, (53), pp. 58-73; Sutton, A. ‘Is the human embryo our neighbour?’, *Ethics and Medicine* (2000) 16 (2), 57-60.

54 Saunders, P. ‘The status of the embryo’, *Triple Helix* Autumn 2000, 12-13.

55 Waters, B. ‘Does the embryo have a moral status?’, in Waters, B. & Cole-Turner, R. *God and the Embryo*, Washington, D.C.: Georgetown University Press (2003), pp. 67-76.

56 Jones, D.G. ‘Responses to the human embryo and embryonic stem cells: Scientific and theological assessments’, *Science and Christian Belief* (2005) 17, 199-222.

57 Johnston, O.R. *Warnock ‘Weighed and Found Wanting’*, London: CARE (Christian Action Research and Education) (1984).

discarding (killing) some of them.⁵⁸ Similarly, it countenances no manipulation of embryos, including routine measures like freezing. In the eyes of some this deviates from God's creation pattern and purpose.⁵⁹

Equating embryos with fully developed and responsible human beings leads some commentators to depict IVF as morally indefensible and reprehensively deceptive,⁶⁰ and processes implicit in IVF have been compared with torture, assault, murder and slavery.⁶¹ IVF, with its technological 'exile' of the embryo, represents a distinctly different path from one in which children are seen as gifts from God.⁶²

This category in its purest form allows only one conclusion: no technological intrusion in reproduction is acceptable.⁶³ While this represents an extreme version of the position, it has the merit of consistency with its basic stance that embryos are never to be deliberately sacrificed. Those who accept that IVF under certain well-defined circumstances may be consistent with God's design for reproduction⁶⁴ are, by implication, accepting that embryos have been sacrificed to bring IVF to its current state of development.

Category B: embryo centred – precautionary

Those in this category have much in common with those in A, since their interests concentrate on protection of embryos. However, rather than asserting that embryos are persons deserving of complete protection, the claim is that those who do not adhere to this position need to prove beyond any doubt that human embryos are not persons (embryos should be given the benefit of the doubt regarding their status as inviolable persons). In other words, the onus of proof is placed upon others to demonstrate that this position is incorrect.

In other words this is a precautionary stance, as epitomised by Robert Song⁶⁵ in the title of one of his papers: "To be willing to kill what for all one

58 Christian Medical and Dental Association (CMDA), 'Statement on Assisted Reproductive Technology', (2010). http://www.cmda.org/wcm/CMDA/Issues2/Beginning_of_Life1/Reproduct...d_Health1/Ethics_statements/Assisted_Reproductive_Technology.aspx (accessed 8 September 2013).

59 CARE, *Warnock Report: Wanted Human Embryos Dead or Alive?*, London: CARE (1986).

60 Torrance, T.F. *Test-Tube Babies*, Edinburgh: Scottish Academic Press (1984).

61 Johnston *op. cit.*, (57), p. 8

62 Northcott, M.S. 'In the waters of Babylon: The moral geography of the embryo', in Deane-Drummond, C. & Scott, P.M. (eds.) *Future Perfect?* London: T and T Clark (2006), pp. 73-86.

63 Hui, E.C. *At the Beginning of Life: Dilemmas in Theological Bioethics*, Downers Grove, Illinois: InterVarsity Press (2002).

64 CMDA *op. cit.*, (58).

65 Song, R. 'To be willing to kill what for all one knows is a person is to be willing to kill a person', in Waters, B. & Cole-Turner, R. (eds.) *God and the Embryo: Religious Voices on Stem Cells and Cloning*, Washington DC: Georgetown University Press (2003), pp. 98-107. Song is here advocating a 'beyond-reasonable-doubt' argument, rather than the precautionary principle but his stance fits within the general precautionary position as I am using it.

knows is a person is to be willing to kill a person'. This expresses the sentiment that we have an obligation to protect every embryo we encounter (including every embryo in the IVF clinic or laboratory), until such time as there is compelling evidence to show that this viewpoint is incorrect – that one imagines that some embryos at least do not merit this level of protection.⁶⁶ This position is sometimes expressed in explicitly Christian terms, namely that it is God's grace that confers a unique status and unique destiny on all embryos.⁶⁷

This position was challenged a number of years ago by Donald MacKay,⁶⁸ who accepted that there is no way of proving that an embryo spontaneously aborted after a few days was not a person. However, for him there is no evidence from Scripture, science or experience that requires a commitment that embryos that never develop further actually are persons. What matters ultimately is to ask what obligation God has placed on us with regard to early embryos. In spite of the inevitable uncertainty regarding the status of very early embryos, including those that fail to develop further under natural conditions, he contended that we do not have a duty to preserve the life of every fertilised ovum; he even went so far as to suggest that there may be circumstances when we are required as God's stewards to terminate this process.

It is interesting that in the discussion that followed these statements, Richard Winter⁶⁹ argued the opposite: 'The evidence from Scripture, science and experience requires us to make a commitment to protect the developing embryo.' In reply MacKay⁷⁰ responded: 'the man who dares pronounce deductions in the name of God . . . must shoulder the onus of proof, not those who remain unconvinced by his rhetoric'.

Atkinson⁷¹ in the context of the Warnock Report, has also argued that we should presume that embryonic life, other than that referred to by David in Psalm 139, is innocent and inviolable. It is a great shame that this debate has not been followed up in more recent literature, since it revolves round the extent to which proponents are prepared to accept the reality of uncertainty and ambiguity. For those in category A there is little debate. But category B begins to hint that this is not as clear-cut as sometimes imagined. And MacKay throws down the gauntlet to Christians to demonstrate the degree to which their certainty stems from Scripture. What does God want, and what is the basis for concluding that he wants *this* as

66 Wyatt, J. *Matters of Life and Death*, Leicester: Inter-Varsity Press (1998).

67 Stott, J. *Issues Facing Christians Today*, Basingstoke: Marshalls (1984).

68 MacKay, D.M. 'The beginnings of personal life', *In the Service of Medicine* (1984) 30(2), 9-13.

69 Winter, R. 'The beginnings of personal life', *In the Service of Medicine* (1985) 31(2), 20-23.

70 MacKay, D.M. 'Response to Winter', *In the Service of Medicine*, (1985) 31(2), 23-24.

71 Atkinson, D. 'Some theological perspectives on the human embryo', in Cameron, (ed.) *op. cit.*, (53), pp. 43-57.

opposed to *that*: complete protection for all embryos or support for those afflicted by infertility?

The precautionary principle affects more than one party; not only does it seek to protect embryos but equally and also it could be used to protect those in need of medical assistance. It could be expressed in this way: 'Those who would deny medical assistance to those who could benefit from it need to prove beyond any doubt that they have compelling reasons why they should withhold such treatment.'

Category C: embryo centred – human dominion

While this category is not the one generally met in debate, and while it fits alongside protection of embryos, it fits into the tradition of Ramsey (and Kass). Its most prominent exponent has been O'Donovan in his 1984 book, *Begotten or Made?*⁷² For him technological inroads into reproduction are fraught with danger, since this is the realm of artifice in which children are made using technological processes. Once this is allowed the door has been opened to any technological development.

O'Donovan's position in 1984 reflected his stringent criticism of what he viewed as the inroads of a technologically-inspired world-view. He severely criticised what he described as 'the sad story of Christian medicine in the last quarter century', and so for him IVF had to be rejected along with all the other reproductive technologies. If not, one would simply be driven to accept more and more of the technologies under the constraints of social pressure.⁷³

There is some basis to these concerns as outlined under category E. However, it is a major move from concerns about technological imperialism to condemnation of specific technological procedures such as IVF. Each is to be assessed, and accepted or rejected, on merit. However, it appears that IVF is being equated with an act akin to manufacture. This, it is said, implies radical inequality and is an act of depersonalised manipulation or technological domination.⁷⁴ This stands or falls on the assumption that embryos are fully human/fully personal, and that the technology implicit in IVF is being utilised to dominate other human beings like us.

If this is the case, it is impossible to separate the fear of human control in this category from the concerns of category A exponents. These concerns are well expressed by a 2003 editorial in *Christianity Today*: 'Medical science has progressed to the point of offering us many ways to bring a child into the world, whether using our own bodies or those of complete

72 O'Donovan, O. *Begotten or Made?*, Oxford: Clarendon (1984).

73 O'Donovan, O. 'A neutered morality', *Third Way*, September 1984, p.27.

74 CARE *op cit.*,(59), p.14.

strangers. But what threats might this Promethean offer pose to our very souls – or, just as important, to the bodies and souls created *in vitro*?⁷⁵ The implication here is that this expression of medical science, by its very nature, is a threat to what we are as human beings standing before God. It is therefore to be approached with great caution.

Category D: child and family centred – infertility

With this category we leave approaches based predominantly on protection of embryos to those that take far greater account of the needs of the infertile. This was clearly enunciated in the report of a working party of the Board for Social Responsibility of the General Synod of the Church of England in 1985.⁷⁶ In supporting all the recommendations of the Warnock Inquiry, except embryo donation and the production of embryos for research purposes, it was united on i) the nature of human life in the image of God, and on our duty to respect it; ii) the importance of marriage and family and the need to uphold and support them; iii) commitment to ensure that informed and sympathetic pastoral help is offered to those suffering from childlessness or infertility.

While there was division of opinion among its members on the moral status of the embryo, most did not think that embryos in the first fourteen days are entitled to the same respect and protection as embryos implanted in the uterus. The point of importance is that the group paid attention to the practical outcome of any recommendations and the effect these would have on infertile couples.

Those in this category have a good deal in common with the Roman Catholic ethicists touched on in a previous section (as opposed to official Roman Catholic dogma that fits into category A), with their wish to reclaim awareness of the importance of care, the good of the family and the integrity of marriage and human relationships. There is an attempt to recognise in the contributions of science and technology the good that can be accomplished in the lives of human individuals and families. There is recognition of the importance of balancing these good ends against the undeniable negatives that can result from excessive dependence upon technology and an unwillingness to accept limits to its use. This approach places limits on research and clinical conduct, including boundaries enshrined within the marriage bond as well as the extent of manipulations to be conducted on embryos.

The extent of any limits is open to debate. Approval of IVF within a Christian framework is not equivalent to approving its unfettered use.

⁷⁵ Editorial, 'Souls on ice', *Christianity Today*, 1 July 2003; accessed 7 August 2013).

⁷⁶ Board for Social Responsibility of the General Synod of the Church of England, *Personal Origins*, London: CIO Publishing (1985).

This recognises that human beings are moral beings who confront moral choices both for themselves and others. They have to weigh up the advantages and drawbacks of utilising embryos for good purposes, as well as the blessings and indiscretions of those who would use IVF within the circle of their families.

Richard Higginson⁷⁷ in the 1980s confronted these tensions as he sought to balance the legitimacy of some research on spare and defective embryos against what he regarded as the wrongness of the initial work undertaken by the pioneers of IVF. In being prepared to accept that there is nothing intrinsically wrong with IVF for couples eager for a child and incapable of conceiving in any other way, he was still acutely aware of the dangers of a product mentality. While retaining concerns about destroying embryos, he made the insightful observation that 'it is unreasonable to ask of the IVF procedure a commitment to sustaining life greater than that which nature itself affords'.⁷⁸ The fact that Higginson is difficult to pigeon-hole, since he appears to fit into more than one of my categories, demonstrates that stringent categorisation fails to satisfy the breadth of ethical, let alone theological, demands placed upon us. This may, of course, also be true of others, who tend to be less open about the tension.

Category E: desire centred – technological imperialism

It has become evident in the years between 1978 and the present that the ways in which IVF has been employed extend far beyond any prognostications at the time. The days of helping young married couples to have children of their own in the face of infertility problems have been largely overtaken. This still occurs but it now represents just one group of recipients. These social trends will fulfil the doomsday scenarios foretold by opponents of IVF from the 1960s onwards, who will see IVF as technology out of control. Instead of healing people medically, it has taken on the façade of technological imperialism with its ability to create in previously unimagined ways. The fear of the slippery slope has come to haunt one society after another, as IVF the helper has become IVF the creator of unusual and even aberrant family structures.

It is easy to paint a gloomy scenario of this ilk, a direction taken by many Christian commentators,⁷⁹ but care has to be exercised that exaggeration is not allowed to take over. Family structures have been challenged and continue to be so, as single people, same sex couples, older and

77 Higginson, R. *Whose Baby? The Ethics of In Vitro Fertilisation*, Basingstoke: Marshall Pickering (1988).

78 *ibid.*, p. 107.

79 Colson, C.W. & Cameron, N.M. de S. *Human Dignity in the Biotech Century: A Christian Vision for Public Policy*, Downers Grove, Illinois: InterVarsity Press (2004).

post-menopausal women, and those in different generations of the same family resort to IVF. However, IVF is no more than one component in this litany of changes (as has been the case with oral contraceptives). The way in which a technology is applied depends upon human decision-making, and it is this that has to be analysed and possibly critiqued.

If IVF or any technological intrusion into reproduction is regarded as capable of remaking humanity in fundamental ways and if its limitations are ignored there will be problems. If it is seen as taking on an aura of enhancement with posthumanist pretensions, rather than therapy, the negativity expressed by some will be justified.⁸⁰

A Christian perspective is poignantly aware of human limitations, as well as of the human proclivity to misuse and misdirect even the most spectacular of human achievements. This is why any Christian approval of IVF will be a circumspect approval, and will have little in common with those who wish to use it hubristically.

Is category D morphing into category E?

As one views the five categories it is not difficult to see why Christian commentators espouse embryo-centred approaches. They appear to provide a bulwark against runaway technology that, in the case of IVF, may be commandeered to change our horizons as to what constitutes human nature.

The first point to acknowledge is that recent developments in the ARTs appear to diminish the gap between categories D and E. These range from routine to the highly experimental. The routine are procedures that are also found in clinical practice outside the reproductive technologies. These include the use of gamete donations, sperm and egg donor banks, and surrogate pregnancies. This does not justify any of these ethically or theologically, but they are essential in overcoming infertility in some cases and justify inclusion in category D. The move into E occurs when PGD is used for the detection of late onset genetic disorders (such as breast cancer that will probably develop in the late 30s), sex selection for social reasons, three parent IVF children to overcome mitochondrial disorders, next-generation sequencing (NGS) to check the embryos for abnormal chromosomes, and whole genome sequencing to read all the DNA of IVF embryos before choosing which to implant. Post-menopausal IVF and dependence upon egg donation and egg freezing have more in common with category E than category D. This leaves procedures like ICSI (intracytoplasmic sperm injection), routine PGD for conditions like cystic fibrosis, and identification of the sex of embryos to prevent the occurrence of sex-linked diseases, lying on the D-E border; these are becoming routine but with quasi-design

80 Waters, B. 'Saving us from ourselves: Christology, anthropology and the seduction of post-human medicine', in Deane-Drummond, C. and Scott, P. M. (eds.) *op. cit.*, (62), pp. 183-195.

features. It is important to note that all these procedures are feasible – or will be in the near future.

A second point to acknowledge is the expansive vistas of those who wish to use biomedical technology as a way of introducing their vision of a posthuman future, a future brought into existence by human beings without any recourse to God or any religious sensibilities. This is unequivocal category E territory, the bulk of which is highly speculative. One illustration is the envisaged creation of human gametes from human stem cells, that is, embryo-like entities from adult tissue (current work is confined to mice).⁸¹ It is envisaged that new individuals will be produced from these embryo-like entities. One thought experiment envisages *in vitro* eugenics, ‘the deliberate breeding of human beings *in vitro* by fusing sperm and egg derived from different stem cell lines to create an embryo, and then deriving new gametes from stem cells derived from that embryo.’⁸² The end result could be various forms of human enhancement. What then becomes of human parenthood? And what ethical, let alone theological, considerations arise? It is scenarios of this type, wildly speculative though they are, that rightly cause huge consternation for many Christian thinkers.

These ideas are far removed from IVF in anything resembling its current iterations, and those who postulate vistas along these lines are driven by world-views diametrically opposed to Christian ones. Their speculative nature places them far outside any feasible science, even though some of the ideas are based on laboratory experimentation. They owe more to idealistic visions of what humans could become than to the realistic demands of reproductive science.

A third dimension is the negativity regularly expressed by theological commentators. While I have some sympathy with these commentators when confronted by the more extreme posthuman speculations that characterise the speculative subgroup within category E, this is far removed from the daily experience of IVF and allied clinical procedures. My conclusion is that far greater attention needs to be devoted by theologians to the ethical and spiritual challenges of those with infertility problems and who wish to have a child of their own in a Christian context.

Negotiating these borderlands

In any assessment of IVF, the driving impetus is to ask what might be most pleasing to God. No matter how vacuous this question appears, it must drive us to biblical directives, with their emphasis upon humility,

81 Hyashi, K et al. ‘Offspring from oocytes derived from *in vitro* primordial germ cell-like cells in mice’, *Science* (2012) 338, 971-975.

82 Sparrow, R. ‘*In vitro* eugenics’, *Journal of Medical Ethics* (2013) 10.1136/medethics-2012-101200.

an ethic of responsibility and stewardship of God's creation. These will not provide ready-made answers, but they force us to justify what we are aiming to do and why we wish to utilise these procedures.

Central to decision making will be the welfare of families, family relationships and individuals, with considerable stress on the significance of marriage. This is central to Christian life in society, with its human-centred framework as opposed to one driven by technological control. A human-centred framework focuses on the significance of humans in the eyes of God – as his beings and, for Christians, as his people. Whatever limits are imposed flow from this framework.

Scientific contributions in the reproductive area have been immense, both at the fundamental and applied levels. Christians should be more open about the blessings of these investigations, in spite of distressing misdirections by those intent on remodeling humanity according to their own specifications.

I am advocating that it is worth taking this risk since it opens the door to the benefits brought by IVF and associated procedures. IVF is not a panacea for anyone and will be accompanied by myriad demands upon them. There are many unknowns, and yet the situation is totally different from when Paul Ramsey was writing in the 1970s. Christians, like others, are to balance these pluses and minuses, to utilise elements in IVF that are helpful in bringing full-orbed health to individuals and families, and to reject excesses that are counterproductive to family life.⁸³

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