Book Review –
Medical Utopias: Ethical Reflections About Emerging Medical Technologies (By Bert Gordijn)

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Introduction

Emerging medical technologies present themselves as having the potential to revolutionise medicine and health care, with the promise of novel treatments for diseases that are presently incurable. Additionally there is also the promise of enhancing or increasing those human attributes that are deemed desirable. The overall outcome envisaged is a world in which human suffering is minimal, the average human lifespan is maximised, happiness and well being are abundant, and our utopian attitudes concerning our own well being are realised. In fact throughout human history the attitude towards achieving utopia seems to have been implicit in our pursuit of well being, happiness and the alleviation or prevention of suffering. However, there is a worry that the notion of medical utopia seems more like a sentiment than the product of rational contemplation. Hence society may, in the absence of rational controlling mechanisms, progress towards such utopian goals that are ethically problematic.

This book begins with a brief exposition of the history of utopian thinking in the form of a discussion of the utopian themes present in the writings of authors from antiquity (Plato), the middle ages (Thomas More) and the modern era (Francis Bacon, Rene Descartes and Marquis de Condorcet). The unprecedented scientific and technological progress made in the 18th century spawned a greater sense of optimism about controlling and perfecting humans and nature, hence contemporary medical utopian attitudes are thought to have emerged from this period of great innovation. Likewise, in the 21st century, humanity is faced with unprecedented scientific and technological advancements such that it may appear that we are well on track to realising many of those utopian objectives envisaged throughout history.

One of the objectives that has gained much momentum and has elicited a sense of utopian euphoria is that of enhancing or perfecting human nature. Humanity armed with its technology and zeal for perfection could ultimately see the utopian vision reduced to a project in genetics and bioelectronic engineering. Human suffering and mortality will be a thing of the past and the idea of heaven and salvation in the after life obviated by the promise of heaven on Earth or more appropriately "heaven in a chip"[1]. Not surprisingly, such objectives, which elicit the greatest sense of euphoria, also elicit the greatest sense of ethical concern.

Method of Ethical Analysis

This book provides a critique of medical utopian thought from an ethical standpoint, reminding us that unbridled utopian euphoria, often swept along by uncontrolled technical optimism, is not the best basis for decision making. Central to this book, however, is the discussion and ethical evaluation of the main objectives of biomedical research and emerging medical technologies. The author advocates the following methodology for ethical evaluation: - medical ethics should analyse the various moral aspects of medical research and technology "prospectively" thus addressing the issue of responsible development and appropriate application. Medical ethics should also address and analyse the issue of "desirability", which the author claims has not been addressed to any sufficient extent in the medical ethics literature. Therefore, this book is firstly a plea for a wider use of prospective analyses in ethical evaluation of new medical research projects and technologies, and secondly, it is also

[1] Kosko, B (2000) Heaven in a Chip: Fuzzy Visions of Society and Science in the Digital Age, *Three Rivers Press/Random House*

a plea for medical ethics to find its direction in questioning the fundamental desirability of developing certain medical research fields further.

The author's analysis of the ethical desirability of the objectives from the research fields of tissue engineering, bioelectronics, germ line genome modifications, and interventions in the biological aging process, was determined according to whether the following three conditions were satisfied:

Condition 1 – The objectives underlying further development of the medical research field must be worth striving for from an ethical point of view.

Condition 2 – Further development of the research field must actually contribute to a realisation of these objectives.

Condition 3 – Any ethical problems concomitant with the further development and application of the medical research field must be justifiable or surmountable.

So long as all three conditions are fulfilled, the further development of the medical research field, with regard to its objectives, is deemed to be in *principle* ethically desirable.

This methodology, discussed immediately after the introductory chapters, foreshadows the theme of the book, one that is mainly concerned with the pragmatic dimension of ethical analysis rather than the moral or philosophical dimension. As the title of the book suggest, it allows the reader to reflect on a broad range of issues and debates, which we ought to be at least acquainting ourselves with, given our current climate of scientific and technological innovation.

Discussion of Ethical Desirability

The analysis found that further development in the field of tissue engineering was in principle ethically desirable with regard to all envisaged objectives, i.e. the objectives of increasing therapeutic options available and advancing the research in this field. The author argues that the ethical concerns that arise from this field of research are surmountable, which therefore, satisfies the third condition. For example, there is the dilemma that arises from the method of therapeutic cloning, which currently necessitates the destruction of cloned embryos. However, for the purposes of tissue replacement therapy there are potential alternatives that are discussed, such as the use of adult stem cells instead of embryonic stem cells. Hence this is one way that further development and application of tissue engineering can be ethically justified.

Another major ethical issue highlighted by the author concerns the storage of cells in banks for tissue engineering and the implications that this might have for informed consent, given that the genetic profile of the individual whose cells are kept in storage banks is available. What if there was a genetic defect that was discovered? A donor has the right to be kept uninformed since knowledge of a genetic defect could have a negative impact on the donor's life. Furthermore there is also the issue of protection of privacy – what if the information were to fall into the wrong hands? This could lead to genetic discrimination by employers or insurance companies. The author argues that the appropriate use of cells/tissues in conjunction with informed consent, privacy of genetic data and the right to know or not to know, is of major concern but not fundamentally insurmountable. For example, it is suggested that confidentiality can be maintained by destroying the data that identifies the donor. Therefore it does appear that there is a case that one could make in favour of tissue engineering, despite the obvious ethical pitfalls.

With regard to the field of bioelectronics, further development is deemed ethically desirable for the objective of "increasing the therapeutic options available", but not for the objective of "improving sensory-motor and cognitive abilities". The problem is that such improvement or "enhancement" knows no natural limit and thus could have negative implications for our sense of personal identity and attitudes towards our bodies. Exogenous implants, bioelectronic integration, prostheses, synthesised organs and tissues are all examples of changing technology that encourages an image of the body as a machine. Capitalism encourages the commercialisation and commodification of the body and its parts - consider for example the commodification of various tissues and organs such as uteri, eggs, sperm, blood, as well as the biotechnology companies that have patents on genes. The fear is that human beings will become increasingly de-mystified which threatens the sanctity of human life.

The objective of enhancing human attributes and abilities through tissue engineering or bioelectronics can be viewed as an "artifactualization of humans" or "anthropomorphization of technology"[2] and as a result many established dichotomies such as nature/culture, organic/inorganic and human/machine become increasingly fuzzy[3]. According to the author this could create a sense of unease and disorientation and even "existential panic"[4]. However, whilst there may be grounds for such existential panic there is currently little consensus as to the ultimate ends/goals or ultimate nature that humanity ought to pursue, which serves as the underlying basis for whether such "artifactualization of humans" could lead to existential panic or alternatively existential bliss. Hence it ought to be pointed out that an analysis of ethical desirability depends on the ultimate ends/goals envisaged for humanity. This is an important meta-ethical question that constrains our evaluation of ethical desirability, though it is beyond the scope of this book.

The other issue is that wealthier people would be the main beneficiaries of such bioelectronic interventions, which would give rise to greater social inequality. Furthermore, in a rather extreme example highlighted by the author, improving cognitive ability could mean that one's brain is permanently connected to a number of databases in addition to other human beings. One could essentially read the thoughts of others, influence others by way of subliminal information, and those in power could manipulate whole populations. Again, the recurring themes of social injustice and infringement of autonomy/privacy is of concern here. It is therefore difficult, at this stage to state with any sense of conviction, that such problems are surmountable. Hence the third condition is not met in relation to the objective of improving sensory-motor and cognitive abilities.

With regard to the field of germ line genome modifications the ethical desirability was found to be questionable for all envisaged objectives, i.e. the objectives of preventing disease and enhancing human attributes. One of the major ethical issues is the destruction of embryos given that pre-implantation diagnoses are required to test the success of the germ line intervention, a process that involves the removal of a blastomere, which is totipotent and thus regarded as an embryo. However, in future there may be new options available that do not result in destruction of embryos, though at this stage we must still conclude that destruction of embryos is intrinsically linked to germ line modification. However, this issue also depends on the outcome of the debate surrounding the destruction of human embryos.

With regard to the objective of enhancing human attributes, there is a risk that genetic enhancements might give rise to novel polygenetic attributes. Consider for example, whether

[2] The author uses the following terms "artifactualization of humans" and "anthropomorphization of technology" to refer to the commodification or objectification of humans (pg. 127).
[3] Consider the cyborgization of humans and whether a cyborg is consistent with the nature/culture, organic/inorganic and human/machine dichotomies (pg. 128).
[4] The "artifactualization of humans" and "anthropomorphization of technology", could have negative effects on the way we perceive ourselves and our nature as human beings (pg. 128).

increasing ones intelligence might affect social skills, working ethos, ambition, and pride. There is also the fear that this will lead to the "geneticization" of humanity and could place less of an emphasis on social improvement, education, culture and motivation, in favour of a genetic "quick fix", which could further exacerbate the general public's susceptibility to unrealistic expectations about the potential of genetics. Of course the most pressing issue here is the possibility of a slippery slope towards eugenics and social marginalisation. Hence there is no clear affirmation of the ethical desirability of germ line enhancements. However, this is once again an issue that depends on the ultimate ends/goals that we envisage for humanity, which may not necessarily exclude genetic enhancements. There is indeed literature dedicated to assessing the compatibility of genetic technology with our envisaged ends/goals for humanity[5] [6].

Finally, with regard to interventions in the biological aging process, the ethical desirability was also found to be questionable for both the objectives of increasing the therapeutic options available and extending maximum lifespan. There is some doubt about whether the objectives will be realised by performing research into the biological mechanisms of aging. A basic prerequisite for this condition would be a viable theory of human biological aging; however, a uniform and generally accepted theory does not yet exist. Aging is currently regarded as a multi-dimensional, multi-causal and stochastic process[7] [8]. Whilst it is at least theoretically conceivable that interventions in the biological aging process might become feasible and thus preventative and therapeutic options are possible, it remains to be seen whether this will really be achieved.

Another concern is that our desire to live longer may not equate to greater well being, since longevity could have a negative outcome on the quality of human life, i.e. quantity does not necessarily imply quality. As the author puts it - "the meaning of life in light of the human mortality puzzle is not suddenly going to be solved by slowing down the biological aging process to prolong the end"[9]. This argument is largely based on concern about one's psychological connectedness with oneself over time, which might be lost with old age, subsequently diminishing the value of longevity. However, one may grant that long life *per se*, is not desirable, but a long, healthy and happy life certainly is. It is common sense that the goal of prolonging life must be concomitant with prolonging health and happiness. However, the author, in evaluating the ethical desirability of this objective, does not consider the notion of maximising lifespan concomitantly with happiness and well being. There are a number of compelling arguments that happiness, well being and the value of human life can be maintained despite a lack of psychological connectedness[10]. If this can be achieved, then why shouldn't we live longer?

Conclusion

This book provides a good introductory discussion of a broad range of ethical issues concerning emerging medical technologies without going into too much philosophical depth. Thus it is a good read for those who are interested in acquainting themselves with the kinds of ethical considerations and normative arguments that are central to assessing the general

[5] Bruce, D M (2006) Moral and Ethical Issues in Gene Therapy. *Human Reproduction and Genetic Ethics*, 12:1. pp 16-23.
[6] Sherlock, R (2006) Nature's End: The Theological Meaning of the New Genetics. *Ethics and Medicine*, 22:1, pp 47-56.
[7] Hayflick, L (1994) How And Why We Age. *New York: Ballantine Books*.
[8] Hayflick, L (2000) The Future of Aging. *Nature*; 408, pp 267-269.
[9] Gordijn, B (2006) Medical Utopias - Ethical Reflections about Emerging Medical Technologies. *Peeters*, pg. 214.
[10] Schloendorn, J (2006) Making The Case For Human Life Extension: Personal Arguments. *Bioethics* Vol. 20 No.4, pp 191-202.

ethical desirability of emerging medical technologies aimed at restoring and enhancing human function. It would appear that the initial utopian attitude, which seems to have provided the impetus for such medical research projects, is not a suitable yardstick for ethical evaluation. However, the author does suggest that there is a place for utopian excitement whereby it serves as a motivating force for new ideas or solutions and the exploration of pioneering research paths. The issue is whether the current research fields and emerging medical technologies aimed at restoring and enhancing human abilities would really solve the problems that humanity faces and allow humanity to realise its ultimate goals. On the contrary, such new developments will likely give rise to a whole host of new ethical problems not necessarily envisaged at the beginning. Choosing to ignore the significance of this point means that humanity is running full tilt, head on, and unprepared into what might turn out to be undesirable developments. This book serves to illustrate this point well and does so by incorporating a wide range of ethical considerations for each of the four major research fields discussed. Though as I've pointed out, questions of ethical desirability discussed here also depend on how we envisage our ultimate ends/goals as human beings, for which there is indeed none more compelling than the utopian goal of achieving happiness, salvation and transcendence from the human condition.