

# Economic Inequality and Human Enhancement Technology

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## ABSTRACT

Human Enhancement Technology ranges from the commonplace, such as education, to the futuristic, with possible future developments including genetic modification or direct computer-brain interfaces. Public policies governing the supply of these technologies have the potential to greatly increase or mitigate economic inequality. Due to this potential harm, many have suggested prohibition of further developments of enhancement technologies. However, prohibition would be ineffective at preventing this harm and also would also prevent many positive aspects of enhancement technologies. On the other hand, due to the expected benefits, many have suggested allowing access and development within a free-market system. However, this has the potential to increase inequality beyond acceptable levels. Consequently, Government policies must provide appropriate funding and regulation in order for these technologies to be distributed fairly to provide the most benefits and prevent the worst outcomes.

## Introduction

Human Enhancement Technology has the potential to provide both great benefits and greater inequalities if left unchecked. Because of this, we must consider a variety of regulatory policies in order to achieve the best outcome. The most common options to be considered include prohibition on the technology and its developments, allowing access within a free-market system, or government distribution. Prohibition would probably be ineffective and undesirable, and a free-market system would likely result in the greatest

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inequalities and negative outcomes for all involved. Therefore, a compromise is the best alternative; access to human enhancement should be ensured for all in order for the best outcome to be achieved. Government funding and regulation can ensure low cost and equal distribution of human enhancement technologies, and consequently should be implemented as the best policy option.

### 1. The Technology

Human Enhancement Technology (HET) encompasses a wide range of technologies, from the commonplace to the futuristic. Although the most powerful enhancements may not yet exist many are already available. For example, education and caffeine are not commonly considered HET, but they enhance individuals' capabilities and, therefore, can legitimately be considered HET and directly compared to new HET. Education teaches mental software for managing cognitive domains to reduce mental load (Sandberg & Bostrom, 2007, p. 208), and caffeine is used by millions of adults daily for its stimulant effect (Bramstedt, 2007, p. 1237). There is also a long history of using external hardware to increase cognition, such as pen and paper or personal organizers, and this use is constantly increasing with smart phones, virtual reality, and direct computer-brain interfaces. Many current, generally low-tech, HETs are well accepted, for example, most people have no problem with individuals using caffeine or education and they do not consider it an unfair advantage as it is commonplace (Sahakian & Morein-Zamir, 2007, p. 1158). These technologies are motivated by the possibility of enhancing human capacities beyond what the average human is naturally capable of. Consequently, enhancements are constantly increasing in their ability to improve capabilities. Future HETs have the potential to allow the brain to learn quickly and improve selective retention, unlearn phobias and addictions, increase fine-grained control over the learning process, increase creativity, and improve memory (Sandberg & Bostrom, 2007, p. 203–207). Francis Fukuyama (2002, p. 8–9) believes that HET will allow us to change our personality, grow new organs, repair our brains, and extend life expectancy beyond 100 years.

Although increasing human capabilities is the goal of enhancement, many HETs were not originally developed for this purpose. Many were developed as therapies for disabilities. For example Ritalin, which was developed as a

treatment for attention deficit hyperactivity disorder, is used by college students to enhance their cognition (Lamkin, 2012, p. 347), and Modafinil, originally developed as a treatment for narcolepsy, is used to reduce performance decrements from sleep loss or jet lag (Sandberg & Bostrom, 2007, p. 204). Consequently, the exact HETs that will be developed are unclear, and this means predicting the outcomes of their development is difficult. However, one outcome is likely to apply to any enhancements developed; they will be expensive and, therefore, only affordable to the better-off in society if left unregulated. Based on this assessment, I will consider all HET together to assess this consequence, as a response combating this harmful outcome must be created prior to their development.

## 2. Increased Inequality

The expected inequality of access to HET will exacerbate existing economic inequalities if left unregulated. The wealthy already benefit from their financial situation; for example they can use their position to access better education and nutrition, which in turn enhances their brain power (Sahakian & Morein-Zamir, 2007, p. 1159). HET has the potential to allow those who can afford it to increase, through the use of genetic modification technology, their own, and their children's, IQ beyond even that of the most gifted naturally. Cognitive enhancements, such as education, have many benefits beyond higher job status and salary; they can reduce the risk of substance abuse, crime, and many illnesses while increasing quality of life, social connectedness, and political participation (Sandberg & Bostrom, 2007, p. 208). Consequently, the benefits associated with higher IQ, such as increased income (Sandberg & Bostrom, 2007, p. 216), and prevention of a wide array of social and economic misfortunes (Bostrom & Sandberg, 2009, p. 330), are likely to increasingly become solely available to those who are better-off, further increasing the advantages packaged with wealth. This will exacerbate economic inequality by providing further benefits to those with the ability to pay and preventing access for the less well-off.

Fukuyama (2002, p. 9-10) is concerned that the idea of natural human equality, that is the base of political and moral equality, will be compromised by HET and consequently some people, the unenhanced, will be considered less human than the enhanced. HET has the potential to create two classes of people, the enhanced and the unenhanced, and this would increase class

struggle; a solid immovable hierarchy would form where, based on ability to pay, some people would be significantly better off than others who would never have the ability to catch up as they lack class mobility. There is concern that those able to afford HET will be buying their own well-being at the expense of a greater social good (Caplan & Elliott, 2004, p. 174). There is fear that the way we live together as a group could be damaged by the actions of individuals. Harms from inequality do not require extreme deprivations to warrant our consideration; injustices exist even when no extreme deprivation is present. If a HET increased political influence for those who could afford it, such as by allowing increased communication capacities, this would be an injustice to those who did not have access to it although they suffer no extreme deprivation (Buchanan, 2011b, p. 250). We must seriously consider these potential harms from increased inequality and create policies to best mitigate these harms.

Studies have found a wide range of negative outcomes both within and between nations with greater inequality, these include; greater risk of mental disability and psychiatric hospitalization (Hudson, 2005, p. 16); lower economic mobility (Andrews & Leigh, 2009, p. 1492); poorer general health; higher infant mortality; lower average life expectancy; increased obesity; greater illicit drug use; higher homicide and violent crime; a greater prevalence of depression; and, lower self-reported well-being (De Vries, Gosling & Potter, 2011, p. 1978). These numerous social problems are more common in unequal societies, for everyone in the society, not just the less well-off (Wilkinson & Pickett, 2007, p. 1972). In a society with a strong hierarchy, an individual's position relative to others is more important, and, consequently, individuals become more competitive, less trusting, more self-focused, less friendly, and less cooperative (De Vries, Gosling, & Potter, 2011, p. 1979). This means more unequal societies have lower levels of agreeableness and, following from this, poor health outcomes, such as poor diet, and increased alcohol and cigarette consumption (De Vries, Gosling, & Potter, 2011, p. 1984). Increased inequality, and the associated negative consequences, should be of concern to both the less and more well-off in society.

### 3. Prohibition

Because of these potential harms some might suggest that we should prohibit HET in order to avoid the inescapable inequality that seems to be bundled with its development. However, prohibiting or severely restricting HET, or at least

any future development, is likely to be ineffective. Prohibition is likely to be an ineffective method for controlling the outcomes. Any prohibition is likely to push HET underground and across borders. The probable outcome from this is price increases that further widen the gap between those who can afford HET and those who cannot (Stock, 2005, p. 29). Similarly, even if prohibition were successful in some countries, other areas lacking the prohibition will continue with the developments. Even if those developments were prevented from going to the countries with prohibition the areas without the prohibition would have an advantage because of their access to HET. Pharmaceuticals will also continue to be developed as therapeutic drugs in many locations, even those with prohibition on HET, but these often also have enhancement abilities, and preventing 'off-label' uses is impractical (Buchanan, 2011a, p. 158). Therefore, attempting to implement prohibition of HET would be a seemingly futile effort.

Although prohibition may be ineffective, this is not sufficient reason to not introduce one if it is the best option. For example, we have laws against murder even though it is sometimes ineffective as a method of prevention. Effectiveness, or its lack, is not alone a sufficient reason to support or oppose a policy. Other expected outcomes of the policy must be considered. HET has the potential to eliminate, not just increase, many social problems by allowing increased control over aspects of our personalities, such as prejudice, discrimination, laziness, apathy, cruelty, anger and to also make people smarter, more insightful, and more athletic (Borenstein, 2009, p. 521). HET could reduce inequalities and provide positive benefits in many ways, not only cause harm. For example, much of human cognition is shared between minds and more efficient forms of collaboration, such as virtual workspaces and internet which are used already, can therefore enhance cognition (Sandberg & Bostrom, 2007, p. 213). Although there is little evidence that greater intelligence causes greater happiness, there is evidence that higher intelligence increases health and wealth, while lower intelligence puts an individual at greater risk of accidents, negative life events, and low income (Sandberg & Bostrom, 2007, p. 201). Increased cognitive ability helps individuals tackle the increasingly complex demands society places on cognition. Increased cognitive ability is not only a positional good, it is also intrinsically valuable and its value does not depend on other people lacking it; for example, having a good memory or increased creativity is valuable even if others have a similar level of excellence (Bostrom & Sandberg, 2009, p. 328). These cognitive

abilities are valuable for society as well as individuals; many social problems could potentially be solved if people were smarter, wiser, or more creative. Alan Buchanan (2011b, p. 247) argues that HET could promote justice because many HETs potentially work better for those of lower cognitive ability and could be cheaper than educational interventions. HET could also be used to remove disabilities and generally increase individuals' abilities in many ways (Buchanan, 2011b, p. 428), for example, HET has the ability to remove deafness or increase hearing, as cochlear implants already do today. Prohibition of HET would limit the socially beneficial uses whereas legal enhancements have the ability to lead to safer, cheaper, enhancements. HET has the potential for many outcomes, some negative and others overwhelmingly positive. If we prohibit HET it is unlikely that we will prevent the negative consequences, but it is certain that we will prevent many, if not all, of the positive outcomes.

#### 4. Free-Market Distribution

Conversely to those arguing for prohibition of HET, it is understandable that enormous potential benefits lead some to favor allowing as much access and development as possible. A free-market system is likely to be the favored method for providing this access, it would mean that those who can afford the technology will have access, and development is based on their demand. This is similar to how many advantages are currently distributed. We allow more well-off individuals to enjoy many advantages over their less wealthy peers, with very few policies that prevent them from doing so. For example, we allow wealthy students to employ private tutors or to have more time for study because they do not have to work to support themselves. We do not hold that justice demands enhancements should not be available to any until they are available to all. If this were the case, we would require literacy campaigns to halt in countries with high levels of literacy until all countries catch up with those ahead (Buchanan, 2011a, p. 158). We already find it acceptable for some to have access to enhancements although others do not.

If HET were distributed through a free-market system, this would obviously be similar to the current situation of many technologies, and consequently we can compare the expected consequences to those currently experienced. It can be expected that if HET was made available through the free-market system, prices would fall dramatically in the future when the enhancements come off

patent and generics became available. Currently, many generic versions of prescription drugs are available at a much lower cost than they were previously, and although they may have been out of reach of some in the beginning, the price has not remained high and the developments are still beneficial (Buchanan, 2011a, p. 158), for example Penicillin was originally prohibitively expensive and now is available to millions for only cents per dose. Although this price drop seems likely to happen for HET as well, the time frame is unpredictable and the wealthy will still be at an advantage as they will move on to the next enhancement developed, that will still be expensive, while those less well-off will only have access to the older, less effective, enhancements once their price has dropped.

Within the free-market system there are other potential ways a technology could be distributed to those unable to pay by their own means. For example, if a specific enhancement is considered necessary by employers, then it is likely that they will provide it for their employees, as they currently do with staff computers. However, even if the employers will supply enhancements for their employees, experience with the technology will increase an individual's employability for a position. With computers currently, proficiency with common programs is a requirement for many employment opportunities, and, consequently, those able to afford their own computer are more employable than those unable to do so. The cost of computers has finally fallen to a price range affordable to almost everyone, except the least well off, in the developed world. This means that, although most people have access now, this was not always the case. Some individuals still lack proficiency with computers, as they are unable to afford their own, which makes them less employable. Although the price of HET is likely to fall similarly, and make many HETs accessible to almost everyone, this dispersion could be slow or limited and, consequently, produce more injustices. Those who lack access in the time it takes for the technology to disperse may be unjustly excluded from important forms of political and economic participation and those with access to HET will gain many advantages (Buchanan, 2011b, p. 253). This inequality is an unacceptable consequence from the free-market system of dispersion. Even if the inequality created would not be permanent, as the price would eventually drop (which is unclear in itself), the consequences of delayed access to HET are sufficient to require action be taken to reduce harmful inequality.

## 5. Government Distribution

Finding the balance where the greatest benefits are available and the worst harms are prevented requires a compromise between prohibition and a free-market system. Depending on how public policy is approached, HET can increase inequality through pushing the technology underground, increasing prices, and only allowing the rich access, or it can reduce inequality by supporting responsible development and ensuring broad access. Without public funding and support, it is likely that HET will be out of reach of many, and the divide between those who are ‘normal’ and those who are above average will continue to grow and be based on ability to pay. Buchanan (2011b, p. 246-247) argues that the requirements of justice mean that socially produced goods, and their impacts, should be distributed. Although distributing HET will not remove all injustices, this does not mean that it is not a valuable goal; we can tolerate some injustices persisting without accepting others. Some we accept because we acknowledge that there is little we can do about them; for example, we accept differences in the amount of time students have to study because it would be difficult or impossible to enact regulations to constrain it (Lamkin, 2012, p. 349). Even if we were able to do something about these disparities, our motivation is most likely to be to provide more access for poor students rather than take access away from rich students. The reasons we have for supporting education as a public endeavor translate simply to other HET. Like education, other HETs increase an individual’s well-being and better equip them for their role as a citizen (Buchanan, 2011a, p. 147). Subsidizing HET would provide a public good and be a more constructive approach than other policy options, as it would speed up dispersion and help ensure that these valuable innovations quickly become widely available.

Some may object to government dispersion as the solution, arguing that our poor track record of helping the disadvantaged shows that it is likely that the rich will still have access while the poor will not. Similarly, they may argue that there may be so many HETs that it would be impossible for the government to fund all of them due to its limited resources. Although this objection is worth considering, it seems plausible that the main reason that we have failed to help the disadvantaged in the past is due to wishing to avoid spending money in this fashion, and, although the economic cost of a policy is important, it is likely that the cost of enforcing prohibition would be greater than that of providing access to HET (Lamkin, 2012, p. 350). Beyond this, it

is likely that the cost of provision will be outweighed by the benefits of increased economic and social advantages from providing HET to all. HET has the potential to reduce costs for the government in other areas, such as health care. It is likely to also be beneficial for our economy by increasing citizens abilities and national productivity. Public funding is also likely to drive down prices of HET as large corporations compete for government contracts to be the HET provider for the nation.

The potential distributive problems for HET are not novel, as with other innovations policies can worsen or mitigate inequalities. If HET is treated as a social good, as education is currently, it is likely that at least basic HET will be publicly distributed and subsidized, rather than solely available based on an individual's ability to pay (Buchanan, 2011a, p. 148). Not only does reducing inequality have positive health and social outcomes for all members of society; but also the benefits of technology are generally greater when more people have access. For example, cognitive enhancements have network effects, where the benefit increases as more individuals have the enhancement; to be more precise, being literate or having computer access is much less valuable if only a few people have those enhancements (Buchanan, 2011a, p.149). Public policies that increase the distribution of HET would be beneficial for all members of society, rather than just those who would otherwise lack the ability to pay, and consequently subsidizing access and regulating development to ensure equal access is the best option for everyone involved.

### Conclusion

HET has the potential to provide many benefits to both individuals and society provided that it is fairly distributed. This requires public funding and regulations in order to avoid the worst inequalities. The obvious benefits from HET provide ample evidence for why HET should not be prohibited, and, rather, governments should fund access for all citizens to ensure that the benefits are distributed as equally as possible. Based on the expected benefits and harms from HET, public policies must be developed to ensure the best of all possible outcomes. Neither prohibiting HET or accepting access through a free-market system are effective or productive solutions as both these approaches will inevitably increase inequality. The best solution for controlling the consequences from HET is a compromise between no access and access only based on ability to pay, this option is best not just for the less well-off but also for the wealthy. Therefore, the government should

ensure distribution of HET through public funding, and regulations on development and patents, that ensure lower costs and equal access.

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