



NEW PERSPECTIVES ON BIOETHICS

Edited by
Vojin Rakić, Petar Bojanić, Srdan Prodanović



Institute for Philosophy and Social Theory
University of Belgrade

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Errata

Page vii: The names Jovan Babić & Petar Bojanić are printed above the chapter title by mistake. The authors of the text are Ivan Mladenović and Vojin Rakić.

Page xiv, 2nd paragraph, line 10: The section that starts with the sentence: "Rakic discusses specific differences between his position and the second view" should be a separate paragraph.

The reader is kindly asked to accept the unfortunate fact that many paragraphs are not formatted properly due to a technical error made in the layout.

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New Perspectives On Bioethics

This book focuses on new perspectives in bioethics and features papers the greatest bulk of which is devoted to the issue of human enhancement. This is not surprising given that enhancement assumes center-stage in current discussions in bioethics. In light of an accelerated development of science which enables such enhancement, an essential issue is the effect of enhancement on human nature, its moral justification and the character of a future society. In addition to this issue, the edited volume also contains chapters that deal with equally topical and controversial questions such as abortion and saviour siblings. Even though these topics certainly do not exhaust the domain of new perspectives in bioethics, it has to be noted that the papers collected here feature some of the key arguments that are representative of the current state of affairs in bioethics. In this introduction we will present some of them.

Human enhancement is relatively uncontroversial *in principle*. There is nothing unusual in the aspiration to enhance someone's bodily and cognitive abilities. The thesis about human enhancement becomes controversial when it is assumed that the means leading to it ought to be biomedical. The justification of this type of enhancement represents the main bone of contention between its proponents and opponents.

The central thesis of opponents of enhancement is based on the argument about the value of what is naturally given to us, i.e. the argument that human nature largely determines the human good. Hence, if human enhancement affects an alteration of human nature, it risks forfeiting the very possibility of determining what is good - in exchange for an uncertain future. Proponents of human enhance-

ment, however, have the possibility to accept arguments that are based on the alleged value primacy of the naturally given and still argue in favour of human enhancement. Let us imagine a world that is debased to such an extent that the only way for the human species to survive on earth is to enhance the function of human respiratory organs. Otherwise, human life would be impossible. Would opponents of enhancement which adduce the value of the naturally given still argue against enhancement? The disappearance of the human species entails a complete loss of what is naturally given. Hence, opponents of enhancement would have to concede that in that case some type of human enhancement is necessary for the preservation of human nature and the value it contains.

Some recent research does not go that far into the future but rather lays an emphasis on enhancement that can be used to alleviate the consequences of climate change. A recently propounded thesis argues that, in addition to usual means of reducing greenhouse gas emissions, one should examine the possibility of human engineering (Liao, Sanber and Roach 2012). Although risky, human engineering is significantly less dangerous than geo-engineering. The proponents of this thesis maintain that no matter how controversial their proposals might be (e.g., the idea to diminish the need of humans to eat meat in order to reduce the quantity of methane produced by livestock, cognitive enhancement aimed at reducing the birth rate, moral enhancement that would lead to greater empathy and responsibility, or even the proposal to make people smaller), the risks of their practical implementation should be weighed against the risks of an inadequate handling of climate change.

One of the main difficulties in combating climate change stems from what is known as the collective action problem (Olson 1965). This problem consists in the following: regardless of the fact that from a collective point of view the best option is that all should adhere to certain moral principles (e.g., regarding the preservation of the environment), from an individual point of view it is better when

everybody else behaves in that way, while we do not adhere to these principles ourselves. Thus, in large groups, the seemingly rational strategy of each individual would be free-riding. If everyone reasons in that way, the result would be a universal non-adherence to moral principles. Considering that the collective action problem emerges in large groups, while our moral psychology has been adjusted to life in smaller groups of people (throughout our evolutionary development), some authors maintain that confronting contemporary global challenges requires a more adequate moral psychology. Hence, we are in need of moral enhancement (Persson and Savulescu 2008).

A central contention when discussing moral enhancement is whether it implies merely traditional means or whether it requires biomedical interventions, including genetic engineering. The proponents of the second view maintain that biomedical enhancement is not only desirable to combat climate change and other global problems (e.g., nuclear armament and bioterrorism), but that the sole way to successfully handle these challenges is to make it obligatory. Persson and Savulescu, the most important proponents of this view, argue that there are two meanings of the word "human." The first meaning implies membership in the *Homo sapiens* species, while the second implies the possession of certain moral qualities.

According to them, a radical alteration or even the disappearance of humanity in the first meaning of the word is not particularly significant if its benefit is the enhancement of humanity in the moral sense. Consequently, they assert the following: "This makes it worthwhile to explore the possibility of biomedical means of moral enhancement, to change our nature. It seems to us likely that such means could be made available by further research, since moral dispositions have biological and genetic bases" (Persson and Savulescu, 2010, p. 12). We have seen that for the opponents of enhancement the main problem is precisely the alteration of human nature. They maintain that upsetting human nature may serve as a decisive reason for rejecting any type of enhancement. Let us consider the well-known

reason for utter rejection of enhancement, as formulated by Michael Sandel (2007). He maintains that for an adequate treatment of the enhancement problem it is essential to examine the moral status of nature, as well as the correct attitude of people towards what is naturally given. In this regard, he lays special emphasis on the need to respect what nature has given us. Even though this kind of respect stems from religion, it cannot be limited to the religious framework. Such respect and gratitude towards what nature has given us should also be acceptable to followers of secular worldviews.

Consequently, aspiring bio-enhancement is not just an expression of disrespect towards the naturally given (including various types of talent), but also of a drive to master nature. The latter represents "a Promethean aspiration to remake nature, including human nature, to serve our purposes and satisfy our desires" (Sandel 2007, pp. 26–27). Sandel sums up his point by asserting that enhancement "threatens to banish our appreciation of life as a gift, and to leave us with nothing to affirm or behold outside our own will" (Sandel 2007, p. 100).

Buchanan reconstructs Sandel's key argument in the following way.

- (1) The sense of giftedness is a central human good (or an important aspect of good character);
- (2) the drive for mastery is incompatible with the sense of giftedness;
- (3) the employment of biomedical enhancements is an instance of the drive for mastery;
- (4) (therefore) the employment of biomedical enhancements is incompatible with the sense of giftedness;
- (5) therefore, the employment of biomedical enhancements is incompatible with a central human good (Buchanan 2011, p. 78).

If we introduce an additional premise which assumes that if something is incompatible with the central human good, we have a conclusive reason against it, on the basis of this premise we may infer that there is a conclusive reason against biomedical enhancement. Namely, if we accept Sandel's conclusion, we opt for a general rejection of any type of enhancement and do not leave room to examine whether in individual cases some types of enhancement would be morally justified. Any further weighing of pros and cons is thus ruled out because enhancement has been proven to be morally unacceptable.

According to Buchanan, the key problem regarding this argument is its third premise. He maintains that this premise cannot be true because it neglects the complexities of human motivation that may lead to various types of enhancement. To claim that the drive for mastery is the only source of motivation for enhancement represents a generalization for which Sandel fails to offer any sort of evidence. On the other hand, it is relatively easy to find examples that may refute such a claim. For example, if someone wishes to correct her eyesight to an extent going beyond the original condition, it does not mean that with this procedure she expresses a drive to master nature. To have a somewhat better eyesight than we had previously might simply be motivated by a desire to facilitate certain aspects of everyday life. This sort of enhancement would thus not necessarily imply a disrespect of the naturally given and, consequently, a disrespect of a central human good.

Hence, Buchanan concludes that those who subject themselves to such a procedure cannot be accused of failing "to appreciate that much of what is good in life is not subject to human control" (Buchanan 2011, p 79). Furthermore, Buchanan argues that the thesis about mastery over nature can be criticized in another way as well. Let us imagine an enhancement that enables life expectancy to be extended to 400 years. Would it imply full mastery over nature? No. It is easily imaginable, namely, that such an enhancement would

preserve many uncertainties in our lives (for example, events such as weather storms and catastrophes or an encounter with someone with whom we will spend the rest of our life). Buchanan thus maintains that discussing every individual type of enhancement is a much more fruitful approach than a general rejection of the enhancement enterprise. Opponents of enhancements can claim that even if it is shown that some of them are justified, these enhancements still may entail unintended effects that will become obvious in the future. The enhancement of the functioning of certain parts of the human body may result in a deterioration of the functioning of some other parts. This can upset human nature as a whole. And even if such consequences do not occur, one could rightly pose the question to what extent considerably enhanced and hence modified humans can still be considered human beings.

Proponents of enhancement have two possible replies. One is to claim that the risks of a complete deterioration and disappearance of human nature are exaggerated and the other is to bite the bullet and accept the possibility of a complete alteration of human nature. They may place their bets on the option that humans or maybe post-humans will not merely survive in the future, but that their world will be a better and happier place than the world we currently inhabit. Opponents of enhancement may not accept the bet. They may hold that human nature is not to be subjected to a bet and that it should be preserved the way it has been given to us.

On the other hand, they can also bet on the option that leaving things as they are will not have negative effects in the future. Taking into account that the future is unknown, including the future of science, both positions probably rest to a large degree on adding lighter or darker shades to the picture representing the future – regardless of whether it contains humans or post-humans. It is not surprising, therefore, that the issue of human enhancement is such fertile ground for philosophical speculation. The first three chapters of the edited volume are devoted to moral enhancement – a theme that has

assumed center-stage in the enhancement debate of the previous couple of years. The opening chapter is Ingmar Persson's "Unfit for the Future: A Brief Argument for Moral Enhancement". Persson argues in favour of an urgent need for moral enhancement. His line of reasoning is the following (this is the key argument which Persson, in co-authorship with Julian Savulescu, has presented in several recent papers and which also is the gist of their book *Unfit for the Future: The Need for Moral Enhancement*). First, it is (allegedly) easier to do harm than good to other people. Second, contemporary technology is so advanced that it is possible to inflict "ultimate harm", i.e. harm that makes worthwhile life on earth unfeasible.

Third, human moral psychology is adapted to conditions of life in small groups and thus represents an obstacle in confronting contemporary challenges of technologically advanced and globalized societies. In the light of the aforesaid, Persson concludes that it is necessary to intervene in human moral psychology. In fact, we have an obligation to morally bio-enhance ourselves – if meaningful life on earth is to be safeguarded. Although it is obvious that only very limited means of moral enhancement are currently available, Persson emphasizes that contemporary global challenges oblige us to take moral bio-enhancement into serious consideration.

Tom Douglas's chapter discusses the issue of legitimacy of the enhancement enterprise. Following Buchanan, he terms the view of key critics of the legitimacy of such an enterprise "The Conclusive Reasons View". Contrary to theoreticians who adopt such a perspective, Douglas maintains that Buchanan has cogently demonstrated that adducing the naturally given, human nature, authenticity or character cannot furnish conclusive reasons for rejecting all types of enhancement. Conclusive reasons imply decisive arguments that rule out any further discussion of reasons for or against. The main purpose of Douglas's chapter is to examine whether it is possible to give other conclusive reasons that may challenge the legitimacy of the enhancement project. In his view, the key point in examining this

legitimacy is not the harm one might inflict on oneself, but the harm one might inflict on others. Douglas scrutinizes three candidates for conclusive reasons against enhancement, all of them implying harm-to-others. The first is based on the precautionary principle, the second on the qualitative disproportion of harm and benefit from enhancement and the third on quantitative difference (harm quantitatively outweighing benefit). Douglas concludes that none of the proposed candidates contains conclusive reasons in favour of giving up on enhancement.

Vojin Rakic's chapter focuses on the relationship between cognitive and moral enhancement. He discusses three perspectives on cognitive enhancement and morality.

- 1) Cognitive enhancement is our moral duty, because a cognitively perfected human is a better human.
- 2) Cognitive enhancement is morally justified only if it is preceded by moral enhancement. He argues that both perspectives can be shown to be less cogent than a third:
- 3) Cognitive enhancement is solely acceptable if leading to moral enhancement. Rakic discusses specific differences between his position and the second view. An essential distinction is that, according to him, moral enhancement ought not to be obligatory but voluntary. In light of the fact that the second view can be interpreted as requiring moral enhancement to precede cognitive enhancement, Rakic argues that the advantage of his perspective is that it integrates cognitive and moral enhancement into one enhancement enterprise.

In her chapter "Neuro-enhancement, New Enhancement?" Sarah Chan explores the notions of the "natural" and the "artificial" in the context of current debates on human nature and human enhancement. She examines these notions employing examples of neuro-enhancement, primarily in the cases of moral enhancement and

cyber-enhancement (which includes brain chips and brain-computer interfaces). In the first part of her text, Chan pays special attention to the notion of the "natural" in moral enhancement. She starts her discussion by reminding that increased levels of serotonin contribute to a reduction of the tendency to do harm to people in immediate surroundings. She questions the assumption that this phenomenon can unambiguously be considered to be an example of moral enhancement, because moral action implies moral judgement.

Moreover, strong emotions can help moral judgment, but they can also hinder it. In the second part of her paper, Chan discusses the relationship between the notions of the "natural" and the "artificial," but this time in the context of cyber-enhancement. Relying on conclusions similar to those of the extended mind view, Chan asserts that enhancement implying chips and implants can be viewed in a similar manner. Given that there is nothing morally suspect in employing external means (computers) to enhance human memory, the use of internal means for cognitive enhancement (such as brain implants) should also be considered as morally unproblematic. Chan believes that the essential difficulty lies in the fact that such neuro-enhancement implies mediation by other people, making human enhancement not only a moral, but a political issue as well.

In his paper entitled "Three Types of Freedom," Stefan Lorenz Sorgner deals with the problem of freedom in the context of genetic enhancement. He presents two ways of looking into genetic enhancement: from the point of view of autonomy and from the point of view of heteronomy. Autonomous decision-making related to the genetics of a certain person implies morphological freedom regarding somatic cells. A problem arises, however, when germ cells are concerned: their alteration affects not only one's own genetic makeup, but also the genetic makeup of one's progeny. Considering non-autonomous decision-making, Sorgner maintains that it is possible to justify genetic interventions on the basis of several analogies. He claims that, analogous to procreative freedom when the choice of partners is

concerned, a similar type of freedom ought to be allowed when selecting a fertilized egg after *in vitro* fertilization. Furthermore, Sorngner maintains that an analogy can be made between the freedom of parents to affect the education of their children and somatic genetic enhancement of progeny.

All in all, the author advocates three types of freedom regarding genetic enhancement: morphological, procreative and educational freedom. He delineates his position from libertarian and liberal social-democratic views, asserting that the most appropriate approach to the issue of genetic enhancement is hermeneutic pragmatism. The element of pragmatism implies adaptation to newly emerged circumstances, while the hermeneutic element consists of an understanding of the historical and social context in which certain types of enhancement are proposed (which represents a basis for drawing analogies). The chapter contributed by Nada Gligorov examines several issues related to human enhancement. She looks at the distinction between treatment and enhancement, the medicalization of enhancement and the issue of personal identity in the context of human enhancement. The distinction between treatment and enhancement is usually employed in order to argue against enhancement, because treatment is traditionally assumed to be the only morally acceptable utilization of medical means.

Gligorov points to the fact that this terminological distinction is not sufficiently precise, but even if it were to be made more precise, it could not be employed to argue in a persuasive manner against enhancement. Vaccination, generally considered to be morally permissible, can be regarded both as a type of preventive medicine and as a type of human enhancement (to be more resilient to infections is to be better). Gligorov asserts that the medicalization of enhancement might have the unenviable impact of making people neglect other opportunities to work or feel better, but that it also has favourable effects. Hence, it should not be ruled out immediately because of its negative effects – effects that might even be outweighed by its

positive impact. When personal identity is concerned, the author adduces DeGrazia's difference between numerical and narrative identity, maintaining that the opponents of enhancement make a mistake when they interpret the impact of enhancement on identity in the former meaning of the term. According to her, in light of the variability of our narrative identity and the fact that neuro-enhancement mostly concerns that type of identity, there is no reason to treat this type of enhancement as immoral.

In "Five Perspectives on Abortion Ethics," Don Marquis probes advantages and disadvantages of various pro-life and pro-choice views. He begins by examining the standpoint of reproductive freedom and the standpoint of innocent human life. These positions represent the basic stances and clear opposites in abortion ethics. Marquis rejects both of them and continues to discuss a third standpoint, one he calls the personhood perspective. According to this view, the (non-)personhood of the foetus does not prove that abortion is morally right or wrong. The fourth standpoint (Marquis terms it the pro-attitude perspective), is an upgraded version of the personhood perspective. It strongly emphasizes the value of the right to life, and is based on the conception of a person as a continued subject of experience. The desire of a person to live is an indicator that she considers her future life to be valuable. Hence, it is not some biological features (as is assumed by proponents of the standpoint of innocent human life) but rather one's valuing of her future life that grounds the right to life.

Considering that foetuses do not have such a desire, abortion is morally permissible. Marquis claims that these upgraded pro-choice perspectives face serious difficulties. The problem with them is that they are not based on an appropriate theory about the wrongness of killing. Both are too permissive in that regard: they imply that it would be morally justified to kill not only foetuses, but also adults who do not have a desire to live (due to a major depression, for example). Marquis continues to present his own standpoint. This is the

fifth standpoint, one that he terms the future of value perspective. In an earlier paper Marquis explains that "one's future of value is the class of goods in one's future that occur later than a given time in one's life, if one does not die prematurely" (Marquis 2007, p. 399). According to this view, killing a fetus is equally morally wrong as killing a depressed person, because both can be considered to have a future of value. Marquis also demonstrates that his perspective does not rule out the idea of human being as a person. He does that by introducing the notion of p-future of value, which implies that a valuable future consists not merely of future goods, but also of a future of being a person.

In her text "Procreative Selection to Help Others: Saviour Siblings", Katrien Devolder addresses a type of enhancement that does not deal with our cognition, but with our reproduction: saviour siblings. She discusses moral reasons for having saviour siblings. Pre-implantation tissue typing has been proposed as a method for creating such siblings: tissue matched children that can serve as a stem cell donor for a sick sibling in need of a haematopoietic stem cell transplantation. Despite promising results, many still think this method should not be used. Devolder's chapter addresses the two main concerns of these critics:

- (1) the risk of pre-implantation tissue typing for the saviour sibling and
- (2) the morally dubious intentions for having a saviour sibling. She argues that these concerns cannot support a conclusive argument against using pre-implantation tissue typing to select a saviour sibling. Devolder further argues that since, when selecting a child, there is good moral reason to take not only one's future child's expected wellbeing into account, but also that of others, we have a strong moral reason, if not a moral obligation, to create saviour siblings using pre-implantation tissue typing.

Veselin Mitrovic deals with social and epistemological problems regarding human enhancement. In the first part of his chapter, he examines the so-called "yuck" factor, as well as arguments which try to diminish its significance for criticism of human enhancement. Discussing mostly examples of cloning and genetic engineering, the author claims that the "yuck" factor represents a part of normal human functioning and that in this respect it cannot be fully rejected when assessing the moral justification of enhancement. In the second part of his text, Mitrovic explores the problem of differentiation of two classes in an "enhanced" society: one consisting of enjoyers of enhancement and the other of those who have no access to enhancement.

Mitrovic maintains that the approach of the power elite, nicely represented by Wright Mills' *The Power Elite* and Michael Foucault's *The Birth of the Clinic*, is the most pertinent one when we discuss this issue. In the closing part of his text, Mitrovic attempts to demonstrate that utilizing the concept of self-fulfilment in the context of enhancement, as well as adducing Weber in this context, rests on a wrong understanding of Weber's thesis about the spirit of capitalism.

Ivan Mladenović

Vojin Rakić

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Ingmar Persson

Unfit for the Future: A Brief Argument for Moral Enhancement¹

1. Introduction

It is easier for us to harm each other than it is for us to benefit each other, for instance, it is easier for us to kill than to save life. As the progress of scientific technology has increased our powers of action, our capacity to harm has reached the point at which it is possible for us to undermine worthwhile life on Earth forever. This could be done by the use of weapons of mass destruction or by causing catastrophic climatic and environmental changes. The problem is that our moral psychology has been adapted to life in small, close-knit societies with primitive technology, in which human beings have lived for the most part of their history. This is reflected in the fact that we are psychologically myopic, disposed to care more about what happens in the near future to ourselves and some individuals who are near and dear to us. We are also incapable of responding adequately to the suffering of larger collectives. Due to the fact that it is easier to harm, we have a moral reluctance to harm that is stronger than our disposition to benefit, but like the latter it is largely confined to an "in-group", and this makes it an ineffective bar when modern weapon technology enables us to create kill large numbers at long distance. To some extent we have undergone moral improvement in the course of history by means of traditional moral education. But to cope with the moral problems created by the advance of scientific technology, it seems that we would have to change radically in short time. Therefore, it is imperative that we investigate the possibility of

¹ This paper is a summary of Ingmar Persson and Julian Savulescu (2012), *Unfit for the Future: The Need for Moral Enhancement*, Oxford: Oxford University Press.

moral enhancement by means of genetic and biomedical techniques. We need advanced technology for the foreseeable future to provide a huge, and increasing, human population on Earth with a decent standard of life. In summary form the argument goes like this:

- (1) It is easier to harm us than to benefit us.
- (2) Due to the progress of scientific technology, we are now in a position to cause ultimate harm, i.e. forever make worthwhile life on this planet impossible.
- (3) Since our moral dispositions are designed for life rather in small communities with limited technology, there is considerable risk that we shall cause ultimate harm.
- (4) We need moral enhancement if possible by biomedical means, alongside traditional means to minimize the risk of us causing ultimate harm.

The following sections spell out these claims in more detail.

2. Easier to Harm than to Benefit

It is easier for us to harm each other than it is for us to benefit each other. To give an everyday illustration: most of you probably have access to a car and live in densely populated areas. Whenever you drive, you could easily kill a number of people, by ploughing into a crowd. But very few, if any, of you have the opportunity every day to save the lives of an equal number. Indeed, it might be that none of you have ever had that opportunity, since this kind of situation obtains only when, first, a large number of lives is threatened, and, secondly, you are also in a position to eliminate that threat. The claim is not that we are *never* capable of saving as many individuals as would die if a threat were not successfully foiled. It is that in order to save such number of lives, we have to find ourselves in situations in which these lives are under a threat that we could avert, and this is a comparatively rare event often beyond our control. By contrast,

we frequently have the opportunity to kill many. We could distinguish between two related aspects of the greater easiness or power to cause harm. First, the *magnitude* of the harm we can cause can be greater than the magnitude of the benefits we can provide: e.g. we can generally kill more individuals than we can save the lives of, wound more than we could heal the wounds of, and cause pain that is more intense than the pleasure that we could cause.

Secondly, there are normally many more *ways or means* of causing harm of a given magnitude than there are ways of benefiting to the same degree. This is because there are more ways of disturbing a well-functioning system, like a biological organism, than of improving it to the same extent. Thus, arbitrary interferences with well-functioning systems are much likelier to damage them than to improve them. Their degree of organization or integration tends to decrease in the course of time because most changes in them will damage them. This is a part of what is known as *entropy*. If we remove *any* of the countless conditions which are necessary to maintain the functioning of an integrated system, we shall interrupt its function, but in order to improve its function, we shall have to discover a condition which fits in so well with all or most of these conditions that the function is enhanced. Such conditions are likely to be far fewer, so this task is much harder.

This is why it is in general easier to kill than to save life. But, imagine, contrary to the present argument, that it would be as easy to save life as to kill; it would still not follow that, if we save a life, we could claim credit for as much life-preservation as we are guilty of life-destruction if we end it. This is again because there are countless conditions which are necessary for an organism to remain alive. If we remove any of these conditions, we are guilty of ending the life forever. But if we prevent the removal of such a condition, we cannot claim the whole credit for the continuation of this life, since there are other conditions which are necessary to keep it going. Therefore, our life-saving is not by itself sufficient to sustain life, while our killing

is by itself sufficient to end it. Suppose that life is good for the organism as long as it lasts. If we remove any of the conditions which are requisite to sustain it, we kill the organism, thereby depriving it of all the future good that its life would have contained had it not been ended. Thus, by removing any of those conditions we are guilty of causing it a harm which equals the loss of the goodness of which it is deprived. But if we had instead saved the organism from death at the same time, we cannot claim credit for all the good that the future has in store for it, since this saving is only one of indefinitely many conditions which are necessary for it to lead this good life in the future.

Consequently, the benefit we would bestow upon an individual by saving its life at a time would be less than the harm we would do it were we to kill it at the same time, for our saving is not sufficient for it to receive the future good life, whereas the killing is sufficient to deprive it of it. Therefore, even if it had been as easy to save life as to kill, which it has here been claimed that it is not, it would still not be true that our capacity to benefit would be as great as our capacity to harm by these means. In this argument, it has been assumed that life is worthwhile, at least better than non-existence. If Arthur Schopenhauer and other pessimists are right that life is always worse than non-existence, then the opposite would hold: by killing somebody, we would benefit them much more than we would harm them were we instead to save their life. Here we shall however proceed on the assumption that life, or at least human life, is normally better than non-existence, since this is presumably the view that most of us would take.

3. The Risk of Ultimate Harm Because of the Advance of Technology

As scientific technology increases our powers of action increase, the easiness to harm is magnified. Of course, our capacity to benefit also increases, but the power to harm maintains its clear lead. With the invention of nuclear weapons during the last century our power

to harm reached the point at which we could cause what might be called *ultimate harm*, which consists in making worthwhile life *forever* impossible on this planet. Since such a harm would prevent an indefinitely large number of worthwhile lives that would have been led in the future had it not occurred, its negative (instrumental) value is indefinitely high.

To fabricate a nuclear bomb out of fissile material, such as highly enriched uranium or plutonium, is comparatively difficult, though it might in the imminent future be within the capacity of a well-organized terrorist group. The expansion of technological prowess is likely to put in the hands of an increasing number of people such weapons of mass destruction. Now, if an increasing number of us acquires the capacity to destroy an increasing number of us, it is enough if very few of us are malevolent or deranged enough to use this power for all of us to run a significantly greater risk of death and grave injury. Biological weapons of mass destruction are far easier to fabricate than nuclear weapons – indeed, a single individual could do so. For instance, some scientists in Australia inadvertently produced a strain of mousepox that is lethal in almost 100% of mice. The study of the genetic modification of mouse pox was published on the Internet, making it indiscriminately available. Mousepox is similar to human smallpox. Knowledge of such experiments could enable a small group of terrorists to genetically engineer smallpox to create a new strain with a mortality of near to 100% instead of 30%, and with a resistance against current vaccine.

These terrorists could then fly around the world and deposit aerosolizers with fluids of this virus in airport terminals, underground stations, shopping malls, indoor stadiums, etc. Within a few minutes these aerosolizers could infect thousands of people at each location, most of whom would in their turn infect others, and so on. Since the incubation period of smallpox is one to two weeks, the disease would have spread widely before it was even detected, and even after detection there would be no effective way of preventing further dis-

semination. Biological weapons are harder to control and outlaw than nuclear weapons because they are the downside of research which has the laudable aim of curing diseases.

The advance of scientific technology has also produced another kind of threat to our survival. It has produced an explosion of the human population and its colonization of the whole planet, by giving it means to an extensive use of natural resources. The human population is now 7 billion and is expected to grow to over 9 billion by 2050 and perhaps to 10 billion by the end of the century. Population growth is bad enough, but it will coupled with a sharp rise in consumption in some populous countries like China, India and Brazil, to bring them closer to the standard of life in Western democracies. The human impact on the Earth is a function of three variables: the size of the human population, the average level of welfare, or the GDP per capita, and the efficiency of technology, i.e. how much welfare it could generate out of natural resources. "Overshoot Day", i.e. the day when we have consumed more than the Earth produces in a year and exhausted more waste than it can reabsorb, has in the last years occurred alarmingly early, in August or September.

This means that in a year humans spend close to 30% more than what the Earth can provide in the same period of time. Clearly, this overconsumption is untenable, but it seems unlikely that we could stop it only by making technology more efficient. To achieve sustainability, technology must however be made *radically* more efficient: it has been estimated (Hamilton 2010) that even if carbon emissions per unit of GDP produced are cut by 90% to 2050, this will not be enough to prevent catastrophic climatic and environmental changes. Such an increase of efficiency is of course hard to bring about, but there is also the problem that if technology is made more effective, the surplus tends to be spent on more consumption. This is what has happened so far in human history, and especially in view of the huge global inequality it is likely to go on happening. Consider the two countries which emit most carbon dioxide in the world: China and

the United States. The population of China is roughly four times as large as the population of the US, but the per capita emission of the US is roughly five times as high as it is in China.

Moreover, since 1850 the US has been responsible for 29% of the greenhouse gases put in the atmosphere whereas China has been responsible for a mere 8%. In view this historical record, China could claim a right to a per capita rate of emissions which is at least as high as that of the US. But it would be disastrous for the climate if China were to increase its level of emissions to the present level of the US. Rather, equality should be achieved by reducing the US level by 80% to the current level of China. But, needless to say, it would be exceedingly difficult to persuade voters in the US of such a Draconic cut. It would also be difficult to persuade China not to increase their present level. So, the astonishing progress of scientific technology has not produced the bright future prospects for humanity that one might have hoped. Quite the contrary, the future of humankind looks darker than ever. The prominent British scientist Martin Rees estimates that "the odds are no better than fifty-fifty that our present civilisation on the Earth will survive to the end of the present century" (Rees 2003, p. 8).

Such an estimate would have been wildly implausible with respect to any other hundred year period before 1950's, before humans acquired a nuclear capacity to blow up the Earth by nuclear weapons, and when only eruptions of super-volcanos or hits by massive asteroids presented such catastrophic threats. It then seems indisputable that contemporary scientific technology has markedly increased the risk of world-wide catastrophe, even if Rees's estimate of the risk might be exaggerated. Perhaps human civilization will end sometimes this century in a war with weapons of mass destruction over the dwindling resources of this planet. On the other hand, we have seen that we do need a more efficient technology to provide a huge – and increasing – human population with a decent standard of living without depleting the resources of the planet.

It is unacceptable to let billions of human continue to live in misery. Thus, we face a dilemma: we need sophisticated technology for the foreseeable future, though it comes with a horrifying risk.

4. Human Nature and Common Sense Morality

We face this dilemma because we are not capable of handling this powerful technology in a morally responsible way. Technology has progressed so quickly that there is now a huge mismatch between our technological and moral capacity. It is reasonable to hypothesize that our moral psychology has been shaped by evolution to suit entirely different social circumstances than the current ones. For most of their 150,000 year long history, human beings lived in small, close-knit societies with a limited technology that allowed them to affect only their most immediate environment. Therefore, evolution is likely to have made human beings psychologically myopic, disposed to care more about what happens in the near future to themselves and some individuals who are near and dear to them.

Since the threats that are most urgent to deal with in order to survive and reproduce tend to be located in the immediate future, we have been equipped with a *bias towards the near future*. It is this bias which manifests itself when we are relieved if something unpleasant due to happen to us in the immediate future is postponed, and disappointed if something pleasant in store for us is postponed. The bias towards the near future is not a discounting of possible future events in proportion to how probable they appear. For we could be greatly relieved when an unpleasant event, such as a painful piece of surgery, is postponed for just a day, even though we take this delay to make it only marginally less probable. To the extent that our lesser concern for what is more distant in the future is out of proportion to its being estimated as less probable, it is arguably irrational. The bias towards the near future is often the explanation of why we exhibit weakness of will by choosing, against our better judgement, to have a smaller good straightaway rather than to wait some extra hours for a greater

good. Many thinkers in the history of philosophy have believed that human beings are exclusively *egoistic*, i.e. concerned only about their own well-being for its own sake. But this sits ill both with everyday experience and evolutionary theory.

From an evolutionary point of view, it is to be expected that we exhibit *kin altruism*, i.e. altruism as regards our children, parents, and siblings. Kin altruism is straightforwardly explicable in evolutionary terms, since each child shares 50% of each of its parent's genes and on average 50% of each sibling's genes. Consequently, caring about kin would be caring about somebody who carries genes similar to one's own. But we seem also to develop concern for other individuals whom we meet on a daily basis and enter into mutually beneficial cooperation with. Such regular close encounters apparently tend to breed sympathy and liking, other things being equal, i.e. unless there are special reasons for aversive feelings such as hostility, fear, disgust, etc. However, the sheer *number* of subjects to whom we have to respond can present an obstacle to our adoption of a proper response. While many of us are capable of vividly imagining the suffering of a single subject before our eyes and, consequently, of feeling strong compassion for this subject, we are unable vividly to imagine the suffering of 100, or even 10, subjects even if they be in sight – indeed, we could barely vividly imagine the suffering of more than one subject. Nor could we feel a compassion which is 100 or 10 times as strong as the compassion we could feel for a single sufferer.

Rather, the degree of our compassion is likely to remain more or less constant when we switch from reflecting upon the suffering of a single subject to the suffering of 100 subjects. Yet the cost of relieving the suffering of 100 subjects may well be 100 times as high as the cost of relieving the suffering of one subject. Therefore, it is not surprising that, as the number of subjects in need of aid increases, the amount of aid we are willing to give to each subject decreases. Our altruism and disposition to cooperation do not extend indiscriminately to strangers; this would mean a too great danger of being exploited by

free-riders. Suspicion against strangers is called for, since human beings often try to get the better of each other. This is presumably the explanation of why xenophobia is a widespread characteristic of humanity.

Owing to the relative ease of causing harm, common sense morality places more stress on not causing harm than on doing good. This finds expression in the so-called *act-omission doctrine*. According to this doctrine, it is harder to justify morally causing harm than letting harm occur. But like altruism, the disposition to do good, this reluctance to refrain from harming is strongest *vis-à-vis* people in our in-groups.

The act-omission doctrine involves a *conception of responsibility as causally-based*, a feeling that we are responsible for an effect in proportion to our causal contribution to it. We do not see ourselves as causes of what we let happen, so we feel little responsibility for it. The notion of responsibility as causally based is proportionally diluted when we cause things together with other agents, e.g. when we together destroy a lawn by each of us walking across it from time to time, since our own causal contribution to the deterioration of the lawn then decreases compared to what it would have been had we destroyed the lawn single-handedly. This is obviously an aspect that is highly relevant to such issues as climate change and environmental destruction.

5. The Need for and Possibilities of Moral Enhancement

Against the background of this sketch of our moral psychology, we can see that we are rather badly equipped to deal with the moral problems that have been created by the advance of scientific technology. The limitation of our altruism to those with whom we are personally acquainted renders us unable help poor and starving people in distant developing countries. The sheer enormity of their number is also an obstacle for us to respond with an appropriate degree of sympathy

to their suffering. The trust which is necessary for cooperation is similarly limited. This gives rise to cooperation problems, like the tragedy of the commons: Suppose that if the herdsmen of a village let their cattle continue to graze to the current extent the pastures that they have in common, there will be overgrazing of them in the near future. As a consequence, the herdsmen will in the course of time be able to feed fewer cattle, and they and their families will eventually starve.

Suppose further that if only a few herdsmen reduce the grazing of their cattle, and most of the other herdsmen do not do so, there will still be overgrazing, though it will occur somewhat later. Almost all of them will have to effect a reduction if overgrazing is to be avoided. Then it might not be rational for any individual herdsman to cut down on the grazing of his cattle. This will be rational only if he has good reason to believe that a sufficient number of the other herdsmen will do so as well, and especially if this number will not be sufficient without his own contribution. Otherwise, his reduction will be a useless sacrifice. In small villages there might be good reason to trust that others will do their share. But in contemporary societies, which have millions, and sometimes even billions of members, there is little ground for such trust. Also, it is easy for free-riders to escape detection.

Similar problems arise internationally, in negotiations between different nations about e.g. reductions of emissions of greenhouse gases. The bias towards the near future is also a drawback in the context of climatic and environmental problems, since the worst effects on the climate and environment are likely to occur in the more remote future. Our parochial altruism is likewise a drawback, since the people who will suffer most from our wasteful lifestyle are future generations and poor people in developing countries. Our conception of responsibility as causally based is a further obstacle, for the reason that it is diluted when we produce an effect together with others because our own causal contribution then decreases. This conception

of responsibility, and the concomitant weak feeling of responsibility for what we let happen, becomes particularly pernicious when our powers of action grow, and we could do a lot of good by eliminate suffering in developing countries. Together with the limitation of our altruism and our inability to sympathize with great numbers, this conception of responsibility is a large part of the cause of why so little has been done to rectify global inequality. Our reluctance to harm is stronger than our disposition to do good, but it is most powerful with respect to individuals in our neighbourhood. This is worrying since by means of weapons of mass destruction we can kill huge numbers at great distance. During human history some moral improvement has occurred; consider, for instance, the idea that all human beings are of equal worth that is now more widely spread than ever. But to a significant extent people pay only lip-service to this doctrine; their behaviour often gives evidence of racial discrimination, and in recent times we have witnessed even outbreaks of genocide, e.g. in ex-Yugoslavia and Rwanda. Xenophobia lurks beneath the surface.

Since human moral development has been relatively modest so far in the course of history, and such a great moral improvement in short time seems necessary for us to handle responsibly the enormous powers of modern scientific technology, it is important to put a lot of effort into research on biological and medical means of moral enhancement, as a supplement to intensified moral education of a traditional sort. In principle, such means could be effective, since moral dispositions like altruism have a biological basis. This is indicated for instance by the fact that it is generally stronger in women than in men, as argued e.g. by Simon Baron-Cohen (2003). Moreover, there are no valid philosophical or moral objections to moral enhancement by such means. Contrary to what some, e.g. John Harris, claim it does not undermine our freedom.² The most interesting scientific find-

² See his "Moral Enhancement and Freedom" (Harris 2010, pp. 102–111), and the reply by Ingmar Persson and Julian Savulescu: "Getting Moral Enhancement Right: The Desirability of Moral Enhancement" (Persson and Savulescu, forthcoming).

ings in the area of moral bioenhancement might be on the hormone oxytocin. Oxytocin is naturally elevated by sex and touching, but it can also be elevated by nasal spray. It facilitates maternal care, pair bonding, and other pro-social attitudes, like trust, sympathy and generosity. Frustratingly, however, oxytocin's effects on trusting and other pro-social behaviour towards other people appears to be sensitive to the group membership of these people. Research findings indicate that people who received oxytocin were significantly more likely to sacrifice a different-race individual in order to save a group of race-unspecified others than they were to sacrifice a same-race individual. The effect of oxytocin might then be to increase sympathy only to members of one's in-group. If this is the case, it would not be of much use to solve the global problems of today.

Research in this area, however, is still in its infancy, so it is too early to judge its prospects. Perhaps it will not be able to deliver any useful results in time, but human moral enhancement is so urgent that this avenue should be explored.³ However, even if effective means of moral bioenhancement were discovered, there is still the problem that these means must be administered by human beings who are morally imperfect; consequently, there is a risk that they will be misapplied as other kinds of scientific technology have been. The road ahead to moral bioenhancement is no doubt full of pitfalls. But it seems that humanity has now so radically changed its environment that its best chance of surviving is by radically changing its own nature so as to be able to master morally this new environment.⁴

3 Cf. Frans de Waal: "I'd be reluctant to radically change the human condition. But if I could change one thing, it would be to expand the range of fellow feeling. The greatest problem today, with so many groups rubbing shoulders on a crowded planet, is excessive loyalty to one's own nation, group, or religion" (de Waal 2010, p. 203).

4 Many thanks for valuable comments to participants of the conference (*New Perspectives in Bioethics*, Belgrade, October 13–15, 2011, especially Vojin Rakic.

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The Harms of Enhancement and the Conclusive Reasons View

Biomedical technologies have traditionally been used primarily to combat disease. But increasingly they can also be used to augment the capacities or traits of normal, healthy people. This practice is commonly referred to as *biomedical enhancement* or *bioenhancement*. Perhaps the best-established examples of biomedical enhancement are cosmetic surgery and doping in sport, but biomedical enhancement also occurs in other spheres. For example, some musicians take beta-blockers to calm their nerves before performances (Tindall 2004) and a significant proportion of American college students report taking methylphenidate (Ritalin) while studying in order to improve performance in examinations (Johnston, O'Malley and Bachman 2003; Teter et al. 2005).

Biomedical enhancements can be contrasted, on the one hand, with non-biomedical enhancements and, on the other hand, with biomedical therapies. Non-biomedical enhancements aim to augment the capacities or traits of normal, healthy individuals, but not through the use of biomedical technology. Instead, they may employ institutions (such as schools) or external technologies (such as computers). Biomedical therapies employ biomedical technologies, but, unlike enhancements, they aim to treat disease. They are the staple of mainstream Western medicine.

Non-biomedical enhancement and biomedical therapy are widely accepted as typically ethically permissible, and often ethically desirable. However, the same is not true of biomedical enhancement, which has become the subject of vigorous ethical debate.

The Legitimacy of Biomedical Enhancement

A number of different ethical questions have been asked about biomedical enhancement. When, if ever, is it ethically permissible for individuals to undergo biomedical enhancements? Should the state fund or provide these enhancements? May states/employers/parents ever permissibly require that their citizens/employees/children to undergo biomedical enhancements? Should biomedical enhancements be provided within the ordinary institutions of clinical medicine?

One important ethical question concerns the *legitimacy* of biomedical enhancement. In recent work, Allen Buchanan, argues that, at least in liberal societies, political institutions should treat biomedical enhancement as a legitimate enterprise. That is to say, they should

- (i) allow individuals and organizations “considerable freedom” to develop and use biomedical enhancement technologies,
- (ii) devote “significant public resources” to research expected to produce them, and
- (iii) promote debate about – and sound policies on – their use
(Buchanan 2011, p. 16)¹

Buchanan here takes himself to be arguing against the views taken by so-called ‘bioconservative’ authors such as Francis Fukuyama (2002, 2004), Leon Kass (2002, 2003) and Michael Sandel (2007). Though these authors have not been entirely clear about what stance society should take towards biomedical enhancement, they do appear to be committed to the view that it should not treat biomedical enhancement as a legitimate enterprise, in Buchanan’s sense. For example, Michael Sandel portrays himself as offering an “argument against enhancement” not further specified (Sandel 2007, p. 97, p. 95), and Francis Fukuyama urges that we protect “the full range of our complex, evolved natures against attempts at self-modification”

¹ See also Harris 2007.

(Fukuyama 2002, p. 172). These claims are naturally read as favouring a model in which the state generally discourages, if not prohibits, biomedical enhancements. In what follows, I will assume that Fukuyama, Kass and Sandel indeed take their arguments to show that enhancement should not be treated as a legitimate enterprise. As I will henceforth say, they are arguing against the *legitimation* of biomedical enhancement.

The Conclusive Reasons View

It is notable that, in arguing against the legitimation of biomedical enhancement, Fukuyama, Kass and Sandel do *not* engage in a balancing of the pros and cons of legitimating enhancement. Rather, they lay out one or a few reasons against such legitimation. For example, Michael Sandel bases his case against legitimation almost exclusively on the claim that engaging in biomedical enhancement expresses an objectionable attitude – an attitude of “mastery” towards oneself, or an “unwillingness to accept the given”. He does discuss other general arguments that have been offered against enhancement, but he dismisses them as inadequate (Sandel 2007, pp. 5–24).

Kass and Fukuyama both endorse a broader range of concerns about biomedical enhancement. But, like Sandel, they engage in no attempt to weigh these concerns against possible upsides of legitimating biomedical enhancement. This approach suggests that these authors accept what Buchanan has called the Conclusive Reasons View (CRV) (Buchanan 2008; Buchanan 2011). In the context of debate about the legitimation of biomedical enhancement, this can be understood as the view that there are conclusive reasons against legitimating enhancement. A conclusive reason is a reason that is decisive – that is, one that outweighs all countervailing reasons – and whose decisiveness is obvious in advance of engaging in any explicit weighing against those countervailing reasons. Unless we attribute this view Fukuyama, Kass and Sandel, it is difficult to make sense, in any

charitable way, of their tendency to evade any balancing of the pros and cons of enhancement (Buchanan 2008, pp. 19–20).

The problem is that the reasons against legitimating enhancement that have been cited by these authors look unpromising as candidate conclusive reasons. The reasons most often cited are that biomedical enhancements:

- are unnatural
- will compromise or offend against human nature
- will alienate us from our authentic selves
- express a lack of gratitude and an attitude of mastery.

Buchanan has argued that none of these considerations gives us conclusive reasons not to legitimate biomedical enhancement (Buchanan 2011) and it would, I think, be unsurprising if he were right about this. There are, at least two grounds for doubting that these considerations (either individually or collectively) constitute conclusive reasons against legitimating enhancement.

First, none of these reasons appears to be *harm*-based. None indicates that voluntarily engaging in biomedical enhancement will cause harm to anyone other than the individual who pursues the enhancement. The concern that enhancement might render the enhanced individual inauthentic is a concern about one way in which engaging in enhancement might harm *oneself*. And the concerns about naturalness, human nature, and the expression of objectionable attitudes arguably do not point to harms at all.

This is problematic since it is arguably a fundamental tenet of liberalism that a voluntary practice should be treated as legitimate *unless* it causes harm to others. According to liberals, putative reasons against legitimating an enhancement are not reasons at all unless they are grounded in harm caused to others. Of course, bioconservative writ-

ers might reject liberalism, or at least, this tenet of it.² They might maintain that considerations other than harm can provide reasons against legitimating enhancements. But now we come to the second ground for doubt. Even if one accepts that considerations other than harm *could* count against the legitimation of biomedical enhancement, it is doubtful whether any of the considerations adduced by Fukuyama, Kass and Sandel in fact play this role. The normative significance of naturalness, human nature and authenticity are all hotly contested, and it is also questionable whether the fact that an action (e.g. engaging in enhancement) expresses a defect of character or attitude can count against legitimating that action.

Like Buchanan, then, I doubt whether existing defences of the Conclusive Reasons View can succeed. However, I believe that there may be a more promising way of defending that view – one that is neither systematically advanced by Fukuyama, Kass or Sandel, nor explicitly confronted by Buchanan: one might appeal to ways in which voluntary pursuit of enhancement by some might inflict harm on others. This approach would be acceptable to liberals, and would appeal to a consideration (i.e., harm) that is widely accepted to be relevant to the legitimacy of any practice. Moreover, as we will see, there *are* several mechanisms via which biomedical enhancement might plausibly be thought to inflict harm on others, and indeed at least one author who appears to subscribe to CRV – Francis Fukuyama – has appealed, among other considerations, to concerns about harm to others.

I believe, then, that it would be premature to reject the CRV; the most promising argument in its favour has not yet been considered. My question, in the remainder of this article, will be “do concerns about harm-to-others give us conclusive reasons not to legitimate biomedical enhancement?” I begin by outlining five ways in which

² Michael Sandel suggests that standard liberal principles are unable to capture the problematic nature of biomedical enhancement and takes this to count not in favour of biomedical enhancement, but against liberalism (Sandel 2007, chap.1).

enhancement might cause harm to others. I then consider whether these can be assembled into a conclusive case against legitimating enhancement.

Five Harms of Enhancement

(1) Deliberate Harmful Use

One way in which enhancement could cause harm is by being placed in the service of harmful goals. Enhancements could be used to increase the effectiveness or efficiency of those engaged in deliberately harmful activities. The clearest example of this would be enhancement in the military. Modafinil is a drug which increases the ability of soldiers and air force pilots to fight even when deprived of sleep, and has been approved for use by the US Air Force for this purpose (Caldwell and Caldwell 2005). Since one of the aims of military combat is typically to inflict harm on one's opponents, one might expect that, where modafinil is effective at increasing a soldier's combative effectiveness, it will tend to increase the amount of harm inflicted on one's opponents.

(2) Competitive Effects

A second way in which enhancement could cause harm to others is by increasing the effectiveness the enhanced in some competitive activity, and therefore placing the unenhanced at a competitive disadvantage. This is probably the most frequently mentioned harm of enhancement and has been widely adduced in support of restrictive approaches to enhancement.³ The classic example of a competitive enhancement is doping in sport. If one athlete uses performance enhancing drugs (or other biomedical technologies), she clearly places

³ See for example: Academy of Medical Sciences, 2008, pp. 158–9; Chatterjee 2009; McKibben 2003; President's Council on Bioethics, 2003, pp. 131–4, pp. 280–1.

her competitors as a competitive disadvantage. Similar concerns can also be raised about cognitive enhancements insofar as they are used by those engaged students preparing for exams or anyone else engaged in competitive, cognitively demanding activities.

(3) Contribution to Coercive Enhancement

Another commonly mentioned way in which voluntary biomedical enhancement might lead to harm is by causally contributing to subsequent coercive biomedical enhancements (President's Council on Bioethics 2003, pp. 135–7, pp. 283–5; Farah et al. 2004, p. 423; British Medical Association 2007, pp. 19–23; Sandel 2007, pp. 18–19). There are two distinct ways in which one person's voluntary enhancement might lead others to be coerced into unwanted enhancements. First, one person's voluntary enhancement might increase the competitive pressure on others to follow suit: the unenhanced may need to engage in enhancements to maintain their competitiveness with the enhanced individuals, and thus to maintain their *status quo ante* levels of wellbeing. The initial enhancement thus puts pressure on others to enhance, and this might be thought to amount to a soft form of coercion. Second, voluntary enhancement by some might lead to coercive enhancements by breaking down anti-enhancement attitudes and conventions, perhaps ultimately leading to a society in which governments or others feel free to make enhancements compulsory. For example, suppose a number of individuals engage in enhancements that dramatically enhance their economic productivity across a range of occupations. One can imagine that, observing this effect, a government might be tempted to make the enhancement compulsory. After all, belief in the productivity-increasing effects of primary education played an important role in moves to make it compulsory.⁴

4 For example, the Elementary Education Act 1870, which paved the way to compulsory primary education in England and Wales, was motivated largely by a concern for those countries to maintain their international economic competitiveness. See for example: Ramirez and Boli 1987, p. 9.

(4) Undermining Harm Aversion

A less frequently discussed way in which enhancement might cause harm is by undermining those psychological factors that typically hold people back from harming others. These might include empathic ability, feelings or sympathy, and the capacity for moral reasoning. We can imagine various ways in which enhancements might weaken these resources. One possibility is that aggressive pursuit of enhancement by some individuals might confer on those individuals capacities so different from those possessed by others that the enhanced feel so different from (and perhaps superior to) the unenhanced that they can no longer empathise or sympathise with them (Sandel 2007, pp. 89–91). Another possibility is that enhancements might simply reduce the psychological costs of harming. Think of an intervention that enhanced forgetfulness in soldiers, thus allowing them to commit atrocities over and over without succumbing to post-traumatic stress disorder. Or consider a ruthless businessman who seeks to enhance his efficiency by biomedically suppressing feelings of altruism. These enhancements could surely increase the prevalence of harmful behaviour.

(5) Susceptibility to Justified Harm

A fifth possibility that has been considered by a few authors, lying on either side of the enhancement debate, is that cognitively or emotionally enhanced individuals might not only harm us in various ways, they might be *justified* in doing so.⁵ To see how this could occur, note that cognitively normal adult humans are normally thought to have the right to exclude children and cognitive disabled adults from effective political participation by introducing political arrangements that are much too complex for them to effectively participate in, and that are, in some cases, entirely closed to their participation.

⁵ See: Wikler 2009, pp. 341–55; Wilson 2007; Buchanan 2009; Buchanan 2011; Douglas 2011; DeGrazia 2012, pp. 135–139.

For example, we have the right to introduce democratic institutions which some cognitively disabled adults cannot understand, and from which children are legally prevented from participating. Now suppose that there existed super-enhanced beings capable of much more sophisticated forms of social and political co-ordination than us. It might be thought (by them, us, or both) that they would have the right to introduce these socio-political arrangements at the expense of our less sophisticated arrangements, even though we would then be excluded from effective engagement in the dominant co-operative system.⁶ There would thus be a sense in which the existence of the super-enhanced beings would have rendered ordinary humans more susceptible to permissible harm of a certain kind. And this increase in susceptibility to permissible harm might itself be regarded as a harm.

Are There Conclusive Harm-Based Reasons against Legitimizing Biomedical Enhancement?

There are several ways in which biomedical enhancements undergone by some individuals *could* impose harms on others. Moreover, we might expect that at least some actual biomedical enhancements *will* indeed have these harmful consequences. And we might reasonably suppose that treating biomedical enhancement as a legitimate enterprise would, by increasing the overall amount of biomedical enhancement that takes place, tend to increase the frequency with which these harms would occur compared to the situation in which we did not legitimate biomedical enhancement. Do harm-based considerations thus give us conclusive reasons not to legitimate such enhancement?

One reason to doubt that they do is that it seems doubtful whether *all* biomedical enhancements would cause harm to others. *If* only some would do so, then it might be acceptable to legitimate biomedical enhancement. Recall that political institutions legitimate biomedical

⁶ This example is modified from: Wikler 2009; Buchanan 2009.

enhancement just in case they (i) allow individuals and organizations "considerable freedom" to develop and use biomedical enhancement technologies, (ii) devote "significant public resources" to research expected to produce them, and (iii) promote debate about – and sound policies on – their use. This is consistent with prohibiting *some* biomedical enhancements. Perhaps, then, the right approach would be to legitimate biomedical enhancement, but then prohibit specific types of biomedical enhancement on harm-based grounds.

Another reason to doubt whether considerations of harm give us conclusive reasons not to legitimate enhancement is that there may be some that we have no reason to avoid. When a judge hands down a sentence to a convict, she harms that convict, but provided that the harm is proportionate to the offence, consistent with sentencing rules and so on, it is not clear that the judge has any reason not to impose that harm.

Similar thoughts may apply to some of the harms brought about through biomedical enhancement. I noted above that biomedical enhancements might harm others through competitive effects. One person's biomedical enhancement might place others at a competitive disadvantage. But it is not clear that we have reasons to avoid imposing all competitive harms. When one student buys a newer, better textbook, he may place other students at a competitive disadvantage. But it is not obvious that this gives the student a reason not to buy the textbook. Competitive disadvantages created by, say, cognitive biomedical enhancements might in some cases also lack normative significance.

For the sake of argument, however, let us suppose that either:

- (1) *All* biomedical enhancements would result in harm to others, including harm that there is reason to avoid

Or

- (2) *Many* biomedical enhancements would result in harm to others, including harm that there is reason to avoid, *and* there is no effective form of regulation that would prevent these biomedical enhancements while enabling others.

If either of these assumptions is correct, then harm-based considerations would, I take it, give us some reason not to legitimate biomedical enhancement. The interesting question, and the one that I will pursue in the remainder of this article, is whether these reasons count conclusively against legitimating biomedical enhancement.

Harms versus Benefits

One problem with the suggestion that they do is that biomedical enhancements can obviously *benefit* others as well as harming them. For example, Buchanan argues that, like non-biomedical enhancements such as education and information technology, many biomedical enhancements should be expected to significantly increase human productivity – our ability to produce things we value with the resources we have (Buchanan 2008, pp. 35–67). As well as benefitting the enhanced, this is predicted to have spillover benefits for the unenhanced, for example by lowering prices, accelerating scientific progress, and assisting the mitigation of global threats such as pandemics and climate change.⁷ It seems possible that reasons to bring about these benefits by legitimating enhancement would outweigh reasons to prevent harms by not doing so.

At this point, there seem to be three main routes open to the opponent of enhancement. One would be to argue, perhaps by appealing to a strong variant of the precautionary principle, that when a course of action is associated with serious harm, one ought not to pursue it regardless of the benefits. Another would be to argue that the benefits of

⁷ Bostrom and Ord 2006; Buchann 2011, pp. 38–49. Compare: Persson and Savulescu 2008.

enhancement are qualitatively different from, and less important than, the harms. Finally, a third response would be to argue that the benefits of enhancement will be smaller in magnitude than the harms. In what follows I consider whether any of these approaches establishes that harm-based reasons against legitimating biomedical enhancement are conclusive – that is *decisive*, and able to be established as decisive in advance of any weighing against countervailing considerations. I begin with the approach grounded on the precautionary principle.

The Precautionary Principle

The precautionary principle was developed in northern Europe in the late 1960s and is frequently advocated as a guide for assessing projects that pose environmental risks. It has been formulated in many different ways (Sunstein 2005, p. 18). Perhaps the two most frequently discussed variants hold respectively that, in assessing the risk-benefit balance posed by some policy or project:

- (i) lack of certainty about possible risks should not prevent those risks from being taken into account,⁸ and
- (ii) the burden of proof is on those who claim that a risky policy or project should be pursued.⁹

⁸ See, for example, United Nations Environment Programme, Principle 15: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (1992, online).

⁹ See, for example, Ashford et al.: "Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of the activity, rather than the public, should bear the burden of proof" (1998, online).

Neither of these variants of the principle is of much help to the proponent of the CRV. These formulations do bear on how the risk-benefit balance associated with legitimating biomedical enhancement should be determined. But once we have established that there are both risks of harm and prospects of benefit associated with legitimating biomedical enhancement – as, plausibly, we already have – these variants of the precautionary principle lose relevance, for they tell us nothing about how one should respond to a given risk-benefit profile.

A third variant of the precautionary principle appears more promising as a potential basis for the CRV. This variant holds that

(Strong Precaution) When a project or policy is associated with a serious risk, it should not be pursued regardless of its expected benefits.¹⁰

The seriousness of the risk would typically be determined by the severity of the bad outcome that may occur, though the likelihood and certainty of that outcome might also be relevant. If this variant of the precautionary principle is correct, and if the risks of harm posed by legitimating biomedical enhancement are serious, then we would have decisive harm-based reasons not to legitimate biomedical enhancement. Moreover, the decisiveness of those reasons could be established without weighing them against any benefits: the existence of a serious risk of harm combined with acceptance of *Strong Precaution* are together sufficient to rule out the legitimization of biomedical enhancement.

Strong Precaution is, however, susceptible to an apparently devastating objection. Suppose that we are considering whether to adopt some policy *P* and we wish to apply *Strong Precaution*. There are two differ-

10 See, for a similar formulation of the precautionary principle, Seas at Risk: "If the 'worst case scenario' for a certain activity is serious enough then even a small amount of doubt as to the safety of that activity is sufficient to stop it taking place" (1994, p. 28).

ent ways in which we might apply it. One option would be to simply assess the likely risks of *P*, determine whether any are serious, and if they are, conclude that *P* should not be adopted. But suppose that the following situation obtains: *P* will create some serious risks, but any alternative policy (including the *status quo* policy) is associated with even more serious risks. In this case, considerations of precaution should count *in favour of P*. Yet if we apply *Strong Precaution* in the way suggested above, it will instead count *against P*. It will instruct us not to adopt *P*. The problem arises because the risk associated with alternatives to *P* is ignored. This suggests an alternative more comprehensive approach in which we apply *Strong Precaution* to *P* and all alternative policies (including the *status quo* policy). For each alternative, we determine whether it poses a serious risk, and if it does, conclude that it should not be adopted. But if we use this method, *Strong Precaution* may imply that none of the available alternatives should be adopted, since each may pose a serious risk. In this case the principle provides guidance that cannot be followed, since it is clearly impossible to reject all policy alternatives.¹¹ Thus, if *Strong Precaution* is applied in a restricted way, it may give the wrong guidance, and if it is applied in a comprehensive way, it may give no practical guidance at all.

It might be thought that we should nevertheless apply *Strong Precaution* in cases where it *can* be applied comprehensively and still yield guidance that can be followed – that is, in cases where some *but not all* alternatives pose a serious risk. However, it seems unlikely that this is the case when the decision is between legitimating biomedical enhancement or not. This is because both legitimating and not legitimating biomedical enhancement are likely to be associated with serious risks. We have already discussed the risks of harm associated with legitimating biomedical enhancement. Risks associated with not legitimating biomedical enhancement might include a risk that biomedical enhancements will be pursued ‘underground’ without proper

¹¹ This critique is adapted from: Manson 2002; Sunstein 2005, pp. 18–49.

safeguards and thus potentially in ways that will cause significant harm, for example, through medical side effects. It seems likely that *Strong Precaution* will advise against *not* legitimating biomedical enhancement as well as against legitimating it.

At this point, we could weaken *Strong Precaution* to something like the following:

(*Weak Precaution*) In deciding between alternative policies we should attach greater weight to risks associated with each policy than to the benefits.

This principle may well yield practical guidance on the question whether to legitimate biomedical enhancement: it will not rule out all available courses of action. But it faces further problems. For example, it relies on there being a meaningful distinction between risks and the loss of benefits, but it is not clear that there is one. Suppose we chose not to legitimate biomedical enhancement and thereby sacrificed certain productivity benefits that would otherwise have been obtained. It is not obvious that this loss of benefits should not itself qualify as a risk. Another problem is that it remains unclear *why* risks should be attached more weight than benefits.

Qualitative Differences

Given the problems faced by an attempt to justify the CRV through appeal to the precautionary principle, it seems wise to look elsewhere for a defence of that view. One possible defence of the CRV would maintain that the advertised benefits of biomedical enhancement, in the form of increased productivity, are qualitatively less important than the harms. For example, we can imagine someone arguing that at least some of the harms of enhancement would be a matter of *justice* or *rights*, whereas the benefits would not. (I henceforth pursue this suggestion using the language of justice, though, given

that there is plausibly a close connection between justice and rights, I suspect what I say could be translated into the language of rights.)

When a soldier waging an unjust war takes an enhancement that increases his efficiency, this not only harms others, it does so by bringing it about that *injustices* are perpetrated against those others. Similarly, if voluntary enhancement by some individuals harms others by encouraging the state to pursue coercive enhancements, it might be thought that those harms could be the upshot of an injustice. For surely it could be unjust for the state to coerce people to undergo biomedical enhancements. These cases suggest that there are reasons of *justice* not to legitimate biomedical enhancement.

It is, arguably, less clear that there are reasons of justice to bring about productivity benefits through legitimating biomedical enhancement. According to certain minimalist theories of justice, justice gives us reasons only to abstain from the most seriously immoral actions. For example, it may give us reasons only to correct, and refrain from causing or materially contributing to exploitation, oppression and extreme deprivation. It doesn't give us reasons to bring about gains in social productivity.

If it is correct that the harms of enhancement are a matter of justice, but the benefits are not, then the CRV will look quite plausible. This is because justice is often thought to be a moral consideration of over-riding importance. Thomas Nagel puts it like this:

Some people suffer from congenital handicaps, mental and physical, which are not only burdens in the themselves, but affect the capacity to gain benefits through social interaction. Others suffer from diseases, like kidney failure, that require expensive treatment. I do not think that society has the same kind of responsibility, under justice, with respect to those inequalities that it has with respect to others that are socially caused. Straightforward humanitarian concern for the welfare of those afflicted

will not be undermined by the fact that nature is responsible for their disadvantage, but the kinds of deontological judgments of justice that *take precedence* over the general welfare may well be.

(Nagel 1997, p. 315)

If Nagel is right, then an appeal to justice will be a promising way of defending the Conclusive Reasons View. Nevertheless, I don't think the view can be rescued so straightforwardly. This is because biomedical enhancements could have other benefits, besides those of increased productivity, and these might well be a matter of justice. That is to say, they might be benefits that we have reasons of justice to promote.

(1) Preventing Injustice through Biomedical Enhancement

An initial possibility is that biomedical enhancements might be used in ways that prevent the perpetration of injustices. One way in which they might do this is by altering the enhanced person's moral psychology in a way that makes her less likely to act unjustly. The enhancement might, for example, attenuate those psychological factors that dispose a person to act unjustly.

There is already one biomedical intervention that is used more-or-less in order to prevent the perpetration of injustices. Anti-androgenic drugs are used in several jurisdictions to prevent recidivism in sex offenders, a practice that has become known as 'chemical castration'. Chemical castration significantly reduces rates of re-offending in certain classes of sex offender, include paedophiles.¹² It is unclear whether this intervention should be regarded as a biomedical *enhancement*, since it is being used to correct what is clearly an abnormality (if not a disease). However, the existence of biomedical interventions capable of reducing unjust conduct in certain abnormal individuals at least

¹² See, for a recent review, Thibaut et al. 2010.

raises the prospect that it might be possible to develop interventions which also reduce unjust conduct in normal individuals.

To give a concrete example, we can imagine an enhancement that would reduce racial, sexual, or self-serving biases by attenuating the emotional aversions on which these biases are based, or by generally improving our ability to engage in explicit moral reasoning. Let us understand 'biases' as robust tendencies to more or less weight than we ought to give to certain considerations when (consciously or subconsciously) tallying competing considerations. There is a growing body of evidence showing that most people are susceptible to a range of biases, understood thus, and that these can drive behaviour that most of us would regard as unjust.

A relatively uncontroversial example of a bias is self-serving bias. Sometimes we ought to act impartially, for example when we are entrusted with settling some matter justly or fairly. Often, on such occasions, we fail to be as impartial as they we ought to be. Babcock and collaborators allocated pairs of participants to the roles of plaintiff and defendant in a legal dispute. They then presented each member of the pair with information about the case and informed them that the judge had awarded in favour of the plaintiff. When asked to estimate what would be a fair settlement, plaintiffs on average estimated that a larger settlement would be fair compared to defendants. Moreover, the difference between the estimates reached statistical significance. If the participants had reached their estimate from an impartial point of view, we would have expected there to be no significant difference between the estimates of the defendants and those of the plaintiffs (Babcock 1995).

Further uncontroversial examples of bias include racism and sexism: favouring or disfavouring the claims of those from certain racial groups or of a certain sex in cases where race and sex are morally irrelevant. It is tempting to think that racism and sexism are, at least

in Western societies, largely a thing of the past. But the evidence suggests not. Though racial bias is notoriously difficult to measure, most research suggests that, though it has declined since 1960, it remains present. Regression analyses typically find that Black US men earn less than their White counterparts even after correction for alternative explanatory factors such as educational attainment and age.¹³

Darity and Mason estimate that in 1980 and 1990 black men in the United States were paid 12–15% less than white men as a result of racial discrimination (Darity and Mason 1998, p. 71). Further direct evidence of bias comes from court proceedings (successful suits for racial discrimination remain frequent) and audits, in which pairs of actors who differ in race but are trained to perform equally well at interview apply for the same position with matched curricula vitae. A series of such audits in the United States found that black male actors were three times more likely to be turned down for a job than white male actors (Fix, Galster and Struyk 1993).¹⁴

Similar evidence is available for sexual bias (Neumark, Bank and Nort 1996). In one interesting study, Goldin and Rouse found that where symphony orchestras move from auditioning candidates in the view of auditioners to 'blind' auditions, the average likelihood of women being selected increases by fifty percent (Goldin and Rouse 2000). Sexual, racial and self-serving biases appear to be part of normal human psychology. Yet it should be uncontroversial that the behaviour motivated by these biases is often unjust. If it were possible to attenuate these biases via biomedical means, we might thereby prevent unjust conduct. Moreover, it seems somewhat plausible that this *will* be possible in the future. A technique known as neurofeedback has already shown promise in training emotional response in human research subjects. Neurofeedback involves presenting individuals with

13 See, for example, Darity, Guilkey and Winfrey 1996; Rodgers and Spriggs 1996; Gottschalk 1997.

14 See also Darity and Mason 1998, pp. 79–81.

real-time data on neural activity through continuous neuroimaging (such as fMRI). When subjects are presented with data on neural activity in certain emotional centres of their brain while engaged in emotional training tasks, they are able to quickly learn new emotional responses.¹⁵ It has been suggested that this intervention could be used as a treatment for psychopathy (Sitaram et al. 2007), and it seems plausible that it could also be used to attenuate the emotional aversions that underpin some biases.

(2) Correcting Past Injustices through Biomedical Enhancement

Another way in which enhancement might have benefits that are a matter of justice is through being used in ways that correct, or partially correct, past injustices. This possibility can be illustrated straightforwardly with the aid of hypothetical cases. Consider first this case:

Suppose that the adult members of a minority group were, as children, unjustly excluded from the education available to others by a racist government. As a result they compete less successfully in the labour market than their contemporaries from other ethnic groups. A new, more enlightened government now in power decides to provide intensive adult education programmes for members of the minority. As a result of engaging in these programmes, many members of the minority group are able to compete more successfully with their contemporaries.

I think most would agree that the educational programme offered by the government in this case helps to correct a past injustice.

But now consider a second case, in which everything is the same as before except that this time the educational deficit is too severe to be much altered by an education programme alone. So instead,

¹⁵ Sitaram et al. 2007; Sitaram and Birbaumer 2009; Caria et al. 2010.

the government decides to offer an intensive education programme *plus* a cognitive enhancing drug that improves learning ability. This programme substantially increases the success of those who undergo it in the labour market.

It seems clear that if the education programme in the first case corrected an injustice, then the combined education-biomedical enhancement programme in the second case does so too. Moreover, the biomedical enhancement described here might well become technologically feasible. There are already drugs available that augment various aspects of cognitive function including working memory and attention (de Jongh 2008), and, though the long term effects of these drugs on learning in normal individuals has not been investigated, it would not be surprising if they turned out to be positive.

(3) Justice on Both Sides

Given the possibilities described above, it seems that both those who oppose and those who support legitimating biomedical enhancement can appeal to considerations of justice. I have granted that legitimating biomedical enhancements might contribute to the perpetration of injustices. But I have also now argued that biomedical enhancements could prevent or correct injustices. Thus, *not* legitimating enhancement may also contribute to the perpetration or persistence of injustices – it might do this by preventing these injustice-correcting or injustice-preventing biomedical enhancements from taking place. Considerations of justice – arguably the most important moral considerations – can thus be found on both sides of the ledger.

Given this, it seems doubtful that the potential benefits of enhancement are qualitatively less important than the potential harms. It could be responded, at this point, that the justice-based reasons *against* legitimating biomedical enhancement are of a more powerful variety than the justice-based reasons *for* doing so. Arguably, by legitimating biomedical enhancement, a society would be actively

contributing to the future *perpetration* of injustices (such as those that consist in coercing individuals to undergo biomedical enhancement) whereas by declining to legitimate enhancement it would merely be passively allowing some future injustices to be perpetrated (or to persist). It might be argued that there are stronger reasons not to positively contribute to injustice than to prevent or correct them.

However, this response relies on the view that to legitimate biomedical enhancement is to take an active step in a way that to decline to legitimate it is not. This, I think, is questionable, for at least two reasons. First, there is a sense in which we ordinarily treat an activity as legitimate as the default position. If this is right, then there is a sense in which *not* legitimating biomedical enhancement is in fact more 'active' than is legitimating it: the former involves deviation from the default position, whereas the latter does not. Second, it seems fair to say that, at the moment, most liberal democracies treat some biomedical enhancements as legitimate and others not. For example, almost all biomedical enhancements that enhance sporting performance are widely prohibited: biomedical enhancement in sport is certainly not treated as a legitimate enterprise in Buchanan's sense.

On the other hand, cosmetic procedures generally *are* treated as legitimate. Thus, either legitimating biomedical enhancement or not legitimating it would require some change from the *status quo*. In a sense, then, both would involve taking active steps.

Quantitative Differences

A third and final way of defending the view that considerations of harm provide conclusive reasons against legitimating biomedical enhancement would maintain that the harms associated with legitimating biomedical enhancement are, or are likely to, exceed the benefits in magnitude. For example, one might argue that, although it is *possible* that biomedical enhancements might be used in ways that prevent or correct injustices, they would only very rarely be

used in these ways. Much more frequently, they will be used in ways that contribute to injustice. All things considered, then, we should expect the legitimization of biomedical enhancement to increase the amount of injustice in the world. Or one might expand the scope of one's concern from injustices to all good and bad outcomes, and one might argue simply that legitimating biomedical enhancement will have overall worse effects than not doing so.

However, this defence faces problems too. For most *non-biomedical* innovations that have augmented the capacities of normal humans, the benefits have exceeded the harms, and regardless whether the benefits are measured in terms of justice or overall good and bad. Think of computers, the internet, and telephones, devices which have enhanced our information processing and communication abilities. Or think of enhancing institutions such as schools, universities, the criminal justice system (which we could think of as a kind of external moral enhancement) and contract law (which enhances our abilities to make credible promises). Most of us think that most of these technologies and institutions have been used more for good than for bad, and have mitigated injustice more than they have contributed to it. We have at least a *prima facie* reason to expect the same to be true of biomedical enhancement technologies.

Of course, this analogy between non-biomedical and biomedical enhancements could be questioned. One could argue that biomedical enhancement technologies differ from other 'external' enhancers in ways that make them more susceptible to bad or injustice-producing uses. Certainly experience to date with the best established biomedical enhancements – doping substances and cosmetic procedures – does not fill one with confidence that biomedical enhancements will generally be a force for justice and the good.

I suspect that the most promising argument against legitimating biomedical enhancement is the one being discussed here – the one which maintains that biomedical enhancements will do more harm

than good, or more for injustice than justice. It may well turn out that this argument is well-founded. However, I find it difficult to see how we could put ourselves in a position to conclude that it is except by weighing the likely benefits of enhancement against the risks. There is some reason, based on consideration of past, external enhancements, to expect that biomedical enhancements will have net beneficial effects, both in terms of justice and overall value.

Thus, merely pointing out that biomedical enhancements will often cause harm – and may even often cause injustices – will not be enough to establish the case against legitimating these enhancements. These harm-based considerations will not provide *conclusive* reasons against legitimating biomedical enhancements. The reasons they provide may end up being decisive, but we can establish their decisiveness only by weighing them against the benefit-based reasons to legitimate biomedical enhancement.

Conclusion

The Conclusive Reasons View maintains that we have conclusive reasons not to legitimate biomedical enhancement – reasons that are decisive, and whose decisiveness is already available to us. To date, the main candidates for the role of conclusive reasons have been those grounded on considerations of naturalness, human nature, authenticity and character. But I have suggested that these are unpromising candidates. More promising, I think, are reasons grounded on harms that biomedical enhancements might cause to others. I have identified five ways in which biomedical enhancements might impose such harms and distinguished three ways in which one might argue that these reasons count conclusively against legitimating biomedical enhancement: by appealing to the precautionary principle, by arguing that the relevant harms are qualitatively different to, and more important than, the benefits of biomedical enhancement, or by arguing that the harms exceed the benefits in magnitude. I have suggested that the last of these approaches is most promising and may,

in the end, establish that we have decisive reasons not to legitimate biomedical enhancement.

However, even this approach does not support the Conclusive Reasons View. If the harm-based case against legitimating biomedical enhancements is quantitative – maintaining that the harms exceed the benefits in magnitude – then a careful *weighing* of likely harms and benefits is required, for it is not obvious in advance that the harms will exceed the benefits. This is a weighing that opponents of biomedical enhancement have yet to engage in.

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Integrated neuro-enhancement¹

Perspective 1: Cognitive Enhancement as our Moral Duty

Libertarian proponents of cognitive bio-enhancement believe that we should not refuse enhancement to someone who wishes to be subjected to it. The enlargement of human possibilities is a step to greater freedom, because of two reasons. Firstly, it increases the options open to people by adding the option of undergoing enhancement. Secondly, the enhancement itself increases freedom: it enables us to learn and earn more, augmenting thereby the number of opportunities we have in our lives. It is therefore not bio-technologies but the state that is the primary potential culprit for denying our pursuit of happiness through self-improvement.

Since human well-being is a valuable goal, the argument goes, biotechnological interventions to *increase* opportunity and happiness are morally justified even if they do not operate by treating or preventing disease. Enhancement is thus morally permissible. Some libertarians go further: if it is our duty to treat and prevent disease, it is also our duty to intervene in what is given to us by nature in order to provide an individual with the best prospects for having the best possible life (Savulescu 2007, p 525). Hence, enhancement is morally obligatory.

Arguments in favor of the moral permissibility of enhancement, including cognitive enhancement (CE), can be found in the works of Agar (2003) and Kamm (2005). Agar argues that enhancement is

¹ I am indebted to Ingmar Persson and Thomas Douglas for commenting extensively on a previous version of this paper.

morally permissible but not morally obligatory. Unlike authoritarian eugenics that embraces a monistic outlook on human excellence, liberal eugenics encourages a pluralistic view. This view is marked by an absence of compulsion which distinguishes it from the eugenic practices of the Nazis – practices that were based on the concept of a single desirable genome. Kamm (2005) argues against Sandel (2004), developing her line of reasoning into a consideration of what can be safely enhanced. Moreover, she makes an attempt to prove that, contrary to Sandel's view, the motivation of enhancement by the desire for mastery is not a satisfactory ground for asserting its impermissibility. The focal point in Kamm's argument is not different than in Agar's: an emphasis on the moral permissibility rather than on the moral duty of enhancement.

Agar's and Kamm's deliberations in favor of the moral tolerability of enhancement are developed by Harris and Savulescu into the contention that we have a moral duty to enhance. Harris argues that it is not only feasible to use genetic technology to make people healthier, longer-lived and more intelligent, but that it is in most cases our moral duty as well. Moreover, a drastic augmentation of our mental and physical powers will influence the very course of evolution. New types of regenerative medicine appear to open up the possibility of human tissue to repair itself, techniques are becoming available that can radically extend life expectancy, while new drugs can improve concentration and memory and enable us to function successfully with less sleep. Harris emphasizes that he wishes these enhancement techniques to make people healthier, longer-lived and cognitively upgraded, supporting the idea that we should enhance ourselves in almost any way we desire (Harris 2007).

In the view that was promoted by Savulescu, parents should have freedom over their children's genes that is similar to the freedom they have regarding their rearing and education. Procreative liberty is to be extended to enhancement. From the perspective of parents: since the raising of children is a private matter and parents must

endure much of the weight of having children, they have a justifiable interest in the nature of the child they are bringing up. From the perspective of all of us: it is only through "experiments in living" that people find out what is best for them, while others have the opportunity to observe the variety of lives that can be good; diversity in choice is thus essential to discovering which lives are optimal for human beings (Savulescu 2007, pp. 526–527).

The argument that enhancement is morally impermissible because we should not interfere in God's ordinance or in human nature, Savulescu rebuts by asserting that people implicitly reject this view already when screening embryos and fetuses for diseases, while vaccination, pain relief for women in labor or the treatment of deadly diseases is not less of an interference in nature or God's will than genetic therapy. Hence, medical interventions based on new biotechnologies are our moral duty and do not hinder God's will more than, for example, the administration of antibiotics (Savulescu 2007, pp. 528–529).

The fear of the creation of a two-tier society of the enhanced and the unenhanced Savulescu confutes by asserting that the inferior, unenhanced are already underprivileged all through life. Some are born terribly deprived, fated to die in physical and mental torment after short and miserable lives or to suffer great genetic disadvantage, while others are born talented in many aspects. Consequently, allowing choice to change our biology will permit the ungifted to approach the gifted. Enhancement may be fairer than the gamble of nature. Furthermore, how well the lives of those who are deprived go depends not on whether enhancement is allowed, but on the social institutions we have to protect the underprivileged and provide everyone with a fair chance in life (Savulescu 2007, p. 530).

Savulescu believes that those who oppose the use of bio-technological enhancement are guilty of a "crude form of social determinism", predicting undesirable social consequences if enhancement is permitted,

even though it is within our power to avoid these consequences taking place and to reduce inequality (Savulescu 2006, p. 336).

Moreover, the cost-benefit ratio of bio-technological enhancement compared to education might favor the former. Cheap and safe cognition-enhancing pills can improve cognition in a similar manner as years of education. But the bio-medical route to enhancement implies only a tiny fraction of the time and resources required by the educational route (Bostrom 2010).

Everything considered, what remains is the difference between a naturally given and a perfected human being. If we have to choose between these two, it is our duty to opt for the latter. A cognitively enhanced human being is a better human being. We are obliged to try to become better, while society ought to provide us with the best opportunity for this endeavor.

Perspective 2: Moral Enhancement as a Precursor to Cognitive Enhancement

Nevertheless, even if we conclude with Savulescu that enhancement “expresses the human spirit” and that “to be human is to be better” (Savulescu 2006, p. 531), the question remains whether we have the moral capacity to cognitively enhance ourselves. And if we do not have such a capacity, is moral enhancement (ME) a possible solution?² Douglas (2008) considers ME to be permissible. He focuses on motives, defining ME as follows: “A person morally enhances herself if she alters herself in a way that may reasonably be expected

2 Moral enhancement I understand here as denoting a relatively broad specter of meanings. Most importantly, it includes those types of cognitive enhancement that serve a moral purpose. This understanding makes sense, because an increase in number of acts with a moral purpose enhances us morally. Acts with a moral purpose, I posit, include those that are directed to achieving the well-being of others, but also of oneself – provided that these acts do not harm others.

to result in her having morally better future motives, taken in sum, than she would otherwise have had" (Douglas 2008, p. 229). Douglas tentatively suggests that examples of moral enhancement might include, in some individuals, a reduction of dislike of certain racial groups, as well a lessening of impulsive violent aggression. Moral enhancement would thus lead people who choose to undergo it to have better motives than they would otherwise have had (Douglas 2008, p. 231). Douglas refers to a number of relevant findings: oxytocin has been shown to promote trust, serotonin (and SSRIs) to increase cooperation and reduce aggression, while methylphenidate (marketed in the U.S. as Ritalin) reduces violent belligerence; furthermore, the biological basis for some personality types that prompt to immoral conduct appears to be elucidated – antisocial personality disorder may have biological underpinnings, whereas criminality has been related to MAO mutation on the X chromosome when coupled with social deprivation (Douglas 2008, p. 233).³ None of these findings suggests that we already have reliable means of achieving ME, but further advances may bring about such means.

The biological underpinnings of morality are also evidenced by the fact that identical twins, who have been brought up separately, exhibit similar responses in "ultimatum games". These games are usually encountered in economic experiments in which two players have to decide how to divide a sum of money that is handed out to them.

3 For an illustrative analysis of the role of the neurotransmitter serotonin, see Crockett et al. 2010. Serotonin turns out to directly alter both moral judgment and behavior through increasing our aversion to personally harming others. Hence, it has the capacity of enhancing us morally. In Crockett's experiment the level of serotonin in healthy volunteers was increased with an SSRI. The effects of this drug on moral judgment were measured in a set of moral "dilemmas", contrasting utilitarian outcomes (e.g., saving five lives) to extremely aversive harmful actions (e.g., killing an innocent human being). Individuals whose serotonin levels were increased by the SSRI turned out to be more likely to judge harmful actions as unacceptable, but only in cases in which harms were emotionally laden (Crockett et al. 2010, p. 17433).

Player 1 proposes how to divide this sum between her and Player 2. The latter can accept or reject this proposal. If Player 2 opts for rejection, neither player receives anything. If Player 2 decides to accept, the money is divided according to the proposal. Reactions to “unfair offers” (other than 50–50 splits) vary, but the similarity of the responses in the study on monozygotic twins who have been brought up separately appears to boost the hypothesis that genetic variation can affect reactions to “unfair offers”.

Persson and Savulescu believe that ME is not just morally permissible (as Douglas appears to argue), but morally obligatory. It ought to accompany other forms of enhancement.

For if an increasing percentage of us acquires the power to destroy a large number of us, it is enough if very few of us are malevolent or vicious enough to use this power for all of us to run an unacceptable increase of the risk of death and disaster. To eliminate this risk, cognitive enhancement would have to be accompanied by a *moral* enhancement which extends to *all* of us, since such moral enhancement could reduce malevolence.

(Persson and Savulescu 2008, p. 166)⁴

The argument that ME ought to “accompany” CE, appears to imply that the latter should be avoided until we are sufficiently morally enhanced: “Therefore, the progress of science is in one respect for the worse by making likelier the misuse of ever more effective weapons of mass destruction, and this badness is increased if scientific progress is speeded up by cognitive enhancement, *until* effective means of moral enhancement are found and applied” (Persson and Savulescu 2008, p. 174; emphasis added). It follows from this citation that “to accompany” is actually understood as “to precede”. That CE is to be *preceded* by ME follows also from Persson and Savulescu’s reference

⁴ An apparent modification of Savulescu’s position between 2006 and 2008 is to be noted.

to one of C.S. Lewis's fantasy novels for children and the "Deplorable Word" (a magical curse which will end all life in the world except that of the one who pronounces it).

"If we all knew the Deplorable Word, the world would likely not last long. The Deplorable Word may arrive soon, in the form of nanotechnology or biotechnology. Perhaps the only solution is to engineer ourselves so we can never utter it, or never want to utter it" (Persson and Savulescu 2008, p 175). In other words, Persson and Savulescu argue that we ought to "engineer" ourselves morally in such a manner that we will be highly disinclined to destroy ourselves with the cognitive capacities we have. In that sense, our first task is ME, while much of CE has to wait until this task has been accomplished.

Moral enhancement has to be related to our *motivation* to act morally (Persson and Savulescu 2008, p. 167). The steady decrease in racism through our evolution Persson and Savulescu forward as an example of such a motivationally determined understanding of ME: the role of racial distinction to signify a lack of kinship by marking off strangers from neighbors has been gradually losing its biological significance, enabling us to comprehend the moral falsity of racism (Persson and Savulescu 2008, p. 168). Since moral features are not a social construct, but are based in our biological makeup (Persson and Savulescu 2008, p. 168), Persson and Savulescu conclude that the potential hazards of CE are to be kept in check by serious research on the biological foundations of moral behavior, while effective and safe forms of ME are our duty and ought to be mandatory.

"At the very least, the perils of cognitive enhancement require a vigorous research program on understanding the biological underpinnings of moral behavior. As Hawking quipped, our future may depend on making ourselves wiser and less aggressive. If safe moral enhancements are ever developed, there are strong reasons to believe that their use should be obligatory, like education or fluoride in the water, since those who should take them are least likely to be inclined

to use them. That is, safe, effective moral enhancement would be compulsory" (Persson and Savulescu 2008, p. 174).

In a more recent paper, Persson and Savulescu continue to develop their argumentation along the same lines (Persson and Savulescu 2011a). They diagnose a misfit between a limited human moral nature and globalized, highly sophisticated technology. As the progress of scientific technology has been steadily increasing, the human capacity to cause harm has reached the stage at which life on Earth might be annihilated. The root of the problem is that human moral psychology has been adapted to life in small, cohesive societies with primeval technology, while it is unprepared for the moral challenges of a technologically advanced global society. The development of advanced scientific technology appears to have resulted in the need for a radical change of human moral dispositions. The misfit between a limited human moral nature and a technologically sophisticated global society ought to be ameliorated by ME, in order to achieve restraint, promote cooperation, develop respect for equality, as well as other values that are now necessary for the survival of humanity. And it is scientific progress, the cause of this misfit, that might be employed to address it – by offering means leading to the enhancement of our capacity for moral behavior. But that is precisely where the caveat ("the bootstrapping problem") is: human beings, i.e. those who need to be morally enhanced, are the ones who have to make a morally wise use of the techniques of moral enhancement (Persson, Savulescu 2011a, p. 498).

Fenton (2010) and Harris (2011) criticize Persson and Savulescu (2008). Fenton claims that if ME is to take place at the biological level, non-traditional CE is required. Hence, if we do not continue scientific research into enhancement, we have no hope of achieving the great moral progress that will ensure the survival of humans as a species. In other words, the argument that Persson and Savulescu develop appears to lead us to an obstinate predicament: "scientific progress is both the means of our salvation, as well as the means of

our downfall" (Fenton 2010, p. 148).⁵ Harris also asserts that ME must in large part consist of CE and that the latter ought not to be postponed in anticipation of the former (Harris 2011, p. 106). Not only that scientific development would be delayed in that way, but we would also impose restrictions on our freedom, including our "freedom to fall". Furthermore, much of the mass destruction we have been or will be exposed to is not attributable to malice and is thus not subject to moral intercession. It is rather the consequence of various types of cognitive failure (prejudices, "idiocy" etc.).

The most obvious countermeasure to prejudices Harris believes to be a combination of rationality and education, possibly assisted in the future by various new forms of CE (Harris 2011c, p. 105). Harris also makes an important remark about the discrepancy between what we do and what we believe we *ought* to do: "The space between knowing the good and doing the good is a region entirely inhabited by freedom . . . We know how lamentably bad we are at doing what we know we should" (Harris 2011, p. 104).

Persson and Savulescu (2011b) forcefully rebuke Harris in several ways. When the issue of freedom is concerned, they do it in the following manner. Suppose, they say, that our freedom is compatible with it being fully determined by us acting in accordance with what we believe is right to do. In that case, a proper use of moral bio-enhancement techniques will not reduce our freedom. It will simply make us always or almost always act as we believe we ought to act. Suppose on the other hand, they continue, that we are free only because, by nature, we are not fully determined to do what we believe is right to do. In that case, moral bio-enhancement cannot be truly effective, because our freedom in this indeterministic sense limits its effectiveness. In other words, no matter whether we accept determinism or indeterminism in the realm of human action,

5 For a response to Fenton's argumentation, see a recent article of Persson and Savulescu (2011c).

moral bio-enhancement will not limit our freedom. In fact, Persson and Savulecu appear to argue that moral bio-enhancement will not encroach upon our freedom, because we:

- either lack a completely free will and moral bio-enhancement will thus not make us lose our freedom;
- or we have a completely free will that limits the effectiveness of moral bio-enhancement.

But they do not take into account the possibility that we can have an entirely free will that does not limit the effectiveness of moral bio-enhancement. As a matter of fact, we can be morally enhanced in an effective manner without losing our freedom. The reason why this is possible is that our free judgment will always remain the adjudicator of the morality of our actions – even if it has been effectively subjected to moral bio-enhancement. We are free to decide whether we wish to be morally bio-enhanced. If we wish to be, we do not give up our freedom. We only use our freedom to decide to be morally bio-enhanced. Our motives might change if we undergo effective moral bio-enhancement (as do our motives change for a variety of other reasons), but our freedom will not be curtailed by it. In other words, voluntary moral enhancement, even if brought about in an effective manner by medication, induces us to act more morally, while leaving our freedom untouched.

Perspective 3: Cognitive Enhancement That Leads to Moral Enhancement

It is clear from the two foregoing chapters that both perspectives on the relationship between cognitive enhancement and morality have been subjected to vigorous mutual critiques. I will argue that both are less cogent than a third perspective. This perspective states that cognitive enhancement is morally permissible only if leading to moral enhancement, including moral bio-enhancement. In what follows I will first emphasize the discrepancy between what we do and what

we believe is right to do as arguably the fundamental problem of our moral existence, relating this discrepancy to weaknesses of the first perspective. Subsequently, I shall provide arguments in favor of the third perspective, delineating it from the second perspective. Then I will give a number of examples that are to shed additional light on the third perspective. The concluding paragraphs will be a note on the issue of whether there are individuals or groups that should be prevented from undergoing CE and ME, and whether we should expect a significant number of people being sufficiently motivated to be subjected to both types of enhancement, as defined in the third perspective.

The discrepancy between what we do and what we believe is right to do might be the greatest predicament of our existence as moral beings. The essential issue is not how to make us understand morality better, but how to morally enhance our *actions*. It is freedom rather than cognition that is at the heart of the matter. Hence, the key problem of morality comes down to how we use our freedom, to how we decide to act. On the other hand, Harris's thesis is that prejudices can best be countered by a combination of rationality and education. If these two countermeasures are applied successfully, our comprehension of morality will be enhanced.

But the question is to what degree it will morally enhance our actions (in quantity and quality)? Is it going to have a critical impact on the great moral concern of our existence, on the problem of how to bring our actions in line with our understanding of morality? Since it is difficult to believe that the impact will be even close to decisive, additional means (apart from rationality and education) will have to be sought in order to make us *act* more morally. One possibility is medication for ME. It is indeed gradually becoming possible to develop medicines that can help us act more morally. We have noted already that trust can be promoted by drugs containing oxytocin, cooperation by SSRIs, while violent aggression can be reduced by

methylphenidate.⁶ Hence, it might well be some types of drugs, rather than rationality and education, that can have a favorable bearing on the enhancement of the morality of our actions. They improve the morality of our deeds, not solely our comprehension of morality. They primarily lead to morally enhanced *behavior*.

Harris is certainly right in claiming that defects in cognition drive much immoral behavior. As Garrett Jones observes, smarter groups are generally more patient and more perceptive, traits that are keys to cooperative behavior (Jones, 2008, p. 496). If these observations are correct, the implication is that intelligence is one of the drivers of moral behavior: when we are more intelligent, we cooperate more and are less prone to violent conflict or to secretive actions; hence, we might be less inclined to certain types of immoral behavior; consequently, enhanced intelligence appears to help us act more morally. Intelligence can be improved through better nutrition, healthier environments, and better education in the world's poorest countries. In other words, traditional means of CE are indeed essential to ME. But they are not sufficient for two reasons:

- Morality has some biological underpinnings, which cannot be affected by traditional means of CE. The roles of oxytocin and serotonin have been mentioned, as well as the responses of identical twins in ultimatum games.
- Traditional means of CE do not have a critical impact on us bridging the gap between how we act and how we believe we ought to act. Hence, they do not offer us decisive help in dealing with what might be the greatest predicament of our moral existence.

⁶ It ought to be acknowledged, however, that increasing trust and decreasing aggression will not always constitute a moral enhancement. I am thankful to Thomas Douglas for arguing along these lines while commenting on this paragraph.

Moreover, not all motives for CE are morally justified (e.g., the use of methylphenidate by students in order to provide them with a comparative advantage over their colleagues during exams might be morally dubious). Hence, we should not enhance our cognition indiscriminately. We have to use our moral judgment in order to decide which types of CE are ethical. But in the second perspective it is precisely this judgment that is alleged as what ought to be enhanced.

The only morally permissible solution to this problem appears to be to promote exclusively those types of CE that lead to ME. This solution solves also the “bootstrapping” problem to which Persson and Savulescu point (2011a): human beings, i.e. those who need to be morally enhanced, will make a morally wise use of the techniques of cognitive enhancement by ensuring that all cognitive enhancement serves a moral purpose. Serving a moral purpose it contributes to our moral enhancement (see footnote 2). Hence, we need to approach cognitive and moral enhancement as a single project. Our objective ought to be cognitive plus moral enhancement, (C+M) E. Integrated neuro-enhancement.

The third perspective is to be delineated from the second as follows:

- 1) The argument that ME ought to “accompany” CE implies that the latter should be avoided until we are sufficiently morally enhanced (Persson and Savulescu pg 166, pg 174).[9] We have established that “to accompany” is understood as “to precede”. In other words, the second perspective is in favor of CE *after* ME. The third perspective, on the other hand, is against the idea of postponing CE in anticipation of ME. Nevertheless, it poses a significant limitation to CE, claiming its acceptability only if leading to ME.
- 2) If ME is to become compulsory, as is claimed by some proponents of the second perspective, our freedom will obviously be restricted. Conversely, the third perspective is not in favor of

making ME obligatory, maintaining that only voluntary (C+M) E will leave our freedom intact.

- 3) The second perspective fails to give a solution to the problem of how competent decisions on ME can be taken by ordinary humans, i.e. by those who have to be morally enhanced. This failure is a consequence of the second perspective regarding ME too much in isolation from CE. In fact, by treating ME as something that ought to take place before CE, it is not supportive of either one of them. The third perspective, on the other hand, considers CE and ME as highly related processes.

Persson and Savulescu also do not deny that the discovery of effective bio-medical techniques of moral enhancement may turn out to lie too far into the future for such techniques to give us a helping hand in facing the enormous moral problems we are overwhelmed with (Persson and Savulescu 2010a, p. 667). The solution that I propose is immediate, but integrated neuro-enhancement – *both* by education and medication.

How can this type of neuro-enhancement ameliorate the concerns Persson and Savulescu raise regarding the danger “ultimate harm”? Persson and Savulescu define ultimate harm as something that can permanently annihilate sentient life, or damage its conditions so drastically that, in general, life will not be worth living anymore (Persson and Savulescu 2011c). The danger of ultimate harm has become reality as a consequence of technological developments in the previous decades taking place at a faster pace than our moral development. We fear that life can be extinguished on our planet and are willing to do whatever we can to eliminate that possibility, even if the chance of it becoming reality is very slight. An increase in the probability of ultimate harm from 0.05 to 0.1 might not noticeably affect the intensity of our fear, whereas an increase in it from 0 to 0.05 could strike us with horror. Hence, Persson and Savulescu believe that we have to make sure that CE is accompanied (=preceded) by ME.

On the other hand, we can never fully eliminate the possibility of our self-annihilation. Nuclear, bio-technological and other weapons of mass destruction may end up in the hands of one or more deranged individuals who can inflict ultimate harm with it. Our security will not be guaranteed if we postpone CE. Cognitive bio-enhancement should not wait until humanity acquires appropriate moral capacities to deal with the potentially destructive technological means that are at its disposal. A small number of psychopaths are sufficient to cause ultimate harm. We have to learn to live with the idea that this harm will remain a possibility. The probability of the annihilation of humankind will never be 0. Hence, we can only try to keep its likelihood at a minimum. Cognitive bio-enhancement is a fiddly path – as are many other contemporary technological advances. But if we make sure that it leads to ME, we can reasonably expect that we have done what is in our power to keep the probability of ultimate harm as low as possible.

Let us look now at some examples of (C+M) E. General cognitive capacity is positively correlated with a number of morally desirable outcomes. It diminishes the risk of a variety of economic and social calamities, including bad health, accidents (even being the victim of homicide), while reducing overall mortality and improving educational outcomes (Bostrom 2010). Jones has also discussed that in prisoner's-dilemma type experiments individuals with higher cognitive abilities do not only cooperate more often, but are also found to have a stronger future orientation – something that appears to promote economic success and decrease the likelihood of morally undesirable outcomes (Jones 2008)

Robin Hanson addresses one attribute that can be associated with both our cognitive and moral capacities: truth-orientation. He discusses three types of enhancement that might contribute to our truth-orientation: more recorded and standardized statistics on our lives, prediction markets on important disputed topics, as well as in-

terventions that could cause our minds to be more transparent. These types of enhancement can result in a reduction of self-deception and bias-vices that are especially dangerous in a modern world with a variety of potentially dangerous technologies (Hanson 2009). Moreover, these vices are Janus-headed: they have both a cognitive and moral side. Consequently, CE that strengthens our truth-orientation has a moral purpose. It is CE that leads to ME.

There are a variety of laws and regulations that are Janus-headed in a similar manner. Bostrom gives the following examples of safeguards of cognition: regulation of lead in paints and water; requirements of boxing, bicycle, and motorcycle helmets; bans on alcohol for minors; mandatory education; folic acid fortification of cereals; legal sanctions against mothers taking drugs during pregnancy (Bostrom 2010). But Bostrom fails to note the Janus-headedness of these laws and regulations: not only do they safeguard or promote cognition, but in addition to that, they have a moral purpose.

Bostrom also discusses recent studies indicating that children's IQ can be boosted up by increasing maternal docosahexaenoic acid (DHA) intake during pregnancy. This increase can be accomplished by supplementing infant formula with DHA. Furthermore, cognitive function can be enhanced by the treatment of hundreds of millions of people worldwide suffering from iodine deficiency. Iodine deficient populations average between 12.5 and 13.5 IQ points less than normal populations (Bostrom 2010). Hence, by supplementing infant formula with DHA and by iodizing salt in areas that are worst affected by iodine deficiency (sub-Saharan Africa, South Asia, but also Central and Eastern Europe and the CIS), we cognitively enhance populations with a moral purpose. Unlike the mentioned examples of (C+M) E, cognitive enhancement without a moral purpose can hardly be considered as morally justified. At the very least, it has a morally ambiguous status. The use of methylphenidate with the aim of providing oneself with a comparative advantage over classmates

would be an example.⁷ In this context, it is useful to compare medicine in general with sports medicine. Tjorbjorn Tannsjo believes that in medicine in general we are to accept both enhancement and what he calls "positive measures" (the improvement of functioning of a human organism within the range of natural variation). In sports medicine, on the other hand, both enhancement and positive measures are considered as morally dubious, because in elite sports we search for the limits of human capacities, endorsing a very specific notion of justice according to which we think highly of individuals who excel for having been endowed with something valuable in the natural genetic lottery. Let it be noted that Tannsjo rejects this notion of justice (Tannsjo 2009). In the third perspective, the one that promotes integrated neuro-enhancement (C+M) E, enhancement in general and enhancement in sports medicine are both difficult to accept if they do not serve a moral purpose.

The "recreative" use of anti-depressants and tranquilizers (in order to improve our normal mood) can possibly serve the purpose of making us feel better. Such a purpose might be considered to be morally justified, according to the criterion of "acts with a moral purpose" from footnote ii. The recreative use of the mentioned drugs would then be an example of (C+M) E: it can possibly help us improve our well-being without causing harm to others. In that sense, it differs from the use of methylphenidate with the purpose of achieving a comparative advantage over competitors.

The last question I would like to address here is whether there are individuals or groups that ought to be prevented from undergoing (C+M) E and whether we should expect a significant number of people being sufficiently motivated to be subjected to (C+M) E. The first question is not difficult to answer. Since the third perspective deals

7 On the other hand, there is nothing morally doubtful in using methylphenidate for improving our motivation or boosting our self-confidence without the purpose of achieving an advantage over others in a competitive setting.

only with those forms of CE that lead to ME, there is no reason to prevent anyone from undergoing it. All should be allowed to be subjected to (C+M) E. An entirely different problem is whether many of us would be really motivated to embark on that path of improvement. Are we eager to use medication in order to enhance the morality of our actions? If we were, why would we prefer to take drugs rather than decide to act more morally without them? Furthermore, will more trust and less aggressiveness help us to be successful in the societies we live in? Might more empathy not be abused by others?

Since all of the above concerns are founded, it appears that we might be in need of external stimuli to undergo (C+M) E. The state ought not to be excluded here as an actor that can have a role in providing them. It should not prescribe (C+M) E, but it can use a variety of means in favour of C+M enhanced citizens: tax reductions, schooling allowances for their children, retirement benefits, affirmative action policies that favor them. Such benefits would give morally enhanced individuals various social advantages: advantage in opportunity, rather than equality of opportunity.

The fact that (C+M) E would not be obligatory, in combination with what has been proposed above, ensures us achieving two essential objectives. First, (C+M) E would be encouraged, while making sure that C+M enhanced individuals are not in a disadvantaged position in relation to the C+M unenhanced ones. Second, by treating (C+M) E as a matter of choice, our freedom would not be curtailed. In other words, the third perspective preserves the liberal position of the first perspective, while motivating citizens to undergo ME (critical in the second perspective). Consequently, the mutual critiques of the first (e.g., Harris) and second perspective (e.g., Persson & Savulescu) can successfully be responded to by adopting the third perspective.

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Sarah Chan

Neuro-enhancement, new enhancement?

My intention in this paper is to engage with arguments drawing on the concept of the "artificial" (as in the title of this session) and what may be seen as its binary opposite, the "natural"; and to re-examine the ways in which these concepts are used in discussions of human enhancement, particularly neuro-enhancement. I aim to explore how new aspects of neuro-technological enhancement, and the ethical discourse surrounding them, further problematise existing concepts in the enhancement debate – including enhancement itself, as well as the "natural"/"artificial" binary and the use of arguments based on "human nature".

I will focus for this purpose on two examples in the field of neuro-enhancement that highlight certain contrasts and similarities. One form of neurochemical modification that has attracted much recent bioethical attention is the possibility of altering what are called (perhaps improperly) the "moral emotions", and the associated concept of "moral enhancement". Another mode of neuro-enhancement that has been the subject of ethical debate for slightly longer is physical or electronic brain modification (for example brain chips and implantable devices). Comparing the issues raised and the ways in which ethical arguments relating to the natural, the artificial and human nature are deployed across these two related but very distinct areas may, I suggest, reveal some insights common to both.

Enhancement and human nature: the state of the debate

Let me start by laying out two possible positions in relation to human enhancement and human nature that are often cast in opposition:

- 1) "We are already enhanced humans". This claim is often illustrated by reference to examples of existing technology that increase human capacities or change what we think of as "normal" or "species-typical", such as vaccination, modern medicine, spectacles, and so forth. Other assertions also associated with this position often include that there is no moral significance to the "norm" and that therapy and enhancement lie on a continuum; at the individual level they are morally indistinguishable.
- 2) Enhancement technologies, or at least some of them (to distinguish the examples used in the first, opposing argument), are either "unnatural", against "human nature"; or would represent some (presumably unacceptable) alteration to "human nature".

These tend to align, respectively, with what have often been dubbed the "bioliberal" and the "bioconservative" approaches to the ethics of human enhancement.

Making a sound case against enhancement on the basis of human nature is a difficult task. Appeals to "human nature" and the primacy of the "natural" to reject some forms of enhancement but not others cannot succeed without providing first, an account of what is meant by "human nature" or "the natural"; showing how the enhancements in question contravene this; and most importantly, demonstrating that the account given of human nature or what is natural has moral force. It is debatable whether any of the attempts to do this have succeeded thus far, but it is not my intention here to analyse and dissect those arguments:

A weaker form of the "naturalistic" argument assumes that what is "natural" is likely to be better, even if it has no moral priority as such: what occurs in nature is taken to be better for us, or at least likely to be. In its weaker form, this argument crops up in some unexpected places, as we shall see.

Part I: Moral enhancement

Morality and emotion: where is the enhancement?

The idea of “moral enhancement” has attracted an increasing level of bioethical attention in recent times (Harris 2011; Persson and Savulescu 2010; Persson and Savulescu 2011; Douglas 2010). One possibility for moral enhancement that has come under consideration is the use of neurochemicals that have been shown to have an effect (whether we view this effect as enhancing or otherwise) on “moral behaviour”.

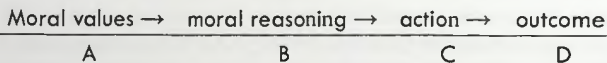
An interesting feature of considering neurochemical moral modification as a possible enhancement is that much of the research so far examines the effect of naturally occurring biological agents, at levels within the naturally occurring spectrum of human possibility. This provides us with an opportunity to re-examine the influence of the natural in the enhancement debate, in the context of arguments over moral enhancement. To do this, we must explore the relationship between morality and emotion in order to question the use of human nature arguments in discussions over what is moral and what would constitute an enhancement of morality.

The “neuroscience of morality” is a growing and complex field of scientific investigation. For the purposes of this consideration I concentrate on one example: the effect of serotonin on (so-called) moral behaviour. Increasing the level of serotonin in the brain has been shown to modulate decision-making in situations that are cast as moral/ethical dilemmas, biasing actors against causing direct harm to persons immediately present (Crockett et al. 2010). This finding has been interpreted as showing a role for serotonin in moral behaviour (Tost and Meyer-Lindenberg 2010) – the implication being that individuals who are harm-averse in the particular, narrow sense of the serotonin-affected, are somehow more moral.

In a recent series of correspondence¹ John Harris and I have critiqued this interpretation, arguing that if serotonin does act in this way, it in fact impairs moral judgment, rather than “enhancing” morality: being made more susceptible to harm-aversive emotions does not enhance moral reasoning. In summary, we have argued that serotonin, because it strengthens emotional reaction at the expense of reasoning, may even be considered a moral de-enhancer.

This position, however, does not sit entirely easily with the objections to moral enhancement that Harris raises elsewhere. In a critique of Tom Douglas’ arguments in one of the earliest papers on this topic, Harris suggests that there are some “things to which strong aversions are constitutive of sound morality” (Harris 2007, p. xiii). He cites Strawson’s work “Freedom and Resentment” as an example: it would not be “moral” not to feel antipathy to those who unjustifiably harmed our loved ones. The argument here, as Harris presents it, is that any modulation of strong aversions would have difficulty distinguishing between these strong aversions, “constitutive of sound morality”, and “things it is bad to have strong aversions to”; and a modulation that removed the former would not be a moral enhancement.

But this does not fit well, in my mind, with the account of morality and what it is “to be moral” that we have begun to develop in relation to the research on serotonin and its supposed effect on moral judgment. One possible account of moral behaviour might divide the process of exercising moral agency up into the following steps:



¹ Chan and Harris 2011, pp. 130–131; Harris and Chan 2011, p. E184.

Defects in the process might occur at any of these points:

- a) It is possible that one might hold “wrong” moral values (without presupposing what “right” moral values might consist of, or whether there is a single absolute set of ‘right values’);
- b) deficits in moral reasoning may mean that the judgments we come to on the basis of those values are unsound;
- c) we may suffer from a failure to act on good moral reasoning (akrasia, as Harris describes it)²; or
- d) the act may not produce the intended or desired outcome.

Let us accept the position, as our argument regarding the serotonin experiments implies, that the locus of the morality in this process is the reasoning step. Thus an act can be classed as a moral act if the actor has applied moral judgment or reasoning, even if it is deficient in one of the other areas.

Thus in the above account of what it is to be moral, emotions can either support or controvert moral reasoning, but they do not themselves *constitute* moral reasoning. If some “strong aversions” happen to overlap with “sound morality”, that is a fortuitous coincidence. The aversions themselves cannot be said to be “constitutive of sound morality” any more than the decisions of Molly Crockett’s serotonin-influenced research subjects, to avoid harming the person immediately in front of them at the expense of more distant persons, can be said to be moral behaviour.

According to Harris, removing the influence of strong emotions would not be moral enhancement because it weakens “essentially moral” responses, but serotonin also impairs moral judgment by making us *unduly* subject to emotional influences on moral reasoning, and for this reason, tampering with our emotions in either way

² Harris 2011.

would be morally suspect. But this leads us to ask a further question, and one that reveals, or at least cautions against, an (albeit implicit) invocation of the natural in the foregoing analysis. Elsewhere in the same paper Harris emphasises “the crucial role of personal liberty and autonomy”, “freedom to fall”, as central to his (and Milton’s) vision of humanity, and argues against implementing the kind of moral enhancements that might constrain this, even if such enhancements might be necessary to save the human race: “I... would not wish to sacrifice freedom for survival... freedom is certainly as precious, perhaps more precious than life” (Harris 2011, p. 111).

The question, then, that must be asked with respect to the juxtaposition of these arguments, is this: Why should we assume that the endogenous level of, say, serotonin (or indeed any other neurotransmitter) present in our brains confers the optimum balance between those “strong emotions” that produce “essentially moral” responses, and other emotions that might lead to defective moral reasoning, or between “freedom to fall” and being slaves to our emotions? If pro-social emotional impulses actually restrain us from being “free to fall”,³ perhaps serotonin reuptake inhibitor inhibitors are actually what is required in order to maximise meaningful liberty!

The presumption of non-interference

This case also highlights another subtle influence of the weak naturalism argument which is not often articulated: the presumption of non-interference. A simple prescription for moral action is that we should do good things when we can, and we should avoid doing bad things when we can. But what about when we just don’t know? We are not agreed, for example, about what would make us morally better – or for that matter whether becoming morally better would be better for us. That being the case, is it worse to do something than to do nothing? If one is caught between two conflicting courses of

³ Harris 2011.

action, to meddle or not to meddle, our intuition may be to think "if I don't do anything it's not my fault". We must remember, however, that if a modification is at worst neutral then there is no harm done. Of course, if we subscribe to the argument that it is easier to do harm than good,⁴ then when we don't know then we should never do. This, though, perhaps relies on unwritten assumptions about the givenness of the status quo, namely that things are the way they are and we can only act to change them, as opposed to the reality, which is that we are constantly acting to create the world around us, either by action or inaction.

Moral enhancement and human nature: In pursuit of moral perfection?

Many generally accepted accounts of morality allow that it is not always wrong or morally blameworthy to fail to do what is right or morally best. This has sometimes been characterised as weak impermissibility versus all-in impermissibility. In other words, morality does not require moral perfection. But should it?

John Harris, in his work discussed above, argues (citing Strawson) that some strong emotions are necessary to morality. One can think, however, of cases in which these same emotions might be counter to morality, or at least not conducive to moral perfection. In the famous "trolley problem" (Thomson 1976), which asks whether we should sacrifice the life of one person to save multiple others and which is often used to test moral judgment in neuroscience research, utilitarian analyses tend to lead to the conclusion that the morally best course of action is to sacrifice the one to save the many. But our aforementioned "strong emotions" would surely weigh against taking this course of action when the one to be pushed under the trolley is one's own child. Or, to take another example: in the Schuringa scenario,⁵

4 As seems to be implied by Ingmar Persson (see: Persson and Savulescu 2010).

5 Jasper Schuringa was the "hero" of Flight 253, who attacked a would-be hijacker, thereby saving the lives of the other passengers; see: Chan and Harris 2011.

what if one's child, rather than a stranger, was the hijacker? Should we allow the rest of the passengers to die rather than risk inflicting harm on one's own child?

We can say that a mother could not be *blamed* for failing to harm her own child to save many others in such a situation. Similarly, it is understandable that one would choose to rescue one's own child from the burning hospital rather than multiple others, but that does not mean it is the morally optimum choice. (And indeed some negative judgment does attach to, for example, parents of criminal children who shelter them; and vice versa in the case of parents who overcome their emotion-based protective tendencies to commit children to justice if they have really done wrong.) Nevertheless, we allow for this sort of behaviour within our account of publicly acceptable morality; we create a special case of "vicious choices" that one should not have to make. A generalisable, consistent account of morality in these cases entails accepting that we are not morally perfect beings – there is some "wobble room" for us to be imperfect. But if this is so, why reject the sort of moral enhancement which might have at least the potential to make us less imperfect?

This, then, is where I want to question our intuitions about human nature and morality in this debate. Harris' argument feels persuasive; we would be appalled at the suggestion that a person should feel a lack of special obligations to family members and be willing to sacrifice them for others, or be indifferent to the perpetrator of harm to a loved one (as in the Strawson example) – but herein lies the problem: it *feels* right, but when analysed rationally is difficult to justify as a generalisable and consistent principle, except by introducing agent-relative reasons or "vicious choice" exceptions to the rule when it comes to one's nearest and dearest. These "reasons" seem to be generated in order to justify our intuitions – we are prepared to forgive moral imperfection in this regard. Forgiving moral imperfection, though, is a very different thing to clinging on to it, if and when we have the option to overcome this weakness! Yet this is what Harris seems to

be arguing that we should do – that we would not be moral if we did not. Indeed, we probably think it would not be human to be able to exercise such perfect rational capacities, to be able to overcome our emotional impulses to protect others and particularly those close to us, about whom we care. It would not be *human* not to prefer one's own family over a stranger. But can we consistently argue that is it part of essential human nature to be morally imperfect – when we otherwise reject claims that finitude, fallibility and limitations are an essential part of human nature?⁶ What balance between reason and emotion constitutes “natural” human morality – and to what extent are we letting the ghost of the human nature concept haunt our bioethical debates over moral enhancement?

Part II: Cybernetic neuro-enhancement

The “artificial” as non-biological

The moral enhancement problem raises quantitative questions, sliding scales of what we consider to be the “best” level of neurochemicals to achieve optimum morality and how, if at all, that might relate to naturally-occurring levels of those same chemicals. It is more straightforward, at least at first pass, to distinguish the “natural” from the “artificial” in my second comparator case of cybernetic neuro-enhancement. I extend this category to include machine-mediated enhancement, including electronic and computer technology, both external (eg. cars) and internal (eg. pacemakers), as well as those enhancements that lie on the boundary (eg. prosthetic limbs, which may or may not be controlled by brain-machine interfaces). In the case of neurochemical moral enhancement serotonin and other neurotransmitters are naturally-occurring, biological products, though we may be modulating them by artificial means. In the case of physical, mechanical enhancement, nobody was ever

⁶ In choosing these words I am thinking, of course, particularly of Leon Kass (2003), discussed in: Harris 2007.

born with a silicon chip in the brain – the non-biological is clearly “artificial” in some respect.

One question of interest with respect to these sorts of enhancements is how we react to the incursion of the “artificial” in the context of cyber-enhancement and how in turn this reflects the role of the “natural”/“artificial” divide in the discourse over these new modes of neuro-enhancement. What I will suggest is that many of the concerns about and objections to cyber-enhancement fall out along the lines of what I call “the body as boundary”: that we tend to treat external cyber-enhancements differently to internal. I want to show, however, that this boundary is by no means established, solid and impermeable and that that objections to internal, as opposed to external, enhancements on the basis of that classification alone are spurious. In addition, however, we must consider the possibility that although concerns fall on this boundary, it is correlative rather than causative – there are other reasons why they align in this way, and these may point us to the root of some of the genuine ethical concerns over neuro-enhancement.

Implantable technologies and the body as boundary

Does breaching the boundaries of the physical body also constitute a transgression of some moral boundary, some change to essential human characteristics? Looking at how others have described the concerns associated with implantable technologies that breach bodily integrity, it seems that this is indeed a major, if not the sole, objection to these types of interventions. Maguire and McGee, for example, worry that “[e]lectronic equipment implanted within human bodies might replace, augment and enhance those most human of faculties, our memory and our ability to reason” (Maguire and McGee 2007, p. 291). To observe the replacement of “these most human of faculties” by external electronic enhancement, one has only to watch an average high-school mathematics student turning to a calculator to perform

simple single-digit arithmetic! Yet calculators do not seem to arouse the same kind of general concern as implantable brain chips do.

In fact, the internal/external divide is inscribed not only in our attitudes towards implantable cyber-technologies, but towards other forms of enhancement: chemical and biological as well as mechanical and physical. Consider the words of Stephen Rose on chemical cognitive enhancement: "It is true that when Galileo developed the telescope there were those among his compatriots who refused to look through it, but few today would share this ethical discomfort. Yet in the context of substances that interact directly with our bodily biochemistry, we feel a considerable unease, reflected in custom and law" (Rose 2006, p. 74). Now of course unease is not in itself a moral objection, but it does seem clear that concerns about bodily integrity and interfering with the body underlie many of the worries about implantable cyber-enhancement technologies.

The internal/external divide: some preliminary justifications

Are there valid reasons why might we be concerned to preserve the divide between internal and external – the "body as boundary"? First, it would seem that internal interventions expose the subject to greater physical risk. Our bodily integrity; the physical boundary of the body, represents our defence against the outside world: the legion of microbes that threaten to assail us whenever that boundary is breached, the external environment that is often hostile and outside our control – whereas inside our skin, we carry around our own personal, homeostatically regulated, microenvironment. There is also a greater degree of permanence associated with internal enhancements: it is much harder to take out an implanted chip than it is to take off a wristwatch or put down a smartphone.

It seems facile, though, to say that internal interventions will necessarily be more risky, even though they may tap into deeply-held

intuitions about the integrity of the body. Plenty of external enhancements pose significant risk to those who choose to adopt them – fast cars, for example. As for permanence, the external environment can wreak changes on the physical body, not just in obvious passive ways such as acquiring a suntan, or suffering injury in a natural disaster, but through the active use of external “devices” (or if you like, “enhancements”). These changes can be to the brain as well – the effect on the brains of London taxi drivers of acquiring “the knowledge” is an oft-cited example – and can be equally as permanent as direct internal interventions.

Refiguring the body

Does it and should it make a difference to us whether a technology is inside the body or outside it? We know that our self-perception can extend beyond the physical body to objects to which we grow accustomed to using. An example I have used previously in relation to this topic is that of mobile phones and laptop computers: we rely on these devices, they “enhance” us, but at the same time we tend to feel them as part of our normal or ideal “way of being in the world”. Other writers have coined a term for this array of technologies that, although not physically part of our bodies, are nevertheless part of our “selves”: the exocortex.

The blurring of the internal/external boundary goes far beyond the obvious parallels in consequence and effect. Tool use reconfigures the brain to recognise external tools as part of the body (Cardinali et al. 2009); the converse is also possible in the case of neuropsychological conditions that fail to recognise parts of physical body as part of the “self”. (Oliver Sacks reports a fascinating case of a patient who fell out of bed because he had awakened to find a strange leg in the bed with him and pushed it out of bed – only to find that it was attached to his own torso!). In other words our own brain’s image of our bodies, our feeling of our bodies as “us” is essentially malleable.

Our understanding and experience of ourselves as embodied humans intrinsically includes our interaction with assorted technologies, no matter on which side of our skin – the inside or the outside – they are located. Furthermore, external technologies also change how we perceive and understand the world. Frequent and widespread use of computers changes our experience of everyday concepts: our experience of words, for example, gains in addition to semantic meaning and sound, the physical memory associated with typing words on a keyboard.

Accepting the human body as mutable should lead to two things: the acceptability of internal interventions, whether “therapeutic” or enhancement; and a readiness to accept increasing variability in the human form and what counts as “human” in body.

Cyber-enhancement and changing human nature

Human nature also plays a part in the cyber-enhancement debate. Consider this quote regarding BMIs: “... brain-machine interfaces will put new forms of stress on... what it means to be human. Brain-machine interfaces will enable humans to be constantly logged onto the Internet, and this augmented human-system interaction can assist not only those with failing memory, but might even bestow fluency in a new language, enable “recognition” of previously unmet individuals, and provide nearly instantaneous access to encyclopedic databases. It promises to change the capacities of humans to such a degree that they become fundamentally different. Humanity itself, at least those (former) members of *Homo sapiens* who have access to the technology, will be substantially different” (McGee and Maguire 2007, p. 293).

If we look at some of the feature identified in the above quote, however, we must conclude that we are already “fundamentally different”. Recognition of “new” faces is possible thanks to social media and can

even be automated by face recognition software; readily accessible encyclopaedic knowledge is provided by search engines and information tools such as Google and Wikipedia. The ways in which we engage with and understand the world are different; the quality and the nature of knowledge have changed.

This demonstrates, if anything, that it is not actually against our nature to take technologies, whether internal or external, on board as part of ourselves and our bodies; nor to accept entities that push the conventional bounds of what we think of as "human" as being "us" – our concepts of the human body and human nature are essentially malleable.

In so far as cyber-enhancements produce changes that we should worry about, then, these changes might be not to human form but to human society. There may, as I suggested, be reasons on this basis for the lines of ethical concern to be drawn at the boundary of the body, without invoking arguments based on the natural human form or human nature itself.

Mediating technology: who controls neuro-enhancement?

A potentially very important difference between external cyber-enhancements (such as computers, the internet, phones etc, which we mostly accept) and internal (such as brain chips, brain-machine interfaces and other direct physical interventions into the brain, which are often subject to question) is that enhancements in the latter category generally require medical assistance to mediate, to introduce and if necessary to remove. The body's boundary is also the boundary of medical expertise, a realm in which ordinary citizens are not considered privileged to intervene. This raises a broader question: why are health care practitioners uniquely privileged to interfere with bodily integrity? (Though of course not entirely uniquely; tattoo and piercing artists share a limited amount of the same privilege.

Interestingly, they are granted license to breach the bodily boundary in pursuit of an aim that might be regarded as cosmetic enhancement, but almost certainly cannot be classified as medical; one may speculate as to whether “chipping” parlours might one day deliver brain-chip neuro-enhancements in the same way!) One possibility is that we think there should be some relationship between the levels of risk involved in uptake of a new technology and the expertise required to access it, as a way of mitigating the risks. The need for accountability may also be a factor, also related to increased risks (or the perception thereof). Be that as it may, however, it seems to be the case that as things stand, the control of implantable neuro-enhancements will be less in our hands and more in those of the medical profession.

Perhaps therefore our concerns in relation to such enhancements are less about classifying enhancements as “artificial” or “natural”, “internal” or “external”, than about how enhancement technologies are mediated and who the mediators are. Similarly in the case of neurochemical moral enhancement, the issues that have been raised relate not least to the prospect of involuntary or coercive use of these drugs as potential “anti-anti-social behavior” agents, and the threat to personal liberty that might ensue. Thus it is not the means of enhancement itself that is the cause of concern, but the means by which we access the means, and the level of control that we have over this.

As we have seen, the role of medical expertise is invoked in the internal/external debate over cyber-enhancement as well as some forms of chemical cognitive enhancement, and hence becomes problematic in this context, leading some to describe this as cosmetic neurology⁷ and seeing doctors as the gatekeepers to cognitive enhancement. The spectre of political control is invoked in case of moral enhancement: who decides for us that we should be good, or compels us to be good? In both cases the locus of control is not with the individual, and herein lies the source of concern.

7 Hamilton et al. 2011; Chatterjee 2004; Chatterjee 2007.

Once we are able to disentangle fears about how technology will be mediated and used, and perhaps either forced upon us or forcibly denied us, from other issues surrounding moral enhancement, a host of other interesting questions will remain. For example, if we wanted to make ourselves less "moral" in the moral reasoning sense by increasing our emotional susceptibilities – would we be wrong to do so? Should we be *free* to do so? What is it that makes us *want* to be good, and would increasing this be an effective moral enhancement? These are the sorts of issues that both advocates and skeptics of moral enhancement will need to consider.

Conclusions

In this paper I have compared two novel forms of neuro-enhancement: chemical moral enhancement and cybernetic cognitive enhancement, in order to show how these, and bioethical arguments in respect of them, draw out different aspects of the "artificial"/"natural" and "human nature" discourses that are so well-rehearsed in the context of other forms of enhancement. Revealing the potential hidden influence of these concepts in the neuro-enhancement and moral enhancement debate has implications perhaps especially for bioliberals, both in terms of how we conceive of enhancement and how we apply arguments regarding "artificial", "natural" and "human nature" in terms of these new neuro-enhancements.

Finally, I have argued that this analysis demonstrates a need to re-focus our arguments about enhancement on the means of accessing technology rather than whether it is natural or artificial *per se*: our common concern in both these areas of neuro-enhancement, and probably in enhancement more generally, relates to how the technology is mediated and who the mediators of technology are, not the nature technology itself. As such it is essentially a political, rather than a moral question, about who has control and who holds the power. Thus the enhancement debate moves somewhat out of

the realm of moral philosophy and firmly into the political – where some, of course, would argue that it already is, and always has been.

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Three Types of Freedom

In this article I put forward some guidelines concerning the question: What is the best way of dealing with the norm of "freedom" concerning questions of genetic enhancement? I wish to defend that a pragmatic hermeneutic approach which argues by means of analogies represents a more plausible way of responding to the various challenges in question than either a libertarian or a liberal social democratic one. As we are dealing with "(New) Perspectives in Bioethics", I focus on the topic of genetic enhancement, because it touches and challenges the most fundamental beliefs of human beings and it seems to me that it will be the topic which will be of particular relevance to law makers, ethicists, and philosophers for many years to come.

I progress as follows. Firstly, I describe four different types of genetic enhancement, structurally analogous procedures with which we are already familiar, because I think analogies are an important tool for handling the ethics of emerging technologies, and the various, corresponding types of freedom. Secondly, I refer to two paradigmatic types of bioliberal positions and discuss some challenges they have to face so that a range of options, how to deal with moral questions concerning genetic enhancement in a liberal society, are being revealed. The paradigmatic positions are being represented well by John Harris (2007), who can get classified as libertarian, and James Hughes (2004), who upholds a liberal social democratic position. Thirdly, I present some outlines of a pragmatic hermeneutic approach concerning how to react to the challenges mentioned before, whereby I suggest a method of dealing with the moral challenges we have to face when we get confronted with problems related to new technologies of genetic enhancement.

1. Genetic Enhancement and Three Types of Freedom

The following list of four types of genetic enhancement starts with measures which concern primarily ones own self and ends with measures which concern primarily ones children. Due to the different scope of who gets affected by the various genetic enhancement technologies, different ethical reflections become relevant. Basically, one can distinguish between autonomous and heteronomous versions of genetic enhancement. Concerning the autonomous versions, I will mention some differences which need to be considered when somatic and germ cells get altered. Concerning the heteronomous options, I will distinguish between technologies of genetic enhancement which focus of selecting and others which focus on altering an already given genetic makeup.

1.1. Autonomous Types of Genetic Enhancement

Autonomous variants of genetic enhancement occur, when an adult wishes to change his genetic makeup which has successfully been done already, e.g. early in 2007, when Robert Johnson, who suffered from Leber's congenital amaurosis, was successfully treated at Moorfields Eye Hospital and University College London's Institute of Ophthalmology without any apparent side affects (Maguire, Simonelli and Pierce 2008). Transduction is one means of having altered ones own genetic makeup. It occurs when a gene gets altered by means of a modified virus which permanently (or temporarily) alters the genetic sequence of all cells.

Thereby, the modified virus gradually changes the gene in question in all body cells. If the procedure thus changes a gene of a somatic cell, e.g. a diploid cell, then we have a case of genetic enhancement which primarily affects the person in question. As the altered cell is a somatic cell and not a germ cell, e.g. a haploid cell, the altered sequence does not get passed on to the person's children. In this context the first type of freedom becomes relevant.

1.1.1 Morphological Freedom concerning ones Somatic Cells

So far, these types of treatment have only been done for therapeutic ends. However, it is a matter of dispute whether there is a clear cut distinction between a therapy and an enhancement and there are good reasons for rejecting such a distinction. (FitzGerald 2009, pp. 39–53) In any case, given the related methods of genetic enhancement become more reliable and the risk of side affects get reduced and it seems to be highly likely that the developments move into this direction, we will be faced with the question of whether such enhancements ought be legal of not.

Given that morphological freedom (More 1993) or the right to alter ones own body is an important right in liberal societies and somatic cells are a part of ones own body, it is plausible to hold that we also ought be permitted to have morphological freedom concerning ones somatic cells by means of genetic enhancement procedures. Given that genetic alterations do not only concern ones somatic cells but also ones germ cells, the issue gets more complicated, because it does not only concern ones own self but also that of ones offspring.

1.1.2 Morphological Freedom concerning ones Germ Cells

Altering ones germ cells is an interesting case, because it involves ones own cells, i.e. ones germ cells, but it primarily affects others, i.e. ones offspring. As germ cells here are the cells of an adult, it can be seen such that the right to alter ones germ cells still falls under the norm of morphological freedom. Do I not have the right to alter my own germ cells, even though they might no longer be within my body but might already exist in vitro? Of course, germ line genetic enhancement, i.e. the genetic alteration of gametes or haploid cells, does not work yet, but if it worked, it would change the genetic makeup of all of a person's offspring. In this case, it can get argued analogously to the first case. However, the issue gets more complicated, if the germ cells are no longer within ones body but outside of it. In this case, it

might be more appropriate to talk about the freedom to alter what one owns instead of morphological freedom. This type of freedom is more limited than morphological freedom, however, because external things might also concern other people more than ones own body. There are limitations to what one is allowed to do with ones house.

The issue becomes even more complicated when we are dealing with heteronomous types of genetic enhancement, e.g. when the person to be enhanced is not ones adult self, but is ones offspring. In the case of germ line enhancement, we have already had special case which can be understood as lying in between an autonomous and a heteronomous version of genetic enhancement. However, in the case of heteronomous genetic enhancement adults make decisions about their offspring.

1.2 Heteronomous Types of Genetic Enhancement

To make a decision for someone else, which influences their genetic makeup, is a far reaching decision. When discussing heteronomous types of genetic enhancement two paradigmatically different types need to be distinguished. They have been alluded to by Savulescu (2001, p. 422), but the impact of their distinctness has not been sufficiently considered, as two categorically different types of freedom become relevant in these two cases. In the first case, a specific already given genetic makeup is being selected. In the second case, an already present genetic makeup is being altered. I begin with the first option.

1.2.1 Selecting a Genetic Makeup

In 2011, there have been intensive political discussions in Germany concerning the ethical legitimacy of preimplantation genetic diagnosis (PGD), and it was decided that in certain very specific cases when grave diseases are predicted, the selection procedure is supposed to be morally and legally legitimate. It is a move into the right direction, I think. What happens during this type of enhancement? Firstly, an

in-vitro-fertilisation has to take place, then one or two cells from a fertilised egg get taken and their genetic make up gets analysed. On the basis of the analysis, the parents can decide whether the respective fertilised egg can get implanted or not. The parents do not actively influence or put together a genetic makeup, but merely have the possibility of choosing some genetic options among a great variety of genetic variants, given that many eggs were fertilised, as it is being done in the UK. Selecting a fertilised egg after an in-vitro-fertilisation and PGD is a procedure which differs significantly from the process of actually changing a gene or maybe even actually creating a complete genetic makeup concerning its morally relevant aspects.

Which type of freedom becomes important in this context? I think procreative freedom is what is at issue here, and procreative freedom is also what is at issue when we select a sex partner with whom we wish to have offspring. I also hold that we have reasons to believe that there is a structural analogy between selecting ones partner in order to bring about a child and selecting a fertilized egg after an in vitro fertilization. In how far are these two procedures analogous? By choosing a partner with whom one wishes to have offspring, one thereby implicitly also determines the genetic makeup of ones kids, as 50 per cent of their genes come from ones partner, and the other 50 per cent from oneself. By selecting a fertilised egg, one also determines 100 per cent of the genetic makeup by means of selection.

One objection, which might be raised here, is that selecting a fertilised egg cell is a conscious procedure but normally one does not choose a partner according to their genetic makeup such that one has specific genes for ones child. However, it can get replied that our evolutionary heritage might be more effective during the selection procedure of a partner than we consciously wish to acknowledge. In addition, the qualities according to which we choose a fertilised egg after a PGD might not have been chosen as consciously as we wish to believe, but might be influenced more on the basis of our unconscious organic setup than we wish to acknowledge. It might even be the case,

that the standards for choosing a partner and for choosing a fertilised egg might both be strongly influenced by our organic makeup and evolutionary heritage such that both are extremely similar.

A difference between these two selection procedures is surely that in the one case, one selects a specific entity, a fertilised egg, but in the other case a partner and therefore only a certain range of genetic possibilities. However, given the latest epigenetic research, we know that genes can get switched on and off which makes an enormous difference on the phenomenological level. Hence, it is also the case that by choosing a fertilised egg, we only choose a certain range of phenomenological possibilities of the later adult, as is the case by choosing a partner for procreative purposes.

The aforementioned comparison provides some initial evidence for holding that there is a structural analogy between choosing a partner for procreative purposes and for choosing a fertilised egg cell after PGD which again provides some reasons for regarding the following line of thought as plausible: A liberal society allows its citizens to select ones partner in order to bring about a child. As selecting a fertilized egg after PGD is structurally analogous to selecting a partner in order to bring about a child, it ought to be evaluated analogously. The liberal state imposes few restrictions concerning the selection of a partner to bring about a child.¹

Hence, the state also ought to impose few restrictions concerning the selection of a fertilized egg after a PGD. The aim of this section was not to argue in favour of a liberal attitude towards selection procedures after PGD but to show the central importance of procreative freedom both when one is choosing ones partner as well as when one is choosing a fertilised egg after PGD.

¹ In Germany incest among consenting adults is legally forbidden which I regard as highly problematic. In Catholic Spain such behavior is legally legitimate by the way.

1.2.2 Altering a Genetic Makeup

A different type of freedom becomes relevant when we are concerned with genetic enhancement by means of altering a genetic makeup, given that the decision is made by parents for their offspring. This can take place in the case of somatic genetic enhancement of foetuses, embryos or babies, e.g. by means of transduction, whereby a modified virus permanently (or temporarily) alters the genetic sequence of all cells. In that case educative freedom becomes central, because there are reasons for holding that there is a structural analogy between educating ones child and changing the genetic makeup of ones child by means of somatic genetic enhancement which I have shown in the article "Beyond Humanism" (Sorgner 2010b, section 1.1.1). Both procedures have in common that decisions are being made by parents concerning the development of their child, at a stage where the child cannot yet decide for himself what it should do. In the case of genetic enhancement we are faced with the choice between genetic roulette vs. genetic enhancement. In the case of educational enhancement we face the options of a Kasper Hauser lifestyle vs parental guidance. On the basis of this analogy, the following argument can be suggested:

A liberal society allows its citizens to educate their children. As changing the genetic makeup of ones child by means of somatic genetic enhancement is structurally analogous to educating ones child, it ought to be evaluated analogously. To have the right to educate ones child does not imply that there are no restrictions concerning how the child can be treated. As there are and ought to be restrictions concerning how to educate ones child, there ought to be restrictions concerning how to change the genetic makeup of ones child

In liberal countries there is also the duty to educate ones child. Analogously it can be argued that there ought to be the duty to change the genetic makeup of ones child. Given this analogy and given the situation that in Germany we have compulsory education, it be-

comes plausible to also demand a duty of genetic enhancement. As I and most citizens of Western civilizations regard such a state governed version of enhancement, or should I say eugenics, as morally highly problematic, I recently suggested in a public talk as part of the *Bayreuther Dialoge 2010* to alter the law concerning compulsory education which we have in Germany into a *Bildungspflicht*/the duty to bring about *Bildung* in ones kids, which does not demand that children go to school but allows the possibility of home schooling or other options for educating ones child.

Such a regulation is present in most other European countries such as Austria, Switzerland, France, Spain et cet. Even given a *Bildungspflicht* and the analogy between genetic enhancement and classical education, in certain circumstances genetic enhancement of ones children can become a duty. However, my main goal within this section was to show which type of freedom becomes relevant in the case of genetic enhancement, given that adults decide to alter the genetic makeup of their children, namely educative freedom.

2 Non-Bioconservative Challenges of Bioliberal Positions

In section one, I showed the relevance of freedom for decision making processes concerning moral challenges in the field of genetic enhancement. Morphological, procreative, and educative freedom are three different types of freedom which are relevant for the above mentioned versions of genetic enhancement. By revealing analogies between these types of genetic enhancement and traditional procedures, I suggested that an analogous evaluation of both types of procedures is appropriate. I also stressed that it is possible to draw analogies between new types of genetic enhancement and procedures with which we are already familiar with whereby I stressed the following three procedures: 1) Human beings change their own bodily feature - morphological freedom; 2) Human beings choose a partner for procreative purposes - procreative freedom; 3) Human beings

educate their offspring – educative freedom. In section two, I describe some fundamental challenges various liberal positions have to face.

2.1 Libertarianism primarily focuses on the Norm of (Negative) Freedom

The classical libertarian position is one which regards it as the duty of the state to uphold the rights of bodily integrity and the property of its citizens. All other social realms are open to free exchange and negotiations. According to this position, it is regarded as an illegitimate paternalism of the state, if the state decides to intrude into the financial, ethical or social realm of its citizens beyond the areas mentioned above.

The problems related to such a position become particularly grave, if the field of genetic enhancement gets considered. The rich are able to afford the best treatments for remaining or becoming healthy and also for getting stronger and more intelligent and for living longer. Hence, the differences between the poor and the rich, the ill and the healthy and the simple-minded and the intelligent ones will increase permanently, so that we are likely to end up in a hierarchical system with enormous financial and social differences, far beyond the differences we already have. Such a system leads both to internal conflicts concerning the finances as well as to an endangerment for the system itself. It is highly likely that the rich, by being in a position of power, also wish to gain political power, whereby the libertarian system ends up by undermining itself. By solely focusing on freedom, there is the danger of bringing about structures of rigid domination which make people dependent and unfree.

The situation can get even worse, if a libertarian system does not only lead to a hierarchical society with various social classes, but if biotechnologies manage to bring about a posthuman so distant from contemporary human beings that it also demands a special consideration on the political level, as it was presented in the movie

Gattaca. I am not claiming that the coming about of a posthuman has to have these consequences, but this risk cannot be excluded, I think. In any case, a libertarian political system seems to imply consequences which do not seem as appealing to myself and to many others I think, too. Henceforth, certain restrictions are needed in order to avoid the above mentioned problems.

2.2 Social Democratic Liberalism

The aforementioned reflections show reasons for stressing and considering the norm of equality as well as the norm of freedom, as it was pointed out by social democratic liberals. What are the consequences of such a position concerning genetic enhancement procedures? Given a social democratic liberal system, the state supports certain enhancement technologies which have proven to be particularly successful and effective such that they become available not only to the affluent but to whoever is keen on using them. It has the advantage that the most basic and most significant options become publicly available and only some more specific ones or new developments do not have such a wide spread availability.

We have a similar way of handling vaccinations in Germany nowadays. We had obligatory vaccinations only until 1983 (Polio). Since then, the most important vaccinations have been offered by public health insurance companies and are publicly available in this way. Other more specific vaccinations are not being covered by public health insurances but need to be paid privately. Vaccinations are a widely practised enhancement technology. Genetic enhancement technologies, if they become relatively safe and successful, could get treated analogously. The problem I see with such a liberal social democratic position is that an overtly strong and too dogmatic consideration of the norm of equality leads to paternalistic intrusions of the state into the realm of the individual both in the financial realm as well as in the ethical realm. It strongly intrudes into the financial realm, because money gets taken away from the financially more

successful and hence more affluent ones and it gets distributed such that all citizens have an equal share of certain basic benefits. In addition, such legal regulations also intrude into the ethical realm of the citizens. If genetic enhancement technologies are publicly available by means of a public health insurance, then people who disapprove of these technologies, and many people still do, get forced to pay for these technologies, even though they strongly reject them. Thereby, social democratic liberalism undermines central achievements of the enlightenment process.

During the Enlightenment, fights have taken place on various social and intellectual levels. Philosophers, citizens, soldiers and scientists attacked the leading Aristocratic and religious classes to free individuals from the ethical and financial domination of religious and Aristocratic leaders. Their goal was to gain freedom, i.e. negative freedom so that citizens eventually become able to live according to their own understanding of the good life which is a wonderful goal and a praiseworthy achievement. People no longer wanted to be forced by Aristocratic and religious leaders to support their affluent lifestyle financially and to be forced to live according to what the leaders regard as a good life, but wished to make up their own mind on how to live a fulfilled life. Organic constitutions of human beings differ significantly from one another and human dreams and fantasies and what is needed to live a good life differs significantly, too.

All the various struggles which have taken place from the Renaissance onwards supported the fight for the right to live according to ones own concept of a good life and hence, negative freedom. (Sorgner 2010a, pp. 239–242) In many realms, this freedom has not been realised significantly yet, esp. when I am considering the bioethical regulations in Germany. (Sorgner 2010a, pp. 244–250) The historical perspective has made me aware of the central importance of negative freedom. Hence, there is the danger that a too strong focus on equality undermines central and highly valuable achievements of the Enlightenment period. Therefore, I think that a dogmatic social

democratic liberalism seems to me not as the appropriate response to future bioethical challenges either. In the third and final section, I will present some perspectives of my own suggestion concerning how to deal with freedom in the context of challenges related to genetic enhancement procedures.

3 Negative Freedom and Genetic Enhancement

In section three, I present some reflections concerning what needs to be taken in account when new challenges of genetic enhancement procedures are being dealt with. Instead of a dogmatic libertarian or social democratic liberalist solution, I present a rather hermeneutic pragmatism which is a further development of Vattimo's *pensiero debole*. (Vattimo and Rovatti 2010) His position ends up in a hermeneutic communism, but mine can rather be classified as a pragmatic posthumanist, this-worldly liberalism. However, both of us explain what we put forward by means of a Nietzschean type of genealogy. By reference to historical processes it is possible to put the importance of freedom and equality into the appropriate perspective. At the end of the second section, I already presented traces of my line of thought which stresses that freedom is not an eternal truth but was gained as the result of long lasting class struggles during the Enlightenment.

As a dogmatic reliance upon a libertarian or a social democratic liberal position leads to problematic consequences, I suggest that it is advisable to take a more pragmatic approach which enables us to dynamically adapt to new challenges. To be pragmatic does not mean that no stable norm or basic integrity is given. The integrity, which I am suggesting, refers to the insight that negative freedom is a precious achievement which members of many interest groups and from many social and intellectual backgrounds have managed to establish during the previous 500 years. It is an achievement which we should not abandon too easily, as it has taken a long time to establish a wide spread recognition of this norm and many intensive fights on various levels were needed to bring about the realization of the importance

of negative freedom. To stress the importance of negative freedom does not mean that libertarianism is the most appropriate reply to our challenges, but it implies that only if too much negative freedom endangers itself, then equality ought to be considered further as long as the paternalistic intrusions implicit in the norm of equality do not impose too many, rigid, and strict restrictions upon the norm of negative freedom.

The norm of negative freedom is one, which always ought to be taken into consideration. The norm of equality which is derivatively connected to that of freedom also needs to have its adequate place in a legal system. In daily politics, it ought to be considered that if negative freedom brings about a too rigid and vast separation of the various social groups, then the aspect of equality ought to be considered further. If the decisions connected to the consideration of equality bring about a too rigid and intensive intrusion of the state into private realms, then the focus ought to move back to freedom, so that a dynamic and balancing dialectics between freedom and equality gets instantiated during which the historical achievement of the central norm of negative freedom must not be forgotten. In my recent monograph "Menschenwürde nach Nietzsche" I spelled out in more detail the specific web of thought and implications connected to this approach. (2010a, pp. 232–266) Which consequences would such an approach have for our current and future bioethical challenges?

This position implies that morphological, procreative and educative freedom ought to be of central importance which also leads to the demand that legal regulations concerning enhancement technologies ought to consider the norm of freedom more than most laws in Western countries do today. However, this position does not imply that one must disrespect the historical and cultural embeddedness of each country, as it is based upon a historical narrative by means of which the current situation gets understood. I am not committing the genetic fallacy, because I am not claiming that the historical origin proves the truth of falsity of a currently given norm. I am a

perspectivist, and according to an intellectually legitimate version of perspectives, every perspective is an interpretation, and this also applies to my own perspective of course. Being a perspective does not imply that it is false, but merely that it can be false which is the crucial distinction between a simple minded and an intellectually legitimate version of perspectivism. However, I am putting forward reasons in favour of the above mentioned position and I am trying to show why I regard it as the most plausible one.

To apply this approach in a specific situation currently implies in most European countries that changes towards a more liberal state of affairs are wanted, but also that such alterations need to be undertaken with care, because the future needs the past and it is not in the interest of human beings to be forced to adapt to fast, and radical changes. It also means that the same legal regulations are not appropriate for all countries. In Germany, we have to deal with the fascist past during which state governed eugenics has been practised. In the UK, it is already permitted to make research with animal-human hybrids, i.e. chimeras or parahumans. To face the bioethical challenges in the field of genetic enhancement implies that the past of a country gets taken into consideration because a significant group of citizens is still emotionally connected to them. On the other hand, the latest research also needs to be considered, an adequate dialectics between freedom and equality needs to be upheld, and the wonderful norm of negative freedom must not be forgotten, because it has enabled citizens to live in accord with their own wishes, desires and dreams so that they can realise their own concept of having a fulfilled life.

4 Conclusion

The aim of this paper was to put forward some guidelines concerning how best to deal with the norm of "freedom" with respect to questions of genetic enhancement without falling into either a libertarian or liberal social democratic trap. By stressing the importance of

a dynamic hermeneutic position which takes seriously the impact and relevance of structural analogies and which considers both the historical background of a country as well as latest research outcomes and the central norm of freedom, I wish to point out that even though we are lacking absolute guidelines, we have some reliable and plausible cornerstones which provide us with a basis for dealing with new challenges. Concerning the latest challenges in the field of genetic enhancement, I showed in which way the norm of freedom is relevant and in how far analogies between new technologies and already known procedures are given:

- 1 There is morphological freedom which gives us the right to alter ourselves which can also get applied to the realm of genetic alterations;
- 2 There is procreative freedom which gives us the right to genetically determine our offspring by choosing our partner which can also be applied to the field of PGD;
- 3 There is educative freedom which gives us the right and duty to provide our children with the best basis for their adulthood which can also be applied to the field of genetic enhancements.

To apply these insights in the decision making processes of the various countries is a complex matter and cannot be done by means of some general remarks. Each decision depends upon a detailed prior study and a careful way of progressing such that both due respects is being paid to the past, present and future, whereby all dogmatic single minded solutions get rejected. A dynamic open minded enquiry with takes all the latest scientific and ethical insights and research outputs into consideration, but also attributes adequate respect to values and norms from which ones country has benefited immensely in the past, can lead to plausible solutions in the difficult field of contemporary bioethical challenges, and the moral challenges related to the topic genetic enhancement are clearly significant ones, as they touch the very basis of our understanding of humankind. Yet, I am hopeful that by progressing carefully, we can benefit sig-

nificantly from the wonderful scientific progresses without having to worry too much about the corresponding dangers connected to any type of progress.

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Seeking More than Health¹

Introduction

Enhancement in general is defined as the use of medical intervention aimed at the improvement of normal individuals. An example of a medication that may be used as an enhancer is methylphenidate (marketed in the United States as Ritalin[®]). For individuals with Attention Deficit and Hyperactivity Disorder it is prescribed as treatment, but for those without the disease it has been shown to increase concentration and improve performance on cognitive tasks (Mehta 2000 et al. 1997). Other examples include pharmaceuticals used for treatment of Alzheimer's disease, which in healthy individuals could produce enhancement in memory (Yesavage et al. 2002), and medications used to treat depression, which in normal individuals could be used as mood enhancers.

The purpose of this essay is to examine some of the ethical concerns raised with regards to the use of neuroenhancers. Authors such as Fukuyama (2002) and Sandel (2004) argue that medical intervention should be limited to treatment of disease, and that enhancement should be outside of the scope of medicine. This paper will examine the distinction between treatment and enhancement. I shall conclude that it is not a well-drawn distinction and should not be used to provide guidance with regards to the use of psychopharmacological agents for the purpose of enhancement. I shall further examine whether concepts such as disability and normality could provide a

¹ Sections of this paper draw on a commentary originally published in the Newsletter of the American Academy of Pediatrics. Gligorov, Nada. (2010). "Seeking More than Health: Using Medicine for Enhancement". *Newsletter – Section in Bioethics. American Academy of Pediatrics*, Fall–Winter, pp. 15–18.

criterion for determining whether enhancement is a permissible use of medical intervention. I conclude that as those concepts are contextually defined, they cannot be used to make principled arguments against enhancement. In addition, I shall review the charge that medicalization of cognitive performance is not morally permissible. I shall argue that medicalization might have both negative and positive consequences, and decisions about the moral permissibility of medicalization should be made on a case-by-case basis. Finally, I will examine the charge that neuro-enhancement can negatively affect personal identity. I shall argue that although the use of enhancers might alter aspects of our self-conception, such changes would not be morally impermissible.

The Distinction between Treatment and Enhancement

The distinction between treatment and enhancement discriminates between the use of medical intervention intended to cure and prevent disease and disability, and the uses of medicine aimed at the improvement of normal individuals. An objection against the use of human enhancers in general, and genetic and neurological enhancements in particular, rests on the treatment-enhancement distinction and designates treatment as the only morally acceptable use of medicine. On this view, medicine should be aimed towards treatment of disease, and physicians should prescribe drugs only for the treatment of illness. All other uses of medical intervention, including enhancement, fall outside the purview of medicine (Sandel, 2007).

Although the distinction between treatment and enhancement is often invoked, there are myriad cases where treatment and enhancement become conceptually linked. A child successfully treated for ADHD will not only have improvement in symptoms, but will have corollary improvement in quality of life (e.g. higher test scores, better prospects for college admission, improved social status, etc.). All of those improvements in quality of life qualify as a type of enhancement. Thus, if enhancement results from treatment of disease, we

cannot argue that it is entirely outside of the realm of medicine. An alternative way of drawing the treatment–enhancement distinction is to define disease in terms of its biological basis. One could argue that only those conditions that have a biological basis and can be qualified as a disease should be subject to treatment. Consider the example of Johnny and Billy:

Johnny is a short 11-year-old boy with documented Growth Hormone (GH) deficiency resulting from a brain tumor. His parents are of average height. His predicted adult height without GH treatment is approximately 160 cm (5 feet 3 inches). Billy is a short 11-year old boy with normal GH secretion according to current testing methods. However, his parents are extremely short, and he has a predicted adult height of 160 cm (5 feet 3 inches).

(Daniels 2000, p. 9)

In the case of Johnny we can clearly say that his disease, a brain tumor, is impeding his growth and growth hormone would constitute treatment. Billy, however, does not have any identifiable disease causing his short stature; hence we could argue that treatment in his case would be enhancement. A shortcoming in drawing the treatment–enhancement distinction by relying on a definition of disease is that biologic variability alone is insufficient to determine what constitutes a diseased state and a normal state. Most human traits can be explained by their biological underpinnings; one can give a biomedical explanation for both Johnny's and Billy's short stature.

Although the two boys are the same short height, we judge one to have a disease and the other to be normal. The difference between Johnny and Billy is not that one boy's shortness can be traced back to a biological state and the other boy's cannot, it is that we judge Johnny's and Billy's biologically explicable shortness differently. For that reason Daniels (2000) argues that it is our norms and values that define what counts as disease, not merely the biologically based characteristics of a person. Although norms and values do contribute

to framing a certain biological state as a disease state, diseases should not be considered entirely socially constructed. Both biologic underpinnings and social values play a role in the delineation of normal variation and defined diseases.

With advances in biomedical science, more human traits may be explicable in terms of biology, and more of them will be amenable to modification through medication. Decisions about which states should be treated will not rest solely on medicine or biology; rather they will also rest on normative and social judgments about which of our characteristics traits are desirable or undesirable. The biological origin of some conditions, e.g. familial short stature, is not enough to characterize those states as disease states; thus the distinction between treatment and enhancement cannot be buttressed solely with a biologic notion of disease.

Moreover, even a clearly drawn distinction between treatment and enhancement would not be enough to justify an argument against enhancement. Indeed, society tolerates and often encourages varied forms of enhancement. A wide variety of behaviors directed at improvement of ostensibly normal abilities are pervasive. People diet, exercise, and take nutritional supplements in order to improve health, extend life, enhance memory, elevate mood, and increase concentration. These lifestyle choices are unlikely to be branded as morally problematic; in fact they are often characterized as laudable. A wide variety of foods are advertized with reference to their enhancement properties, for example "brain food" said to improve memory and improve brain functioning. We drink coffee to stay alert. The use of neuroenhancers by students is morally contested, but parents often use all known means of improving test scores, school performance, and increase chances of admission into a prestigious college.

Given that most behavior aimed at enhancement does not come under moral scrutiny, it seems inconsistent to argue, on principle alone, that the use of medical enhancers would be morally questionable.

The use of vaccines is at once an example of morally permissible enhancement, where we medically increase our body's normal ability to fight infection, and an example of enhancement that is considered preventative medicine. Furthermore, there are many instances where medication and the services of physicians are used solely for the purposes of enhancement, with cosmetic surgery being a conspicuous example. One could still have serious and warranted misgivings about the use of some medical intervention for the purposes on enhancement, for example based on the risks involved.

Defining Disability and Normality

A further way of defining the distinction between the use of medical intervention for the treatment of disease and their use for enhancement is to argue that medicine should promote normal functioning and prevent or treat disability. Given that enhancement entails prescribing medication to normal individuals, it might be outside of the scope of medicine, and thus is morally impermissible. Norman Daniels (2000) suggested that one way of identifying normality is to define it in terms of "species-typical" normal function, where departures from species-typical function is considered a disease or a disability. In this way disability is defined in contrast to normality, and normality is fixed by appeal to "species-typical" function. Daniels further points out that normal functioning is used in the context of medical insurance, and is frequently employed to determine which medical services people should be helped in obtaining.

There is difficulty however in clearly specifying "species-typical" functioning. As per Synofzik, the concept of biostatistical normality cannot carry the normative burden (Synofzik 2009). Species-typical functioning is only meaningful with reference to specific classes of individuals. Normal functioning for an adolescent is not the same as the normal functioning of an elderly person; there are gender differences, and many other group differences all of which could meaningfully alter the standards of normal species function.

Taking this objection into account Daniels argues that normal "species-typical" function can be understood as kind of indexical, where a myriad of social and cultural factors may be used to more clearly define normalcy, and in contrast, disability. However, even if this way of determining the boundaries of normalcy were successful, it would not help determine the morally permissible uses of medical intervention. Many biological attributes considered statistically normal for specific populations are treated with medical intervention, such as menopause in women or arteriosclerosis in elderly adults. Furthermore, a number of statistically abnormal attributes such as high intelligence or absolute pitch are not considered disabilities nor treated as diseases (Synofzik 2009).

A further problem with the distinction between normality and disability is that normal species functioning changes over time. For example, height averages changed over time, and if one were to specify normal height in the 18th, 19th or the 20th century, these values would differ considerably (Eveleth and Tanner 1991). In 18th century Europe, both Johnny and Billy, mentioned in the previous section, would have been close to the average height for a man of 5 feet 4 inches. Similarly, the steady increase in IQ over the past several decades (Flynn 1987) could potentially redefine what we consider a normal IQ and consequently whom we identify as cognitively disabled. Such variability in normalcy poses a challenge for those who argue that the sole purpose of medicine is to treat illness and disability (Fukuyama 2002). If how we define normal species-typical functioning is not only contextual, but changes over time, what once was normal can become a disability and vice versa, and the obligation of physicians to treat will have to change accordingly.

Medicalization

One could argue that the off-label use of psychopharmacological agents is actually precipitating the medicalization of cognitive performance. To medicalize a certain condition "refers to the process

by which certain health, behavior or social conditions come to be identified as medical issues and treated with medical measures” (Synofzik 2009). By offering medication to improve concentration and performance on cognitive tasks, we will “force” the improvements of those abilities into the realm of medicine. Going back to an argument that was made in a previous section, the more science is able to identify the biological bases of human traits, the more possibility there is for medicalization. Medicalization is likely to become a frequent phenomenon, which is in part due to how certain human traits and conditions become relegated to the realm of medicine. Characterizing a condition as disease depends on our ability to either identify the physical basis of a certain human trait or to influence that same trait with the use of medical intervention. Thus, if we become able to control cognitive performance with the use of psychopharmacology, inability to perform at certain level will become a medical condition.

One could think of this process in both morally positive and negative terms. On the one hand, an increased ability to control conditions that might cause death or disability, as well as those traits that might interfere with quality of life more broadly, has positive implications. Consider, for example, our changing conceptualization of depression, where the identification of a biological basis associated with the condition and our ability to effectively treat it with medication, changed the way in which we think of those suffering from it. Medicalization of depression has diminished some of the stigma surrounding those individuals who suffer from depression. Depression is less likely to be thought of as a “character defect” and those suffering from it are not considered responsible for the symptoms of depression.

On the other hand, our increased ability to control our physical and psychological states with medical intervention may lead people to rely on medication to fix unwanted problems, ignoring potential risks, and sidestepping other alternatives to improve health and quality of life. Although medical and surgical treatments for obesity have benefited those who did not have other means of controlling their weight, the

medicalization of weight in general may lead to an over-reliance on medical or surgical interventions in lieu of healthy lifestyle changes. Similar arguments can be made for other conditions that can be controlled by lifestyle modifications, such as diabetes mellitus.

Despite the possible negative outcomes of medicalization, an argument against enhancement cannot be made solely on the grounds that using psychopharmacological agents to improve cognitive performance is impermissible because it will push cognitive performance into the realm of medicine. Medicalization may have a number of both positive and negative outcomes, most of which cannot be surmised in advance. Thus the permissibility of the prescription and use of enhancers would most likely have to be determined in a more context-specific manner.²

Personal Identity

A further argument against neurocognitive enhancement is that it could alter personal identity in a way that is not morally permissible. A few authors have brought up alterations to personal identity as a potential moral obstacle to neurocognitive enhancement, including the members of the President's Council on Bioethics (2003).³

The charge is that the use of enhancers could change not just our intellectual abilities but might alter core personality characteristics. Consider, for example, the recently publicized use of selective serotonin reuptake inhibitor (SSRI), marketed in the United States as Zoloft[®], to treat shyness (Cain 2011). Presumably the use of SSRIs would treat shyness by transforming the person, changing their identity, from a shy introvert into a social extrovert. A reason to think that such a change is not morally permissible is the commitment to the notion of authenticity and a moral preference for the natural state

² For a proposed model see: Synofzik 2009.

³ Presidential Council on Bioethics 2003.

of a person's personality. Charles Taylor argues that American society is committed to an ethics of authenticity and self-actualization, which obligates people to optimize who they are and develop hidden potential (Taylor 1991).

DeGrazia (2005) aptly notes that in order to evaluate the claim that neuroenhancers can change personal identity, we need to make clear what is meant by personal identity. To do that DeGrazia distinguishes between two senses of identity, numerical identity and narrative identity (DeGrazia 2005a). Numerical identity refers to the identity of an object across time and is often discussed in philosophy because establishing numerical identity gives rise to the problem of personal identity over time.

Numerical identity for persons is particularly difficult given the strict requirements of Leibniz's Law, which stipulates that two things are identical if and only if they have all the same properties. Numerical identity over time would require that a person at two different stages of her life, for example at age 6 and then at age 15, have all the same properties. It is obvious then, that in most cases this type of identity would not hold because people endure both physical and psychological changes over time. To accommodate this problem, criteria for personal identity over time narrow the scope to only those properties that are necessary and sufficient to establish survival of a person over time.

Broadly speaking, there are two main approaches to solving the problem of personal identity within the philosophical literature. One approach uses a physical criterion to establish identity, while the other employs a psychological criterion. The psychological criterion of identity, often referred to as the Lockean criterion, relies on the continuity of a person's mental features to establish identity over time (DeGrazia 2005b). A person at one stage is identical to a person at another stage if and only if they have the same psychological characteristics. The psychological criterion presupposes personhood as

essential for the maintenance of identity over time; in other words, identity across time persists only if personhood persists. The traditional physical criterion establishes a relationship of identity between the person and her body, where the body excludes the brain.⁴ A more contemporary version of the physical criterion establishes identity between various stages of the same biological animal.⁵

DeGrazia argues that when people express the worry that enhancers might change our identity, they are worried that the use of enhancers would result in a change in numerical identity. DeGrazia, however, provides arguments for why personality changes that can be effected by the use of psychopharmacological enhancement would result only in changes of our narrative identity, which refers to our individual conceptions of ourselves.⁶ Narrative identity is the view that we each have a personal biography that helps us maintain a conception of *who we are* and helps us guide our actions.⁷

There are several features of numerical identity that need to be mentioned further because they are often mistakenly attributed to narrative identity. Numerical identity is a bivalent relationship. If we think of a person's life as divided into various stages, and if we maintain that the relationship that holds between those life-stages is that of identity, then Jane at twenty-five can either be identical to herself at age five or not. Identity does not admit of degrees. And if we say that a person is not identical to herself when she was five that means that Jane at age five and Jane at age twenty-five are actually two different people with all the relevant legal and social sequelae. Narrative identity, however, is not meant as a criterion of numerical identity; it admits of degrees, and a person can be more or less similar to herself over time and still retain numerical identity. Also,

⁴ See: Perry, 1978, especially the Third Night.

⁵ For a defense of this view see: DeGrazia 2005b.

⁶ See: DeGrazia 2005a.

⁷ See: DeGrazia 2005b.

a criterion of numerical identity should apply to each human in the same way. For example, the physical criterion of numerical identity, would apply to each human in terms of exactly the same feature. Assuming the contemporary version of the physical criterion that feature would be the membership of a particular species. Personal conceptions, conceptions that individual people have about themselves and their identity, would not be accounted for by a criterion of numerical identity. Whether Jane conceives of herself primarily as a member of a particular species is irrelevant to whether she is numerically identical to herself in virtue of possessing that feature.

The manner in which Jane thinks of herself, for example as a creative, liberal, introvert, is crucial to her narrative identity, but not to numerical identity. After all, many personality traits do not persist over time. One changes political views, moral inclinations, and interests over the course of a lifetime without change in numerical identity. The use of Zolof[®] would not entail the demise and literal replacement of the shy introvert with the social extrovert; it would merely precipitate a change in narrative identity. The persons' self-conception and their personal biography might change to accommodate new personality traits. One might enjoy interacting with others and partake in more social activities than before, and the persons' self-conception would accommodate that change in personality. Furthermore, it is not obvious that such alterations would be perceived as radical shifts from one personality to another. It might in fact feel like the person has, with the aid of medication, actualized a more authentic self.

In a study done by Bolt and Schemer (2009), patients treated for Attention Deficit and Hyperactivity Disorder (ADHD) reported a variety of perspectives when it came to the influence of medication on their sense of personal identity. Although some study participants expressed that taking medication felt like it changed their personality, some reported that they felt more like themselves. Kramer (1997) reports something similar in his description of a patient taking medication for depression; the patient reported that she felt more like

herself on medication then when she was not taking it. Conflicting evidence about the perception of the continuity of narrative identity shows that one cannot conclude that the use of neurocognitive enhancers will result in a changed identity. Therefore, there is no reason to think that enhancers are perilous to personal identity, or even authenticity.

One could argue, however, that in both the study by Bolt and Schemer and Kramer's experience, study participants and patients were discussing the effects of treatment for ADHD and depression respectively, not enhancement. Thus, the use of medication is justified, and the potential changes in personality are justified, as part of treatment. In an earlier section of the paper, it was argued that the distinction between treatment and enhancement is not easy to maintain because medicine and science have become more successful in explaining human traits in terms of their biological underpinnings. It is human aversion to certain naturally occurring traits that contributes to them being characterized as diseases. It is not self-evident then why the alteration of some naturally occurring traits, i.e. disease states, would be morally justified, while the alteration of other naturally occurring states would be immoral. If one is committed to the notion that what is natural is good, then any alteration of the natural state would be morally wrong, including treatment of disease.

Finally, in order to establish that a change in identity has occurred, one would have to establish an inviolable core of psychological traits that should not be altered through the use of enhancers. It is here that one might again detect confusion between the two senses of personal identity, numerical and narrative. Although a criterion of numerical identity needs to establish characteristics that are both necessary and sufficient for the maintenance of numerical identity, no such requirement exists for narrative identity. Individual people might select different aspects of their personality as primary; they might define themselves in terms of their profession, religion, nationality, or even in terms of their family relationships. Furthermore, a person

might change her self-conception over time without a real challenge to her identity. When it comes to narrative identity there are no objective criteria by which one could argue that a person has based their conception on the wrong personality trait. If Jane centers her sense of self on her profession, one cannot say that Jane has failed to properly form a narrative identity because she has failed to include her nationality, for example, into her core sense of self.

In addition, there are no specific core personality traits that we all ought to have in order to be judged as having a narrative identity. People might have different opinions for which personality traits are most important for a person's narrative identity, but there is no reason to prefer one such ranking of traits over others. Moreover, the lack of criteria that are independent of personal perspective prevents us from categorizing personality changes in terms of their importance. It is arbitrary to argue that some types of changes in personality do not pose threats to identity, while the types of change that might be precipitated through the use of neurocognitive enhancement would constitute a loss of narrative identity.

Given the subjectivity and variability of narrative identity, it would be peculiar at best to argue that changing one's sense of self is morally wrong. And it would seem wrong to argue that we have a moral obligation to maintain a particular sense of self for most of our life. Thus, it seems that there is no conceptual reason to judge neurocognitive enhancement as immoral, although there might be particular instances of enhancement that could be.

Conclusion

As advances in biomedical science increase the ability to identify the physical bases of human traits, and improve the ability to control both health and quality of life, the medical domain will expand. With this expansion of medical intervention, the boundaries between treatment and enhancement, as well as normal-species function and

disability, will become increasingly blurred and this is why decisions about the moral permissibility of the use of cognitive enhancers should not be based on those concepts. Instead, physicians' decisions whether to prescribe cognitive enhancers should be made in a manner similar to decisions about any other medical intervention. Physicians should take into account the relevant contextual features of each individual patient, evaluate the risks and benefits, and use applicable principles of medical ethics to decide whether prescription of cognitive enhancers is appropriate.

It should be noted that additional ethical considerations, which might greatly affect the moral permissibility of neuroenhancers, were outside the scope of this paper and remain to be considered. Some of those issues include the notion of social justice and the fair allocation of enhancers. If neuroenhancers become widely available, an issue of social inequality could arise for those who might not be able to afford them. In addition, widespread use of enhancers might create situations where people could be pressured or coerced into using them.⁸

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Don Marquis

Five perspectives on abortion ethics

The reproductive freedom perspective

Most people who defend abortion rights appeal to the value of reproductive freedom. There is much to be said for this perspective. The decision concerning whether to bring a child into the world is central to one's life plans. Unwanted children place a considerable burden on women. Unwanted children are less likely to be loved and raised well. Apparently, there are many good reasons to respect women's right to reproductive freedom.

Some object to the reproductive freedom perspective because they believe that life begins at conception. However, as Harry Blackmun pointed out in *Roe v. Wade* (1973), there is no consensus among philosophers and theologians concerning when life begins. Surely in a free society even a majority may not limit valuable liberty rights of individual members of society when the limits on freedom are based on religion. As John Stuart Mill (1869) argued in *On Liberty*, society is justified in restricting the liberty of one of its members only to prevent harm to another.

The reproductive freedom perspective is open to an apparently devastating objection. Consider the product of conception – at least after the third week of pregnancy. It consists of cells that engage in metabolism. It grows. Therefore, it is certainly living. It is an integrated biological unit with parts. Therefore, it certainly seems to be a biological organism, although, of course, a very young biological organism. This biological organism certainly seems to be a member of our species. Of what other species could it be a member? Therefore, human fetuses are living human beings. In other words, they are bio-

logical organisms who are members of the species *Homo sapiens*. This being the case, ending their lives is ruled out by Mill's principle, for to have an abortion greatly harms a human being by ending its life.

The innocent human life perspective

This criticism of the reproductive freedom perspective opens the door to a very different perspective on abortion ethics. According to this perspective, the right to life is a right of all human beings, or, at least a right of all human beings who are innocent and have not waived their right to life. These qualifications do not apply in the case of those young human beings we call 'fetuses'. Therefore, all human fetuses have the right to life. The right to life trumps anyone's claimed freedom to end that life. Therefore, abortion is wrong. (Noonan 1970).

The innocent human life perspective is a powerful argument. It amounts to the syllogism:

1. All innocent human beings have the right to life.
2. All (human) fetuses are innocent human beings.
3. Therefore, all (human) fetuses have the right to life.

Notice how powerful the defense of this syllogism seems to be. Given that no human fetus is guilty of anything that would cause her right to life to be forfeited, the second premise is a true claim in biology. The first premise is a claim that all decent people regard as too obvious to mention. Plainly discussions of the evil of the Holocaust simply take this premise for granted. Nothing in this argument rests on an appeal to religion either. That all human beings have the right to life is a basic moral claim that every decent person takes for granted, whether religious or not. The standard claim that the innocent human life perspective on abortion rests only on religion, or on some indefensible assumption about when life begins, is clearly false. In spite of its apparent virtues, the innocent human life perspective is

subject to three devastating criticisms. The first two were set out most clearly by Peter Singer (1979) in his famous book *Practical Ethics*. Singer criticized the above syllogism in the only way it could be vulnerable to criticism: he objected to the first premise. He offered two objections.

First, Singer pointed out that when we condemn, as we should, racism, we take for granted that any biological difference between Caucasians and non-Caucasians has, by itself, no moral significance whatsoever. When we condemn, as we should, sexism, we take for granted that any biological difference between males and females has, by itself, no moral significance at all. Singer argued that for the same reason we should not suppose that the biological property of being a member of our species has any moral significance whatsoever. In short, just as we believe that racism and sexism are unfounded, we should also believe that what Singer called "speciesism" is unfounded. Basing a moral right on a biological property, whether that biological property has to do with race or sex or species is unjustified.

Singer's second objection can be called "the over-commitment objection". If all human beings have the right to life, then human beings who are rightly judged to be irreversibly unconscious have the right to life. There are good reasons for believing that some human beings who are irreversibly unconscious, but who are otherwise functioning, integrated biological organisms are living members of the species *Homo sapiens*. Nevertheless, it is hard to believe that such human beings really do have the right to life. We think of rights as the sorts of things that people care about having. (They are more than that, of course.) If you, reader, were rendered, at some time in the future, irreversibly unconscious, would you (now) really care if your life were (then) ended? On the basis of these objections, Singer concluded that the first premise of the syllogism that represents the human life perspective is unjustified and, indeed, false. A third objection to the innocent human life perspective has been found compelling by many. It can be called "the under-commitment objection". Suppose you are

visited by a being from outer space. You learn to interact with this being in many different ways. Eventually, you interact with this being in most of the same ways you interact with persons on this earth. You might begin to treat him as another person. Suppose now you also establish that this being lacks human DNA. You might begin to suppose that this person from outer space has all of the same rights that you attribute to persons who are also members of our species. This suggests that it is not being biologically human that is morally central to having the right to life, but some other property. This also suggests that there is something wrong with the first premise of the innocent human life perspective. (Warren 1973)

The personhood perspective

The above considerations suggest that what it is about us in virtue of which we have the right to life is not our being a member of the species *Homo sapiens*, but some other characteristic *correlated in many cases* with our being a member of our species. Singer, along with many others, has defended the view that what it is about us that gives us the right to life is our being *persons*. Singer understands being a person as having the capacity for rational agency and self-consciousness. The view that human beings have the right to life in virtue of being persons has a number of virtues.

One virtue is that it explains why we do not find it objectionable not to keep alive human beings who are unconscious, and whom, we are certain, will never regain consciousness. Since on this personhood view, such human beings lack rationality and self-consciousness and never will regain it, such human beings are no longer persons. Since they are no longer persons, they lack the right to life. Another virtue of this perspective is that it explains why we would treat certain visitors from outer space as having the right to life even though they were not biologically human. If such visitors exhibit the marks of rationality and self-consciousness, then we would treat them as persons and, as a consequence, as having the right to life. The innocent human life

perspective cannot explain this, whereas the personhood perspective can. According to the personhood perspective since fetuses lack the capacity for rational agency and self-consciousness fetuses lack the right to life. Since fetuses lack the right to life, the supposed moral barrier to women's reproductive freedom posed by the innocent human life perspective vanishes. Is this personhood perspective free of difficulty? It has, as I have presented it, a rather interesting weakness. We agree, with Singer, that the biological characteristic of being a member of one sex or another is morally irrelevant, because biology all by itself is morally irrelevant. And we agree, with Singer, that the biological characteristic of belonging to one race rather than another is morally irrelevant because, again, biology all by itself is morally irrelevant. Now suppose we agree, with Singer, that being a member of one species rather than another is morally irrelevant because, again, biology all by itself is morally irrelevant. Why should we suppose that psychology is morally relevant? A psychological property is just as much a natural property as a biological property.

Presumably our thought that the moral is not based on the biological is based on some version or other of the naturalistic fallacy, that is, that the claim that an individual has a natural property does not entail that the same individual has a moral property. If we accept the doctrine of the naturalistic fallacy, then why should we believe that the possession of a psychological property, which is a natural property also, is any more morally significant than the possession of a biological property? If we don't accept the doctrine of the naturalistic fallacy, then why should we be so certain that the biological property of being human has no moral significance?

The pro-attitude perspective

Singer's view is not a pure personhood view. He has an answer to the naturalistic fallacy concern. He argues that being a person is central to the correct account of the right to life because a personhood account gets our *values* into the account of the right to life. It does

so in the following way. Only persons have a self concept, that is, a concept of self as a continuing subject of experience. Only if one has a concept of self as a continuing subject of experience can one desire to live. To desire to live is to *value* one's future life. To desire to live is to have a pro-attitude toward one's future life. We have the strong desire to live. This strong desire to live is the basis for our right to life. The reason the strong desire to live is the basis for the right to life is that everyone agrees that we have a presumptive obligation to respect the desires of others, especially to respect their very strongly held desires. The desire to live is a strongly held desire because it is a desire that is a necessary condition of the fulfillment of our other desires. Accordingly, our strong desire to live is the basis for our belief that (most) human beings have the right to life.

Perspectives like Singer's are popular in the philosophical community. Michael Tooley (1972) also argued that our right to life is based on our desire to live. John Harris (1999) has claimed that our right to life is based on the fact that we *value* our future lives. Steinbock (1992) and Dworkin (1993) have argued that our right to life is based on our *interest* in continuing to live. Reiman (1999) has claimed that our right to life is based on the fact that we *care* about continuing to live. Paske (1998) and Brown (2002) have argued that our right to life is based upon our *hopes* for our future. No doubt there are other variations on this theme. The differences between these views should not be allowed to obscure their essential similarity. All of these views refer to the fact that you and I *value* our continued existence. All of these views refer to the fact that you and I have a *pro-attitude* toward our continued existence. All these views have the same virtues.

The pro-attitude perspectives justify reproductive choice, of course. Fetuses do not value their future lives, because they lack a concept of self as a continuing subject of experience. They lack the property that is necessary for them to value their future lives. As a consequence, they lack the property that is the basis for the right to life. It follows that ending their lives is not wrong and abortion is morally permis-

sible. The great virtue of these pro-attitude views is that they base our view that killing post-natal human beings is wrong, not ultimately on biology and not ultimately in psychology, but on the values we actually have. Pro-attitude views have other nice features as well. They do not suffer from the over-commitment problem. People who are irreversibly comatose do not value their future lives. Indeed, they lack the brain states in virtue of which they could possibly value anything at all. Therefore, they lack the right to life. Therefore, pro-attitude views, unlike the innocent human life perspective, do not underwrite the wrongness of killing them.

Neither do pro-attitude views suffer from the under-commitment problem. People from outer space who behave like persons presumably want to continue to live. That shows that they value their future lives. Therefore, unlike the innocent human life view, the pro-attitude view explains why it would be wrong to kill them.

Nevertheless, pro-attitude views all suffer from a devastating problem. Consider someone with untreated bipolar disease who is greatly depressed and suicidal. Consider someone who has been given a suicide pill by a mortal enemy and after the pill takes effect, says sincerely she does not want to live. Consider someone who has become convinced by his religious leader that all the members of their cult should commit suicide in order to obtain bliss in the afterlife. Pro-attitude views imply that it is not wrong to kill such folks. However, it is wrong. Therefore, any pro-attitude view is false.

Is there a way of modifying these pro-attitude views so that they are not vulnerable to these counter-examples? A defender of a pro-attitude view might try to repair her view in the following way. She could point out that the alleged counterexamples to pro-attitude views describe people who lack *rational* desires concerning their future lives. Therefore, she might suggest that the *rational* desire to continue to live is the basis for the right to life, and therefore, the above counterexamples are not counterexamples to the pro-attitude

view at all. Such a repair is ineffective. People who suffer from clinical depression who lack the desire to live also, of course, lack the rational desire to live. Consequently if the rational desire to live is the basis for the right to life, then such people lack the right to life. No one believes that.

Suppose a defender of the pro-attitude view tries to repair her view by arguing that one's *ideal desire* to continue to live is the basis for the right to life (Boonin 2003). One then understands an ideal desire, not in terms of a desire that one actually has, but in terms of the desire toward one's future life that one *would* have if one were rational and had full information about one's future, whether one actually has that desire or not. Therefore, one can hold that people who are suicidal because of depression or because they were given a suicide pill actually have an ideal desire to continue to live, because if they were rational and full information about their futures, they would desire to continue to live. Accordingly, an ideal desire view will not be subject to the counterexamples that plague standard pro-attitude views or views in terms of *actual* rational pro-attitudes.

Ideal pro-attitude views can be characterized in different ways. One way of characterizing such a view I shall call an "idealized desire" view (after Singer, 2009). According to an idealized desire view a necessary condition of one's having an idealized desire toward one's future is that one have *some desire or other* toward one's future life. An idealized desire concerning one's future is a desire that one actually has concerning one's future that is idealized, that is, is corrected if it is not based on full information and rational calculations concerning one's future. Thus, the depressed suicidal patient will have an idealized desire to live, but fetuses will not. The reason for this is that a depressed suicidal patient actually has a desire concerning her future, whereas a fetus, lacking the capacity to have any desires concerning her future at all, will not have an idealized desire to live. (I neglect the case where the depressed patient says that she does not care whether she lives or not) Therefore, if one has the right to life

only if one has the idealized desire to continue to live, then fetuses lack the right to life and abortion choice is assured.

There is a different way of characterizing an ideal desire view. We might suppose that having an actual desire concerning one's future is *not* a necessary condition of having an ideal desire concerning one's future. Just to have a name, let us call such a view 'a hypothetical desire' view. A hypothetical desire view concerning one's future is a desire one would have if one had full information concerning one's future and one made a rational decision concerning one's future. Notice that, apart from the absence of the stipulation concerning *actually* having some attitude or other concerning one's future, a hypothetical desire view is the same as an idealized desire view. However, the presence or absence of this stipulation makes a great deal of difference if one is concerned with the ethics of abortion. Fetuses can have hypothetical desires. They cannot have idealized desires. Therefore, a hypothetical desire account of the wrongness of killing will be incompatible with abortion choice; an idealized desire account of the wrongness of killing will support abortion choice.

Which account should we choose? An analogy will help us answer this question. If a Nazi tells you he believes that all innocent human being have the right to life-unless, of course, they are Jews, you will reject his view because he has offered a restriction on the scope of his account that is arbitrary. Notice that you cannot reject his account on the ground that it is subject to counterexamples. He will maintain that all your counterexamples beg the question against him. What this little example shows is that we do not want an account of the wrongness of killing that contains restrictions that cannot be defended in a principled way. The difficulty with an idealized desire account of the wrongness of killing is that it contains restrictions that cannot be defended in a principled way. The account permits abortion choice *solely* because of a linguistic stipulation about the definition of idealized desire. Notice how different this view is from the original pro-attitude view. The original pro-attitude view per-

mitted abortion because fetuses *actually* do not desire their futures. There is nothing arbitrary about that. What this extended analysis shows is that pro-attitude accounts of the wrongness of killing are subject to counterexamples and that such accounts cannot be modified so that they are no longer subject to difficulties.

The result of all of this analysis is that we must find a better sort of account of the wrongness of killing that will help us defend one perspective or another concerning abortion choice.

The future of value perspective

Why are the counterexamples to (non-idealized) pro-attitude views really counterexamples? Are these counterexamples based on strong, but ultimately indefensible moral intuitions, or is there a reason why these counterexamples are persuasive? There is indeed a reason. Many people who are depressed can be treated with psychotherapy and/or psychotropic drugs and can go on to live lives they will value. We presume that after the suicide pill wears off, the individual who took the pill will go on to live a life she will value. We presume that after rescue and treatment the deluded member of the religious cult can be deprogrammed and can go on to live a life he will value. This suggests that underlying the counterexamples is the belief that if an individual would have a future she will value if she does not die, then it is wrong to kill her (Marquis 1989).

This suggestion is born out in other ways. Consider the class of people who do want to live. One could argue that it is wrong to kill them because if they are not killed they will go on to live lives they will value. We believe that one's premature death from cancer or heart disease or some other cause is a misfortune to her because that death deprives her of a future that she would value. Why is this? We presume that a shorter life is a worse life than a longer life because the shorter life will, *ceteris paribus*, contain fewer goods than the longer life. We believe that to cause someone's life to contain fewer goods than it

would otherwise contain is to harm her. To deprive someone of *all* of the goods of her future life is to cause great harm to her. It causes her to suffer a great misfortune. It is wrong to cause others to suffer a misfortune. It is wrong to harm others and it is certainly wrong to cause great harm to others. Therefore, killing another human being is wrong because it deprives her of a future of value. Reflection on the counterexamples to the pro-attitude view and reflection on our attitudes to death leads to a better account of the wrongness of killing.

Reflection on ideal desire views of the wrongness of killing lead in the same direction. If one has a future of value, then, if one has full information about that future and reasons correctly about it, then one will have a hypothetical desire for one's life to continue. One's future of value is the *basis* for one's hypothetical desire. The hypothetical desire view is actually parasitic on the future of value view. If one has a future of value, then one will have an hypothetical desire to continue to live and if one lack a future of value, then one will lack an hypothetical desire to continue to live.

The future of value view, like the innocent human life view, or like a personhood view or like the pro-attitude view, is intended to provide us with a sufficient condition for the wrongness of killing, unless special circumstances obtain. Special circumstances include killing in self-defense, killing in time of war, and cases in which the death penalty may be the appropriate penalty for a crime. Reasoned discussion of these special circumstance cases takes for granted that ordinarily killing another human being is wrong, but there may be exceptions in cases involving the termination of other human life. However, these are all cases in which the killing needs careful justification. If these special circumstances do not obtain, then the future of value view, like the innocent human life view, and the personhood view and pro-attitude views, is intended to provide us with a sufficient condition for the wrongness, indeed, the very serious wrongness, of killing.

Does the future of value view provide a necessary condition for the serious wrongness of killing? Consider those cases that cause difficulty for the innocent human life account: cases of human beings who have become irreversibly unconscious. Irreversibly unconscious humans lack futures of value; that is, they lack a future in which they would value their experiences. Therefore, the standard reason why killing a human being is wrong does not apply to them. However, it does not follow immediately that it is not wrong to kill anyone who is irreversibly unconscious. There may be another reason why such human beings should be kept alive. Perhaps a relative is willing to pay for the continuation of life supports. Perhaps the patient himself has made provisions to pay for his continued care. Usually, however, there is no such reason. Unless such a special situation obtains, ending the lives of people who are irreversibly unconscious is not wrong. In the absence of special situations, the future of value account of the wrongness of killing will function as a necessary condition for the wrongness of killing.

The future of value account of the wrongness of killing is, strictly speaking, too inclusive. Although it is easy to think only of cases of humans when considering the morality of abortion, the unqualified future of value account will imply that it is wrong to kill most mammals. Cows have future of value, as futures of value have been defined. Beef eaters do not think that it is wrong to kill cows. Unless this difficulty is addressed, the future of value theory is subject to a serious objection.

It can be addressed in the following way. What is attractive about both the pure personhood theory and the pro-attitude theory is that they take into account the moral importance of the lives of persons. Warren's view, in particular, is attractive because her view took account of the common view that the lives of persons are far more morally important than the lives of those who are not. If the future of value view cannot provide us with insight into why Warren's view is wrong in this respect, we would have one reason for thinking that

Warren's personhood view is superior to the future of value view. We can put the difficulty in another way. The reproductive freedom view and the pro-attitude view were criticized because they were too narrow. They made too much killing morally permissible. The innocent human life perspective was criticized because it was too broad. It made it wrong to end lives that it was clearly not wrong to end. Is the future of value view also too broad because it makes it wrong to end lives that most people think it is not wrong to end?

The future of value view can be qualified so that it deals with this objection. What are the arguments in favor of the future of value view? The arguments are based on analysis of why we believe that it is wrong to kill humans when it is wrong and why we believe that it is permissible to end the lives of humans when it is permissible to end those lives. Those futures that we believe are so morally important that they are the basis of a strong moral prohibition of killing are futures that can be characterized as the lives of persons. We believe that it is wrong to kill suicidal persons, or persons who have taken a suicide pill or persons in the grip of a religious cult because they can have (after deprogramming) the kind of futures that persons have. We believe that death from cancer is a misfortune because it deprives someone of the kind of future that persons have. Thus what is morally significant in ending a life contexts seems to be a future personal life. Call such a life a p-future of value. The p-future of value view does not imply that we must refrain from eating beef.

Accordingly, one objection (There are others) that the future of value perspective makes too much killing wrong can be dealt with. Indeed, the p-future of value perspective recognizes the moral importance of the life of a person as much as does Warren's personhood perspective and pro-attitude perspectives. However, unlike those other perspectives, the future of value perspective recognizes *future* personhood. Therefore, it implies that abortion is not only wrong, but seriously wrong. It is wrong for the same reason that killing any post natal human being is wrong. Birth is morally irrelevant.

A key concept in the p-future of value view is (of course) the notion of a p-future of value. What it is to have a p-future of value is (I suppose) intuitively obvious. However, there would be something wrong with the p-future of value view if one were unable to unpack the notion more precisely.

At an early age we acquire a notion of a natural human life span. We recognize that our parents, grandparents, and great grandparents are located on later points in that life span. To end someone's life at some particular time is to deprive her of the years of a normal life-span after that time. But what is that future of which she was deprived? It is not something that was actually part of her life if his life were ended prematurely. It is not necessarily something that she thought she had. Otherwise, the view would not imply that abortion is wrong, for a fetus is unable to have a concept of her future. An individual's future of value at a given age is one's *potential* at that age to live to a greater age and to have a future life that one would value. That potential is based on one's nature as a biological organism in much the same way as table salt's potential to dissolve if put in water (even if it is never put in water) is based on the chemical nature of Na Cl (McInerney 1990.)

There is nothing mysterious about this. Epidemiologists have data concerning one's median life expectancy at a given age. One's median life expectancy refers to one's potential future life at a given age. One's future of value is just one's median future life expectancy on the assumption that one would value that future life.

This explication of the idea of a future of value shows how a common criticism of the future of value view is unsound. Norcross (1990) has argued that if fetuses have futures of value, then combinations of sperm and ova also have a future of value, for they can combine to form a zygote and ultimately a fetus and ultimately a post natal human being. However, not all combinations of sperm and ova could possibly have a future of value. Prior to fertilization there is no actual

combination of a particular sperm and ovum and therefore, nothing to have the potential that is the basis for a future of value. There are only a multitude of possible combinations. Once a fetus exists, there is an actual entity with an actual potential to have a future of value. Misfortunes require actual victims.

Why the p-future of value view is superior to other accounts of the wrongness of killing

Let us compare the p-future of value view to other accounts of the ethics of abortion. It is superior to the reproductive freedom view because, unlike the reproductive freedom view, the p-future of value takes seriously the fact that fetuses are human beings and that, at least in the vast majority of cases, deliberately ending the life of another human being is wrong. It is superior to the innocent human life view because, unlike the innocent human life view, it is subject neither to the speciesism objection nor to the over-commitment or under-commitment objections. Unlike the innocent human life view, the p-future of value view does not make it wrong to end the lives of the irreversibly unconscious. Indeed, it does not rule out the moral permissibility of euthanasia and physician-assisted suicide.

On the other hand, like Warren's personhood view and pro-attitude views, it is open to the possibility that elsewhere in our universe there could be individuals with p-futures of value who lack human DNA. The p-future of value view is superior to Warren's personhood view because it involves our values in a way that Warren's view does not. The p-future of value view is superior to any of the many pro-attitude views because it deals correctly with cases in which, due to some mental aberration, a human does not desire to continue to live. Because there are other reasons why the p-future of value view is plausible, the p-future of value view is superior to alternative accounts of the wrongness of killing. The p-future of value view seems to imply that abortion is morally wrong. This conclusion is, and should be, very hard to accept. It underwrites a great restriction on

the liberty of women. Because of this the future of value perspective has been heavily criticized. It is not possible in an essay of this length to discuss all of these criticisms.

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Procreative Selection to Help Others: Saviour Siblings¹

Preimplantation Tissue Typing to Select a Saviour Sibling

Preimplantation tissue typing has been used to enable families to create so called 'saviour siblings': tissue matched children that can serve as a stem cell donor for a sick sibling in need of an allogeneic haematopoietic stem cell transplantation. Haematopoietic stem cells are blood forming stem cells residing in the bone marrow, the peripheral blood, and the umbilical cord blood. For several lethal malignant and some non-malignant disorders, haematopoietic stem cell transplantation is currently the only therapeutic approach (Benito et al. 2004).

Preimplantation tissue typing involves the combination of three techniques: *in vitro* fertilisation (IVF), preimplantation genetic diagnosis (PGD) and human leukocyte antigen (HLA)-typing. PGD involves the genetic testing of IVF embryos prior to transfer to the uterus. One or two cells are removed from the embryo to test for certain inherited diseases. Only unaffected embryos are transferred. When PGD is combined with HLA-typing (also called "tissue typing"), the biopsied cells are used to test for the embryos' HLA-type. The HLA-type is determined by the antigen pattern, the markers on the surface of body cells and tissues. These markers are used by the immune system to distinguish our own body cells and tissues from foreign ones. The success of a stem cell (or any other) transplant largely depends on how well the HLA-types of the donor and recipient match.

1 Adapted from: Devolder, K., 2005, "Preimplantation HLA typing: having children to save our loved ones." *Journal of Medical Ethics*, 31(10): 582-6.

Why use preimplantation tissue typing to create a saviour sibling? Preimplantation tissue typing is not *required* to create a saviour sibling. There have been cases of couples conceiving, or trying to conceive saviour siblings via sexual reproduction. The Ayala and the Curry cases are probably the most discussed ones. In 1989, Marissa Ayala was conceived to provide stem cells for her sister Anissa, who suffered from leukaemia and would die without a bone marrow transplant (Morrow 2001).

In the same year, umbilical cord blood stem cells collected after Emily Curry's birth were used to treat Emily's sister Natalie, who was born with a rare genetic condition called Fanconi Anaemia and would likely die before the age of ten if she did not receive a haematopoietic stem cell transplant. Emily was the third attempt of Natalie's parents to conceive a saviour sibling. Natalie's mother had one miscarriage, and Audrey, their second daughter, was not a tissue match for Natalie. The chance that a child is a perfect tissue match for its sick sibling is only one in four. Couples who are trying to conceive a saviour sibling are thus faced with a difficult decision about whether to keep trying in the hope that the next child will be a tissue match. To avoid having more children that are not a tissue match, some couples made use of prenatal testing, which is performed during pregnancy. If the fetus turned out not to be a tissue match, the pregnancy can be terminated and a new attempt to have a saviour sibling can be made, without having to extend the family (Auerbach 1994).

Preimplantation tissue typing has been proposed as a more efficient and less demanding method for creating a saviour sibling than the lottery of sexual reproduction or selection after prenatal testing (Verlinsky et al. 2001). The main advantage of preimplantation tissue typing is that it provides genetic information about embryos *prior* to implantation. Selection prior to implantation avoids the problem of having to take demanding and controversial decisions about whether or not to terminate a pregnancy if the fetus turns out not to be a match, or to extend the family in the hope that the next child will have

the desired HLA-type. Adam Nash, born in 2000, was the first saviour sibling created as a result of preimplantation tissue typing (Grewal et al. 2004). The umbilical cord blood stem cells collected after his birth were used to treat his sister Molly, who had the genetic condition Fanconi anaemia. The procedure involved testing IVF embryos to identify those that were free from the disease *and* a tissue match for Molly. The transplantation was successful and two years later Molly was cured. In May 2004, a research team in Chicago reported the birth of five healthy saviour siblings (Verlinsky et al. 2004).

Their older siblings were affected with acute forms of leukaemia or with Diamond-Blackfan anaemia and needed HLA-matched haematopoietic stem cell transplantations. Because these diseases are sporadic and not hereditary, the IVF embryos were only tested for HLA-type, not for hereditary diseases. Since these successful attempts, several other saviour siblings have been created worldwide using preimplantation tissue typing. Despite promising results, many people still object to the use of this method to save sick children. In what follows, I discuss the two main concerns of these critics and show that they do not constitute a sufficient ground to reject preimplantation tissue typing to create a saviour sibling.

The risks of preimplantation tissue typing for the saviour sibling

In some saviour sibling cases, such as the Nash case mentioned earlier, the disease in the affected child is hereditary. PGD is then used both to select an embryo that does not have the disease and that is also a tissue match for the sick child. Another widely discussed case is that of the Hashmis. Three-year old Zain Hasmi had Beta Thalassaemia (BT), a hereditary condition. After a failed attempt to conceive a saviour sibling naturally, the Hashmis applied to the Human Fertilisation and Embryology Authority (HFEA) for permission to carry out PGD on their IVF embryos to select an embryo that would not have BT *and* that would be a tissue match for Zain (Boseley 2001).

Permission was granted. In some cases, however, the disease of the affected child is sporadic. PGD is then used solely for HLA typing and not as a diagnostic technique. The five saviour siblings created in Chicago had only been tested for HLA-type. One of these saviour siblings was James Whitaker. The Whitakers' earlier request to the HFEA for permission to use PGD to select a saviour sibling for their child suffering from Diamond Blackfan Anaemia (DBA) – a sporadic condition – had been refused, the reason being that the IVF embryos did not have to be tested for a disease but only for their tissue type (HFEA 2002).

Some who accept PGD for selection against genetic diseases are opposed to PGD solely for HLA typing. They have argued that an embryo should be exposed to the risks of PGD only if it is likely to derive enough benefit from it to outweigh the risks (Wolf, Kahn and Wagner 2003). These risks are the as yet unknown long term effects of PGD resulting from the extraction of one or two cells from the embryo. The idea is that if PGD is used to test for genetic diseases, then this is in *the best interest* of the child that will be selected, whereas if PGD is used solely for tissue typing, the only benefit is for the existing sick child who will receive a stem cell transplant. Suzi Leather, former chair of the HFEA, expressed this concern as follows:

PGD can secure an outcome, which is much better than the horrible death say, of an infant with Tay Sachs condition. Clearly then the resulting child benefits from the PGD to the extent that it owes its serious-disorder-free life to PGD. But an intervention which imposes risks without benefits, or where the benefits accrue to another person, is very different.

(Leather 2004, online)

This objection is problematic. It is misleading to say that the child owes its "serious-disorder-free life" to PGD. The child without Tay Sachs owes its life to PGD, in the same way as any other child selected following PGD, for whatever reason, owes its life to PGD. It is not

as if, without PGD, the *same* child would have been affected by the disease. PGD is not a cure, it is a *selection* procedure. An embryo is, or is not selected because of genetic characteristics it already had.

How then can PGD benefit children? If one believes it is better to exist than not to exist (except if a life is so bad that it is not worth living), the only conceivable benefit of PGD for the resulting child is its existence, rather than a "serious-disorder-free" existence. Without PGD it would probably not have existed at all. The parents would not have had this particular child. If one does not believe existence is a benefit, none of the children that came into the world after PGD have directly *benefited* from PGD. Consequently, regardless of whether one thinks coming into existence is a benefit or not, PGD does not benefit the child in the sense that it prevents the child from having a serious disease.

Will the resulting child be harmed by PGD? We could say that one part of the procedure – the extraction of the cells – might harm the child, but PGD as a whole does nevertheless *not* harm the child if it was a necessary condition for the child's existence. This does not mean that the child could not have a complaint about the procedure. However, a child resulting from PGD for tissue typing has no more grounds for complaint about possible side effects than a child resulting from PGD for diagnosis of a genetic disease, given that in both cases PGD was a necessary condition for the children to exist.

In the case of PGD for tissue typing, PGD is carried out for a clearly *person affecting* reason – saving the sick sibling, whereas in the case of PGD for testing for a genetic disease, PGD is carried out for a mainly *non-person affecting* reason – the creation of a new person without a genetic disease as opposed to the creation of another new person *with* a genetic disease (Parfit 1984). Of course, there are also *person affecting* reasons for using PGD to select against diseases, for example, the benefit to the parents and to society, but these kinds of *person affecting* reasons might also operate in the former case. The

important point is that in the case of PGD for tissue typing there is an *extra* person affecting reason for doing PGD: saving a child's life.

This person affecting reason makes the moral case for PGD for tissue typing even stronger than the moral case for PGD to select against genetic diseases. If one accepts the risks of PGD for the benefit of people who want a healthy child, surely one should also accept these risks for the benefit of parents who want a healthy child *and* for the benefit of a sick child in need of a stem cell transplant.

The morally dubious intentions to have a saviour sibling

It is, however, precisely this person affecting reason that is the basis of another concern of opponents of preimplantation tissue typing to create a saviour sibling. For example, the editor of the *Bulletin of Medical Ethics*, wrote:

We are not creating this saviour sibling to be a child in its own right. We have created it – designed it – to be a source of spare parts for an existing child...Where do we draw a moral distinction between slavery...and creating what I prefer to call slave siblings

(Nicholson 2003, online)

That saviour siblings will be created, and thus treated as “spare part babies” is a common concern. There are, however, several problems with it. First, it is based on the speculative assumption that saviour siblings are created *merely* for *instrumental* reasons, that is, merely to serve as a stem cell donor for the sick sibling, and not for their own sake. But why would this be the case? It is extremely difficult, if not impossible, to separate the reasons that lead to the conception of a child because of a ‘genuine desire for a child’ from those linked to an attempt to save another child. Second, even if saviour siblings are created for instrumental reasons, it is not clear why that in itself

is so problematic that it justifies preventing their existence. Parents generally have children for all sorts of instrumental reasons. For example, "The Value of Children Project" conducted in 1973, before most assisted reproduction techniques had been developed, indicated that one of the advantages of childbearing most frequently mentioned is the benefit for the husband-wife relationship. Other frequently mentioned reasons include 'immortality' of the individual, continuity of the family name, and the economic and psychological benefits children provide when their parents become old (Fawcett and Arnold 1973). These reasons are widespread and generally considered unproblematic, as long as the child is also valued in its own right. What is most important in a parent child relationship is the love and care inherent in this relationship. We judge people on their attitudes toward children, rather than on their motives for having them.

Perhaps this is where the problem lies: because saviour children are created as a means to help another child, they will not be valued in their own right. But what does it mean to be valued in one's own right? If you are extremely rich or talented, and people approach you because of these characteristics, does that mean they do not value you in your own right? Suppose we express it differently, and situate the problem not in the vagueness of not being valued in one's own right, but rather in terms of not being respected, loved, or taken care of in the way people expect in given circumstances. Do we have reason to believe that saviour siblings will not be cared for in the way children should be cared for? For example, do we have reason to think that these children will be neglected or abandoned as soon as their stem cells have been used to save the sick sibling?

One cannot completely exclude the risk that this will be the case, but this is true for all reproduction. We generally do not think that such risk justifies interference with people's reproductive plans. Perhaps the risk of maltreatment or abandonment would be much higher in the case of saviour siblings because of the particular intention for having such children. They were created, partly or wholly, as a

stem cell donor. This concern relies on the assumption that there is a strong link between one's intention to have a child, and the way one will treat the child once born. It is, however, a mistake to presuppose that the desire or the intention to have a child determines the attitudes of the parents toward the child once born. This would imply that children conceived in order to have a brother or sister for an already existing child would not be loved, which, fortunately, is not the case (Pennings 2004).

Moreover, the fact that the parents make so much effort to try to save their sick child suggests that they are caring and loving parents and makes it very unlikely that they will treat the saviour sibling as a 'bred to order child' and will abandon it once the transplantation was successful (Boyle and Savulescu 2001). Indeed, anecdotal evidence from families with a saviour sibling indicates that these children receive all the love and care children should get. Finally, we should not forget that someone – the sick child – is to benefit from the creation of a saviour sibling, whereas the saviour sibling cannot be harmed by its creation (unless her life is not worth living). One could, of course, still argue that from a non-person affecting point of view it is morally better to bring a child into the world that can be expected to have more wellbeing than any other possible child one could bring into the world.

For example, the Principle of Procreative Beneficence instructs parents to select the child, of the possible children they could have, that will have the best chance at the best life (Savulescu 2001, Savulescu and Kahane 2007). Suppose a couple can choose to create child A that is a saviour sibling or child B that is not a saviour sibling. Suppose also that A will have somewhat less expected wellbeing than B. However, if A is selected C will live. If B is selected C will die. Procreative Beneficence would instruct parents to select B. But why should we, when selecting children, only take the wellbeing of the selected child into account? There is good reason to think that parents should also protect and promote the wellbeing of others through

their selection decisions. People in general have moral reason to promote and protect the wellbeing of others through their actions. Indeed, the existence of such reasons is recognized in relation to parental decision-making contexts that are somewhat related to those of genetic selection. It is generally thought that parents should raise their children not merely to have lives containing much wellbeing, but also to contribute to the wellbeing of others. For example, it is widely thought that parents should encourage moral sensitivity in their children. Many also think that they should inculcate certain values or moral beliefs into their children through punishing harmful behaviour and rewarding beneficent behaviour. Accepting that when selecting a child, parents should also take into account others' wellbeing would be a natural way of extending these common sense views about good parenting into contexts of proactive selection (Douglas and Devolder, forthcoming).

To what extent parents should take into account the wellbeing of their selected child and that of others is a difficult question I cannot settle here. But they should take into account both. Since there is no reason to think the wellbeing of the saviour sibling will be significantly lower than that of any other child the parents could have, and the sick sibling will benefit tremendously, we have a strong moral reason, if not a moral obligation, to use preimplantation tissue typing to select the saviour sibling.

Conclusion

Preimplantation tissue typing can be used as a method to create saviour siblings – tissue matched children that can serve as a stem cell donor to save the life of a sick sibling. Since the saviour sibling cannot be harmed by the procedure (unless she or he has a life not worth living), and an existing person – the sick child – will expectedly benefit from it, there is a strong moral reason for applying it. The concern that saviour siblings will be used merely as a means does not provide a strong reason against employing preimplantation tissue

typing to create them. First, if we accept the risk of abandonment, or maltreatment in 'normal' reproduction, we should also accept it when creating saviour siblings. Secondly, there is no reason to think that this risk will be significantly higher in the case of saviour siblings. The intentions of parents to have a child do not necessarily determine the way they will treat their child.

Moreover, parents who go through significant effort to create a saviour sibling will generally be caring parents. Finally, even if the saviour sibling had somewhat less expected wellbeing than any other child the parents could select, they would have good moral reason to select the saviour sibling. Parents generally have good moral reason to benefit others through their actions, and it is not clear why this reason would not extend to reproductive decisions. Since there is no reason to think the wellbeing of the saviour sibling will be significantly lower than that of any other possible child, and the sick sibling will benefit tremendously, we have a strong moral reason, if not a moral obligation, to use preimplantation tissue typing to create a saviour sibling.

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Socio-Epistemological Aspects of Enhancement¹

Introduction

Human Enhancement could be described as the use of medicine, surgery and other kinds of medical technology, not just to cure or control illness, but rather to enhance or improve human capacities and characteristics (Elliott 1998). One of the *well-known* and most contradictory definitions of *Enhancement* is that it represents a directed use of biotechnical power through direct intervention in order to alter the 'normal' functions of the human body and psyche – not the disease processes – and to increase or improve the innate capacities and performances of the body (The President's Council on Bioethics 2003).

In the contemporary study of the idea of human enhancement there are at least three ethical or theoretical approaches. The first one is a *transhumanist* approach, whose advocates explicitly promote the practice of genetic, prosthetic and cognitive enhancement of humankind, that is the transition from a human to a post-human society; the second approach is a *bioconservative* one and its proponents perceive such experiments on human beings as a violation of human dignity, meddling in "God's business" (*playing God*), and generally as a threat to humankind; while the representatives of the so-called *middle standpoint* see the danger in the dialectical relation between capitalism and medicine. The authors of this middle approach perceive the accessibility to, and application of, biotechnology

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as a certain resource for ensuring better social positions. Thus, it is necessary to know to what extent the bio-medical enhancement supports or clashes with the socially accepted activities such as attending trainings, courses, language or music lessons, talent building, immunization, etc. Regarding this question, we need to explore some epistemological and social implications of the main pro and contra arguments.

I would like to claim that, despite their theoretical divergences, these approaches encounter the same epistemological problems. In order to show the social and epistemological implications of the present day enhancement debate, I am going to discuss the three following arguments that it faces.

I Irrationality of the “yuck” argument?

When new technologies are introduced, the first reaction is often either “wow – this is amazing!” or “yuck – this is sick!” Harris deals with the reasons and arguments that underlie both reactions, and how it can sometimes be rational to move from “yuck!” to “wow!” The same author further claims that when using the *yuck factor* we only make an appeal to custom and law, “to feel a considerable unease reflected in custom and law” (Harris 2007, pp. 1–4; 20).

Agar underlies that the problem with the irrationality of the *yuck* argument is the following: if we lack a rationally persuasive reason to find the existence of biotechnological interventions wrongful, we should not translate queasiness into moral condemnation (Agar 2004, p. 58). Also, Harris emphasizes that Daniels’ definition of health and, hence, of illness in terms of departures from normal functioning or departures from species-typical functioning (Daniels 2000), is unacceptable in those cases like Chemical or Genetic enhancement. Immunization, as Harris underlies, is also a kind of health change, which goes beyond species-typical functioning (Harris 2007, p. 21). Although *immunization* is a sort of health improvement and one of

the most valuable social goals, especially in the domain of children's and youth's social – and healthcare, it should not be forgotten that not all vaccinations are risk free and morally acceptable. More risky procedures of genetic and chemical enhancement make the last comment more relevant; although there are some optimistic perspectives in terms of health, genetic or chemical means are still unexplored knowledge, risky and ethically questionable.

However, Harris and Agar claim that the difference between the moral justification of

- (1) mechanical enhancement or vaccination, and of
- (2) chemical or genetic enhancement is in the irrationality of the “yuck factor” (Harris 2007, p. 20).

I will try to show that this form of “irrationality” is part of a *normal human function*. At the same time, the *normal human function* term appears as a valid argument in this kind of epistemological explanation.

Agar examines the argument that human cloning and genetic engineering are wrong because they violate some deep, inchoate sense of what is right for us. This line of thinking is called the *yuck* argument. Placing the conservative's conclusion about biotechnology beyond reason's reach goes against the grain for those who are used to rationally justify their moral conclusions. The 'yuck' argument is designed for reactions of disgust that lack an obvious rational reason, especially in the case of the cloning of human beings (Agar 2004, pp. 55–56), where human cloning means the use of the technology of a nuclear transfer of the human somatic cell to produce a human embryo (Kass 2001, p. 29). But Agar's assumption in relation to this example clashes with at least two kinds of problems. The first group represents scientific facts about the negative effect of cloning or genetic engineering. The second problem is related to it. Once one has become familiar with the real dangers of the cloning procedure,

fear and uneasiness, based on several empirical data that we will here show, cannot be irrational, but are part of the normal (*and everyday V.M.*) human judgment (Wright 2009; Buchanon et al. 2009).

The examination of these problems starts from the concrete procedure, as well as from the challenges that are related to cloning. When we speak about cloning, as Agar emphasizes, „cloning can serve the end of human enhancement so long as the traits that parents want for their children are influenced by genes. Replicating all of a person's genome reproduces, in a new person, all of the genetic influences that helped shape her. Another biotechnology might enable more precise choices of hereditary influences" (Agar 2004, p. 10–11). But, Agar also underlines that the actual experiment of the realization of reproductive cloning opens many practical problems. The first one is that the fetus of the clone develops faster (about 30%) than the naturally fertilized fetus. Success in cloning a sheep does not guarantee success in cloning other organisms (Long et al. 1998, p. xiii).

Joyce D'Silva, underlies that the procedure of the cloning of the an experimental animal shows several serious problems:

- (1) Reproductive and other invasive medical interventions; required on a large scale because the process is so inefficient. These are performed on donor animals – for oocyte extraction – and on surrogate mothers, who often give birth by caesarean (D'Silva, online).²
- (2) Suffering caused to surrogate mothers. Pregnancy is typically prolonged and cloned calves (and lambs) may be 25% heavier than normal. Higher birth weights lead to painful births and often the need for caesarean section (D'Silva, online).

² See also *Compassion in World Farming*. The foUndation was founded over 40 years ago in 1967 by a British farmer who became horrified by the development of modern, intensive factory farming, at the site http://www.ciwf.org.uk/about_us/default.aspx.

- (3) Abnormal foetal development and late pregnancy mortality, leading to frequent death at various stages of development. Death in the second half of gestation is common, with the occurrence of hydroallantois, excess accumulation of fluid in the allantois (D'Silva, online).
- (4) Postnatal mortality; the viability of cloned offspring at delivery and up to weaning is reduced compared to normal, and this is despite greater than usual veterinary care.

Surviving newborn clones have altered neonatal metabolism and physiology – an elevated proportion of them dies before weaning (complications include gastroenteritis, umbilical infections, defects in the cardiovascular, musculoskeletal and neurological systems, as well as susceptibility to lung infections and digestive disorders). These animals have short lives of suffering. Jeff Carroll writes, "Post-natal survival of cloned calves can be as low as 33% in some studies, and we have experienced similar losses in cloned piglets.

- (5) Health problems during life. Recalling a study of N. D. Wells (2005), D'Silva emphasizes that Clones may have a greater propensity in later life for respiratory problems and immune system deficiencies compared with normal animals. Any underlying frailties in cloned animals may not be fully revealed until the animals are stressed in some manner (D'Silva, online).

In August 2003 three cloned adult pigs died from heart attack. The three pigs, part of a group of four (the 4th one died only a few days after birth) did not live to six months. Research leader, Jerry Yang, of the University of Connecticut, said it was "dramatic and shocking when all three died suddenly from similar problems" (Cohen 2003).³ He had described the animals as "normal, cloned piglets". The sow from whom the piglets had been cloned was still alive in 2003 and showed no signs of cardiovascular problems. Furthermore, the piglets

³ See also Lee et al. 2003..

all had separate surrogate mothers. According to Yang himself, that puts suspicion firmly on the cloning procedure.

In 2001 the biotech company *Immerge Biotherapeutics* and the University of Missouri produced transgenic cloned miniature piglets. Twenty eight surrogate sows were implanted with cloned embryos. Three sows, implanted with approx 100 embryos each, gave birth by caesarean to seven cloned piglets. Two piglets died shortly after birth from breathing problems and a third died after 17 days from heart failure. Of the surviving piglets, one had heart and lung abnormalities, one had eye and ear abnormalities and one had a leg joint abnormality. Of the dead piglets, two had leg problems and one had a cleft palate.⁴

The phenomenon of the DNA copying error is something that we may all confront, but the problem could be more expressed for someone whose genome comes from the somatic cell of a fifty-year old man or woman (Agar 2004, pp. 25-27), because aging increases the possibility of mistake by the process of DNA replication (which could be reflected in the wrong information stored in the chromosome of the potential clone). Scientists suggest that the problem may lie in the fact that an egg with a new somatic nucleus must reprogram itself in a matter of minutes or hours (whereas the nucleus of an unaltered egg has been prepared over months and years) (Agar 2004; Kass 2001).

Besides, we also know that even a cloned organism such as Dolly does not inherit *all* its DNA from its progenitor; a small amount of mitochondrial DNA is bequeathed to it by the enucleated oocyte (that is, by the contributor of the egg). Mitochondrial DNA is not located in the nucleus, but in the cytoplasm of a cell. It codes for a number of metabolic proteins and is passed down exclusively through the female of a species. When we talk about cloning an organism of either sex, we must remember that the cloned organism will not inherit its

4 See in Lai et al. 2002.

mitochondrial DNA from its progenitor unless its progenitor also donates the oocyte. That means that males cannot be perfectly cloned while females only can if the somatic cell and the oocyte come from the same individual – that is, if the individual that is being cloned also provides the egg (Long et al. 1998, p. xiv).

In this sense, Agar's vision of the *Liberal Eugenics* is a circular explanation. In the described manner, a "perfectly cloned genius", whose role is crucial in the fertilization or replication of a "perfect baby", can be created from the same genius, who, at the same time, must be a woman; A cloned embryo must have the same progenitor and donor of the egg who must have healthy cytoplasm.⁵ In such an *Enhanced Society*, reproductive cloning would not exist. Hence, we should speak about the infinite process of the self-reproduction of extraordinary persons, who must be exclusively women.

Perhaps the biggest factor of uncertainty is the effect that the environment has on the development of an organism with the same genetic base. A relevant example of the interaction between the genotype and the environment is a research of the behavior of twins. (Clark and Grunstein 2000). Examples of the behavior of twin pairs lead to

⁵ "The named technique is a transfer of ooplasm, which surrounds the nucleus of the egg and is essential for it to thrive, from the donor eggs into the eggs of women who have experienced recurring implantation failure-fertilisation occurs, but the resulting embryo will not implant in their uterus. An inadvertent consequence of this procedure was that mitochondrial DNA found in the ooplasm of the donated material was introduced into the recipient eggs" (Frankel 2003, p. 31). This author emphasized that one of the clinics reported that the technique had led to the birth of 30 babies worldwide. The clinic also reported that both the donated mitochondrial DNA and that of the birth mother were found in all the cells of those babies born by this method – a modification of the children's genome, since they inherited mitochondrial DNA from two mothers. Presumably, they will pass this inheritance on their offspring. The report was met with ethical disapproval in some quarters of the United States, and the British reminded us that the procedure would be illegal in the United Kingdom.

the following conclusion: the first case is about monozygotic twins, who are raised in different families, but both persons have identical life stories. This case concludes that genes, not environment and socialization, have the main role in determining human behavior. The second case is about dizygotic twins raised in the same family, but whose life stories are significantly different.

This case shows that genes, again, have the dominant causal role regarding human behavior. But the fact is that both stories are not completely true. In the second case, socialization in the same family does not necessarily mean the same conditions for different children. In the first case, socialization in totally different families may be very similar, thanks to the same culture, values and norms, besides having the same genetic. Thus, the behavior of certain species is a result of the interaction between the environment, the nature of certain species and, especially, culture (Clark and Grunstein 2000, p. 3-7). Having in mind the specific natural traits, the environment can create, thanks to a certain cultural context, various relations with different individuals who were raised in almost the same conditions. Thanks to a particular cultural context, the environment can play both the role of fostering the emergence of uniform social relations, and that of influencing the individuals to develop very diverse and particular responses to their social surroundings.

To that extent, individuals growing up in seemingly identical social and cultural conditions can develop totally different relationship toward their immediate surroundings. We should always bear in mind not only the role of the environment in determining behavior in a general sense, but also the unique role of the cultural environment in determining human behavior in particular. The interaction between our genetic selves and our cultural selves is very complex indeed (Clark and Grunstein 2000, p. 7). This example shows that fertilization with the copy of a cloned genius does not guarantee geniality or superiority of the offspring. Practically, with this conclusion we have showed that Agar's concept of Liberal Eugenics cannot

survive the test of a complex interaction between several factors in determining human behavior.

Considering the complex interaction between genes and environment, Leon Kass underlines that *in vitro* fertilization did more than "supply what one or both bodies lack, namely, a reasonable chance to produce an infant." By putting the origin of human life literally in human hands, it began a process that would lead, in practice, to the increasing technical mastery of the process of human generation and, in thought, to a continuing erosion of respect for the mystery of sexuality and human renewal. A society that allows cloning has, with or without knowing it, tacitly said yes to converting procreation into manufacture and to treating our children as pure projects of our will (Kass 1998, pp. 3-61, 77-89).

Wilson underlines that cloning presents no special ethical risk if society does all in its power to establish that the child is born to a married woman and is the joint responsibility of the married couple (Wilson 1998, pp. 61-77, 89-101). Apart from all their confrontations, both authors agree that the challenge of Human Cloning is not just that it is a problematic reproductive technique, but that it is also a dramatically important subject for many critical social questions.

Having in mind other similar dilemmas, we could ask a justified question – is the argument from disgust unacceptable because of its irrationality? While confronting Agar's and Harris' ideas, we are going to give just a few of the many scientific explanations of normal human functioning, considering the situations when humans are faced with fear, risk, disgust, etc. Here we want to underline the importance of subjective or irrational reactions for the formatting of the everyday social and cultural human activities. Although it is now clear that the amygdale is not so specialized for fear, but processes a broader range of emotions, it was found that certain persons were impaired in their ability to judge the level of arousal of their emotions with negative valence (unpleasant emotions), including fear, anger,

disgust and sadness. It was found that, in the case of these persons, the amygdale's dysfunction was caused by the normal aging process.⁶ Since fear is normally judged as one of the most arousing unpleasant emotions, the impaired individuals' reaction may be disproportionate to fear for this reason. The amygdale's role is not limited to making judgments about basic emotions, but includes a role in making social judgments (T.W. Buchanon et al. 2009, p. 304).

There is also the question of cultural relativism, i.e. of the impossibility of a universal measurement of the irrationality of decisions. In the so-called measurement of decisions, the age issue may also be the problem. Although relatively few studies have concentrated on the effects of healthy aging on amygdale volume, the available research suggests a fairly modest atrophy – in the order of 2–20%. In the mentioned research the atrophy is 4%. Besides, recent findings on aging suggest that the differences in the medial PFC (pre-frontal cortex)-amygdale interactions that are related to aging may result in decreased amygdale responses to negative versus neutral stimuli. The author assumes that the described alternations are playing a role in decision making, whereby the role of emotional influences is less important (Wright 2009, pp. 382–396).

Considering the real and possible (medical and social) consequences of the described alternations, on one hand, and the "protectoral" function of fear, when a person is faced with a certain risk or an unpleasant intervention and another social role of amygdales, on the other, we do not find enough arguments that fear or disgust can be rejected as non-scientific or irrational human reactions. Besides, some old and empirically proven socio-anthropological examinations (Daglas 1993) suggest that disgust is having a great influence on the social organization of communities, and that it cannot be added to the spectrum of purely irrational human activities; it is completely

6 See also: Roiser et. al. 2009. The damaged Amygdale resulted, in the case of this man, in a permanent handicap in the domain of choice making.

clear that such actions are part of the social and cultural life of human communities. It could also be added that there is an old argument about disgust as an emotion which possesses a protectoral and survival function – that it is related to a biological mechanism of a rejection of “suspicious” (filthy, infectious) substances. According to this finding disgust is a very rational reaction. Because of that, the „argument from irrationality“, in the case of human cloning and genetic engineering, can be accepted, and thanks to that fact the term „normal human functioning“ can be used as the epistemological base of a similar account.

II Sociology of Enhancement

The problem with the bioconservative idea is that the unequal access to biotechnologies leads to a genetically divided society (two classes: Natural and “Gen-rich”). The problems related to this idea are rooted in bio-(class)reductionism. The film *Gattaca* from 1997. presents a vision of a future society driven by liberal eugenics where potential children are selected through preimplantation genetic diagnosis to ensure they possess the best hereditary traits of their parents. A genetic registry database uses biometrics to instantly identify and classify those so created as “valids” or Gen-rich while those conceived by traditional means are derisively known as “in-valids” or Naturals. While genetic discrimination is forbidden by law, in practice it is easy to profile a person’s genotype resulting in the valids qualifying for professional employment while the in-valids – considered more susceptible to disease, educational dysfunction and shorter life-spans – are relegated to menial jobs. The Messages of this film are:

- (1) The real and possible genetic-based social division in the future society evolved from the competitive character of capitalism and commercial use of bio-tech achievements,
- (2) Gen-rich individuals will not necessarily be successful in everydaylife.

On the other hand, there is Nicholas Agar's idea of innovation and diffusion. Innovation within the technologies of enhancement tends towards a greater polarization within society, but the process of diffusion of these technologies, on the other hand, points in the opposite direction, promoting their spread (Agar 2004, p. 140). But, here we are faced with the actual problem of the unequal allocation of social power, which is even more problematic considering the fact of the availability of biotechnologies to powerful social groups; they are more capable of buying "genetic material".

Those who already have the economic resources will readily gain access to new technologies, while these new technologies make them stronger competitors for more resources. Those who had access to technology would, as a result of their newfound productivity, win more resources. Those without resources to purchase the new technology would be that much farther behind. Parenthetically, we should note that it is logically possible that all members of our society might gain access to the same technology, thereby providing no competitive or positional advantage to anyone (Parens 1998, pp. S7-S8).

Despite his correct comprehension of one or more possibilities of the acquiring of social power, it seems that Parens oversees the contingency of this process. Considering Potter's classification of surviving types,⁷ as well as Murray's note about the distinction between

7 „*Mere survival* is a term used scornfully by people who dislike talk about survival. Mere survival implies food, shelter, and reproductive maintenance, but no progress beyond a more or less steady state. It implies no libraries, no written history, no cities, and no agriculture for urban support - essentially a "hunting and gathering" society. For many thousands of years the Eskimos on the shores of the Arctic Ocean appear to have been archetypal examples of mere survival. But they had pride and standards of behavior. They had a survival bioethic insofar as they had learned over many generations what they had to know about their environment (the philosophers' "is" concept) and what they had to do to survive in perpetuity (the "ought" concept). Life was not too bad. Now the Eskimos have outboard motors and rifles and their future is in doubt.

enhanced persons, on one hand, and people who make profit from developing, possessing and selling enhancement products or interventions, on the other, we come to the particular need for sociological nuancing of the inner side of the social division between "Gen-Rich" and "Naturals." Edie Following Parens' idea (a similar argument can be found in: Fukuyama 2003), in the context of the competitive character of developed societies, a sociological analysis of social mobility could

Miserable survival is a state that tends to be identified with the ravages of disease or war, and the toll of malnutrition, starvation, or parasitism. All of these disasters occur in combinations. Since that occasion the sexually transmitted disease known as AIDS has burst upon the global scene and has given millions of people miserable survival until they die. Today miserable survival can be found in pockets all over the world, including the U.S. People cannot agree on the components of *idealistic survival*, but they can universally agree on the desirability of health and the undesirability of preventable disease. No culture or religion, primitive or modern, has ever placed a premium on, or aspired to, starvation, malnutrition, diarrhea, intestinal worms, or other parasitic infestations. Clearly, the elimination of these scourges is something that all can agree on as a component of idealistic survival. But today we can offer acceptable survival as a proposed goal for idealistic survival: global survival in the form of acceptable survival that is world-wide and sustainable.

Irresponsible survival is doing anything that runs counter to the concepts of idealistic and acceptable survival. Many people have more than any society could duplicate and yet have little concern for people who suffer with miserable survival. This cohort continues to survive from generation to generation with little thought for its miserable neighbors in the short term or for the species in the long term. Overpopulation and overconsumption, and the depletion and degradation of the biosphere, are examples of irresponsible survival. The dominant culture has been based on conspicuous consumption that has been coupled with the exploitation and progressive depletion and degradation of the natural resource base. The present economic model provides employment at high wages for a privileged few while millions are below the poverty level. The dominant culture is irresponsible and not acceptable. It cannot survive in the long term. But today we can offer *acceptable survival* as a proposed goal for idealistic survival: global survival in the form of acceptable survival that is world-wide and sustainable ethics. The dominant world culture at present tends to be quite irresponsible and not acceptable in terms of global survival." (Potter and Potter, 1995, internet).

suppose that the socio-economically stronger groups should be directly classified as a potentially genetically superior class. Those who do not have enough socio-economical power will lose their standing within the social hierarchy by staying in a "natural" condition. But this claim is not completely true. The existence of two bio-classes is not the cause behind the creation of the future society, but its logical consequence.

So the analysis of this type of society depends on the grade and manner of the use of the bio-technology. With respect to this, such an analysis could be done on the basis of the social status as well as that of the *power elite* approach. The variables that are important for such an analysis are: The level of the economic and technological development of society, social layers or classes involved in socio-technological reproduction, particular technology that is used (reversible or irreversible effect, outside or inside body), etc. Therefore, this claim is perhaps most illustratively presented through an intersection between Wright Mills' *The Power Elite*⁸ and M. Foucault's concept of "contractor" or *user* (italic added) in *The Birth of the Clinic*. Following this perspective, a group with a better structural position has the power to impose new social and medical norms. We suppose, also, that the very same group has the power to finance and create new techniques and technology, which provides them with certain

8 „The power elite is composed of men whose positions enable them to transcend the ordinary environments of ordinary men and women; they are in positions to make decisions having major consequences. Whether they do or do not make such decisions is less important than the fact that they do occupy such pivotal positions: their failure to act, their failure to make decisions, is itself an act that is often of greater consequence than the decisions they do make. They are in command of the major hierarchies and organizations of modern society. They rule the big corporations. They run the machinery of the state and claim its prerogatives. They direct the military establishment. They occupy the strategic command posts of the social structure, in which are now centered the effective means of the power and the wealth and the celebrity which they enjoy" (Mils 1956, pp. 3-4).

bio-technological power. But bio-technological power does not yet mean the genetic superiority of the class that creates such power. For a capitalization of biotech power they need a group of people who are educated for the usage of biotechnology. That group is a class of specialists who will try to secure a greater share of power. In the process, they not only publicize the procedure but also experiment with more powerful and riskier techniques.

There are also groups of socio-economically lower classes who represent a potential experimental group whose safety is compromised, although the patients may be the last ones to know this (Murray 2007, p. 500). And, last but not least, there is the group which should justify such interventions – a class of bioethicists (Elliot 2007, pp. 45–46). We must have in mind that the middle group (the proletarians from Marx's earlier class dichotomy), is, in this case, the one which does not possess biotechnology. Foucault's idea in *The Birth of the Clinic* gives a certain dynamic to such a class constellation. In the free-market regime, the clinic discovers the possibility to arouse, in a group of rich men, an interest to invest into medical research.

The clinic establishes a gradual payoff for the other contractor – a payoff which, from the perspective of the pauper, is actually an *interest* paid for the clinical capitalization that the rich man had in fact approved; this interest has to be understood in all the complexity of its meaning, as we are actually referring here to a compensation that is part of an objective interest of science and of an existential interest of the rich man (Foucault 1994, p. 87). This implies that it is possible to identify several strata in the “enhanced society”. Today there already exist big bio-medical magnates (*Geron, PPL- Therapeutics*, etc.) who possess biotech resources. Therefore, in the context of new biotech research, we can recognize a stratum of specialists who, because of their professional skills, have a particular social position. After all, there are ambivalent, structurally-intermediate classes, who are neither *Gen-Rich*, nor *Naturals*. Today we already know of such strata: “transgenetic organisms created for xenotransplantation”

(Cohen 2002); "babies with DNA from two mothers" – to an in ovum with a sick cytoplasm, healthy cytoplasm is being transplanted from another woman, who has a different DNA (Frankel 2000); children with surgically created anatomical traits (Ouellete 2009), while the genetically engineered organism would represent a transition from an ambivalent to an unambiguous class of genetically enhanced men.

Only through a dialectical relation of the mentioned socio-technological process with all the transitional stratum is it possible to realize a transition from the economic to the genome-(ca)pital. It is perceivable that this dynamic reminds of Agar's idea of the diffusion of technology to the lower social layers, but at the same time it raises the question about the nature and range of such diffusion. Looking through the sociological optic, it is the question of the structure and function of such processes. As we already described, the structure of "diffusion" represents an expansion of the prior bio-medical effects towards an experimentation phase, and the real advantage stays in the *higher circles* – gradually, from an economic compensation for the specialists, through the objective interest ("knowledge") for science, to the final and accident-free genetic enhancement for the sponsors of enhancement.

This process is provided with the help of cultural complicity, including the special role of the class of bioethicists, in which the whole community participates by spotting the partial interests that are framed with the possession of social power. It is obvious that the so called "Agar's diffusion" cannot be assumed as a type of cultural diffusion, but rather as cultural-technological hegemony.

III Enhancement as an intrinsic good or a vulgarization of Weberianism

The problem of dealing with the idea of self-fulfillment as a part of the Protestant ethic: "...for many of it (the idea of self-fulfillment – V. M.) comes to mean that if we are not aggressively pursuing prosper-

ity and happiness with the fervor urged by our Founding Fathers, then we are letting ourselves down and squandering our time on Earth. Given that many Americans feel it is our duty to pursue self-fulfillment and happiness on the Weberian model, it would not be surprising if many of us came to feel it is our duty to use any means possible to fulfill it including taking drugs like Prozac". (Note that here we are not talking about using drugs like Prozac to treat clinical illness) (Parens 1998, pp. S11-S12).

Beside the previous sociological inconsistency of a direct transition from socio-economic to socio-biological class dichotomy or a direct transition from economic to genetic "positional good", we also find similar problems with Harris's claim about enhancement as an "intrinsic good" (Harris 2007, pp. 28-29). In the following lines we will try to show that the Weberian model offers no epistemological basis for such statements. Regarding the previous claim, similar to, but not the same as, that of Harris, Parens notices that in the context of Weber's Protestant ethic of the American society, cognitive enhancement can be a means of self-fulfillment. Analyzing both ideas, we have come to the conclusion of the so-called falseness of the *empirical arbitrability*, because some enhancements can be "intrinsically good" at one moment, but a positional good at the next one. The best example is the use of Ritalin for better comprehension of certain literary works, and the use of the same improvement for a school exam. In other words, *empirical arbitrability* depends on something that Parens and other authors call different "life projects" or a capacity for auto-creativity (Parens 1998, p. S12; DeGrazia, 2000).

Even with the correct emphasis on the so-called mistake of empirical arbitrability, Parens does not recognize a more important sociological anomaly bounded with the moral justification of enhancement as an intrinsic good, via Weber's *Protestant Ethic and the Spirit of Capitalism* (2005) which glorified productivity in the name of God (ibid, pp. S11-S12). But, like in the case of a genetically divided society, this change of argumentation, as well as resources such as spirituality

on one hand and chemical means on the other, cannot be coherent. Regarding the mentioned problem, it is important to clarify that Parens glosses over the essence of Weber's thought, and that he not just jeopardizes the whole conception of the *Protestant Ethics*, but certainly brings the whole conception to a particular "vulgarization," because he emphasizes the possibility of a consistency between bio-tech means and spirituality. The concept of the intrinsic good occurs as one of the most important bases of *The Protestant Ethic*, seen through the "asceticism" and the "compulsive saving" for the glory of God (Weber, *ibid*). According to Weber, "asceticism" is the most important cause of the genesis of Capitalism. Weber's model of *self-fulfillment* is, at the very end, "motivated" by the religious idea of *Predestination*. This model is represented through the concept of work in calling, as well as the concept of asceticism and saving.

Thus, work in calling and asceticism with believing in God's choice or predestination is the core of the intrinsic good. Regarding this matter, we cannot accept that this kind of consistency between *religious spiritualism* and *chemical enhancement* has freed us from every Pilgrim's idea of Progress. This kind of consistency is based on an analogy between *utility* and *functionality*. If in a highly developed society Pilgrims' asceticism becomes needless, we cannot compare his *inner function* with the function of chemical enhancement in the bio-tech epoch. The conclusion is that the bio-tech usage as expressed throughout Weber's model is the negation of "asceticism" indeed, i.e. it is the possibility of a momentary satisfaction through bio-medical enhancement (especially through genetic engineering).

The aggressive pursuit of prosperity and happiness, with the fervor urged by our Founding Fathers, and with the bio-tech means, excludes the long and patient process of socialization, labor and abandonment in the spirit of Weber's *Calling* and more generally that of the *Protestant Ethic*. Having in mind this kind of "bio-tech distortion of Max Weber", we can neither approve of the epistemological basis of *self-fulfillment*, nor of the *intrinsic good* argument. The mentioned

evidence has led to a subsequent rejection of these arguments as potential justifications of chemical enhancement.

IV Conclusion

Considering the different ethical approaches of the three bioethical streams, we have analyzed some relevant arguments. The analysis of these issues has led us to a better comprehension of the actual bio-ethical problems. The first challenge had two faces. We have showed some real and possible dangers of cloning or genetic engineering. Based on these objectivities, we described and explained the structure of human behavior as caused by fear or disgust.

It has also been underlined that some preventive procedures (vaccine), in spite of the wide cultural acceptance of the immunization practice, and thanks to the same connections between fear or the feeling of unease on the one hand, and cognition and moral disgust on the other, can be rejected, like in the case of AH1N1. Thus, normal human functioning in the cases of unease, fear or disgust, can in certain cases implicate rejection, although the procedure is culturally legitimized. It is more difficult with procedures which are cognitively poor, technically imperfect, and, at the same time, cannot be socially and ethically accepted. The second issue emphasizes all the troubles with genotypes and, at same time, it emphasizes bio- class dichotomy. It is so obvious, but easily neglected, that the process of the transformation of the socio-economic into genetic power is neither coherent nor expressed.

There is no direct or wide-ranging diffusion of bio-tech innovations. Yet, the transformation of a socio-economic into a genetic class requires, and results in, more than two social layers. The social and biological ambivalence of the newly created stratum can be long-lasting. Efficiency and perfection in the creating of two crystal clear classes (Naturals and Gen-Rich), open the social and moral questions not only for the class of the Naturals, but more dangerous questions

of the vanishing manners of the ambivalent classes. Presumably, the *yuck* argument could be used in the justification of the vanishing, unclean and ambivalent structures.

The next finding refers to a perhaps less dangerous relation of proportionality between the individual and social changes. Very fast and efficient change in the individual genetic structure is disproportionate to social mobility. That means that providing a better social position for the Gen-Rich people requires a slow and long process of the wide ethical and social acceptance of genetic engineering. There is no process of technical and social diffusion, but rather cultural and technical hegemony.

The third challenge shows a distortion of one idea or theoretical model. This issue could also be seen as a kind of oxymoron – *the Instrumentalization of Spiritualism* (V.M.). Max Weber, in his classical book *The Protestant Ethic and the Spirit of Capitalism*, described the rise of capitalism as caused by religious spiritualism, which is reflected through the “asceticism” and “compulsive saving” for the glory of God, coupled with a belief in individual Predestination. But, Harris’s or Parens’s view of this idea overlooked *spiritualism* which is motivated by the Puritan striving for work in *calling* and for the glory of God, which results in everyday asceticism that began to dominate the world morality and to constitute a part of the tremendous cosmos of the modern economic order. Thus, the real damage coming from this epistemological distortion is in the overlooking of one of the most complex problems of Weber’s mental imaginary. The problem we are referring to is the problem of alienation. In Weber’s terms, this means that the trapping of human beings in the socioeconomic structures of their own making; man is trapped in a “shell as hard as steel” (*stahlhartes Gehäuse*). In a situation of the earlier described transition from socioeconomic to biological power (in the section named *Sociology of Enhancement*), we are faced with Meta-alienations; the abandonment of our own biology and getting captured in a much more dangerous and isolated type of shell.

In spite of the basic differences, it is obvious that all the streams are dealing with the same epistemological and social implications. Their moral beliefs are based on a sort of consistency and coherence. But we have shown that instead of coherence, it is more appropriate to speak of a kind of contingency.

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