

## Preface

Society is struggling with issues regarding rapid advancements in Human Enhancement Technologies (HET), especially in terms of definition, effects, participation, regulation, and control. These are global matters that legislators must sufficiently address at some point, as was evidenced partly by debate within the 2008 European Parliament's Science and Technology Options Assessment (STOA), among other discussions; yet, relevance must not be relegated entirely to scientists, legislators, and lobbyists who may gain power and control at the expense of those parties most affected by these life-changing technologies. Since current and future HET initiatives should be in the best interests of those who will eventually participate, research into critical pragmatic elements of HET must expand beyond government and scientific experimentation for eventual societal adoption to incorporate deeper relevant inquiry from within the humanities.

While much of the realm of HET is in a state of growing experimentation, there is benefit to exploring ground that may be covered regarding universal concerns, ethics, objectives, and principles in aspects of HET as viewed through the humanities. This compendium includes the scholarly contributions of professional researchers and others working with HET issues today and into the future. It provides a well-rounded composite of the HET landscape and a privileged glimpse into a few of the plethora of potential concerns that confront us as humans embracing and merging with new emerging technologies.

The challenge of a technology will always be its effect on society. While our network connectedness is influenced by our personal interests and an apparent technological destiny for what may determine our ultimate humanity, we live in a time when our freedom to electronically connect is dictated by the entities that have control of that freedom as they liaise with governments and corporations that provide global electronic connection services. Since it is humans who make critical decisions on behalf of individuals, corporations, and governments, at times all these entities find themselves competing in interests between liberty and profit.

HET are no less affected by these forces; rather, they are at the forefront of a struggle for determining what it means to be human in the twenty-first century, and conversely, what it means to be human and technologically merging with machines. Full hybridization of humans and computers into new, integrated, interdependent biological and physiological structures is upon us. Organic and synthetic components are merging in important new ways, making endless possibilities a reality, and ultimately, changing communication values and methods across the globe and beyond, between people, between machines, and between people and machines. The ability to enhance raises an assortment of ethical concerns that not only affect the individual but also affect the Internet world.

Whether cloning another individual or requiring installation of an Internet brain interface, the decision is not without requisite review and evaluation of its consequences. Whether a scientist bent on fame or infamy, or a student experimenting with a chip under the skin for the first time, there are consequential decisions facing the inquisitor, and the smallest decision today has the potential for global impact. Governments and states have been busy working to cover some of the ethical concerns new and emerging technologies afford their societies; however, speed of technological development and diversity is happening at an unprecedented pace. Full control of the forces that will determine the available and perhaps requisite choices facing mankind are up for grabs, at times dictated by uncalculated response in an attempt to bring that which appears out of control under control.

What are human enhancement technologies doing to us? Rapidly advancing at a pace beyond the scope of any singular individual to calibrate, HETs are radically changing our world. Consumer desire and adoption goes unquestioned, military advancement goes forward without any requisite accountability, and entrepreneurship goes into uncharted territory with everything from virtual reality headsets to synthetic biological creations that defy traditional nomenclature. These are just some of the issues that concern the authors in this book as they seek to lay out the landscape for human enhancement technologies before ethical matters get swept away in the global adoption of technologies that hold wonder and promise, yet may be unregulated or out of control.

This book is deliberately presented in a non-hierarchical order for the reader to access accordingly. It strives for a more rhizomic flow (i.e., a networked continuum of sorts, with nodes of select [reader] significance across that spectrum). Still, the overall scheme moves sensibly from physical body to meta-physical theory, from practical experimentation and body modification to medical and military adoption, addressing legal and civil ramifications before closing on philosophical and rhetorical perspectives. While it does not have regional voices emanating specifically from South America or Asia, this edited volume truly is a global initiative, with representative authors from North America, Eastern and Western Europe, and the South Pacific.

The Japanese student in neurosciences will find valuable information here, as will the professor from Argentina and the corporate lawyer in The Netherlands. HET are global in scope and effect. They intimately touch the lives of the critically disabled, the lives of the exceptionally privileged, and the lives of everyone in-between. They appear to strive to improve our lifestyles while potentially threatening our freedoms. They are here to stay, growing in efficacy and ubiquity, connecting our human natures to one another and the known Internet in irrevocable ways that we must not ignore. To do so is to render posterity helpless in ethical concerns that confront our lives, our children, and their children beyond racial and ethnic barriers, without prejudice, testing the limits of our dreams, our freedoms, our limits, our privileges, and our rights in jurisprudence from citizen to diplomat, scholar to revolutionary, Ludite to vagrant, mother to machine.

It would be remiss to simply address what is going on in these pages without a brief look at the human enhancement technology phenomenon on the outside, in our physical world. While advancements exist beyond the scope of this book, history has been made in the realm of HET with everything from mind-reading helmets getting ready to hit the market to one of the most astounding events in Internet phenomena. University of Washington researchers in 2013 took part in the “first noninvasive human-to-human brain interface” activity ever made where one researcher “thought” about moving the mouse of his colleague who was connected to him strictly through brain interfaces over the Internet, and it actually happened that the colleague’s fingers moved (Kaiser, 2013). The list goes on almost exponentially.

As we look inside the pages of this book, we cannot help but see recurring themes and concepts on humanness and identity, from technè and augmentation to matters of access and privacy, revealing the common threads that bind these authors across the continents. Expertise ties them together as well in scholarly research references and citations; this truly is an informed intellectual citizenry tied to HET for learning from one another and sharing important new ideas.

For our first look inside, inquisitive eyes initially open, as they should, in the classroom. In this chapter, Dr. Marcia Dawkins explores a wondrous new space for a pedagogical journey with virtual eyewear technology that provides a novel, new “third voice” to the learner experience of the digital citizen. Informative application development, branding, diversity, education, ethics, and privacy issues are pedagogically assessed through the use of Google Glass in the class.

In Chapter 2, Drs. Deniz Tunçalp and Mary Helen Hagan explore integration of HET with Information and Communication Technologies (ICT) in their delineation of matters related to external wearables and implants as bodyware. The authors consider Barad's "agential realism" as a viable perspective for identifying and addressing ethical issues related to how technologies intra-act with bodies. They quickly introduce us to the definitive realm of the cyborg, a sensible, recurring theme throughout this book.

Dr. Kevin Thayer's research into rhetorical aspects of human enhancement technologies is posited ahead of further discussion. In Chapter 3, Thayer surveys the field, mapping the rhetoric, so a clear picture of terms and devices being employed by industry professionals and scholars alike might emerge for the reader. Many of these terms will surface throughout this book, and Dr. Thayer initially introduces them from his thought-provoking perspective of the cyborg and the transhumanist.

As noted thus far, matters of semantics regarding the lexicon of terms applicable to issues in HET are highly contestable. This includes defining Human Enhancement Technologies for authors who aim to universally ground the term as an imperative prior to addressing its full capabilities. Mr. Johann Roudit and his colleagues bring that discussion front and center with query into the nature of the ideal human, and the need to precisely define HET in order to address any moral complications that may loom on the horizon.

Before shifting headlong into the realm of the ideal human or perfect man-machine, however, Dr. Brett Lunceford brings ethical concerns into the conversation that are associated with use of emerging enhancement technologies in our timeless quest for perfection of the human body. Dr. Lunceford's insights are informed by observations on how humans use enhancing technologies for their correction of perceived "defects" in endless pursuit of beauty through cosmetic surgical arts and persistent celebrity status.

While the body is being enhanced with wearable technologies and prosthetic implants, it is the human brain that has become the most valuable piece of real estate for enhancement. In Chapter 6, Drs. Reuben Johnson, Dirk De Ritter, and Grant Gillett bring their expertise in neurosurgery and biomedical sciences to the discussion with a formidable piece noting, among many rising concerns in the field, market demand for cognitive enhancement through deep brain stimulation and corresponding ethical issues that move the conversation forward in this regulatory domain.

Creation of cyborg soldiers—and the implications that arise from their prospective activities—is no deterrent in war, of course, but the ethical ramifications are important for Dr. Patrick Lin and his colleagues in Chapter 7 to further forge their imprint as experts in these matters. In this first of two parts, these scholars provide a solid historical background to military human enhancement and its pressing controversies.

The second part of *Super Soldiers* takes the reader deeper into moral and ethical concerns of HET that surface as the authors explore military law and policy matters that rapidly advancing science and technology initiatives are bringing to the (USA) military's robotics efforts. The authors explore, among other issues, prospective roles for human virtues, emotions, and codes of ethics with enhanced military warfighters.

Whether policy and regulation related to the Internet, the military, or the medical field, Dr. Joanna Kulesza adds her expertise in critique of European legal matters for privacy and the individual to global emerging technologies, especially Internet service providers capable of deploying HET initiatives on a massive scale with little to no oversight. Her chapter on the privacy rights of the individual provides a segue from medical and military initiatives discussed prior to her essay in Chapter 9 to civil matters that will inform the conversation into potential effects of HET on the human spirit and psyche found in remaining chapters of the book.

In the struggle to maintain valid human rights and freedoms, democratic enterprises have been steadily reverberating under the pressures of oligarchic uprisings in major nation-states. Dr. Jean-Paul Gagnon discusses the spirit of the democratic citizen faced with participation in human enhancement matters but with emphasis on HET influence for elections and citizen voting interfaces. Dr. Gagnon suggests an imaginary world, shifting the conversation into theoretical, rhetorical discourse that aims to understand some of the democratic, even at times, metaphysical, aspects HET are bringing to our attention today and into the future.

Dr. Dev Bose explores issues in the relevant literature to bring the reader up-to-date on a current and future state of proposed regulation for the reader querying issues with disability and HET. Bose opens the door to disability regulatory issues in the contested area of transhumanism.

It is in the HET realm of transhumanity that Franco Cortese has been blazing a trail as a leading voice for the transhumanism movement, and the reader will understand why with an introduction to his logic and semantics for controversial perceptions related to the debate on life, death, and immortality, as evidenced in Chapter 12. Arguably a growing area of inquiry and speculation, transhumanism is connected to HET in novel ways that Cortese posits for the reader.

Who we are and how we wish to be perceived as who we are constitute major psychological and philosophical components of our humanity, more specifically, our selves and our identities. Elizabeth Falck's approach to HET and replication of the self is informed by her philosophical research into ethical matters of identification that make inquiry into consciousness, the narrative self, and memes, in Chapter 13.

The continuous, underlying theme of technological human enhancement is frequently framed by fear, derision, confusion, and wonderment over *who* we will be, or *what* we will be, when it all comes down to our self-identity and how to approach it in analysis. In the final chapter, Dr. Samuel Wilson provides a social psychological perspective on enhancement, humanness, and the continuity of identity, as augmented humans and machines learn to co-identify through emerging technologies of human enhancement.

My research interests in HET were initially sparked by my new media effects research of Internet addiction and dependency in 1995, leading to media iconics for cybersemiotic, autopoietic agents as a subscript of AI in the mid-2000s, then, circling back to human technological dependency today, with triangulation of the human body, technology, and the Internet as our destined permanence. Much of what I find imperative before our global society may be found in the following excerpt from my plenary talk at the First International Forum on Media and Information Literacy held in Fez, Morocco, in 2011:

*Digital applications and chips in mobile phones attached to the hand and held to the ear are headed into the body. Proliferation of cell or mobile phones provides access to the Internet for more people than standard ISP connections, results in more access. Brain implants and interfaces enhance Internet connections in new ways. Their affordability will make them worthwhile for the privileged. With friends, colleagues, and professional contacts moving into the global hive, there will be much incentive to join the network with increasing finality or be stigmatized, left out, a psychosocial outcast. Benefits appear to far outweigh the consequences. Addiction is not a bad word anymore, it is the norm, result of our dependency, magnified to the level of 21st Century human necessity and expectation (Thompson, 2011).*

Personally, my inclination regarding the ultimate purposeful uses of human enhancement technologies is to wax dystopian and apocalyptic; partly due to their calculated prophetic value in Judaeo-Christian theology, and partly due to their propensity for power abuse and misuse. While they serve to provide the means for moving humanity closer to technological wonder, that translates to 'enhancement' for some,

but not all; they are not competitive for me as a valid ticket to immortality. As noted above, my deepest concern lies with consequences of HET policy in designating select HET as a human requirement, and in my statement on benefits the reliance of semantics is critical when I said “Benefits appear...” rather than “Benefits are...” Furthermore, our corporate dependency on technology today is no different than our individual addiction to it, and I am not convinced that is a good thing overall for humankind.

Heidegger, in my interpretive meditation, was not specific enough: *technology is timely*. The remake of the landmark film *Total Recall* left many people wondering why anyone would attempt such a feat: to remake something that could not compete with its original on any level – except, it seems, for one spectacular upgrade, Special Effects. At times, looking like a set ripped off of Ridley Scott’s mind-blowing classic *Blade Runner*, but on steroids, the 2012 *Total Recall* remake is a Computer-Generated Imagery (CGI) sensory override: layer upon layer of textures and effects at multiple structural levels that the viewer cannot process in a single viewing, with rapid character-environment interface machinations that provide an unwieldy sense of not knowing whether one is coming or going. Of interest to the human enhancement technologist, protagonist Colin Farrell’s one threat in the film is a phone implanted beneath the skin, which, in his case, is being used by authorities to track him. The scene is a winner, hands-down, providing a pragmatic view of a Graphical User Interface (GUI) that seamlessly interfaces the individual body with the “corporate” network every which way, securing the human—whether desired or not—*on the grid*.

This book provides a definitive reference for an indefinable, emerging phenomenon, that of Human Enhancement Technologies. In its pages, scholars from around the world have brought their topics to the table in an attempt to identify the global issues and ethical concerns that they believe are pre-eminent when it comes to potential societal impact from emerging enhancement technologies today. The voices heard in the pages of this book are those of educated risk-takers and lifelong dreamers. The future is not for any one person to predict, especially one fraught with so many competing voices in realms of access, privilege, policy, regulation, power, governance, and ultimate control of emerging technologies. Still, without the risk these scholars take to put their research and scholarship into the hands of the layman for further exploration, there is no sensible conversation, but what Henry David Thoreau once called “a quiet desperation.” Surely, the authors in these pages know that desperation to be an enemy of the human soul, as evidenced in their fresh, erudite reflections and keen insights that transport the curious mind’s journey of each one of them into the waiting heart of the watchful reader.

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## REFERENCES

Kaiser, T. (2013, August 28). *UW researcher moves another human’s finger with his thoughts*. Retrieved from <http://dailytech.com>

Thompson, S. J. (2011, June). *Endless empowerment and existence: From virtual literacy to online permanence in presence*. Paper presented at the First International Forum on Media and Information Literacy. Fez, Morocco.