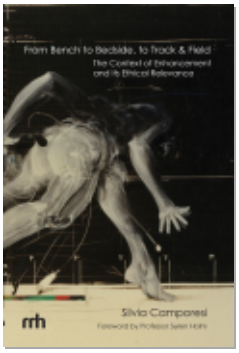
Chapter 1: Framing the ethical debate on enhancement technologies



Published by

Camporesi, Silvia.
From Bench to Bedside, to Track and Field: The Context of Enhancement and Its Ethical Relevance.

University of California Health Humanities Press, 2014.
Project MUSE. https://muse.jhu.edu/book/124666.

Chapter One

Framing the ethical debate on enhancement technologies

1.1 What we talk about when we talk about "enhancement"

> Because human enhancement apparently involves altering human nature, it is meant to be the sort of thing that sends shivers down the spine. For 'trans-humanists,' these are frissons of excitement at the thought of a wonderful new world of genetically and pharmaceutically augmented, ultra-intelligent, long-lived super-persons. For conservatives such as Leon Kass, our shivers are the wise verdict of an instinctive moral repugnance. (Lewens 2009, 354)

It is a matter of fact that the mere mention of the possibility of "human enhancement" is able to spark a vehement discussion between staunch supporters and vocal opponents.. Lewens is quite right in putting the finger on the instinctive opposite reactions triggered by the newest possibilities opened by biomedical enhancements. But what exactly is so unique about human enhancement that is able to elicit such visceral reactions? It seems to be the perception that human enhancement technologies are tinkering with human nature, and that humans engaging with biomedical enhancements are playing at projects of self-creation and self-evolution that are hubristic and may lead to dangerous slippery slopes. Before addressing the arguments on both sides, a disclaimer is necessary: both reactions described above are extreme examples triggered by misrepresentation of the real scientifically feasible prospects of biomedical enhancement. Often the scenarios portrayed by the media are science fictional, and as such will not be discussed in this work, where I am interested in an empirically grounded discussion of existing or highly plausible enhancement technologies, with a focus on genetic technologies. As pointed out by Atry in the context of genetic technologies aimed at athletic

performance (Atry 2012), I think it is the bioethicists' responsibility to discuss real-world scenarios or scenarios which are at least plausible in the future, and that it is also the bioethicists' responsibility to avoid creating "media-like hype" around biomedical technologies, jeopardizing the ethical debate surrounding the same technologies. Borrowing a felicitous expression from American storyteller Raymond Carver,[1] we need to understand what we talk about when we talk about "enhancement."

The term "enhancement" as we refer to it in bioethics has its origin in genetic technologies in the late 1980s, when it arose in opposition to the term 'therapy' in the discussion of cases that were considered legitimate for the applications of gene transfer, in contrast to applications of the same technologies which were considered illegitimate and ethically troublesome. The first "gene therapy" trials involved the treatment of severe adenosine deaminase (ADA) immunodeficiency in 1990 at the US National Health Institutes. (Aiuti et al. 2009) Also known as "children in a bubble" disease, ADA is a devastating condition caused by a mutation in the ADA gene, which reduces or eliminates completely the activity of the corresponding enzyme, resulting in toxic levels of the same that lead to the death of lymphocytes (white blood cells). As a consequence, individuals affected lack virtually all immune protection and are prone to frequent and persistent opportunistic infections that can be life threatening. ("Adenosine Deaminase Deficiency" 2013) In the past thirty years, a series of clinical trials, employing different (and safer) vectors have been conducted. In particular, three recent studies have demonstrated that gene therapy can successfully correct the disease at the molecular level, and lead children to live a healthy life "out the bubble" to which they had been confined in the past. (Aiuti et al. 2009; Gaspar 2012)

At the time of the first clinical trials, the use of gene transfer to treat this severe immunological disease was seen as a morally justifiable means, even though risks for the individuals were very high, because of the severity of the disease and of the absence of alternative treatments. In parallel though, people started worrying about the prospect of other uses of gene transfer techniques, which would put subjects at a high risk without the same justification as the treatment of a life-threatening condition as ADA. Therefore, it

1 Raymond Carver, *What we talk about when we talk about love*, 1981

was initially thought that a terminological distinction (therapy/enhancement) could also serve as a moral distinction. (Elliott 2009) Things would not prove to be so easy, as we will see below.

In what follows, I adopt the framework developed by Menuz and co-authors who classify definitions of enhancements into four main categories: the implicit approach, the therapy-enhancement distinction, the improvement of general human capacities and the increase of well-being. (Menuz, Hurlimann, and Godard 2011)

The implicit approach

Authors who adopt an implicit approach would start discussing the ethical permissibility of a biomedical technology that they refer to as "enhancement technology" without spelling out what they mean with the word "enhancement". Some examples of this method can be found in (Mansour and Azzazy 2009; McKanna and Toriello 2010; Sadler 2010), among others. For example, Sadler, discussing the implications of enhancement technologies, while providing a critique of different accounts of the concepts of "dignity" as used in the transhumanist debate, takes for granted that the technologies he discusses can be classified as enhancements. (Sadler 2010) Two obvious shortcomings with such an approach are the following: (1) that it does not acknowledge the complexity of the "enhancement" concept, by assuming that all the people involved in the discussion are on the same page when referring to "enhancement," which is usually not the case; (2) that it does not acknowledge the constant evolution of social and political values, and therefore does not address the question of if, and when we can stop considering a technology as an enhancement. For these reasons an explicit approach to defining "enhancement" should be preferred. Of course, to be fair to Sadler and other authors who use an implicit approach, one cannot recapitulate the entire story of humankind – so to say – every time one writes, but one could, and should, make clear at the beginning of the text what definition of enhancement one is endorsing. Without doing so, it becomes impossible to discuss or bring forward the debate, as the different participants in the debate may be talking about different things.

Improvement of some human capacities/abilities

According to this widely used approach (Bostrom, Nick and Sandberg, Anders 2007; Allhoff, Lin, and Steinberg 2010; Harris 2007; Chan and Harris 2008), human enhancement is defined as the application of a technology 'to individuals so as to improve their body, mind or any ability beyond the species-typical level or statistically-normal range of functioning of a human being." (Menuz, Hurlimann, and Godard 2011)

For example, John Harris, one of the most prominent representatives of this approach, defines enhancement as "an improvement on what went before." (Harris 2007) He also adds: "If it wasn't good for you, it wouldn't be enhancement." (Harris 2007) Bostrom and Sandberg (2007) define enhancement as either a functional improvement over a "normal healthy state," or as the addition of a capacity that was not present in the human species at a former time point. This latter meaning of the term enhancement is then considered by Bostrom and Sandberg as they see enhancements as a means to transcend humanity as we know it today, and to produce better specimens of 'transhumans." Here is their definition:

> We define an enhancement as an intervention that causes either an improvement in the functioning of some subsystem (e.g. long-term memory) beyond its normal healthy state in some individual or the addition of a new capacity (e.g. magnetic sense). (Bostrom, Nick and Sandberg, Anders 2007, 3)

Note that, according to this definition, an enhancement is not necessarily a good thing, in contrast to John Harris' account (Harris considers the benefits of an enhancement technology only in relation to the individual, and not to society). Bostrom and Sandberg's definition is neutral in values. Improving on a human trait, or providing a new trait does not necessarily have positive effects on a person's life, as pointed out by De Melo-Martin in the welfaristic approach described below.

Increase in individual's wellbeing

This approach, which is adopted by a minority of scholars in the enhance-

ment literature, defines enhancement as an increase on individual's wellbeing, or welfare. One well-known proponent of this value-laden account is Julian Savulescu:

> The term human enhancement is itself ambiguous. It might mean enhancement of functioning as a member of the species homo sapiens. This would be a functionalist definition. But when we are considering human enhancement, we are considering improvement of the person's life. The improvement is some change in state of the person – biological or psychological – which is good. Which changes are good depends on the value we are seeking to promote or maximize. In the context of human enhancement, the value in question is the goodness of a person's life, that is, his/her wellbeing. (Savulescu 2006, 324)

Therefore, Savulescu proposes a "welfarist" account of human enhancement, where the enhanced state is defined as a "capability" and a capability is "Any state of a person's biology or psychology which increases the chance of leading a good life … ." (2006, 324) (Note that the opposite of a capability is, in Savulescu's account, a disability, which is seen as a condition that diminishes the chances of an individual to lead a good life). While this approach has the advantage of sidestepping the problem of determining what "health" and "disease" are, and of determining a species-typical level, it does not solve the problem but merely relocates it, since this approach is also based on other controversial concepts, namely: human flourishing, wellbeing, welfare, etc. Moreover, this approach runs the risk of underestimating the social and cultural pressures that influence individual choices in life (see 2.1 for a discussion). It seems to me that Savulescu's definition of enhancement would more appropriately be referred to as "enhancement of wellbeing," which is a narrower class within all enhancements. Quite ironically, Saveluscu himself seems to recognize that the term enhancement is probably not the right one in his account. Writes Savulescu: "Enhancement is a *misnomer*. [emphasis added] It suggests luxury. But enhancement is no luxury. Insofar as it promotes wellbeing, it is the very essence of what is necessary for a good human life." (Savulescu 2009) As already noted, this absolutely positive connotation of the term "enhancement" is problematic, as the various applications of biomedical

technologies need to be spelled out and discussed contextually before they can be univocally classified as positive, starting from an accurate description of the underlying science, and of their context of application. Not necessarily, and not in all contexts, enhancements will turn out to be good for the individual, or for society. As a matter of fact, the welfaristic approach does not take into consideration the social and collective consequences of the technology, but only the consequences of the technology on the individual's wellbeing.

The work by Inmaculada de Melo-Martin provides another example of a scholar who adopts a welfaristic approach to enhancement. In her work, de Melo-Martin objects to a "value-neutral" definition of enhancement. Her critique is based on the need to discuss what counts as a risk, and what counts as a benefit before entering the analysis of the risk/benefit ratio of the technology, and therefore the analysis of the value of an enhancement technology. (de Melo-Martin 2010) De Melo-Martin discusses also the necessity to spell out the different values underlying the application of a particular enhancement technology. For example, de Melo-Martin writes that some enhanced capacities, e.g. the ability to read a book in a very short time, or enhanced numerical abilities, should not necessarily be considered enhancements, as they are not necessarily related to a more fulfilled life, or to an enhanced wellbeing of the individual. (de Melo-Martin 2010) In this sense, an improvement on the human capacity for reading, or on human mnemonic skills for example, would not necessarily constitute an enhancement, unless we had decided *a priori* that such increases in human capacities were good things *per se*, on the basis of an intrinsic value – for example – in being able to read very fast.

The therapy-enhancement distinction approach

Finally, in this widely used approach (Daniels 2000; Resnik 2000; Wolpe 2002; President's Council on Bioethics (U.S.) 2003) human enhancement is defined through its goal and the condition or state (i.e., "disease" versus "health") that it aims to modify. This approach suggests that the "therapy/enhancement" distinction can function to draw a moral boundary between ethically

permissible and ethically impermissible technologies (as it was also thought when the term "gene therapy" was coined, as illustrated before). In order to be valid, such an approach needs to be based on a clear definition of "health" and "disease," both concepts which are a source of considerable controversy. In addition, through such an approach interventions aimed at prevention and traditionally considered part of the scope of medicine (such as vaccination) should be viewed as enhancement. As I explain in the next section, I find this approach only of limited usefulness, due to the inherent problematicity of the therapy/enhancement distinction itself. Nevertheless this approach can still have a limited though useful role in the enhancement debate, as also illustrated below.

1.2 On the therapy versus enhancement distinction

As we have seen above, the term "enhancement" itself was coined in opposition to the term "therapy" in the context of gene transfer technologies. Consequently the analysis of this opposition is a necessary premise to understand the debate about enhancement technologies. The distinction was initially thought to possess an intrinsic moral significance, and to be able to demarcate ethically legitimate applications of gene transfer technologies from other not so legitimate applications. But it would not prove to be so easy. In this section I discuss the meaning and moral significance of the therapy/enhancement (T/E) distinction and the role it can play in the enhancement debate.

Norman Daniels spells out a limited defence of the T/E distinction. A US-based scholar, Daniels acknowledges that often this distinction is invoked in his country to demarcate conditions for which an insurance reimbursement would be appropriate (would-be treatments) and for conditions for which it would not (would-be enhancements). Such an approach could be generalised to include countries with a public health system or a mixed public-private health system between medical services for which the patient has to pay (even if partially), and services for which the patient does not have to pay. Writes Daniels:

> The treatment-enhancement distinction draws a line between services or interventions meant to prevent or cure (or otherwise ameliorate) conditions

> that we view as diseases or disabilities and interventions that improve a condition that we view as a normal function or feature of members of our species. The line drawn here is widely appealed to in medical practice and medical insurance contexts, as well as in our everyday thinking about the medical services we do and should assist people in obtaining. (Daniels 2000, 309)

In this sense, the distinction is therefore closely related to the concept of "medical necessity" that is used in legislation in the US and Canada. (Hurley et al. 1997) Daniels offers the examples of children with a short stature receiving or not reimbursement for growth hormone (GH) therapy on the basis of the different underpinning causes of their short statures (only those children with a genetically identified cause would receive growth hormone therapy). Daniels raises the question whether such a differential reimbursement is justified, on the basis of the T/E distinction that forces us to treat "relevantly similar cases" in dissimilar ways. According to Daniels, providing treatment and reimbursement to a child, with short stature because of a genetic cause, and not providing treatment (or not reimbursing) to another child, who is short either because of idiopathic conditions, or only because he "feels short" in society, is unfair.

An excursion into the history of GH can be enlightening to better understand how the ethical dilemma of the scarcity of GH and the application of a scarce hormone have been justified in our recent past, in an occurrence of a problem that is still present today in many other instantiations. In the US in the 1950s, "stunted growth" was the term used to refer to "short stature," while "pituitary dwarfs" was the term used to refer to individuals deficient in the GH, and "primordial dwarves" to individuals affected by achondroplasia. (Rothman and Rothman 2003) In the '50s the only way to obtain GH (at that time known as "somatotropin") was to collect it from the pituitary glands of human cadavers. To overcome this scarcity, the US National Institutes of Health set up the National Pituitary Agency (NPA) at Johns Hopkins University in Baltimore to appeal for organ donation. (Rothman and Rothman 2003) How did the discourse surrounding the T/E distinction play out to decide how to allocate a scarce resource? Initially, GH was allocated only to "pituitary dwarves," but vocal patient advocacy requests pressed the NIH to allocate it also to other individuals affected by stunted growth, independently

of the genetic causes of the short stature. Note that it was never demonstrated that the administration of GH in individuals who had no GH deficiency was successful in the long-term to obtain an increase in stature, although it was demonstrated that they were able to cause spurts in growth in the short term. (Rothman and Rothman 2003)

In 1985, the problem of the scarcity of the resource was solved when the San Francisco Bay area biotech company Genentech started the synthetic production of GH (hence, the legal dispute with the University of California, San Francisco (UCSF) about the primacy of the invention, that was settled with $200M from Genentech to UCSF in 1999 (Barinaga 1999)). The discussion of the ethical use of the hormone was quenched by its new availability, but not extinguished, as a lingering one remained on to what extent patients' requests should be satisfied: what was, if any, the threshold under which an individual was to be classified as "short"? In 1990, after many decades of use, the NIH set up a clinical trial aimed at testing once and for all the efficacy of GH for short, non-hormone deficient children. (Tauer 1994) The results of the study, though, were not able to provide a clear-cut answer to the question because of the way it had been designed (Rothman and Rothman 2003) and the trial concluded that if a "condition" (e.g. short stature) caused "unhappiness, psychological pain, and social disadvantage," then interventions to remedy it should be considered "cures," irrespective of the biological cause. (Rothman and Rothman 2003)

As put by Daniels,

> It is not because there is something biologically distinctive about Johnny's condition, as opposed to Billy's, that has led us to describe Johnny as having a disease and Billy not. Rather, our "social construction" of disease draws on a set of values that happens to have singled out Johnny rather than Billy in this way. … Pointing to the line between treatment and enhancement is not, then, pointing to a biologically drawn line but is an indirect way of referring to valuations we make. (Daniels 2000, 313)

Finally, in July 2003, the FDA accepted the NIH recommendation and approved GH for "otherwise medically normal but unusually short" children. (LATimes Associated Press 2003) As pioneer US plastic surgeon Max Thorek

was reported saying in the 1930s, anything that could raise "the quotient of patient happiness" was to be considered a legitimate medical task. (Rothman and Rothman 2003, 143) Hence, we could say that the conclusions of the NIH trial and FDA recommendation in 2003 represent an example of how the NIH constructed the category of "short stature" in order to respond to, and accommodate, patients' and society's requests.

Returning to the T/E distinction, what can we say about its significance, after we have argued that it is unfair to use it to demarcate "medical necessity" from "non-medical" necessity?

As have seen in this section, the use of the T/E distinction as a demarcation line between what is reimbursable and what is not reimbursable is problematic both from an historical and philosophical point of view. Daniels has also objected to the notion that the natural baseline of the T/E distinction, according to which disease and disability are departures from species-typical functioning, has an ontological importance. Even though I agree with Daniels that the distinction does not hold an ontological value, practically it has become a "focal point for convergence in our public conception of what we owe each other by way of medical assistance or healthcare protection" (Daniels 2000, 318), at least in North America. As such, there is a "primary rationale for including medical services in a healthcare benefit package" (Daniels 2000, 319) on the basis of this distinction. We can then conclude that, from a practical point of view, the T/E distinction can play a *prima facie* role in demarcating the scope of medical necessity from other scopes. This *prima facie* role though needs to withhold scrutiny and may not constitute a sufficient reason to treat similar cases (e.g. short children) in dissimilar ways.

While the distinction traced by Daniels is an interesting one and illustrates one of the concrete applications of labelling a technology as an "enhancement" or as "therapy," it is not one of the central concerns of this work focused mostly on genetic technologies. A more helpful perspective for the kind of contextual analysis and the choice of technologies that I carry out in this work is offered by David Resnik in relation to genetic technologies (2000), to whom I turn to conclude this section.

Genetic interventions are of particular interest for the scope of this work, which includes analysis of how they can be applied to enhance athletic performance in a professional sports context (sections 3.1 and 3.2), to decide what

kind of children to bring into the world (sections 2.4 and 2.5) and to scout out children's talents (section 3.3). Resnik (2000) argues that the T/E distinction does not mark a firm boundary between ethical and unethical genetic interventions, for which it was originally conceived:

> Perhaps the most popular way of thinking about the moral significance of the therapy-enhancement distinction is to argue that the aim of genetic therapy is to treat human diseases while the aim of genetic enhancement is to perform other kinds of interventions, such as altering or "improving" the human body. Since genetic therapy serves morally legitimate goals, genetic therapy is morally acceptable; but since genetic enhancement serves morally questionable or illicit goals, genetic enhancement is not morally acceptable. (Resnik 2000, 366)

According to Resnik, this way of thinking of medical genetics is flawed as it based on at least two questionable assumptions, namely: (a) that we have a clear and uncontroversial account of health and disease (and we do not); and (b) that the goal of treating diseases is morally legitimate, while other goals are not. I concur with Resnik's analysis, but would also like to add that even if we were able to provide uncontroversial accounts of health and disease, it would not follow from this that using biomedical technologies for therapy purposes would be ethically justifiable, while the use of biomedical technologies for enhancement purposes would not. I am sympathetic with Resnik when he writes that what is really ethically troubling with the use of, for example, steroids by athletes, is not the non-medical use of steroid (or another pharmacological enhancer), but the violation of a value intrinsic to the context of professional sport. (Resnik 2000) In a paper co-authored with Mike McNamee and included in a slightly revised version in this work in section 3.2, we reach conclusions regarding the ethical permissibility of the same technology (gene transfer to raise the tolerance to pain) in two different contexts by spelling out the values intrinsic in the two contexts/practices. It is on the basis of this discussion at the level of values that we argue that the same technology could be ethically justified in one scenario and not in the other, not on the basis of the fact that it would count as a non-medical use of medicine.

Finally, another brief historical excursus could be useful to debunk the

arguments that the use of biomedical technologies to enhance human capacities falls outside the scope of medicine, as it is argued by some scholars. The US pioneer surgeon, Max Thorek, provides a case in point. Already in the early 1900s Thorek was performing "therapeutical gonadal implantations," (i.e., testicular transplants collected mostly from apes and monkeys, but also from human cadavers) with the aim of elevating the level of male hormones (and supposedly, their sexual function) in the recipients, mostly older patients. (Rothman and Rothman 2003, 142–44) Between 1912 and 1923, Thorek performed more than one hundred testicular transplants at the American hospital in Chicago. Thorek was also among the first surgeons to perform breast reduction and abdominal excisions (the antecedents of contemporary plastic surgery practices), and in 1942 he wrote one of the first textbooks on plastic surgery. As a doctor, Thorek is a particularly interesting figure as his arguments could be seen as anticipating some of the arguments used today in support of pharmacological enhancement. Thorek was also a convinced champion of the legitimacy of enhancement within the scope of medicine, as he was convinced that "raising the quotient of patient happiness" was a legitimate medical task to pursue within the purview of the doctor's remittal. (Rothman and Rothman 2003, 142–44) The following quote exemplifies his thinking: "If the child can be given shapely ears he should have them for his own happiness; and who is to deny him that happiness if he can attain it?" (Rothman and Rothman 2003, 143), and also: "If surgery can restore happiness and enjoyment of life to an individual who has lost them, that is as strong a justification for its use as restoration to health." (Rothman and Rothman 2003, 143) Therefore, as it can be shown from this example and many others (for a more extensive analysis see: Scripko 2010), the arguments that enhancement technologies do not belong to the proper scope of doctor's profession are historically inaccurate.

1.3 Absolute versus positional goods

The last feature of the definition of "enhancement" that remains a matter of controversy and that I am going to analyse in this work hinges on the distinction between absolute and positional goods. Objects that everybody can enjoy without risking that they lose their status of "goods" belong to the former category. Examples would be music and sunlight. To the latter

category belong goods that only some individuals can enjoy before the objects lose their status of goods (e.g. height. Not everybody can be tall; there must be at least one short person around. Note that the definition itself of being "tall" and of other positional goods changes over time, hence the importance of the discussion of enhancement in the context of society where they are found, as the same technology may count as an enhancement in one society but not in another). Goods that belong to this latter category are referred to as "positional goods" exactly as they place the individual who enjoys them in a better *position* with respect to another person. In other words, they offer a competitive advantage to the individuals.

Performance enhancing drugs in sport are one of the classical examples of instruments which provide a positional good, such as strength, endurance, resistance to pain, etc. Athletes seek to use performance enhancing drugs as they aim to obtain that competitive advantage which, even if marginally small, could secure them victory in competition. As I discuss in section 3.5 and more at length in (Camporesi and McNamee 2014), it is highly problematic that the demonstration of the performance enhancing effects of substances included in the World Anti-Doping Agency (WADA) Prohibited List is not a necessary criterion for inclusion in the List, but that only the potential to do so is sufficient (in combinatin with one of two criteria: potential risk to the athlete's health and the violation of the spirit of sport) for inclusion of a substance in the List. (WADA Code 2009)

John Harris views enhancements as absolute rather than positional good. He writes: "I defend them because they are good for people not because they confer advantages." (Harris 2007, 29) And elsewhere, he writes: "It follows [from the fact that something is good for people] that there can be nothing morally wrong with human enhancement per se." (Chan and Harris 2008) This view, while attractive in its simplicity, risks being too simplistic, as Harris neglects other important, and often fundamental factors, that underlie the reasons why individuals may seek enhancements. These factors are, more often than not, rooted in the search for a positional advantage, in the pressure of peers, of society, of the market, or in a combination of these factors. Note that these are the very same factors that result in social inequalities of access to enhancements. The problem of differential access to enhancement technologies is one of the most pressing ethical issues opened up by the new

technologies. John Harris, by stating that an enhancement is always "good for people" (understood as the individual), is neglecting this fundamental issue of social inequalities. Indeed, not all things that on a subjective account can considered good for the individual are good also for society, nor are all things that can be considered on a subjective account "good for people" allowed in society (think of gambling, or of recreational drugs).

There are other values to take into account when judging the permissibility of enhancement technologies, apart from the personal freedom to pursue one's goals in life, and the relations and implications of the pursuit of one's own goals in life, including enhancements, need to be put in perspective with the pursuit of others' goals in a society, and with social values such as equality, and fairness.

Finally, it must also be noted that in practice it is very difficult, if not impossible, for a single enhancement technology to possess only characteristics that would qualify it as an absolute good, or only characteristics that would qualify it as a positional good. As a matter of fact, most enhancement technologies possess a combination of the two characteristics (see also the point on "relative ends" in the following section). DeGrazia offers the example of a technology that would give a person a "sunnier disposition" (while it is not clear from his writing how the technology could achieve the result of giving a person a sunnier disposition; probably DeGrazia has in mind Paxil, the antidepressant mentioned earlier in his work):

> One might think that an enhancement that gave someone a sunnier disposition, making his life more enjoyable, would provide a major intrinsic benefit without conferring any positional goods. One might think again. For a sunnier disposition offers competitive advantages to politicians, salespersons, real estate agents, and others whose job performance is improved by extroversion and the expression of optimism. (DeGrazia 2012, 129)

The absolute value of a biomedical enhancement acquires therefore an instrumental, external value when put in the context of the workplace. Plausibly, this would be a very common occurrence for most (if not all) biomedical enhancements. In addition, DeGrazia notes how positional goods create concerns about coercion, fairness (of access to the technology), and possibly con-

cerns about collective self-defeat: if everybody, or at least a substantial portion of the population, had access to positional enhancements, they would lose their character of conferring an advantage to others. These are all issues that need to be taken into account when assessing the ethical permissibility of an enhancement technology in a particular context, as I aim to do in the following chapters. Before moving on to the analysis of the ethical and social implications of particular technologies though, let us briefly review the arguments that have been put forward and against enhancement in the bioethical arena.

1.4 Arguments in favour and against enhancement

One of the frequently raised objections to biomedical enhancements is that they alter human nature. This is what sends "shivers" – borrowing the expression from Lewens (2009), quoted at the beginning of this chapter – down the spine of some of the most vehement opponents of biomedical enhancements, including Leon Kass (Kass 2002) (former Chair of the President's Council on Bioethics under President George W. Bush), Francis Fukuyama (Fukuyama 2003), and Juergen Habermas (Habermas 2003). These authors embrace what Allen Buchanan refers to as "normative essentialism": they believe it is possible to derive substantive moral rules from reflection on human nature. (Buchanan 2009)

Habermas argues that interventions aimed at modifying human nature will affect "the necessary presupposition for being-able-to-be-oneself and [affect] the fundamentally egalitarian nature of our interpersonal relationships." (Habermas 2003, 13) For Habermas, what is most unsettling in genetic interventions and other kinds of biomedical interventions aimed at shaping oneself or others is "the fact that the dividing line between the nature we are and the organic equipment we give ourselves is being blurred." (Habermas 2003, 22) This blurring, he continues, shifts the "line between chance and choice," and by doing so "affects the self-understanding of persons who act on moral grounds." (Habermas 2003, 28) Moreover, this blurring of the categories of the "nature we are" and the "organic equipment" we give ourselves might "change our ethical self-understanding as a species" and give rise to a "novel, curiously asymmetrical type of relationship between persons." (Habermas 2003, 42) The possible blurring of the categories is especially

problematic for Habermas as it touches upon "a necessary condition for an autonomous conduct of life and a universalistic understanding of morality." (Habermas 2003, 48)

At the other end of the spectrum of the debate, we find scholars who are so excited about the prospect of biomedical enhancements that they get "frissons" – borrowing again from Lewens (2009) – down their spines. Examples include (Bostrom, Nick and Sandberg, Anders 2007; Harris and Chan 2008; Chan and Harris 2008; Savulescu 2009) among others. As we have seen above, John Harris is among the strongest proponents of enhancements *tout court*. According to Harris, "Enhancing human capacities is taken to be a self-evident good," and we have a moral duty to enhance ourselves, and our children. I have already explained why I think that such an indiscriminate positive connotation of enhancement is incorrect. Here I would like to show why the discourse being used by Harris and other proponents of enhancement to frame new technologies as the most recent instantiation of the human pursuit for progress is only partially accurate.

In Harris' view, enhancing human capacities must be seen as the pursuit of a linear progress without any apparent end, along the lines of the Olympic motto of "*citius, altius, fortius"* (swifter, higher, stronger). Harris dismisses worries about enhancement as being a function of unnecessary anxiety, or of a similarly unnecessary fear of hubris. Together with the pursuit of "a linear progress," Harris stresses the continuity between those kinds of enhancements that humans have resorted to in the past, and the new kinds of biomedical enhancements that are being developed today, thanks to the most recent advances in biotechnology and biomedicine. But, as Erik Parens correctly pointed out: "It would be a mistake to think that the new biotechnologies are just more of the same. We should give up the arguments that take the form, 'we've always done it.'" And, while "It is true that we have always sought enhancement …, arguments from precedent glibly excuse us from thinking about how new means to achieve old ends make a moral difference." (Parens 1998, 13) I agree with Parens on this point: it is not the existence of other established practices in society that justified the emergence of new ones which can be "brought back" to the former ones. Quite on the contrary, I think that it is the emergence of the latter ones that makes us reflect on what has been

going on up to now. Note that this is also the approach I adopt (Camporesi 2013) that is included in this work in a revised form as section 3.4, where I discuss the application of genetic technologies to scout out a child's talent, which are by some scholars justified on the basis of other older and already established child-rearing practices.

Carl Elliott also discusses how enhancement technologies offer us new means to achieve old ends. Elliott outlined five problems created by these new means, which I will discuss in turn, pointing out how they relate to the analyses carried out in this work. (Elliott 2009)

Cultural complicity

The problem of cultural complicity was first identified by Margaret Olivia Little, who acutely pointed out how the demand for certain technologies is construed by cultural forces that can be harmful to the individual engaging in those practices. (Little 1998) Some examples include cosmetic surgery to delete markers of ethnicity, in order to enhance conformity to accepted European standards, or cosmetic surgery for breast or anti-ageing for women. What Little sees as problematic in these practices is that "by giving in" to these cultural forces, and agreeing to have a surgery, the underlying problematic societal trends become reinforced, and the individual who engages in them becomes in turn culturally complicit with them. (Little 1998) Cultural complicity seems to go hand in hand with the contemporary widespread rhetoric of self-fulfilment and the pursuit of happiness. As described by Scripko, the pursuit of wellbeing permeates the daily lives of Americans and enhancement technologies are seen as a way to liberate one's considered "authentic self," in a narrative where "being well becomes being one's optimal self in the society in which a person lives." (Scripko 2010, 294). Erik Parens also writes on this point:

> Given that many of us 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 our duty to use any means possible to fulfill it – including taking drugs like Prozac. (Parens 1998, 12)

Partly for this reason, much of the work in this book is focused on the US system. I also find that many of the ethical issues related to enhancement technologies are first applied in the US context, where the regulatory system is more liberal, and then find in the UK and Europe. For example, direct-to-consumer (DTC) genetic tests to scout out children's talents, which I analyze in chapter 3, first occurred in the US, while potential customers are not limited to US citizens. The analysis of the ethical permissibility of choosing to have deaf children through preimplantation genetic diagnosis (section 2.4) is also based on real-world case studies based in the US.

Relative ends

The problem of relative ends was already introduced in section 1.3, when discussing the intertwining of the qualities of absolute and positional goods in the same biomedical technology. The fact is that enhancement technologies are mostly sought by individuals because they can confer a positional advantage, not because they are "intrinsically" good. In other words, individuals seek enhancement technologies with the hope of gaining a "competitive advantage." Elliott discusses this in relation to the use of performance-enhancing drugs in sports, but it can be applied also to cognitive enhancements, and in general to all biomedical technologies. I analyse the problem of relative ends in my discussion of the use of gene transfer technologies applied to raise one's own tolerance to pain in endurance races, in section 3.4.

The role of the market

The third problem identified by Elliott relates to the role of the market, in particular to the US widespread practice of advertising enhancement technologies online or on television through DTC advertising. This has been possible in the USA since 1997, when the FDA relaxed its restriction on DTC advertising for prescription drugs. In particular, this is especially prevalent for anti-depressant drugs, and more recently for DTC-genetic tests to predict children's talent (discussed in sections 3.3).

Authenticity and human nature

The problem of authenticity relates to the narratives of restoration to "authentic self" through antidepressants that individuals resort to. These kinds of "restitution narratives," as put by Elliott (2009), are very common for people who consume antidepressants. Elliott points out how "restitution" may not be the most appropriate term since the self to which individuals say they are aspiring to never existed before, but was only desired or wished for. Note that the same language of authenticity can also be used for opposite ends (even though less frequently) by individuals who claim that they do not feel like themselves anymore when on antidepressants. Erik Parens (2005) has written extensively on the idea of "authenticity" and the role it playes in the discussion of enhancement technologies. (Parens 2005) Parens argues that the idea of "authenticity" is at the centre, even if not explicitly, of the debate on enhancement. He defines it as follows:

> While the idea of authenticity has a complex history, the core of it is that we are authentic when we exhibit or are in possession of what is most our own: our own way of flourishing or being fulfilled. To be separated from what is most our own is to be in a state of alienation. (Parens 2005, 35)

According to Parens, the current polarization of the debate on enhancement harks back to the different understandings of authenticity that the opponents and supporters of enhancement take as implicit assumptions of their arguments. These different understandings grow out of what Parens refers to as two different ethical "frameworks," where by framework he means a "constellation of commitments that support and shape our responses to questions about, among many other things, new enhancement technologies." (Parens 2005) One framework revolves around the concept of "gratitude," while the other revolves around the concept of "creativity." Parens points out how in the academic debate scholars often shift from one framework to the other, without being explicit about the meaning of "authenticity" they refer to. As I already pointed out at the beginning of this chapter, it is particularly important to spell out the values underlying the arguments when discussing a particular technology, especially when moral judgments are used to inform policy.

Arguments against enhancements and rooted in concerns about threat to human nature must be distinguished in two sorts of concerns: a) the threat of surpassing (or crossing the boundaries of) human nature; and b) the threat of altering human nature. Francis Fukuyama is one of the most prominent scholars opposing enhancement technologies, on the basis of an essential notion of human nature that would be undermined by the application of such technologies. (Fukuyama 2003) This essentialist notion of human nature is problematic on several fronts, as pointed out by David DeGrazia and Allen Buchanan among others. While recognizing that there are "powerful theoretical and intuitive grounds for maintaining that certain kinds of things have essential features" (DeGrazia 2012, 79) ("humanity" being one of those), DeGrazia objects to the argument that there is a single characteristic that could be regarded as the basis for the special moral status possessed by human beings. In other words, it is a logical fallacy to assume that human nature must involve "essential" features, where an essential feature for a kind of thing is defined as a "feature that X necessarily has in order to be a member of that kind." (DeGrazia 2012, 80) Buchanan also debunks these arguments on other grounds: (a) that on all plausible accounts, human nature "contains bad as well as good characteristics and there is no reason to believe that in every case eliminating some of the bad characteristics would so imperil the good ones as to make the elimination of the bad impermissible"; and (b) that modifications of human nature will not affect our ability to make judgment about the good. (Buchanan 2009) I concur with the analyses by DeGrazia and Buchanan, as I do not think that biomedical interventions would change the way a person perceives herself more than other kinds of parental intervention early in life already shape the kind of person one is and perceives herself, (see also: Camporesi 2013) nor that human nature should be considered as the basis of the moral self-understanding of a person. I also do not think that genetic interventions, only by virtue of being genetic, are substantially different from other kinds of interventions and that as such they should deserve a special scrutiny (See: Kakuk 2008 for a full argument debunking the genetic exceptionalism perspective, and my co-authored paper: Camporesi and Maugeri 2011 for a critical discussion of the exceptionalist perspective of the "Beyond Therapy" Report by the former President Council of Bioethics (President's Council on Bioethics (U.S.) 2003).

A Catch-22?

The final problematic issue of the enhancement debate identified by Elliott (2009) is exemplified by the following argument: enhancement technologies will in any case be pursued "somewhere else" in the world, once the technologies that enable them are developed, notwithstanding their moral justification. Consequently, as noted by Nicholas Agar, discussions on the ethical permissibility of enhancement technologies run the risk of falling prey to "technological determinism" about morality, defined as the certainty that "moral pronouncements have little or no influence on which technologies will be developed and who will use them." (Agar 2008, 170) Examples of technological determinism abound, as there will always be the possibility that some researcher "somewhere else" in the world, where regulation is more lax, could put in place and implement the biomedical technologies. Think for example of the claims, then revealed spurious, made by Panos Zavos and Severino Antinori in the early 2000s about reproductive cloning being achieved in Cyprus (Camporesi and Bortolotti 2008). Another example is China, where the regulation for gene therapy are more lax than in the US or Europe, and where gene therapy products have been approved that have been not elsewhere. (Wilson 2005) Many more examples can be found in (Meghani 2011; Cohen 2012), who discuss the migratory fluxes of medical and reproductive tourism and their multifaceted ethical and social implications.

It would therefore seem that we are left with a kind of "biotechnological catch-22," borrowing from Joseph Heller[2]: on the one hand, if we deliberate that research on the latest development of biomedicine is ethically impermissible, it would seem plausible to speculate that somebody else in another part of the world will still develop it, irrespective of our deliberation. If that were the case, we will be left with the not easy question of what to do with the products of knowledge developed elsewhere with means that we have deemed ethically impermissible (for example, the results of clinical trials developed without a proper informed consent in developing countries, or on prisoners, or on other ethically problematic situations etc.). On the other hand, we could

2 Joseph Heller, *Catch 22*, 1961.

recognize the fact that somebody else, elsewhere in the world, will develop the technology, and we could renounce deliberating in this field of morality.

That the latter choice would be a very dangerous move since a consistent application of this reasoning would lead to a retreat on morality on many different fronts. To escape this biotechnological catch-22, we must recognize, with Agar, that "technological determinism does not render morality redundant. There will almost certainly never be a human society in which there is no murder – but this is no reason not to pass moral judgements on murderers." (Agar 2008, 172)

Having concluded that a philosophical analysis of enhancement technologies (and therefore, this work!) is not completely useless, I will now proceed to the contextual analysis of case studies. In the next chapter I turn to the consideration of arguments against genetic technologies aimed at enhancing individuals and future generations, analysing first the arguments based on parallelisms with the old eugenics, and then proceeding to consider the application of genetic technologies to choose what kind of children to bring into the world.