Enhancement for All? A Feminist Ethical Analysis of the Discourses and Practices of Democratic Transhumanism

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Abstract

Transhumanism is a sociopolitical movement that seeks to transform human beings into beings beyond the human condition through various technological means. Within this broader movement stand the democratic transhumanists, or technoprogressives, who believe that a social safety net and broad access to transhuman and related medical technologies are critical to both justice and the success of the transhumanist project. Feminists engaged in technological and political analysis often have much in common with technoprogressivism, but there are also significant points of disagreement. A liberal feminist ethical analysis of democratic transhumanism will highlight areas of both agreement and disagreement and will provide a potential roadmap for how to ethically engage the future of transhuman technologies.

Keywords: feminism, transhumanism, democracy, technoprogressivism, technology, bioethics

Conference Proceedings from Societas Ethica Annual Conference 2011, The Quest for perfection. The Future of Medicine/Medicine of the future, August 25-28, 2011. Universita della Svizzera Italiana, Lugano, Switzerland. Editors: Göran Collste and Arne Manzeschke.

Human beings are beginning to have options in healthcare that make them, in some distinct ways, "better" – not just having a lack of illness, but becoming stronger or smarter, more beautiful or long-lived, than they are without technological intervention. Some of these technologies already exist, while others are being developed every day. Alongside these technological innovations are conversations about the ethical issues involved in both their development and distribution – what technologies should be developed, who should pay to develop the technologies, who should have access to them, and what avenues of research might be displaced in their development.

This paper will provide a brief outline of the contemporary socio-political movement known as transhumanism, explain some of its various forms and their respective politics, and provide a both sympathetic and critical ethical commentary on that movement. I will focus my ethical analysis particularly on democratic transhumanism, sometimes also called techno-progressivism, which I have found to be the most ethically constructive form of transhumanism, though it still has some serious flaws. My comments will be largely derived from a perspective I describe as feminist, though the majority of my analysis will not directly address questions of gender. I will attempt to highlight some points of basic agreement that I see between contemporary liberal, democratic feminism and the sub-movement of democratic transhumanism. I will also discuss some aspects of democratic transhumanism that I believe can and should be challenged and some insights from feminist thought that can provide constructive alternatives in moving toward the future of technology.

The feminist perspective I hope to bring to bear on this discussion is one based in the history of feminist reflection on issues of gender, embodiment, political power, and the common good, as feminist analysis has never been only about gender. Likewise, there are a variety of different types of feminist perspectives, of which I am representing only one. It is my contention here that feminism provides a history of critical reflection on sometimes under-considered topics, particularly the place and function of the body in human life, power and political representation, justice and the common good.

The feminism that contributes to my analysis here is one that stands within the broader liberal democratic tradition of politics. While I believe that there are legitimate criticisms of liberal democracy and the formation of the liberal subject that arise within feminist analysis, I also believe that liberal democracy represents the best available option for contemporary political life in a pluralistic society. Liberal democracy is coupled in this view with social democracy and a well-regulated, if free, market system. The balancing of market economics with a social safety net, and individual freedom with the common good, are things I find important as a feminist and will weigh heavily in my analysis of transhumanist discourse and practice. Culturally, the feminism presented here is one that is Western in perspective but transnational in consideration and scope. While many aspects of transhumanism have proved appealing to affluent Westerners, it has not had anywhere near the same traction in the global South, for reasons I will consider shortly. This feminist analysis will explore the role of the body in democratic transhumanist discourse and will indicate both a skepticism and hopefulness regarding current political, economic, and social structures in developing and utilizing emerging technologies.

Betty Friedan's 1963 classic, *The Feminine Mystique*, described what she called, "the problem that has no name," referring to the discontent with their condition that many women of her era felt when they were socially expected to find happiness and fulfillment by staying at home and raising children instead of pursuing careers.[1] In response to this "strange stirring" and "sense of dissatisfaction" that resulted from women's "painfully giving up [their] dreams," she called for dramatic changes in society in order to free women from the confines of household drudgery.[2] Transhumanism likewise calls for radical social changes in order to free people from the confines of a limited existence within the human condition, offering the opportunity, through advanced technology, to achieve greater happiness, intelligence, and longevity.

Transhumanism is a socio-political movement that has developed in recent years in supporting human efforts to transcend the human condition through a variety of technological means. Transhumanism has its roots in Enlightenment positivist and rationalist thought and often holds to a narrative of ongoing scientific (and sometimes moral) progress and development from primitive to advanced technological societies. The term transhumanism appears to have been coined in the 1950s by Julian Huxley and serves as a portmanteau for transitional human – the human who begins to move beyond one's limits toward a posthuman state.

Transhumanists are not all the same, and there are a variety of sub-movements that vary substantially based on their respective politics and visions of the future. Many of the early transhumanists came from the Californian technolibertarian groups of the 1980s and 1990s. These men (and they were men) were entrepreneurs and early adopters of information technologies. They gathered together over optimism for the technological future of humanity, shared suspicion of any governmental regulation of technological development, and Hayekian-libertarian anarcho-capitalist politics[3]. They changed their names to "cool" high-tech ones and embraced the possibilities for their own boundless technological self-transformation.[4] The libertarian transhumanists adopted the term "extropians" for themselves – with the idea of extropy as the opposite of entropy.[5] Max More founded the Extropy Institute in the early 1990s, which served as an organizational and online hub for like-minded transhumanists.

On the other side of the political spectrum stand the social-democratic transhumanists, or technoprogressives. Arising primarily from Europe rather than California, these transhumanists valued the ideals of equal access to technology and a basic social safety net for all persons. Those democratic transhumanists rejected the libertarian politics of the extropians and started their own organization – the World Transhumanist Association – in 1998, to foster both a more left-wing political transhumanism as well transhumanism as a field of academic study.[6]

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1 Betty Friedan, *The Feminine Mystique* (New York: W.W. Norton, 2001), 57.

2 Ibid., 57-58.

3 James Hughes, *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Humans of the Future* (Cambridge, MA: Westview, 2004), 165-169.

4 For instance, Max O'Connor became Max More, Tom Bell became T.O. Morrow, Nancie Clark became Natasha Vita-More, and Fereidoun M. Esfandiary became FM-2030.

5 Extropy, in this view, is not a scientific principle *per se*, but rather a conceptual opposite indicating the limitlessness of the human potential for self-transformation and improvement.

6 http://ieet.org/index.php/IEET/purpose.

The Extropy Institute closed in 2006, and its founders took over many of the senior positions at the World Transhumanist Association, which was then rebranded as Humanity Plus to signal the optimism and ideology of the movement. The democratic transhumanists then founded the Institute for Ethics in Emerging Technologies. These technoprogressives more readily acknowledge some of the serious risks associated with transhuman projects but still believe that a directed evolution of humanity to increase intelligence, longevity, etc. is the best choice for the future of humanity and the planet.

There are other sub-movements within transhumanism as well, the most well-known and influential of these being Singularitarianism. Historically, the idea of the Singularity referred to the center of a black hole – infinite density at zero volume, from which nothing can escape. In 1993, science fiction author Vernor Vinge used the term to refer to the rapidly approaching point in human history at which the rate of technological change becomes so rapid that past it lies an unpredictable qualitative shift in the nature of the experienced universe.[7] Singularitarians form a quasi-millenarian movement in their expectations for the shape of technological and cultural change in the next few decades.

They base their predictions on extrapolations from Moore's Law, which states that the availability of computing power for the same price is doubling every 18-24 months.[8] Based on the exponential increase of this processing power, human-created technologies will quickly match, and then surpass, the processing power of the human brain, thus creating a self-improving superintelligence.[9] Once this superintelligence exists, there is no way to further predict what the future will hold. Humanity may, and would likely be, annihilated in such a scenario, or we may be merged into the universal consciousness of the superintelligence. While it may seem that Singularitarians might be marginalized, they have actually become quite politically powerful, especially among high-tech companies and university programs. They are well-organized, running both the Singularity Institute for Artificial Intelligence, which is a think tank and advocacy organization, and the Singularity University as an educational group that is co-sponsored by companies like Google, Nokia, and Cisco.[10]

Transhumanism as a broader movement is opposed in ideology and practice by a diverse group of bioconservatives, ranging from environmentalists and some feminists of the left to religious and cultural conservatives on the right. My own position is one that seeks the middle ground transhumanist technoutopians and their bioconservative detractors. This position, which I call technorealism, will be outlined in its beginnings at the conclusion of this paper.

I find the democratic, or technoprogressive, sub-movement of transhumanism to be the most ethically and politically promising of the various groups of transhumanists, and thus the remainder of this paper will specifically address democratic transhumanism in relation to a

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7 Vernor Vinge, "The Coming Technological Singularity: How to Survive in the Post-Human Era," NASA VISION-21 Symposium presentation, March 1993.

8 Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Penguin, 2005), 41.

9 Ibid., 10, 14ff.

10 Singularity Institute for Artificial Intelligence, www.singularity.org. Singularity University, www.singularityu.org.

broadly liberal and democratic global feminism. I will first discuss points of general agreement between these transhumanists and feminists, followed by some points on which I believe that feminists can provide a necessary corrective to some of the more problematic aspects of democratic transhumanism.

The first point of strong agreement would be the importance of democratic governmental and social structures. Many feminists have rightly critiqued various aspects of liberal democracy and most would not see it as the panacea envisioned by democratic transhumanists.[11] The narrative of "better living through science and democracy" is one that has inspired skepticism among feminists who question the power relations involved, whose interests are secured and whose interests obscured in the master narrative.[12] But these groups can still certainly agree that a self-governing, nonauthoritarian body politic is the best form of government that human beings have devised.

We also generally agree on the need to have serious considerations of the global justice impacts of policy choices, including the need for a political and economic structure that provides for the basic needs of all persons. Inequality has risen substantially alongside the development of advanced healthcare, genetic, and information technologies, and while the one is not a direct function of the other, the particular political policies with regard to technology that have been in place have exacerbated, rather than alleviated, that inequality.[13] Some democratic transhumanists have tended to be defensive when questions of global justice arise, assuming that anyone asking the questions has a secret goal of banning all new technologies and creating equality through a race to the bottom.[14] That need not be the case, though, and liberal feminists and democratic transhumanists can work together to ensure that more just social, economic, and political structures accompany the development of emerging technologies.

Feminists and democratic transhumanists likewise share the value of universal flourishing, or in the parlance of the Transhumanist Declaration, "the well-being of all sentience."[15] The opportunity to live a life in which one has general freedom of self-determination and a lack of unnecessary suffering is a vision toward which we should strive. Feminists and other liberation-oriented scholars and activists have long sought to expand the circle of who counts in the moral community, who is understood as a person, and whose values and interests are worth protecting. I believe that there has been real moral progress made in recent centuries in the expansion of the moral community, coming to include first those outside of the tribe, then outside the nobility, those without property, women, persons of African

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11 Key examples include the works of Alison Jaggar, *Feminist Politics and Human Nature* (Lanham, MD: Rowman & Littlefield, 1983) and Catharine MacKinnon, *Toward a Feminist Theory of the State* (Cambridge, MA: Harvard University Press, 1989).

12 Hughes (2004), 3.

13 Florence Jaumotte, et al., "Rising Income Inequality: Technology, or Trade and Financial Globalization?" IMF Working Paper, July 2008, http://www.imf.org/external/pubs/ft/wp/2008/wp08185.pdf.

14 Author conversation with James Hughes, Emory University, Second Annual Neuroethics Symposium, "Neurocognitive Enhancement: Its Impact on Human Mind and Evolution," May 2, 2011.

15 Humanity Plus, "Transhumanist Declaration," http://humanityplus.org/philosophy/transhumanist-declaration/.

descent, persons with disabilities, queer folks, and so on. This expansion has come through hard-fought moral and political struggles and continues now.

This well-being is tied strongly to both individual and social freedom, and democratic transhumanists and liberal feminists have sought a socioeconomic system in which a social safety net exists to guarantee the greatest possible freedom for individuals to pursue their well-being.[16] Feminists have been advocates for important rights to bodily integrity in work, family and marital life, reproduction, and legal structures. Democratic transhumanists likewise seek rights of bodily integrity that pick up on some of the strains of classic feminism and take them in a new direction toward the availability of technological interventions in the body.

Democratic transhumanists, in their better moments, are not unequivocal advocates of any and all technological developments that people may want, but choose to apply critical ethical analysis to particular technologies and applications and to support or not support them accordingly. While generally advocating the maximum possible individual freedom that is consistent with similar freedoms for all others, democratic transhumanists understand that there are some applications that detract from freedom, exacerbate inequality, and fail to promote well-being.[17] Feminist technology thinkers have tended to promote a middle-ground position that takes seriously both the risks and benefits of new technologies and underscores the importance of ethical analysis at every stage of development and implementation of new technologies.[18]

While there are a number of shared values and practices between liberal feminism and democratic transhumanism, there are also some aspects of transhumanism that feminists have seen as in need of critique. Some of these are disagreements of emphasis or policy priority, others take a slightly different point along a broader spectrum, and others question some of the master narratives and assumptions behind transhumanism in general.

Feminists take a wide variety of perspectives with regard to the nature of moral personhood, whether personhood is based in relationality, particular moral or intellectual capacities, or some other set of qualities. James Hughes argues for a definition of person stemming from John Locke: as "a thinking, intelligent being, that has reason and reflection."[19] While no one would argue that rationality is a bad thing to possess, there has been a longstanding set of criticisms arising from within feminist thought to reject an equation of personhood solely with the mind or rationalism.[20] This critical perspective is taken for two primary reasons: first, feminists have shown the importance of the particularities of embodiment and physicality in both

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16 For instance, in *Justice, Gender, and the Family*, Susan Moller Okin picks up on Rawls' understanding of political fairness in a liberal society and expands it, arguing that families also need to be just institutions in order for the broader society (including the state) to be just.

17 This understanding of justice is largely based on the social contractarian work of John Rawls in *A Theory of Justice* (Cambridge, MA: Belknap, 1999), particularly the first principle: "each person is to have an equal right to the most extensive scheme of basic liberties compatible with a similar scheme of liberties for others." (53)

18 A key text that helped to birth the field of feminist technology studies is Donna Haraway's "Cyborg Manifesto," in *Simians, Cyborgs, and Women* (New York: Routledge, 1991).

19 James Hughes, *Citizen Cyborg*, (Cambridge, MA: Westview), 2004, 81.

20 Susan Bordo, *The Flight to Objectivity: Essays on Cartesianism and Culture* (Albany: State University of New York Press, 1987), 2ff., Vicki Kirby, *Telling Flesh: The Substance of the Corporeal* (New York: Routledge, 1997), 129ff.

personal and political identity. I do not simply have a body; in a very real sense, I am a body, and reducing personhood to intellectual capacities ignores the very ground from which rationality arises. Second, feminists have been critical of philosophical and political moves to reduce moral personhood to rationalism because of how the notion of reason has historically been used to exclude women, Africans, person with disabilities, and others from full moral and political standing.[21] The exclusion has been made on the grounds that some humans do not possess the right kind of rationality, or enough of it, to satisfy the definition given by those men with enough power to enforce it.

Hughes makes the claim that "persons don't have to be human, and not all humans are persons."[22] I would agree with one side of that claim but not the other. Old fashioned human rights need to continue to be guaranteed so that we do not find ourselves as a society slipping back into exclusionism amidst possible technologies that may make some persons even more "rational" or intelligent than others. But the moral community can and should continue to be expanded. While I believe that all humans should be counted as persons, this does not mean that robots, genetically engineered monkeys, and various kinds of posthumans could not be persons as well.

Transhumanists, including democratic transhumanists, have shown a rightful skepticism regarding the role of government coercion in the adoption or non-adoption of emerging technologies. No one should be legally required to incorporate particular technologies into her body, and with some basic protections for public and personal safety, should generally not be restricted from doing so either. But transhumanists tend to discount other forms of extralegal coercion that can have just the same impact through economic or cultural means. For instance, there is broad agreement between feminists and transhumanists that one should not be required by law to receive a direct brain-computer interface if one does not desire it. But imagine that I want a job as a network engineer – should the company hiring me be allowed to require that interface as a condition of employment? Should I be required to have certain "upgrades" in order to attend a particular school, or to receive health insurance? Coercion must be taken seriously as more than a simple matter of governmental intrusion or non-intrusion, and simply saying that people can opt-out is insufficient. People need health insurance, education, and employment, and the rights of humans 1.0 need to be protected in a broader scope.

Feminists also question the master narrative of scientific progress that is almost universal within transhumanism. In this narrative, "reason, science, and technology…(are) slowly freeing us from ignorance, toil, pain, and disease."[23] Philippe Verdoux, himself a transhumanist, has recently analyzed this tendency among a variety of transhumanists, including Nick Bostrom, Max More, and Ray Kurzweil, and has sought to rid transhumanism from this discredited Enlightenment narrative. Verdoux argues that "the progressionist conception of history as 'a record of improvement in the conditions of human life' is highly problematic, both empirically

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21 Katie G. Cannon, *Black Womanist Ethics* (Atlanta: Scholars Press, 1988), 7.
22 Hughes (2004), 79.
23 Hughes (2004), 3.

and methodologically…(while) most transhumanists today accept progress as a 'central dogma' of their technocentric worldviews."[24]

Things don't get better simply because we have the latest and greatest technology. While I would certainly argue that there is such a thing as genuine progress, such as universal literacy or peaceful and free societies, these are not guaranteed either by the trajectories of history or the development of technology. Technologies can be used to support both freedom and tyranny. Technology is not inherently either the problem or the solution, but is instead a tool through which ethical progress might be implemented or hindered.

The narrative of progress through reason and technology comes out of an Enlightenment rationalism, and this tends to become combined with a necessarily secular, even virulently anti-religious perspective. While not all transhumanists are anti-religious, they place a quasi-religious faith in "technological optimism" and human capacities for technological self-improvement to "become like gods."[25] A survey of transhumanist literature reveals an antipathy within the movement to any sort of theism, supernaturalism, ecological spirituality, or anything associated with "traditional" religions.[26] William Sims Bainbridge reads transhumanist technological self-transformation as a "positive feedback loop that…may put conventional religion out of business" by assuming that the key function of religion is the imposition of taboos by religious authorities in order to suppress human potential, uphold an existing religious hierarchy, and mark any attempt at self-mastery through technology as an idolatrous violation.[27] But even his pilot study contradicts this claim that religion is inherently conservative and anti-technology. Even among an oversampling of highly conservative religious persons, Bainbridge's study found that large numbers of those who put great confidence in organized religion supported having all of one's experiences recorded as a form of self-preservation and the injection of nanites into the bloodstream for increased longevity in medical care. Many of the differences between the very religious and the non-religious were small, though his report selects the most stark examples of sweeping anti-technology statements by religious persons and ignores the large areas of overlap between the groups.[28] This obsessive anti-religious sentiment is both politically unhelpful and ethically problematic, as it leads to mischaracterization and condemnation of those with whom one disagrees.

Liberal feminism has provided stark criticisms of various forms and practices of religion, particularly the instantiations of patriarchy and misogyny they often uphold by giving anti-woman positions a divine sanction. And certainly, some feminists do hold anti-religious

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24 Philippe Verdoux, "Transhumanism, Progress, and the Future," *Journal of Evolution and Technology* 20:2, 2009, 50.

25 William Sims Bainbridge, "The Transhuman Heresy," *Journal of Evolution and Technology*, 14:2, 2005, 91.

26 For instance, a recent survey by the IEET found that over 70% of its readership was agnostic or atheist (http://ieet.org/index.php/IEET/more/religionpollresults20120602), and they have begun to publish articles on why transhumanists could be more successful if they spent less time "bashing religion," in response to the routine comments and articles that have issued from the transhumanist community. (George Dvorsky, "Why Humanists Need to Make the Shift to Post-Atheism," IEET blog: http://ieet.org/index.php/IEET/more/dvorsky20120515, May 15, 2012).

27 Bainbridge (2005), 91, 92.

28 Ibid., 96-97.

positions. But within feminism, space has been made for religious feminists, including feminist theologians and activists. A diverse group of feminist religious groups has developed, doing work in political advocacy, among religious denominations and organizations, and in parachurch and other faith-based organizations. And these are not co-opted by anti-religious feminists for other purposes; they live side by side, working together where they can and separately where they disagree. The same cannot be said of transhumanism, where a pervasive anti-religiosity holds sway, and religious practitioners as an undifferentiated group are regularly denigrated in presentations, printed works, and websites.

Democratic and other transhumanists endorse public policy initiatives that heavily fund the development of technologies they see as enhancing, including extreme longevity technologies, germline genetic interventions, and friendly artificial intelligences. They argue that existing social problems, such as massive wealth inequality, are not a reason to halt technological innovation, and on this they are correct. But there is reason to be skeptical of the absolute urgency claimed for the sexy high tech and the utter demonization of anyone who opposes particular technological developments or finds that perhaps more funding should be given to alleviate the crushing problems of a lack of clean water, housing, food, and healthcare currently faced by many in the world. Surely we can both provide enough food for all while developing nifty humanoid robots, great cancer treatments, and the like. But we humans are not very good at feeling the urgency for too many policy priorities at once – some things are emphasized while others are de-emphasized, and I want to ensure that in the rush to develop the new and the cool the problems of today are not forgotten. I appreciate the efforts of democratic transhumanists to support initiatives like universal healthcare and hope that those efforts can form a common ground for action.

Feminist and disability studies scholars also question some of the easy assumptions made by transhumanists regarding what constitutes "enhancement" and why. On the one hand, transhumanists support a variety of individual choices with regard to enhancement and lifestyle, and individual freedom and bodily integrity are core feminist values. On the other hand, there are subtle and not-so-subtle ways in which contemporary transhumanists assert their own values and preferences in talking about enhancement, personhood, and the future of society. There is generally an assumption made that, while existing persons with disabilities should not be discriminated against, it would be better in the long run for society if only non-disabled persons were born.[29] This assumes a fairly objective, medicalized model of disability in which disabilities are stable, identifiable, and in need of medical treatment, rather than a contextualized and socio-political one in which understandings of disability are heavily influenced by the way a particular society is constructed.

The debate regarding the choices of deaf parents to choose to bear deaf children is instructive here. Deaf activists argue that deafness is a culture, rather than a disability, and that deaf people lead full and free lives within that culture, so parents should be free to intentionally

[29] Hughes (2004). 238.

bear children whom they can raise to be full participants within that culture.[30] Transhumanists like Hughes, however, see that choice as one of invariable deprivation and harm to the child.[31] They implicitly assume that their own able-bodiedness and intelligence are to be valued and discount or disregard the values gained by other ways of being.

The impacts of the differences between liberal feminist reflections and those of transhumanists can be understood through the lens of debates over technology developments in healthcare. The major healthcare developments of the coming years will likely be something of a continuation of recent trends toward the technologization of medicine, including robotic surgery, personalized medicine, genetic interventions, life extension, and the integration of technology into human bodies as part of routine medical care.

Just as the dramatic changes in medical technologies affected the practice of medicine in the 20th century, so further changes will continue to impact medical practice in the 21st century. This is particularly true in the case of the NBIC technologies – nanotechnology, biotechnology, information technology, and cognitive science. While historically these have functioned quite separately and, in some cases, have had little to do with the practice of medicine, they are increasingly convergent technologies. Nanoscale particles are being developed as targeted medicines, powerful computer databases are able to aggregate huge amounts of data to provide insight into genomics, long-term research projects, and clinical decision-making. Cognitive science developments in concert with advanced information technologies are providing greater understanding of the functions of the brain along with the increasing ability to modify those functions. Humanoid robots are being developed with applications in several areas of medicine – from nurse-bots to lift, turn, and provide medicines to those in need of 24-hour care to robotic arms in precision surgery to artificial intelligence systems that can accurately diagnose and provide treatment for a wide range of illnesses, the practice of medicine is continuing to change and healthcare providers may become the next set of workers to have their jobs automated and largely replaced by machines.

I believe that issues of justice are paramount in the availability of healthcare, including advanced healthcare technologies, and even more so in the case in which "enhancement" medicine is likely to further increase the disparities between rich and poor. Currently in the United States, the most medically technologized nation in the world and the only industrialized nation not to provide health insurance to all of its citizens, over 22% of adults under 65% have no health insurance whatsoever[32], and many more are underinsured such that a major illness would have financially catastrophic consequences. "Medical problems caused 62% of all personal bankruptcies filed in the U.S. in 2007... [Yet] 78% of those filers had medical insurance

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30 H-Dirksen L. Bauman, "Designing Deaf Babies and the Question of Disability," *Journal of Deaf Studies and Deaf Education* 10.3, Summer 2005.

31 Hughes (2004), 13-18, 238.

32 CDC, "Fast Stats: Health Insurance Coverage," November 17, 2011, http://www.cdc.gov/nchs/fastats/hinsure.htm.

at the start of their illness."[33] Over the past 30 years, the real (constant dollar) income of the bottom 90% of Americans has shrunk, even while technology and health care costs have risen dramatically.[34] Likewise, though there have been real gains in the opportunities for some people that have been brought about by the development of internet and related technologies, technology has not solved many major social issues. The disparities are even starker when considered in a broader global context. Globally, approximately one in eight people lack access to safe water, and "more people in the world have cell phones than access to a toilet."[35] One in seven people on earth have insufficient food,[36] and just as many lack any access to healthcare.[37] It is not for lack of technology that these problems continue, but for lack of political will.

Many advancements in medical technology, including sterile surgery, antibiotics, vaccines, birth control, and the like, contributed to a dramatic increase in life expectancy in developed nations during the 20th century. Scientific and technological advancements were critical to increases in health and longevity on a global scale, but technology alone does not solve global crises. As with all new technologies, emerging medical technologies are first available only to the very wealthy and then eventually are common enough to be covered by insurance and affordable for people in developed nations. But many of these technologies do not "trickle-down" to the point of being affordable to the world's poorest, or even the less well-off in nations like the US. It takes significant and intentional choices in political, economic, and social policies in order to make good healthcare broadly accessible.

For instance, AZT and others AIDS medications were initially terribly expensive and unavailable to most people suffering from the disease. After they had been introduced and political pressure in the US strongly encouraged the company making the drug to lower their prices, AZT began to be covered by more Americans' medical insurances. But AZT only became available to the world's poor because of massive political pressure on GlaxoSmithKline to lower their prices prior to the drug's patent expiring in 2005. Here the technology was a necessary, but not sufficient, condition for the possibility of solving the global AIDS crisis. It also takes political will, public pressure, an effective global distribution system, and a strong healthcare infrastructure to provide the care needed by so many.

Effective and inexpensive treatments for a wide range of other conditions, such as malaria, remain underfunded in both development and distribution, so there remain approximately 225 million cases of malaria annually worldwide.[38] Public pressure here has resulted in substantial increase in funding for insecticide-treated mosquito nets and antimalarial

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33 Catherine Arnst, "Study Links Medical Costs and Personal Bankruptcy," *Bloomberg Businessweek*, June 4, 2009, http://www.businessweek.com/bwdaily/dnflash/content/jun2009/db2009064_666715.htm.

34 http://motherjones.com/politics/2011/02/income-inequality-in-america-chart-graph

35 Water.org homepage.

36 UN World Food Programme, "Hunger Stats," http://www.wfp.org/hunger/stats.

37 Arnup Shah, "Health Issues," http://www.globalissues.org/issue/587/health-issues .

38 WHO World Malaria Report 2010, http://www.who.int/malaria/world_malaria_report_2010/malaria2010_summary_keypoints_en.pdf.

medications, but these are available at levels well below what is needed in order to fully and effectively combat malaria.[39]

In the example of malaria, technologies such as insecticidal netting and antimalarial medications have been developed and are part of the solution, but there also must be public pressure for the political decision to make the eradication of malaria a priority on a global basis. Once this policy goal has been established over time and pubic leaders held accountable for upholding it and funding it as a priority, then there must be the necessary technological development to create the conditions of possibility for an effective solution. Substantial public and private money must be spent wisely to develop the technology, but even the development of the right technology is not the end. There then have to be fair and just structures through which to distribute the technology, such as a new generation of antimalarial medications.

Malaria is something of a different case here because there is not substantial public need for antimalarial medications in the developed world to compete with the needs of the developing world. There remains, however, the need for access to effective treatments by a broad range of persons throughout the world as well as the infrastructure to produce and deliver those medicines. Each step, from the decision to make a particular challenge a political priority, to the choice to fund the research and development needed to develop the technology necessary to create the possibility of a solution, to the political choice needed to ensure that the technologies that are developed do not simply benefit the already well-off, the problems are rarely primarily technological in nature. Technology is part of the solution, but if delivered unjustly, can also become part of the problem by exacerbating existing inequalities.

To take another, more currently theoretical case, let's say that a new nanoscale drug was developed that allowed otherwise relatively healthy people to extend their healthy lifespans so that the person taking the drug could reasonably expect to live to 120. Such a drug would be hugely expensive to develop, so the first question is whether such a drug should be sought through publicly funded research. Once a choice has been made to actively fund the development of such a drug, it would be very costly to conduct the necessary research and development to have the drug meet FDA approval. So here the initial political decision has been made to conduct funded research – to make life extension treatments a public priority, which generally means the choice not to fund some other area of research. Certainly a policy decision could be made to allot a much greater sum to medical research in general, but this would also require much greater infrastructure in education, facilities, and equipment for years before becoming a viable option. Given current infrastructure and funding levels, the decision to develop life extension technologies would require the defunding of some other policy priority – and public pressure would help to determine what that would be.

Once the decision has been made and funding given over the extended period of time necessary for development and clinical trials, only then do questions of distribution and access arise. Our life extension drug would have the potential to be useful to anyone in the world and

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[39] Bill and Melinda Gates Foundation, "Malaria: Strategy Overview," April 2011, http://www.gatesfoundation.org/malaria/Documents/malaria-strategy.pdf.

would have universal demand accordingly. Certainly the drug would initially be available only to those who could afford its marked up retail cost – it would almost certainly not be covered under insurance, as it does not treat a specific and broadly recognized disease – so as a cosmetic or voluntary treatment payment for the drug would be entirely private. It is possible that such a treatment might eventually be covered by some of the better health plans in the US, not unlike a procedure like IVF today. It would take a long time for this drug to be accessible under a national health plan in those nations that have one, and given the universal market demand, would likely not ever be made readily accessible to the majority of the world's population. Unlike AZT or antimalarial medications, the target market is not people in the developing world, so it would be surprising if it were ever made affordable to them. Like IVF, it would remain the province of the wealthy and would have the potential to increase existing disparities in healthy life span that exist today.

Transhumanists want to push forward and claim that life extension technologies are among the most pressing research priorities today – after all, everyone could benefit from a longer, healthier life. Bioconservatives, on the other hand, generally do not believe that such drugs should be prioritized or developed, whether through choosing never to publicly fund transhuman technologies or through public prohibitions on that development. But I do not think that the best approach is to ban the development of our life extension drug, but to regulate it and ensure that it does not overtake other urgent public health priorities, and to make broad distribution possible through creative intellectual property applications so that it did not increase health disparities.

I hope to forge a middle ground between transhumanists and bioconservatives. It might be called the enhancement conversation 2.0. Until recently, discussions of human enhancement through technology have tended to be sharply divided into two opposing camps, supporters and detractors, who talk past one another, give ungenerous readings of one another's positions and arguments, and generally park themselves firmly in their own camps, resisting criticism or moderation. I believe that a critical feminist perspective as outlined here can provide something of a roadmap for the ground between the extremes – a feminist technorealism. This technorealism moves beyond "us vs. them" and the current biopolitics of personal destruction. It balances the optimism that we can make choices that have positive impacts in the world around us with the skepticism that we, humans 1.0, tend toward selfishness, rationalization of our own choices, and a lack of empathy for those we do not know, suffering far away from our sight. We can choose a position between an extreme version of the precautionary principle, in which no technology can be developed until all of its possible effects are known, and a proactionary principle in which technology development can and must move full speed ahead.[40] Constructive discussions around risk and benefit need to happen on a global basis, not just among those who currently enjoy the advantages of technology and would benefit most from further development.

[40] For a good variety of working definitions of the precautionary principle, see the UNESCO World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) report, "The Precautionary Principle," (Paris: UNESCO, 2005). The Extropy Institute published a working definition of the proactionary principle that highlights its contrasts with the precautionary principle: http://www.extropy.org/proactionaryprinciple.htm.

These discussions would not look at transhuman technologies as an all-or-nothing proposition but would take seriously how and why particular technologies are developed, the uses to which they are put, and the social, economic, and political systems in which they are developed and made available. Finally, a feminist technorealism acknowledges that technology, in and of itself, does not make life better, freer, or happier. Advanced technologies only provide some means to the end and tend to amplify the effects of our choices. Technology and democracy can provide the conditions of the possibility of a better world, but there far more that we collectively need to choose each day to reach it.

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