Historical and Social Constructs of Technology: Contexts and Value for the Contemporary World

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Abstract

Technology is taken for granted. We live in the age of technology, our lives surrounded by products and gadgets that even a decade ago would have been unrecognizable. Cell phones, ipods, ipads, the Bluetooth, xbox, and myriad other devices have altered our lives in numerous ways. But are these the things that we mean when we use the word "technology?" Does the definition of technology that we have come to rely upon refer to gadgets, or to a process? Various philosophers and scientists over the years have addressed technology and attempted to offer a full account of its impact and its meaning. The guest editors of this thematic issue hope to reinvigorate this debate, asserting that in order to properly conceptualize technology, an interdisciplinary approach is warranted in order to best capture the essence of this phenomenon. We invite scholars from multiple disciplines to join the debate.

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John Stuart Mill noted in 1840 that many people were "forcibly struck by the multiplication of physical comforts; the advancement and diffusion of knowledge … the great works accomplished throughout the globe by the co-operation of multitudes" (1). He observed that the great technological advancements of the early nineteenth century had led to various improvements in the overall human condition. However, he also thought it worthwhile to recognize other phenomena resulting from technology's continued advance, such as "the relaxation of individual energy and courage; the loss of proud and self-relying independence; the slavery of so large a portion of mankind to artificial wants; their effeminate shrinking from the shadow of pain; the dull unexciting monotony of their lives, and the passionless insipidity, and absence of any marked individuality, in their characters" (1). Now, over a century and a half later one wonders if perhaps there is a middle ground between these two extremes, but if so, how do we find it?

In the inaugural edition of *Synesis*, James Giordano addressed what he termed the "Mechanistic Paradox," proposing, "sometimes science and technology must be utilized without a complete understanding of mechanisms and/or effects" (2). Two years later, we believe that it is worth asking how the term "technology" is understood; in other words, do those intellectual concepts that are currently employed to conceptualize technology pass the "construct validity" test? What do we mean when the word "technology" is used by various professions, the media and the public? What does this term infer for the natural, physical and social sciences and the humanities, and how do such meanings and implications affect views of and toward the products and artifacts that technology delivers? Is technology, as philosopher Hans Lenk proposed, an ideology (3)? Examining a number of ideas from some prominent twentieth-century thinkers on this topic provides a starting point for a discourse on the continuing validity of various constructs used to define technology, and to define its use.

In 1980, French sociologist and philosopher Jacques Ellul remarked, "twenty-five years ago, I arrived at the notion of the 'technological society'; but now that stage is passed. Nevertheless, we are faced with the major problem of what makes up the specific nature of our society, its chief characteristic. Indeed, we have to track down the key to interpreting the modern age. But … we will see that every so-called specific trait is actually secondary and points ultimately to technology. Let us investigate" (4). Ellul's compatriot Dominique Janicaud proposed the idea of *partage*, a term which he used to refer to one's lot in life, specifically, "a non-dominating, non-instrumental and dialogic experience of rationality … shared by mortals in their everyday being-with-one-another" (5). Is this experience still possible as technology increasingly is manifested in our lives?

Writing about the same time as Ellul and Janicaud, American philosopher Langdon Winner noted, "in the literature of the eighteenth and nineteenth centuries, such meanings were clear and were not the occasion for deliberation or analysis. Most people . . . did not worry about 'technology' as a distinctive phenomenon" (6). Both Ellul and Winner suggest that technology is open to various interpretations, and both men sought through their writing to try and bring clarity to the term. Philosopher and theologian Ian Barbour maintains that, "…the uses of any technology vary greatly depending on its social contexts," (7) and Carl Mitcham noted that "one aspect [of technology] entails the identification of a basic philosophical stance or attitude; a second involves its instantiation in appropriate conceptual engagements with technology" (8). Clearly there are many ways to conceptualize the meaning of technology. Are these conceptualizations still valid after twenty or more years, and if not, what should be proposed in their place?

Do myriad new developments, including breakthroughs in genetics, nanotechnology, neuroscience and neurotechnology, the proliferation of unmanned weapons systems, rapid increases in the speed and efficiency of computational hardware and software, the internet's untrammeled growth, and the many other scientific and technological developments evident in the twenty-first century contribute to Mill's "great works accomplished throughout the globe," or to "the passionless insipidity?" Are Langdon Winner's three phases of human development—the Eotechnic, Paleotechnic, and Neotechnic, still relevant for conceptualizing technology's continued progression, or is a new category warranted? If in fact, technology is as

Giordano (9) has warned, a "demiurgical force" of both creative and destructive potential, do its effects warrant consideration not only as tools for flourishing, but as sources of clinical, social and/or cultural iatrogenesis, as proposed by the late historian and philosopher, Ivan Illich (10)? Canadian neuroscientist Merlin Donald noted that "the structuring effects of culture and technology on the individual mind need to be taken into account" when illustrating the third stage of human cognitive development—a stage characterized by the emergence of "external symbolic storage," or a network of visual symbols (11). French theologian Teilhard de Chardin presented a similar idea in the mid-twentieth century, proposing that the "thinking layer", or the "nöosphere," the "immense and growing edifice of ideas" will surround the earth, or the biosphere, much like the world wide web has done today (12).

In what context should we view technology *per se*, and how should it be conceptualized? While there are probably more questions than answers regarding technology, the guest editors of this thematic issue contend that a multidisciplinary approach is most useful for conceptualizing technology. The all-pervasive nature of technology touches many disciplines, to include not only science, but also philosophy, theology, and literature. To that end, we invite contributors from these and other fields, and those working in specific areas such as (but not limited to) genetics, nanotechnology, unmanned weapons systems, robotics, and neurotechnology, to join the discussion. We hold that this topic is both timely and necessary as technology becomes more prominent in every aspect of contemporary life.

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Competing interests

The authors declare that they have no competing interests.

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