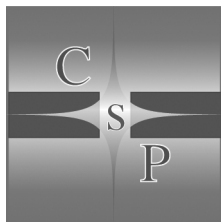


The Future of Post-Human Engineering

The Future of Post-Human Engineering

A Preface to a New Theory of Technology

By
Peter Baofu



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To Those Who Will One Day Regard Reality as the Handiwork of Post-Humans

BOOKS ALSO BY PETER BAOFU

- *The Future of Post-Human Mathematical Logic* (2008) ●
 - *The Future of Post-Human Knowledge* (2008) ●
- *The Future of Post-Human Unconsciousness* (2008) ●
 - *The Future of Information Architecture* (2008) ●
- *The Rise of Authoritarian Liberal Democracy* (2007) ●
 - *The Future of Aesthetic Experience* (2007) ●
 - *The Future of Complexity* (2007) ●
- *Beyond the World of Titans, and the Remaking of World Order* (2007) ●
 - *Beyond Nature and Nurture* (2006) ●
 - *Beyond Civilization to Post-Civilization* (2006) ●
 - *The Future of Post-Human Space-Time* (2006) ●
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- Volume 1: *Beyond Democracy to Post-Democracy* (2004) ●
- Volume 2: *Beyond Democracy to Post-Democracy* (2004) ●
 - *The Future of Post-Human Consciousness* (2004) ●
 - *The Future of Capitalism and Democracy* (2002) ●
- Volume 1: *The Future of Human Civilization* (2000) ●
- Volume 2: *The Future of Human Civilization* (2000) ●

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FOREWORD

We live in an age of information technology with millions of youngsters developing computer skills before they even start school. By the time they reach their teenage years, their technological proficiency can easily outstrip their verbal skills. Indeed, text messaging can threaten to make present day language obsolete in one generation—in sharp contrast to the hundreds of years it took to make Chaucerian English obsolete.

Dr. Peter Baofu, in this volume, addresses the issue of engineering whereby scientific discoveries are converted to forms that benefit society in some cases and that do not in others. He then proceeds to speculate on the implications of this process.

As in his earlier work, he urges the reader to think about consequences ahead of their occurrence. He invites us to join him on a ride ahead of the curve. It promises satisfaction, even exhilaration for those with an inquisitive mindset.

*Sylvan Von Burg
School of Business
George Washington University*

ACKNOWLEDGMENTS

As I often thus wrote for my previous books, this project is written with the challenging spirit to question conventional wisdom and to replace it with a new way to understand reality.

Consequently, in light of this persistent political incorrectness, this project receives no external funding nor help from any formal organization or institution.

The only reward is nothing other than the wonderful feeling of creating something new that no one has ever done before.

There is one person, however, whom I deeply appreciate for his foreword, and he is Sylvan von Burg at George Washington University School of Business,.

In any event, I bear the sole responsibility for the ideas presented in this project.

ABBREVIATIONS

- ALD = Peter Baofu. 2007. *The Rise of Authoritarian Liberal Democracy: A Preface to a New Theory of Comparative Political Systems*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- BCIV = Peter Baofu. 2006. *Beyond Civilization to Post-Civilization: Conceiving a Better Model of Life Settlement to Supersede Civilization*. NY: Peter Lang Publishing, Inc.
- BCPC = Peter Baofu. 2005. *Beyond Capitalism to Post-Capitalism: Conceiving a Better Model of Wealth Acquisition to Supersede Capitalism*. New York: The Edwin Mellen Press.
- BDPD1 = Peter Baofu. 2004. Volume 1. *Beyond Democracy to Post-Democracy: Conceiving a Better Model of Governance to Supersede Democracy*. New York: The Edwin Mellen Press.
- BDPD2 = Peter Baofu. 2004. Volume 2. *Beyond Democracy to Post-Democracy: Conceiving a Better Model of Governance to Supersede Democracy*. New York: The Edwin Mellen Press.
- BNN = Peter Baofu. 2006. *Beyond Nature and Nurture: Conceiving a Better Way to Understand Genes and Memes*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- BWT = Peter Baofu. 2007. *Beyond the World of Titans, and the Renaking of World Order: A Preface to a New Logic of Empire-Building*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- FAE = Peter Baofu. 2007. *The Future of Aesthetic Experience: Conceiving a Better Way to Understand Beauty, Ugliness and the Rest*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- FC = Peter Baofu. 2007. *The Future of Complexity: Conceiving a Better Way to Understand Order and Chaos*. London, United Kingdom: World Scientific Publishing Co.
- FCD = Peter Baofu. 2002. *The Future of Capitalism and Democracy*. Maryland: The University Press of America.

- FHC1 = Peter Baofu. 2000. Volume 1. *The Future of Human Civilization*. New York: The Edwin Mellen Press.
- FHC2 = Peter Baofu. 2000. Volume 2. *The Future of Human Civilization*. New York: The Edwin Mellen Press.
- FIA = Peter Baofu. 2008. *The Future of Information Architecture: Conceiving a Better Way to Understand Taxonomy, Network, and Intelligence*. Oxford, England: Chandos Publishing (Oxford) Limited.
- FPHC = Peter Baofu. 2004. *The Future of Post-Human Consciousness*. New York: The Edwin Mellen Press.
- FPHE = Peter Baofu. 2009. *The Future of Post-Human Engineering: A Preface to a New Theory of Technology*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- FPHK = Peter Baofu. 2008. *The Future of Post-Human Knowledge: A Preface to a New Theory of Methodology and Ontology*. Oxford, England: Chandos Publishing (Oxford) Limited.
- FPHML = Peter Baofu. 2008. *The Future of Post-Human Mathematical Logic: A Preface to a New Theory of Rationality*. Cambridge, England: Cambridge Scholars Publishing, Ltd.
- FPHST = Peter Baofu. 2006. *The Future of Post-Human Space-Time: Conceiving a Better Way to Understand Space and Time*. New York: Peter Lang Publishing, Inc.
- FPHU = Peter Baofu. 2008. *The Future of Post-Human Unconsciousness: A Preface to a New Theory of Anomalous Experience*. Cambridge, England: Cambridge Scholars Publishing, Ltd.

• PART ONE •

Introduction

CHAPTER 1

INTRODUCTION—THE PROMISE OF ENGINEERING

The future is engineering.
—QU School of Engineering (QU
2008)

The Euphoria about Technology

Why should engineering be held in such a high esteem as representing the human future in this technophilic age of ours? Or differently put, is there something fundamentally wrong with the way that the impact of technology in both culture and society has been understood, especially though not exclusively since the modern era?

Contrary to the conventional wisdom of our time, the euphoria about technology (as the combined outcome of science and engineering) in the modern era is much misleading, to the extent that its double sides need to be re-examined, from the unsuspected surface to its troubling core.

This book, therefore, takes on the challenging task to provide a new way of looking at the impact of technology in both culture and society, without, however, favoring any specific ideology in the political spectrum—be it Luddist, technophilic, postmodernist, or other.

If successful, this seminal view will change the way that we think about the nature of science, engineering, and technology, in a small sense—and about the human future and its post-human fate, in a large one.

Science, Engineering, and Technology

To start, one should carefully distinguish three essential terms which at times are confused in the literature, namely, (a) science, (b) engineering, and (c) technology. (WK 2008)

Firstly, science is more on the side of exploration (or discovery), in that it engages in “the reasoned investigation or study of phenomena, aimed at discovering enduring principles among elements of the phenomenal world by employing formal techniques such as the scientific method.” (WK 2008)

Secondly, engineering, by contrast, is more on the practical (or applied) side, by way of its “goal-oriented process of designing and making tools and systems to exploit natural phenomena for practical human means, often (but not always) using results and techniques from science.” (WK 2008)

This is not to suggest, however, that engineering is completely unrelated to science, which is absurd, since the former often makes good use of the latter, especially in relation to the “rational,” “optimistic,” and “predictive” aspects of science. (WK 2008a)

After all, the term “engineering” derives “from the word *engineer*, which itself dates back to 1325, when an *engine'er* (literally, one who operates an *engine*) originally referred to 'a constructor of military engines.' In this context, now obsolete, an 'engine' referred to a military machine, i.e., a mechanical contraption used in war (for example, a catapult). The word 'engine' itself is of even older origin, ultimately deriving from the Latin *ingenium* (c. 1250), meaning 'innate quality, especially mental power, hence a clever invention.’” (WK 2008d)

And thirdly, technology, then, is “often a consequence of science and engineering—although technology as a human activity precedes the two fields.” (WK 2008)

In other words, technology, however primitive, has existed since the start of human history, even before science and engineering became formally established in both culture and society.

In light of this union of science and engineering in technology, it is no wonder that the motto at the world-renowned Massachusetts Institute of Technology (M.I.T.) contains the Latin words in its logo, namely, “Mens et Manus” (or in English, “Mind and Hand”), to precisely capture these explorative and practical sides of technology. (MIT 2008)

As a term, *technology* has its origins in the Greek “*technologia*” (“*τεχνολογία*”)—with its two parts, namely, “*techne*” (“*τέχνη*” = “craft”) and “*logia*” (“*λογία*” = “saying”). (WK 2008)

In a narrow sense, “technology” refers to “material objects of use” (e.g., “machines, hardware or utensils”), but in a broad sense, it can also include non-material (abstract) themes (e.g., “systems, methods of organization, and techniques.” (WK 2008) And the term can be specific or

general in usage (e.g., “construction technology” for the former and “state-of-the-art technology” for the latter). (WK 2008)

With this distinction in relation to the three terms in mind (with a summary in *Table 1.1*)—this book focuses more on technology as the combined outcome of science and engineering, instead of narrowly addressing only science or engineering alone.

The Theoretical Debate

A good way to examine technology as the combined outcome of science and engineering requires an introduction to different theoretical approaches in the literature on the subject.

Six major theoretical approaches can be introduced hereafter (and summarized in *Table 1.3*), as a way to introduce the complicated theoretical debate on the interrelationships among science, engineering and technology—with the sixth to be my original contribution to the debate (as shown in *Table 6.1*).

These six approaches can be called, in the absence of better words, namely, (1.3.1) *the technophilic argument*, (1.3.2) *the fatalist argument*, (1.3.3) *the primitivist argument*, (1.3.4) *the environmentalist argument*, (1.3.5) *the postmodernist argument*, and (1.3.6) *the ambivalent argument*—to be summarized hereafter.

The Technophilic Argument

Firstly, a major theoretical approach in the literature can be called, in the absence of better terms, as *the technophilic argument*, in that it views technology as the solution of all problems.

This argument is sometimes known as “technicism” in the context of technology (with “scientism” as its counterpart in the context of science). (WK 2008, 2008b & 2008c).

It refers to “an over reliance or overconfidence in technology as a benefactor of society. Taken to the extreme, some argue that technicism is the belief that humanity will ultimately be able to control the entirety of existence using technology. In other words, human beings will eventually be able to master all problems, supply all wants and needs, possibly even control the future.” (WK 2008b & 2008c)

Technicism so understood “obeys two fundamental norms, as if they are the two main commandments: technical perfection (or effectiveness) and efficiency.” (E. Schuurman 1997)

Such a view for a “technicist control of reality really began to burgeon during the Renaissance, a movement which then bequeathed its version of technicism to modern philosophy (rationalism) and to the Enlightenment, then later to Positivism, Marxism, and especially Pragmatism. Today’s cultural manifestations of technicism trace back through these modern philosophical movements.” (E. Schuurman 1997)

A good illustration of the technophilic argument concerns those “defenders of the military-industrial complex, with their smart look in the form of futurology. They affirm a social science of systems analysis to facilitate military and industrial planning and management for acquiring strategic military and corporate advantage.” (A. Ross 1991:171-5; P. Baofu 2000: Ch.2)

For instance, “RAND (Research ANd Development) is an exemplary institute for future research on the techniques of military and political warfare. There the technocratic elites favor an automatic command structure aimed at executing planned objectives with maximum efficiency, with relatively little room for participatory democracy. Its methods of information analysis, as in weapons forecasting, have been adopted by many government agencies and corporations in the business of designing the future of whole social systems...With the use of systems analysis, computer databases, and modeling—predicting emerging trends (short-/long-term) for controlling the future is often attempted.” (P. Baofu 2000: Ch.2)

The critical observation by Andrew Ross is well taken here, in that the technophilic argument perpetuates “a rather obsolete elitist technocratic mentality (peculiar to the old military-industrial complex). Its obsolescence no longer fits in a post-Fordist, post-industrial capitalist economy with its flexibility (in labor processes, marketing, and technological development) and with its uncertainty (of options to choose from)...Besides, it does little to address the more pluralistic socio-political needs (women, minorities, environmentalists, and the poor). And none of these post-industrial capitalist features is conducive to macro-engineering, to consensual preference, and to intelligent management and control of the unpredictable....” (A. Ross 1991: 176-7,180; P. Baofu 2000: Ch.2)

And when “Buckminster Fuller once dreamed of a comprehensive design science on a global scale (that is, to design a world society with comprehensive planning),” William Kuhns (1971:228,244) does not wait to criticize it as “‘a very dictatorial utopia’ in a controlled environment. It is indeed comparable to the behavioral control as espoused by B. F.

Skinner and Thomas Watson in psychology, and other ills.” (P. Baofu 2000: Ch.2)

The Fatalist Argument

Secondly, another theoretical approach can be labeled, in the absence of better words, as *the fatalist argument*, in that, unlike the technophilic argument, it views the advance in technology as historically inevitable.

As an illustration, the work of “Jacques Ellul is instructive, in light of his critique of Lewis Mumford's thesis (in *Technics and Civilization*). Mumford argued that, by analogue of a cultural pseudomorph (like a rock which retains its identity even with its substance changed), however much technologies change humans, the latter remain in their deeper nature unchanged...Ellul could not disagree more and wanted to extend Siegfried Giedion's vision (in *Mechanization Takes Command*) that mechanization as occurred in the 19th century had an inhumane side, that is, as much controlling as altering human environment and reshaping their needs.” (P. Baofu 2000: Ch.2; W. Kuhns 1971: 58, 63)

So, “Ellul went beyond Giedion's vision in suggesting in *The Technological Order* that the technological environment has an autonomous force....And the mandate of this force is to transform all facets of human existence (social, economic, political, administrative, scientific, psychological) to its own imagery, a kind of Dr. Frankenstein's nightmare.” (P. Baofu 2000: Ch.2; W. Kuhns 1971: 80, 82-3, 88)

In the end, Ellul believed “[l]ike nature it [technique] is a closed organization which permits it to be self-determinative independently of all human invention.” (W. Kuhns 1971: 106; P. Baofu 2000: Ch.2)

With historical hindsight, Ellul's view remains unpersuasive for many, since, after all, “[i]t is exceedingly hard, however, for anyone (Ellul included), to defend the logic of historical inevitability, be it about technology or else. Previous thinkers on the notion of historical necessity (as in the works of Karl Marx, Herbert Spencer, Auguste Comte, and Friedrich Hegel) suffered rebuttals. For instance, Lewis Morgan and Robert Nisbet argued instead that historical change is 'neither necessary nor inevitable.’” (P. Baofu 2000: Ch.2; R. Nisbet 1969: 178-79, 294; P. Hirst 1976: 34)

And Immanuel Wallerstein (1991:226) was even more to the point: “There is no clearcut case for a technological road to one system or the other. At the very least, we must say that we cannot be sure whether technology will ever have irrefutable implications for [a] social choice.” (P. Baofu 2000: Ch.2)

The Primitivist Argument

Thirdly, a different theoretical approach can be referred to, in the absence of better words, as *the primitivist argument*, in that technology is inherently bad, so that a return to a pre-industrial lifeform is called for.

This argument appeal to those “who are as much disillusioned of the technological problematics as nostalgic of a merried pre-industrial past. The only solution, so they think, must therefore be a return to nature, to a pre-industrialist life, comparable to the dream of the Luddites, an Emerson, or a Thoreau. The term 'Luddite' can be traced back to the early days of Industrial Revolution. A group of English radicals, named for their legendary leader, Ned Ludd, fought hard against the new textile factories that threatened their weaving livelihood. So they stormed the factories and smashed the great machines. This rage was used to signify their distrust of technological progress as empty, vainglorious, and dangerous.” (D. Wright 1995:12; P. Baofu 2000: Ch.2)

In this light, the Unabomber was only a latest addition to this primitivist argument, when he wrote: “[I] attribute the social and psychological problems of modern society to the fact that society requires people to live under conditions radically different from those under which the humans race evolved.” (C.Lasch 1991:96; (R.Wright 1995:50; P. Baofu 2000: Ch.2)

But a critical problem with the primitivist argument is: “[H]ow could this return, be even remotely possible? Arnold Toynbee rightly disapprovingly called 'archaism' as 'an attempt to take a flying leap out of the mundane Present backwards into an already vanished Past.’” (R. Seidenberg 1951: 210; P. Baofu 2000: Ch.2)

In this “vanished past,” as Daniel Kevlves rightly warned us, there were “the unsettling threat of mano-a-mano violence, the periodic starvation, incurable disease and the danger of being eaten by a beast.” (R. Wright 1995: 52)

The Environmentalist Argument

Fourthly, another theoretical approach can be named, in the absence of better words, *the environmentalist argument*, in that any technological advance is to be more ecology-friendly and psyche-satisfying.

For instance, “Alvin Toffler, the hi-tech science fiction guru..., proposed a solution. It was the search for a range of 'appropriate technologies'....And it intended to avoid pollution and to spare the environment in fields as diverse as fish farming, food processing, energy