

Is There Anything Wrong with Altering the Genes of Future Generations?¹

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Unease among the nations

The prospect of deliberately altering the genes of future generations is one that has caused a great deal of concern not only among politicians and the general public but also among academics. Germ-line genetic engineering (as it is sometimes called) has been described as ‘a potential weapon of mass destruction’ (Annas et al 2002, p. 173) posing ‘unprecedented concerns’ (Andorno 2002) for the human race.

In response to these concerns a number of governments and international bodies have sought to restrict genetic engineering so that it does not alter the genes of future generations. This issue was first debated at a European level in relation to biotechnology patents. An attempt to extend patent protection for biotechnology in 1988 foundered in the European Parliament because it did not include ethical limits. When the proposed directive was reintroduced in 1995 it succeeded only because certain areas were explicitly excluded from patentability. These included:

Processes for the modifying the germ line genetic identity of human beings
(Article 6, 2 (b))

At the same time as the European Parliament and the Council of Ministers were discussing modifying the germ line in relation to patentability, a different European body, the Council of Europe, was drawing up a *Convention on Human Rights and Biomedicine*. This was opened for signing in 1997. It included the following article on genetic engineering in humans:

Article 13. An intervention seeking to modify the human genome may only be undertaken for preventive, diagnostic or therapeutic purposes and only if its aim is *not to introduce any modification in the genome of any descendants*.
[emphasis added]

The same year as the European Convention was opened for ratification, the general conference of the United Nations Science and Cultural Organisation (UNESCO) endorsed a *Universal Declaration on the Human Genome and Human Rights*. This states that

research affecting his or her genome may only be carried out for his or her direct health benefit
(Article 5e)

germ-line interventions... could be contrary to human dignity
(Article 24)

There is also an impressive list of national legislation opposing the altering of genes of future generations. These laws are in some ways more modest than international statements – they are

¹ This paper was given on 22 March 2010 as a ‘Zephyr Debate’ organised by the British Association of the Order of Malta and chaired by the Most Reverend Mario Conti, Archbishop of Glasgow. A fuller exposition of the argument is set out in D.A. Jones ‘Germ-line genetic engineering: a critical look at Magisterial Catholic teaching’ in *Christian Bioethics* (forthcoming).

more limited in what they forbid and why, and are also limited in covering only one country. However, in another sense national legislation is far stronger and more effective than international declarations, for it is at a national level that laws are enforced and law breakers are punished.

It is thus of great significance that Indian law states that, 'Considering the present state of knowledge, germ-line therapy in humans shall be proscribed.'

So also South Africa: 'There is, at present, insufficient knowledge to evaluate the risks, to future generations, of gene modification of the germ line. It is therefore recommended that gene modification of the human germ line should not yet be attempted.'

Belgium has a more limited but nonetheless real prohibition on 'eugenic 'interventions which are defined as 'the selection or amplification of non-pathological genetic characteristics'. It is not contrary to Belgian law to alter the genes of future generations if this were done to correct some defect. However it is forbidden to select for non-pathological characteristics such as height, eye colour or sex (except to prevent a disease that is sex-linked).

The banal conventionality of official Catholic teaching in this area

People who feel uneasy in relation to some new technology may well turn to religious perspectives, including that of the Catholic Church for an account of what, if anything, is supposed to be ethically problematic about it.

Unfortunately, there is little that is original or interesting in the scattered official Catholic responses to the question. On questions about human sexuality, the body, or the inviolability of human life the Magisterium has developed a rich theology rooted in the Scriptures and in the tradition. However, in relation to genetic engineering it seems that the Church only reflects back ideas of secular writers. Rather than reflecting theologically on the inherent ethical issues in changing the genes of future generations, Church documents make do with the secular categories of risk management. For example, the 2009 document on bioethical issues, *Dignitas Personae*, makes the following statement:

The moral evaluation of *germ line cell therapy* is different. Whatever genetic modifications are effected on the germ cells of a person will be transmitted to any potential offspring. Because the risks connected to any genetic manipulation are considerable and as yet not fully controllable, *in the present state of research, it is not morally permissible to act in a way that may cause possible harm to the resulting progeny*. In the hypothesis of gene therapy on the embryo, it needs to be added that this only takes place in the context of *in vitro* fertilization and thus runs up against all the ethical objections to such procedures. For these reasons, therefore, it must be stated that, in its current state, germ line cell therapy in all its forms is morally illicit.

The first part of this statement echoes closely the laws of India and South Africa in referring to the risks given the 'present state of research'. The second half of the statement refers to the protection of the human embryo, an ethical requirement that is often unrecognised by secular authorities. However, this ethical requirement, while real, does not address the question of whether there is something inherently wrong with altering the genes of future people. It only says that this must not be done in a way that could harm human embryos. Give this lack of any deep or inherent objection, some commentators have suggested that the Church would permit altering genes, if this could be done without undue risk to parents, children or embryos. James Delaney (2009), for example, has argued that:

Should the current state change in the following two respects, 1) risks to progeny are reduced so as to be outweighed by likely therapeutic benefits, and 2) the subjects involved in the germ line therapy (either gametes or early stage embryos) do not affect persons coming into existence through a morally licit act (the conjugal act between a husband and wife), the [Catholic] Church's position on germ line therapy would likely be that it is morally permissible.

This conclusion is embraced explicitly in a document by the International Theological Commission. The Theological Commission do not have any special authority to teach the Catholic faith. Their documents are not like the teachings of Popes or Councils. Nevertheless they do represent a reasonable (and seemingly an acceptable) expression of the Catholic faith and the document which contains a statement of genetic engineering (*Communion and Stewardship: Human Persons Created in the Image of God*) is available on the Vatican website. This is what it says:

Germ line genetic engineering with a therapeutic goal in man would in itself be acceptable were it not for the fact that it is hard to imagine how this could be achieved without disproportionate risks especially in the first experimental stage, such as the huge loss of embryos and the incidence of mishaps, and without the use of reproductive techniques. A possible alternative would be the use of gene therapy in the stem cells that produce a man's sperm, whereby he can beget healthy offspring with his own seed by means of the conjugal act.

The same basic approach is shown in a document written by a working party of the Catholic Bishops' Joint Committee on Bioethical Issues for the bishops of England and Wales, Scotland and Ireland. There are grave reservations about this technology in practice, but they are viewed as acceptable 'in principle':

In principle such acceptable treatments could include germ-line gene therapy; however, in practice, germ-line therapy is likely to involve one or more of various morally unacceptable elements: use of in vitro fertilization or similar techniques, experimentation on embryos in the course of developing the therapy, discarding of embryos and abortion of foetuses on whom the therapy is unsuccessful, and the causing of excessive risks to the subject and to his or her descendants.

Thus many statements of the Church and its theologians do not see an inherent objection to altering the genes of future generations. They base their objections solely on pragmatic considerations of risk or moral problems associated with IVF and embryo experimentation. However there are some documents which seems to suggest a deeper problem. The teaching document on assisted reproductive technologies, *Donum Vitae*, states that attempts to alter the genes of future generations may be '*contrary to the personal dignity of the human being*'.

Certain attempts to influence chromosomic or genetic inheritance are not therapeutic but are aimed at producing human beings selected according to sex or other predetermined qualities. These manipulations are contrary to the personal dignity of the human being and his or her integrity and identity. Therefore in no way can they be justified on the grounds of possible beneficial consequences for future humanity. Every person must be respected for himself: in this consists the dignity and right of every human being from his or her beginning.

This teaching gains added weight from being quoted in the Universal Catechism of the Catholic Church (2275). Nevertheless, this teaching is somewhat ambiguous as it is unclear whether it refers to all altering of the genes of future generations, or whether it implicitly allows altering genes for 'therapeutic' reasons.

Scientists playing god

While Catholic theologians have seemed to reflect only secular categories when speaking about genetic engineering, it is ironic that secular philosophers and scientists sometimes raise explicitly theological themes. Perhaps the clearest case is with the idea of 'playing god'. This is a phrase that is avoided by Catholic theologians and scarcely ever used in official Catholic teaching but it is common in popular culture and is even used by atheists. For example the atheist scientist James Watson, co-discoverer of the structure of DNA, stated that,

I think it's irresponsible not to try and direct evolution to produce a human being who will be an asset to the world.(Darnovsky 2007)

Defending this view he asked rhetorically,

If scientists don't play God, who will? (Darnovsky 2007)

In contrast, the atheist philosopher Jonathan Glover used the language of 'playing god' to question the justice or wisdom of deciding who should be born. In the 1970s he had defended abortion for reason of disability, specifically spina bifida (Glover 1977, p. 168). However, he was strongly affected by the criticisms of a woman who had spina bifida and who wrote a letter to the Times saying that she was happy to be alive. She caused him to think again and to ask:

Is anyone in a position to make the Godlike judgement: "It would have been better if you had been aborted" (Glover 2001, p. 432).

The older Glover astutely notes that the ethical question here relates not only to killing (whether by abortion or infanticide) but would be present even if the disabled person's existence had been prevented by avoiding conception. He realised that seeking to decide what kind of people are conceived in the future is not like treating someone for a disease they have (Spina Bifida for example) but is rather deciding that it would be better for a person with this condition not to come into existence.

The claim under consideration is that to be brought into existence with an extremely severe disability may not be in the best interest of a child. This entails a general problem of comparing existence with nonexistence. When medical techniques determine that *some people rather than others come into existence*, can those people be said to be better or worse off for the intervention? (Glover 2001, p. 439)

The point made by Jonathon Glover is both subtle and profound. Because future people do not exist we cannot be said to be improving their quality of life by treating their disease. If a couple seeks to avoid having a child with Spina Bifida, and instead seeks to have a child free of this condition there is no one identifiable child who is liberated from the condition. The future possible children do not exist and cannot be identified. What is happening here is rather the decision to avoid having a child with the condition because it would be bad to bring such a child into existence.

The impossibility of identifying future people

The question of identifying future people is a theological consideration (a 'playing god' question) precisely because it is God who brings us into existence. However, there are some secular writers who seem to think that, even without appealing to theology, it is possible to identify future people. Consider the following quotation from Richard Dawkins (1998, ch. 1):

We are going to die, and that makes us the lucky ones. Most people are never going to die because they are never going to be born. The potential people who could have been here in my place but who will in fact never see the light of day outnumber the sand grains of Arabia. Certainly those unborn ghosts include greater poets than Keats, scientists greater than Newton. We know this because the set of possible people allowed by our DNA so massively exceeds the set of actual people. In the teeth of these stupefying odds it is you and I, in our ordinariness, that are here.

Dawkins bases his ability to identify 'the set of possible people' on the basis of DNA. However the idea of 'unborn ghosts' waiting to be born has close parallels with some theological ideas. For example in the book of Ecclesiastes the Preacher laments:

And I thought the dead who are already dead more fortunate than the living who are still alive; but better than both is he who has not yet been, and has not seen the evil deeds that are done under the sun. (Ecclesiastes 4.2-3)

It is not clear what the sacred writer means by 'he who has not yet been' but it seems to represent God's knowledge of future people who will actually be born. The same idea is expressed in a more poetic way in a charming story in a Jewish Midrash written some time in the first few centuries after the time of Jesus. The story goes as follows:

Each and every soul which shall be from Adam until the end of the world, was formed during the six days of Creation and was in paradise... At the time of conception God commands the angel who is the guardian of the spirits, saying: 'Bring Me such a spirit which is in paradise and hath such a name and such a form'... God says to the soul, 'the world into which you enter is more beautiful than this; and when I made you I intended you only for this drop of seed.
(Midrash Tanhuma Pekude, 3, see Jones 2004, p. 96)

While Christianity has rejected the idea of pre-existent souls, it is an established part of theology that God foreknows all that will happen and hence all those who will be born. Nevertheless, this knowledge of those who will actually be born is not equivalent to the identifying of all of Dawkins's 'unborn ghosts' as these include not only those who will be, but all the possible people who might have been. In any case, in seeking to have a child without a specific disability and seeking not to have a child with that disability the would-be parents are choosing between possible children. They cannot be seeking to protect 'this child' from disability or to heal 'this child' of a disabling condition as there is no way to identify 'this child'. This is part of a general philosophical problem that we have in specifying 'what would have happened if...' for different possible futures. As the philosopher Elizabeth Anscombe argued:

There is not, quite generally, any such thing as what would have happened if what did happen had not happened, and ..., in particular there is no such thing as what someone would have done if... and certainly there is no such thing as how someone would have spent his life if he had not died as a child. (Anscombe 1983, p. vii)

Seeking to alter the genes of future generations does not improve the health of any child and thus cannot be regarded as 'therapeutic'. It is rather an attempt to choose to bring into being children with certain qualities and to choose not to bring into existence children with certain other qualities, on the basis that it is better (for the child, for the parents, or for society) that children with these qualities (for example having Spina Bifida) do not exist.

Altering the genes of future generations therefore:

- Seeks to exercise power over future people
- Is not 'therapeutic' as it does not seek to help actual persons (there are no specific persons it helps)
- Seeks to create or select future persons of a particular kind [and is therefore contrary to the attitude to parents who seek both to accept the child and improve his or her opportunities]
- Implies some 'eugenic' determination of the worthwhileness of the lives of future persons, based on their genetic characteristics.

It is this feature of eugenics – the intention to improve or purify the genes of future generations – that is the root of its viciousness. G.K. Chesterton famously compared eugenics to witch-burning. He remarked that he was not sceptical of the existence of witches, but he was sceptical of witch-finders. The attempt to eradicate an evil 'degenerated into a rabid and despicable persecution of the feeble or the old. It ended by being a war upon the weak.' (Chesterton 1922, p. 64) Chesterton argued that the same could be said of eugenics. There is suffering in disability but eugenics represents an attempt to eradicate this evil by eliminating disabled people, and this inevitably brings forth persecution.

This article began with a widespread unease about altering the genes of future generations. It then argued that many contemporary Catholic discussions of this issue add little to secular accounts about unknown risk and precaution. In contrast, this paper argues on the basis of theological considerations that the deeper secular unease is justified. There is an inherent ethical objection to the aim of altering genes of future generations, even were it to be safe, even were it not to involve IVF and embryo destruction, and even were it confined to inherited conditions which were pathological. Altering the genes of future generations is inherently unethical because it cannot be regarded as 'therapy' of a particular future child but instead relies on a 'eugenic' judgement of the worthwhileness of the lives of future children with inherited disabilities. Seeking to alter the genes of future generations so that healthier children are born does not improve the health of any child but makes choices between possible children, to coin an aphorism: it is not an attempt to make people better but an attempt to make 'better people', and this will always be invidious.

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