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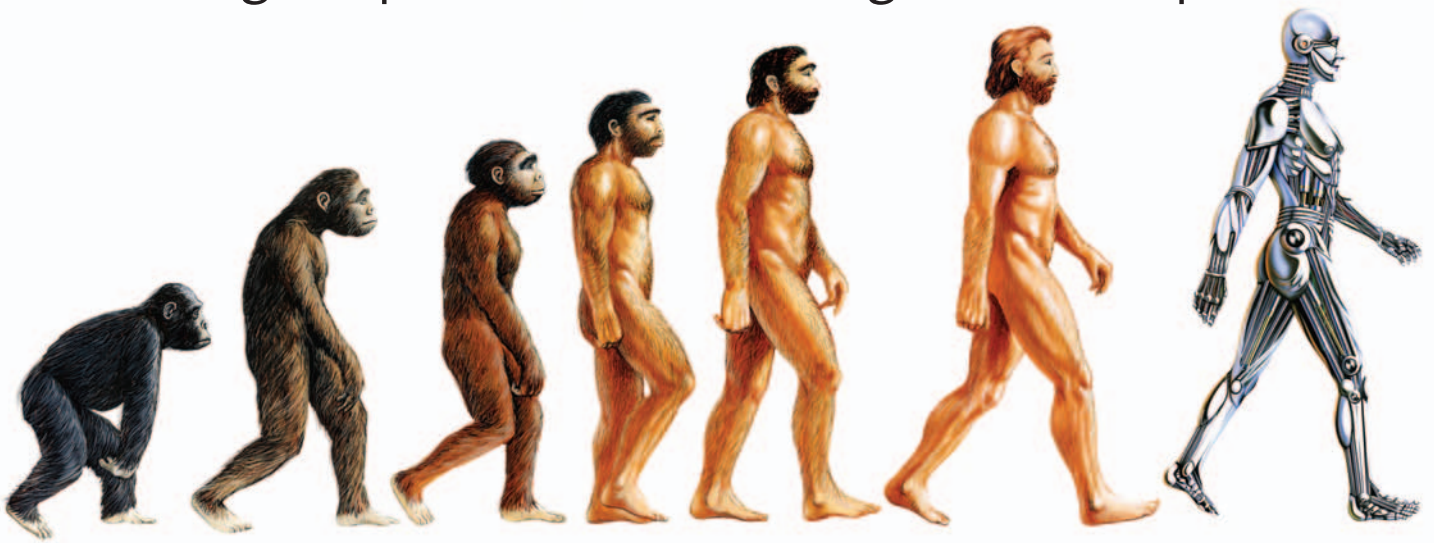
**BIOETHICS**

COMHAIRLE BITHEITICE NA HÉIREANN

Irish Council for Bioethics

# Human Enhancement

Making People Better or Making Better People?



DAVID NICHOLLS / SCIENCE PHOTO LIBRARY

## Q1 What is human enhancement?

Human enhancement refers to the use of medicine or technology to improve people's appearance or capacities beyond what we would consider normal or healthy. Examples of human enhancements include cosmetic surgery, mood altering substances, drugs to improve physical strength and stamina, genetic modifications to ensure future children are healthier or more intelligent and medical procedures to dramatically prolong our lifespan.

## Q2 Is human enhancement currently happening?

While some forms of human enhancement are not yet available and may appear to inhabit the realm of science fiction, others are already accessible and widely used. Cosmetic surgery is one the fastest growing industries in Ireland. Every year more and more people choose to alter their appearance through cosmetic procedures such as laser eye surgery, breast implants, botox injections, nose reshaping and liposuction. In fact, in 2005 Irish people spent more than €250 million on aesthetic or non-essential health treatments.

Medications such as Prozac (anti-depressant), Ritalin (used to treat attention deficit disorder) and Viagra (used to treat erectile dysfunction) are increasingly used for social rather than medical reasons. For instance, where Prozac was initially intended to treat patients suffering from depression, it is now being used by people who suffer from extreme shyness in order to improve their social skills. Human enhancement has also entered the realm of sport. In recent years the phenomenon of athletes using prohibited substances to unfairly improve their chances of victory in competitions has been highlighted.

Pre-natal screening involves testing embryos i.e. embryos produced during *in-vitro* fertilisation (IVF) before being placed in the mother's womb. The aim is to detect genetic conditions, such as multiple sclerosis, cystic fibrosis or down syndrome and to allow parents to choose whether to have a baby, which might suffer from these diseases or to only select embryos which are free from them. In some countries pre-natal screening is also used to select the sex of a child.

## Q3 What can we expect from human enhancement in the future?

Enhancement technology, it has been predicted, will provide future humans with numerous radical improvements. Although, it should be noted that many of these are still years away from being realised.

Biomedical Gerontology refers to the study of aging and the research being undertaken to extend the human lifespan. Scientists hope to find ways of curing debilitation and illness caused by old age e.g. heart disease and Alzheimer's disease. They predict that the natural side effect of their research will be the indefinite postponement of death i.e. people might live for 150 or more years.

Cybernetics is the study of how something or someone reacts to sensory information and examines how this reaction can be improved upon using computer technology. Scientists hope that one day their research will help people who are paralysed to move their limbs, replace lost senses e.g. sight and hearing and relieve pain. Experiments have also been carried out whereby computer chips have been placed into human beings. In 2004, a brain chip, which was implanted into a 24-year-old quadriplegic patient reportedly allowed him to control his T.V. by talking and moving his head and to





send e-mails by thought. Other experiments have been carried out placing chips into people with the aim of creating cyborgs i.e. part human part machine. The aim of this research is to test whether technology can be used to upgrade humans to give them heightened senses and even to communicate telepathically (using thought alone).

Genetic Engineering refers to the introduction of new genetic material or the alteration of existing genetic material in order to change the characteristics of an individual e.g. hair colour, eye colour, height and susceptibility to certain diseases. Scientists hope that genetic engineering will allow future parents to ensure children, born as a result of IVF, are free from genetic diseases. It has also been predicted that, genetic engineering will eventually allow parents to select children, which are healthier, stronger, smarter or more attractive.

For a list of enhancement technologies, both current and anticipated (see Table 1).

TABLE 1

Name	Function	Examples	Availability
Cosmetic Surgery	Alters physical appearance	Facelifts and Liposuction	Widely available
Pharmacology	Alters bodily form/function	Viagra, growth hormones and steroids	Available
Psychopharmacology	Alters brain state or mood	Prozac and Ritalin	Available, more research ongoing e.g. appetite suppressants
Pre-implantation Genetic Diagnosis	Embryos can be selected to avoid particular genetic disorders	Cystic Fibrosis, Multiple Sclerosis and Parkinson's Disease	Not available in Ireland, available abroad.
Gene Therapy	Alters the genetic make-up of selected cells in the body	Treatment of Cystic Fibrosis by replacing unhealthy gene with a healthy copy	Research being undertaken
Cybernetics	Altering mental or physical function using electronic systems within the body	Implanting silicon chips into humans to improve nervous system function	Research being undertaken
Nanotechnologies	Similar to cybernetics but using much smaller implants	Nano devices to deliver medication, repair cell walls or to destroy tumours	Research being undertaken, treatments not expected for at least 10 years
Radical Life Extension	Combination of technologies to significantly increase human lifespan e.g. to 150 years or more	Repairing cell damage caused by aging, monitoring of the effect nutrients, vitamins and diet have on lifespan	Research is currently being undertaken treatments not expected for at least 25-30 years

## Q4 Should society be trying to make “better” humans?

A distinction is generally drawn between medical therapy and human enhancement. Where medicine is used to treat and prevent disease and repair injuries, human enhancement provides new or improved functions that go beyond what is considered healthy or normal. Concerns have been raised regarding the fairness of directing precious resources into enhancing healthy people when so many lack access to basic healthcare. Opponents to human enhancement argue that there are countless diseases and injuries e.g. Alzheimer's disease, HIV Aids, motor neuron disease and spinal cord injury, which require heavily funded research if medical solutions are to be found. The view has been expressed that it is unjust for society to fund research into human enhancement technologies when millions of people around the world are suffering and dying prematurely. Proponents of human enhancement argue that the line between medicine and enhancement is blurred and that there is a certain degree of overlap e.g. vaccinations being used to boost our immune system. They also state that funding research such as cybernetics or genetic engineering, which seek to eliminate debilitating diseases will save lives and money in the long-term.

Concerns have also been raised regarding what effect dramatically increasing the human life span would have on the world's population and resources. Critics argue that allowing people to live indefinitely would lead to overpopulation and would put an overwhelming financial burden on the young e.g. by paying pensions and supporting the elderly. Advocates, however, argue that because human enhancement would eliminate the illnesses and disabilities associated with old age, older people would be capable of contributing financially and otherwise to society well beyond what is currently possible.



## Q5 Shouldn't we seek to change society rather than humans?

There has been much debate over the nature and meaning of “disability”. On one side there are those who view disability as a physical fact that affects quality of life, while on the other there are those who believe disability is the result of social prejudice and discrimination. Proponents of human enhancement say that technologies, such as pre-natal screening and genetic engineering offer the potential to eradicate debilitating conditions for future generations and thus prevent the physical, emotional and financial burden that disability places on individuals, their families and the State. Opponents say human enhancements technologies promote negative attitudes towards

disability and raise concerns that such negative attitudes might result in harmful public policies and practices e.g. job discrimination, barriers to health insurance or funding cuts for healthcare. Opponents also state that many problems experienced by people with disability are the result of intolerance as well as environmental and communication barriers and say that it is society, which should change to accommodate individuals with disability.

## Q6 Will Human enhancement change what it means to be human?

There is increasing concern that human nature is in the process of being irreversibly altered by technological developments which are either already in existence or are in the pipeline and that human life will be so radically transformed that the very essence of what it currently means to be human will be lost. Concerns have also been raised regarding the nature of the changes that will be brought about by biologically, chemically or

electronically enhancing our brains and our bodies. Opponents argue that the changes will be so profound and happen at such a speed that humans will suffer a major identity crisis, which will have significant implications for society. Proponents argue that technological changes will happen so gradually that

humans will be capable of adapting naturally to their new environments or circumstances just as they did during the industrial age or the more recent electronic age or indeed throughout the entire history of human evolution.

Opponents of human enhancement argue that reducing the impact of physical suffering or painful memories, which they say forms our identities, would result in the erosion of the human character. However, proponents argue that there is no value in suffering and that the formation of the human character is equally the result of good health and happiness. Critics have also raised concerns that indefinitely prolonging the human lifespan would deprive life of the meaning, which accompanies the knowledge of our own mortality. However, advocates of human enhancement argue that a lifetime, which would allow individuals to experience, learn and achieve substantially more than is currently possible, would be far from meaningless.

Many would argue that it is an intrinsic feature of humanity to constantly seek improvement. Humans have always harnessed technology to improve their situation e.g. the invention of the aeroplane in order to allow us to fly. However, others have pointed out that there is an inherent difference between maximising the advantages of technology and combining it with people because they believe this would change the fundamental fabric of human beings.

## Q7 Will Human enhancement lead to a two-tiered society?

The issue of who will have access to enhancement technologies raises a number of ethical questions. Because human enhancement is very expensive only those who can afford to pay will get the improvements they want. Opponents argue that human enhancement will create unfair physical and mental benefits for those who can and will use them and that such unequal access will widen the gulf between the “haves” and the “have-nots”. Concerns have also been raised regarding the possible creation of two separate species i.e. humans (unenhanced) and post-humans (enhanced) and what affect this might have on human rights and respect for the dignity of individuals. For example, in the film “GATTACA”, which explores the repercussions of genetic engineering, enhanced individuals are given all of the well-paid jobs, while the unenhanced or “in-valids”, as they are called, are only given menial work with low pay and are excluded from education.

Proponents of human enhancement argue that inequalities in society already exist and are universally accepted. For instance parents, who can afford to, may send their children to fee paying schools because they believe private education will give them certain advantages in the future. This practice is not frowned upon by society but is regarded and respected as an autonomous decision i.e. an independent choice made without any external influences. Proponents also argue that rather than restricting technological enhancements they should be made more accessible so that everyone can avail of them.

## Q8 Should human enhancement be used to alter future generations?

Human enhancement raises the question of whether individuals should be allowed to choose the genetic make-up of future generations. Opponents argue that genetic engineering may cause psychological harm to future people because they will not have given their consent to be enhanced. They also raise concerns that genetic engineering narrows the range of life choices available to a modified individual. For instance, if parents choose the genetic make up of their child, the child may feel enormous pressure to live up to the expectations of his/her parents. There are also concerns that genetic modification violates an individual's right to an open future i.e. a future they can choose for themselves.



In his novel *Brave New World*, Aldous Huxley imagined a society in which the government manufactured five different classes of humans, each designed to perform different roles, where no deviation from those roles was permitted. Proponents argue, however, that none of us gave consent to be born with the genetic make-up that nature randomly bestowed upon us and question why the genetically engineered children of the future would feel any differently about themselves than we do today.

## Q9 What limits, if any, should be placed on human enhancement?

Critics of human enhancement say that it too closely resembles eugenics because it seeks the improvement of humans to a universally accepted norm. While proponents argue that the technology will be used only to eliminate life-threatening or painful diseases, opponents raise concerns that it might be used to stamp out diversity or to eradicate people with disability. They also fear that human enhancement would be used to shape people to fit the demands of society by standardising the types of personalities, skills and physiques individuals have.

Concerns have also been raised regarding the benefit-to-risk ratio of technologically enhancing humans e.g. the unknown risk to unborn children from genetic engineering or to people having electronic chips implanted in their bodies. Opponents argue against enhancing humans to alleviate, what might be considered undesirable aspects of the human condition, when it is not medically necessary. However, proponents argue that there is a moral motive behind human enhancement, which is to intervene in the genetic lottery of life in order to save lives and prevent disability or disease. There is currently a debate regarding what risks are acceptable to take in order to achieve those benefits. Where the risk is only to one individual, advocates say that s/he should be allowed to decide for him/herself. However, where risks are posed to future generations it has been suggested that society should be involved in the decision making process.



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