

The importance of realism in assessing technological possibilities: The role of Christian thinking

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Abstract

Speculation is rife in bioethical debate. Transhumanism imagines a form of salvation in which, through technology, humans are less subject to the whims of nature, including disease and temperature extremes. The use of chemicals to achieve moral bioenhancement is also speculative, but is an extension of the use or abuse of drugs for cognitive enhancement that already occurs. Reproductive technology is currently available, and permits selection of embryos without the gene for conditions such as Huntington's disease, Duchenne's muscular dystrophy and haemophilia, but this fits within the paradigm of disease prevention and treatment.

The degrees of speculation and realism in these cases raise questions of relevance for Christian thinking. Firstly, our earthly goal is holy living, and salvation is in Christ not through the application of technology. Nevertheless, care and cure are in tension with mortality and evil. To find the way through, humility is called for as a cardinal virtue and also the guiding principle in our approach to science and technology.

Key words

Bioethics, moral bioenhancement, artificial reproductive technology, mortality, humility, redemption

Introduction

As you read some current bioethics literature you could be forgiven for thinking that you had entered a world of make-believe, as writers grapple with the possibilities of curing death, the moral status of yet to be created

beings, or ways of making existing people more moral thanks to an increasing armamentarium of drugs influencing crucial areas of the brain. And of course there are the ever-expanding avenues already available of selecting certain characteristics of the next generation, although these are extremely limited in practice.

Faced with such a panoply of possibilities, some of which are highly idealistic, Christian thinkers are tempted to throw up their hands in horror. This truly is the *Brave New World*, so perceptively mapped out and also critiqued by Aldous Huxley 80 years ago (Huxley 1932). This reaction is a great shame, since there is much important work waiting to be done by Christians. My aim is to sketch what I regard as a first step in this direction.

Heading towards a world of post persons

The fringes of bioethical debate are taken up with discussions of post-persons and their role within some of the vast agendas of transhumanism (Garreau 2005). Such speculative theorizing might leave us cold, or perplexed, or simply disinterested. Surely there are numerous far more pressing issues that should occupy our waking moments. Why discuss the moral implications of modified humans who don't as yet exist and may never exist? The pointlessness of it all is apparent, at least to a pragmatic scientist like me.

An Italian politician, Giuseppe Vattino, considers that transhumanism aims to free humanity from its biological limitations, overcoming natural evolution and thereby making us more than human (*New Scientist* 2012). As transhumans, we would be less subject to the whims of nature, including illness or extremes of climate. This is a form of religion of science and technology leading as it does to ethical principles.

At first glance it seems strange that science is taking us into the realm of religion, in the sense that the scientists we are talking about are not religiously-inclined. Here we have humans attempting to achieve salvation by transcending themselves through technology. This is either speculation out-of-control or it needs to be taken seriously.

Expansive scenarios are everywhere within transhumanist thinking. The usual limits experienced by human beings will have disappeared. Not only will the major diseases that afflict us today be banished, from diabetes and heart disease, to Parkinson's and Alzheimer's diseases, but the regeneration of all tissues and organs will be readily accomplished. The end result will be almost inevitable; human immortality will beckon as a physical phenomenon (see Jones 2009a). Death will have been vanquished; all will be made new through the efforts of human beings and their technological achievements. This is indeed the world of post persons (Agar 2013, Hauskeller 2013).

Heading towards a world of moral bioenhancement

Examples of cognitive enhancement are already with us. Think of students and others taking drugs like Ritalin (methylphenidate) and modafinil, to enable them to stay awake and alert for longer, and to aid concentration

and short-term memory (Sahakian and Morein-Zamir 2007; Minzenberg and Carter 2008). These are non-therapeutic and secondary uses of drugs being taken by healthy individuals to enable them to perform better than they would otherwise perform.

But what about improving *moral* behaviour? What if it becomes feasible to make individuals more self-sacrificial, empathic, and altruistic, or decrease their impulses towards violence and aggression? These are examples of moral technology, in which the parameters of conventional morality would be altered by technologically adjusting our ability to choose good over evil.

It is not unusual to encounter journal articles with titles such as: 'Serotonin selectively influences moral judgment and behavior through effects on harm aversion' (Crockett et al. 2010) and 'Oxytocin increases trust in humans' (Kosfeld et al. 2005). Why these two chemicals?

Serotonin is thought of as the neural substrate of ethical decision-making. There appear to be brain circuits active during moral judgement that are linked to emotions such as empathy, guilt and pity. Serotonin selectively influences moral judgement and behaviour through increasing subjects' aversion to personally harming others. Findings such as these throw light on aspects of human social behaviour.

However, it is impossible to divide the brain into distinct functional compartments. Altering serotonin levels not only affects behaviour, it is also involved in cardiovascular regulation, respiration, sleep-wake cycles, and reward learning (Levy, quoted in Selinger 2012). Even within the morality area itself the enhancement of moral cognition may have other consequences, such as increasing people's willingness to allow cheaters to go unpunished. Not only this, enhancing memory may also lead to higher sensitivity to pain. In other words, human behaviour, no matter how neurally-based it is, cannot be reduced to simplistic formulae.

Very similar comments apply to the role of *oxytocin*, a neuropeptide. For instance, the administration of an oxytocin nasal spray increases trust, and also plays a role in in-group favouritism, in cooperation within groups, and in the emergence of intergroup conflict and violence.

Clearly then, these two chemicals have a part to play in moral behaviour. They influence aspects of our moral responsiveness, although this is far from explaining away moral responsibility.

However, some ardent proponents of moral bioenhancement go well beyond such a tentative conclusion and write in glowing terms that, for instance, potential criminals will be prevented from committing evil deeds. People's sympathy and concern for the plight of the global poor will be raised using technological means. Even world peace may be achieved technologically.

The idealism and scientific naivety are hard to comprehend, and yet are put forward as serious contributions to cutting-edge ethical debate on moral enhancement. The use of moral technology is regarded as the way to enhance people's altruism and concern for the poor, to reduce aversion

to those of other racial and cultural groups; and to foster in children willingness to consider the suffering and plight of others (Persson and Savulescu 2008). This mix of speculation and idealism is indeed a heady one.

Living through a reproductive revolution

IVF is the best known and most commonly used procedure within the whole gamut of the artificial reproductive technologies (ARTs). It is however, constantly being refined. This is demonstrated by the development of various techniques used with IVF to improve the success of the procedure. These techniques include intracytoplasmic sperm injection (ICSI), which in some cases increases the chance that an embryo will be formed by directly injecting a single sperm into an egg (for overview see Jones and Whitaker 2009).

The hormonal regime prescribed for women undergoing IVF causes them to superovulate and produce a number of eggs (up to 15) in a single cycle. Currently, embryos and sperm can be frozen and defrosted easily without causing any significant damage. On the other hand, egg freezing is not as routine.

Usually a successful pregnancy occurs before all the embryos have been implanted, leaving embryos surplus to the couple's needs. These frozen embryos can be stored for a prescribed period of time, after which they are allowed to defrost and die, are donated to another couple, or used in research, depending on what is allowed in the country in question.

Preimplantation genetic diagnosis (PGD) is an extension of IVF and is used as a possible means of circumventing the birth of children with disorders such as Duchenne's muscular dystrophy, haemophilia, and cystic fibrosis. The aim of testing is to determine whether embryos carry the harmful gene under investigation. Any embryo that does is discarded. PGD may also be employed to avoid late onset genetic disorders, such as Huntington's disease, or one with a predisposition to develop conditions like diabetes, high blood pressure, or breast cancer. Here, embryos are being selected against because of the possibility, as against the probability, that they will develop into individuals who may suffer from a particular condition.

What is striking about the ARTs in contrast to the previous two areas is that, in practice, there are no grand plans to modify human characteristics. Any changes currently being contemplated and, in some cases put into practice, are to single genes, with the aim of avoiding a particular genetically based condition. The phrase, 'designing babies', may be glibly thrown around and yet that is a figment of people's imaginations. Neither is anyone 'playing God', no matter how much this over-used expression is employed to describe biomedical feats (Jones 2005).

The term 'regenerative medicine' first appeared in the literature in 1992 as a hypothetical future technology that could revolutionize clinical treatment (Kaiser 1992). The idea gained momentum when embryonic stem cells were isolated in 1998 (Thomson et al. 1998) and the possible clinical significance of their growth potential and pluripotency was

appreciated. In theory, damaged tissues and organs could be regenerated by either the insertion of stem cells, or transplantation of tissues or organs grown *in vitro* from the patient's own stem cells. Unfortunately, many commentators have moved with undue haste from considering the use of stem cells to treat disease and disability to the potential to redesign human nature. Consequently, some writers have depicted regenerative medicine as being 'rich with Promethean promises' (Ip 2009). In my view this is completely unjustified and brings us back to the hopes and fears enshrined in unlikely grand enterprises of transforming human nature rather than the more immediate and far more important task of curing sick people.

Theological challenges

I have presented three models of intrusion into the human body and therefore the human condition. Transhumanism (TH) proposes that biological immortality is within the reach of technologically adept human beings, moral bioenhancement (ME) advocates that technology can improve people's moral behaviour, while the artificial reproductive technologies (ARTs) provide ways around infertility and means of assuring the biological quality of life of individuals from their earliest stages. These three areas range from the highly speculative to the almost routine. The question is whether Christian directives have anything to offer.

I believe they do but if we are to appreciate what, we have to get away from extreme visions, whether of utopia or dystopia. Notions of progress and rationality as well as of compassion and hope can be used to advocate for all manner of technological developments. Against this, doomsday scenarios serve to frighten and scare with their visions of modified humans with altered life courses, enshrining cyborgian elements and lacking human warmth and relationships. Each of these in its different ways is misleading, and we have to learn to reject both paths. We have to look for a far more moderate and realistic response, searching for that which is helpful and avoiding the hype and extremism. This I believe is what we should be able to find in Christian understanding.

Perfection and self-perfection

To varying degrees, there is a longing for self-perfection in each of the realms previously touched on. Some Christian commentators interpret this as espousing a God-denying culture, driven by the dream of human perfection and intent upon enhancing natural capabilities (Deane-Drummond 2006; Junker-Kenny 2006).

I have some sympathy with the gist of this condemnation, but I do not consider that it applies equally to the three realms. Nevertheless, it serves to remind us that for Christians ultimate perfection is to be found in God alone and in his redeemed kingdom. And so, while it is true that we are to strive to be perfect and to be holy, we do not expect to attain this state in the present kingdom. Additionally, the perfection we are to seek is to be that of character and attitudes and not of the physical human body. It is within the network of human and divine relationships that we put into effect the work of Christ. While this transcends the physical and biological, it does not totally ignore them. Hence I would not condemn genetic

intrusions into embryos, since the goal of these is not genetic perfection. They fit within the paradigm of healing and care for those in need of restoration, albeit restoration that is limited in both time and scope. Such goals are realistic, and fit comfortably within Christian imperatives.

Alongside talk of perfection, it is important to be reminded of our imperfection as human beings. Everything we touch is tainted; we see in a glass darkly (1 Corinthians 13: 12). Our understanding is inevitably partial, and we are never as wise as we would like to be. Consequently, our scientific endeavours and our clinical competence are incomplete; the developments of which we are most proud leave much to be desired. Christians should be the first to applaud what we can do but also to acknowledge what is beyond our powers of comprehension and control. Self-perfection is unattainable biologically and untenable theologically.

Mortality and immortality

The more extreme versions of these aspirations constitute a secular eschatology, in which humans will be able to achieve a form of bodily immortality. This of course is where transhumanism enters the picture, since this is its explicit aim. In this aspiration the future becomes an extension of the present, with all the foibles and problems of the present. Hope resides in this continuation, and in nothing else. However, the idealism inherent within this perspective contends that the foibles and problems can be removed by technology. In other words, continuation of the present is made possible by removing all pathologies that lead to illness and ageing by the powers of technology, thereby ushering in perfection and immortality. Any future existence is a vastly improved version of the present life (Garreau 2005). This is precisely the tenor of vision of which Christian writers like Deane-Drummond (2006) and Junker-Kenny (2006) are so critical.

Apart from the superficiality of this vista, Christians want to point out the lack of any recognition of human sinfulness, with its incursion into all human activities and aspirations. They would also want to remind proponents of these optimistic scenarios of the ever-present reality of death and loss. Deane-Drummond (2003) writes perceptively: 'a mortality-denying, imperfection-denying culture will not be able to accept mortality and imperfection...'. Problems spawned by attitudes of this ilk are already encountered daily in health care settings as expectations for healing far outstrip both resources and expertise.

The realism of a Christian diagnosis forces us to take note of the inequalities of opportunity throughout the world, where life is regularly cut off well before its prime, and where there is an appallingly uneven distribution of medical resources. Caring for people in dire need, treating eminently treatable diseases, and raising the standard of living of countless people constitute the major form of enhancement consonant with Christian aspirations. As we accept our mortality and limitations, we are better placed to devote ourselves to serving others confronted by suffering and deprivation than if we rejected the legitimacy of suffering and deprivation.

This, in turn, leads to commitment to all who are impaired, including those who are genetically impaired. When divorced from aspirations towards genetic perfection, we are freed to do all we can to alleviate the plight of those whose genetic constitution precipitates serious disease. These are health-related enhancements and are far removed from the desire-fuelled variety.

Facing up to the reality of death brings us to the heart of Christian thinking. Christians have no grounds for extolling the virtues of death, since death is real and evil. Verhey (2011) writes: 'Death sunders human beings from their own flesh, from the community of praise, and from God. Death is a power that threatens...' (p. 191). Although it threatens an unravelling of meaning and hence is always a cause of sorrow and grief, the context for the Christian is one of hope based in the power of God that raised Jesus from the dead (p. 201). Consequently, it is foolhardy to seek our hope in technological mastery over nature, on account of its presumptions and ultimate despair (p. 270). It is as we recognize the 'not yet' character of our present existence, that we are able to come to terms with mortality – of both ourselves and others.

Underlying Christian expectations is the Christ-centred hope that God will bring into being a world redeemed and redirected. It is the hope of the resurrection and of resurrected bodies in which all are made new. The shackles of the old will have been thrown off, and the new creation will be inaugurated. Christians are to be grateful for what can and has been achieved technologically but this will never usher in the new heavens and the new earth.

Finiteness and limitations of created humans

The discussion so far has barely touched on the prospects opened up by moral enhancement. One could argue that Christians should welcome any form of enhancement, and so it seems churlish to question prospects presented by moral enhancement, even if dependent upon technological intervention. But to expect too much of technology in this area overlooks the finiteness of human endeavours. This is not sufficient reason to reject outright attempts to improve morality, but a technological route is an inappropriate one.

Scientifically, precise scientific control of the brain is an illusion, on top of which there is the ever-present problem of side-effects, the magnitude of which is of particular significance in the brain. For instance, addiction appears to be intimately bound up with the mechanisms of action of some of the neuroenhancing drugs (Heinz et al. 2011). The speculative vistas served up in this area need to be tempered by empirical reality – what is and is not scientifically possible today and into the foreseeable future, as opposed to what might eventuate but for which there is no evidence of any description.

Dependence upon external forces to improve our moral responses is superficial and temporary. It leaves us as people untouched. Why act in way M rather than way N? Is it because we are convinced that M is preferable to N for substantial moral reasons, or because drugs acting on our brain move us in that direction? Dependence upon drug support is

reductionist, and while there is a place for this therapeutically, it should be integral to a broader therapeutic regime. For Christians the essence of the moral life is to love expecting nothing in return. Christians are to grow in maturity and understanding so that they shun wrongdoing; they are not resentful, they do not insist on always getting their own way; they learn not to be envious, boastful, arrogant or rude. They are to be kind and to rejoice in all that is good and honourable and uplifting (I Corinthians 13). Living along these lines requires understanding of spiritual truths, of one's relationship to Christ, and of the reasons for seeking such a way of life. This is the essence of moral enhancement, and while one cannot ignore a neural basis for these attitudes, neither can modification of neural substrates produce them. The latter approach is far too restricted biologically, and also fails to account for the self-centeredness of human aspirations apart from divine intervention.

The spiritual challenge is to recognize our limitations and particularly to distinguish suffering that calls out to be remedied from suffering caused by our unwillingness to accept our finitude. This suggests that there are no short cuts to moral behaviour or a moral perspective.

Humility and hubris

Any Christian conception of humility will have as core features the importance of serving others and serving the Lord rather than serving ourselves. This will manifest itself in lowly acts of service, since we will not think of ourselves more highly than we ought. The context for acting in these ways is that we are to be realistic about ourselves, knowing that we may on occasion be wrong. While these features illustrate how Christians themselves are to behave, and while they cannot automatically be imposed on others, they provide a broad base for good practice in the scientific realm.

If we accept the general nature of these practices, we begin to appreciate how important humility is for scientific practice. Overconfidence in the reliability of scientific procedures and especially in our interpretation of them may be closely allied with overweening ambition, since the latter sometimes plays far too great a part in the way in which many scientists function. This in turn leads on some occasions to outright fraud and more commonly to over interpretation of results. This is where hubris enters the picture, and with it excessive confidence in the speculations of scientists, especially where these go well beyond the results obtained (Jones 2009b; Corbyn 2012; Cyranoski 2012). We have encountered examples of this in the hype-speculative digressions on post humans and transhumanism in general, the assurance with which moral bioenhancement is put forward as a solution to a range of human problems, and in a far more restrained manner to the ARTs.

Faced with the variable speculative scenarios encountered here Christian realism entices us to question our motives, our grand theorizing and our incipient pride and arrogance. We may be wrong; we may be going in unhelpful directions. We may be caught up in our own excessive ambition to reformulate human nature in our own image, or simply end up with ideas that please our own egos. And then in science as in every other area

of life we all make errors of judgement, we all make mistakes, and sometimes our vistas turn out to be incomplete and unhelpful.

Cautions such as these are directives we dare not ignore, but sadly are frequently never taken into account. May we learn greater wisdom, wisdom that equates with greater realism. Honesty and objectivity are basic requirements for grappling with these exciting and enticing areas.

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