The Journal of Technology Studies

Guest Editor

Technology within Society

Franz A. Foltz

Over two decades ago, Langdon Winner, a leading scholar of Science and Technology Studies (STS), asked the question "Do Artifacts have Politics?" His answer was that technology is intertwined with our culture and has values embedded within it that helps to shape society. Our world has a particular look – Interstate highways, strip malls, fast-food drive thrus, and sleeper communities – because of the automobile. This idea of technology shaping society is often referred to as technological determinism.

The countervailing position within the field of STS is called social construction (see Bijker, Hughes, & Pinch, 1987). Social constructivists would argue that the car looks and performs like it does because society shapes the nature of technology. Consumers, auto manufacturers, and various levels of government come together to shape the car. We are currently at a potential change in the nature of automotive travel. The SUV – gas guzzling, heavyweight, family carrying, low-efficiency vehicles – has become the norm, simply because people wanted them. It appears that due to rising fuel prices the SUV may be replaced with higher efficiency hybrid technology. This change comes from society's demands.

Together, social construction and technological determinism make up the two extremes within the field of STS. For most STS scholars, it is not one extreme or the other. Technology affects society and in turn society affects technology. Most would agree with Winner (1986) that technology and human culture are inextricably linked together.

Most STS scholars would also agree with the historian of technology, Thomas Hughes (1979, 1987), that when we talk about technology we must talk about technological systems. The automobile is by itself not a very useful technology. We need a system of highways, gas stations, and even traffic laws for us to travel any great distance by car. To maintain this system, we need road crews, snowplows, mechanics, and police. They operate as one complex socio-technical system. The larger system provides much more benefit than any single bit of technology on its own. A single home computer allows us to do some tasks, but when it becomes part of the greater Internet system, its potential grows exponentially.

In the end of his discussion on the politics of technology, Winner argues that the values embedded within technology come from those that design technology. In most cases this is a small elite, who because of their position can in turn shape society as a whole. Winner argues that the only way within a democratic society to ensure that the right values become embedded within technology is to open the design process to a greater range of input. He would argue that we need society as a whole to construct technology and not just a small sample of society.

In the following articles, various viewpoints and arguments are made concerning the nature of the relationship between technology and society. Some are constructivists in nature, while others are more deterministic in their outlook. Most come from an STS perspective, but some are more narrowly focused. They represent viewpoints from technology studies, policy studies, criminal justice, history of technology and even education. All explore technology's intersections with social, political, economic, religious, and engineering domains, demonstrating diverse viewpoints concerning technology's relationship to society.

The first article by Benjamin Sovacool, the 2004 winner of the National/International Association of STS (NASTS/IASTS) Graduate Paper Contest, provides an oversight of the four dominant social construction of technology models. It provides a good introduction for individuals not familiar with technology studies. The next two articles by John Monberg and Mary L. Cummings are traditional social construction of technology pieces. They both deal with computer related issues. The first focuses on the idea of artificial intelligence and the latter reflects on human-computer interfaces, particularly in regard to modern weapon systems.

The fourth and fifth articles deal with how technology has changed society. Sam McQuade looks at how new technology may have unintended consequences as criminals adapt it for use in their criminal behavior. He comes from a traditional criminal justice tradition but shows how technology, in this case computers, affects society in a way that has been given little attention. Chien Yu and Teri Brandenburg take an educational look at how computers have affected distance education and provide insights for individuals who may want to become online instructors.

The next two question the idea that technology is itself the answer to all our problems. The first, by Evan Michelson, the 2005 winner of the IASTS Graduate Paper Contest, looks at how civil society organizations in the developing world use information and communication technology from a more policy-oriented point of view. The next, by Mabel CPO Okojie, Anthony A. Olinzock, and Tinukwa C. Okojie-Boulder takes an educational viewpoint and suggests that simply introducing technology into the classroom may not improve the educational experience. Technology and pedagogy need to be integrated.

The eighth and ninth articles have a strong history of technology foundation but also suggest potential impacts for the future. Richard F. Hirsh and Benjamin K. Sovacool show how technological systems build up an inherent momentum over time that limits the ability for society to make changes. Laurie Robertson looks at the conflict between the values embedded within voting machines and U.S. beliefs concerning elections. She questions if a machine can adequately meet the high expectations of the American voter.

The final three articles have more of a technology policy aspect to them. William M. Shields looks at the epistemic value of "cautionary tales" when dealing with risky technology. Constantine Hadjilambrinos questions the current direction of U.S. nuclear waste policy that seems to be treading water instead of addressing some very important issues. In this case, we see an inherent momentum in the system, which limits society's ability to deal with nuclear waste, though this time; it comes from policy makers and not the technology itself. The final article by Franz Foltz and Frederick Foltz argues that we need to increase the ability of various social groups to participate in the design process for new technology. They show what insights the religious community could provide that would aid in the development of nanotechnology and argue that opening up the process to allow more social groups into the process would only improve the design of new technology.

References

Bijker, Wiebe E., Thomas P. Hughes, and Trevor F. Pinch, (Eds.) (1987) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge: MIT Press.

Hughes, Thomas P. (1979) The electrification of America: The system builders. *Technology and Culture* 20 (June): 124-141.

Hughes, Thomas P. (1987) The evolution of large technological systems. In Wiebe E. Bijker, Thomas P. Hughes, and Trevor F. Pinch (Eds.) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge: MIT Press: 51-82.

Winner, Langdon. (1986) *The Whale and the Reactor*. Chicago: University of Chicago Press.