Dara Bakar
11-1-11

Science, Technology, & Politics—A Shift from Mertonian Ideals

Science, technology, and politics though discrete entities have intermingled throughout the 20th and 21st century. While some have practiced science for the pursuit of pure knowledge, others have pursued scientific endeavors for their own personal gains or the gains of external agencies. Robert Merton, a distinguished American sociologist, claimed that the ethos of science is one that facilitates the acquisition of knowledge. Like Merton, American philosopher John Dewey thought of science as an ideal way of operating in life. Dewey once said: "Scientific principles and laws do not lie on the surface of nature. They are hidden, and must be wrested from nature by an active and elaborate technique of inquiry" (*John Dewey Quotes*). Thus, Dewey and Merton both believed that science was firmly rooted in the pursuit of pure knowledge— not rooted in self-interest or the interests of private corporations and governments. Throughout the 20th century, there was a departure from these notions of pure science, especially during the Cold War and the development of technology in the 1960s - 1970s. Technological advancements began to take on political meaning as scientists became increasingly concerned with how their research could advance their own careers, while facilitating the development of weapons and war materials. A closer inspection of science and technology vis-à-vis Mertonian ideals, the shifting focus of the Research and Development Corporation (RAND) in the Cold War, the commercialization of universities, and the political significance of technology reveals that science in the late 20th century and early 21st century shifted from an initial focus on the Mertonian pursuit of pure knowledge to a focus on personal and governmental interests.

Robert Merton propounded that the ethos of science was one that was purely based on the discovery and extension of knowledge among humans. In one of his most influential works, *Social Theory and Social Structure* he writes: "The institutional goal of science is the extension of certified knowledge. The technical methods employed towards this end provide the relevant definition of knowledge: empirically confirmed and logically consistent predictions" (606). Thus in the late 1960s, Merton believed that the purpose of science was for people to learn from one another and to expand the overall web of knowledge of the human race. According to Professor Henrika Kuklick at the University of Pennsylvania, Merton supported the notion of a free-growing communication of ideas. In essence, while scientists were making discoveries, they had to be sure that what they observed and recorded could be communicated with other scientists of their era. Additionally, Merton proposed a set of "institutional imperatives" that all scientific research should follow—what he deemed as the "ethos of science": "universalism, communism, disinterestedness, and organized skepticism" (607). Merton's conception of pure science was also associated with a sense of openness to anyone with talent. Merton elucidates: "Universalism finds further expression in the demand that careers be open to talents…. To restrict scientific careers on grounds other than lack of competence is to prejudice the furtherance of knowledge. Free access to scientific pursuits is a functional imperative" (608-609). For Merton, the foundations of science and the pursuit of knowledge could only expand if scientific careers were open to anyone with talent. Furthermore, Merton attributes a sense of altruism and integrity to the scientific profession. He expounds:

> A passion for knowledge, idle curiosity, altruistic concern with the benefit to humanity and a host of other special motives have been attributed to the scientist…. The virtual absence of fraud in the annals of science, which appears exceptional when compared with the record of other spheres of activity, has at times been attributed to the personal qualities of scientists. By implication, scientists are recruited from the ranks of those who exhibit an unusual degree of moral integrity. (613)

Consequently, Merton accentuates that scientific discovery is associated with a hunger for knowledge and a raw curiosity. He claims that scientific discoveries in the past have always been authentic, as scientists have been bred with integrity. The Mertonian conception of pure science, however, starts to fade with the increased focus on weapons development in the Cold War.

The RAND Corporation serves as an example in which there is a deviation from the Mertonian ideals of pure science and a shift towards utilizing science for the interests of the government. RAND was established in 1948 as an independent research and development organization and "can be said to be an almost 'pure Cold War' institution" (Hounshell 240). David Hounshell, the David M. Roderick Professor of Technology and Social Change at Carnegie Mellon University, describes the essence of the RAND corporation as a think tank: "In fact RAND and *think tank* are virtually synonymous…. RAND became the prototype for a method of organizing and financing research, development, and technical evaluation that would be done at the behest of government agencies, but carried out by privately run nonprofit research centers" (240). Thus, RAND engendered a shift away from the Mertonian ideal of the pursuit of pure science. Scientists

were now encouraged to perform research that would help the United States Air Force and indirectly the US government in the Cold War. Hounshell explains: "Only through independent research, RAND's management and researchers believed, could RAND adequately address the problems of the Air Force in the context of the Cold War struggle with the Soviet Union" (243). Consequently, RAND's research no longer emphasized an "organizational culture that prized intellectual curiosity and independence" that was so prominent in its earliest days (Hounshell 242). Rather, as the Cold War progressed and RAND faced more pressure from the US government, scientists were pushed to find solutions to optimization problems faced by the US government. Hounshell elucidates: "RAND thus abandoned its pursuit of a general theory of air warfare and devoted subsequent systems analysis to more restricted problems, such as how the United States should base its strategic forces and the value of missiles versus bombers in delivering offensive nuclear weapons" (245). RAND had transitioned from a research institution focused on intellectual curiosity and knowledge acquisition into an institution geared towards researching strategic warfare operations for the US government.

In addition to RAND's undertakings, the shift of focus in science to personal interests is found in the early 21st century commercialization of the university. Mark H. Cooper, a professor in the Department of Sociology at the University of Wisconsin-Madison, argues that the commercialization of the university has caused a shift from science in the public interest to science for private goods. This shift highlights how the pursuit of new knowledge is no longer a driving force in the advancement of research in certain scientific institutions today. With respect to universities, scientists often choose their research problem based on the ability to commercialize and utilize their research

findings in the industrial sector. Cooper expounds: "Using data from our 2005 survey at the University of Wisconsin-Madison, I also found evidence that scientists who receive support from industry are more likely to choose research problems based on the ability to commercialize their findings" (638-639). Thus, the commercialization of the university has changed the way scientists pursue knowledge. Merton's ideals of "a passion for knowledge, idle curiosity, and altruistic concern with the benefit to humanity" begin to fade in the face of the commercialization of academic interests (613). Additionally, the commercialization of the university has caused certain universities to emphasize the importance of the production of private and public economic goods, which have taken away from the Mertonian ideals of pure scientific research. Cooper writes: " This notion; that the mission of the university includes the production of private goods or the generation of public goods such as new products and economic development, reflects an instrumental justification for the abdication of the value-rational roles in the public interest, which traditionally [have] been fulfilled by public and private universities alike (Calhoun 2006)" (648). Therefore, the commercialization of the university not only has engendered a scientific apathy towards the public interest, but also has engendered a shift away from the Mertonian ideals of disinterestedness—nowadays, scientists often choose their research problems based on how successful the commercialization of their work will be.

Just as the commercialization of the university serves as an example of the shift of science to personal interests, the utilization of technology as a political device also accentuates this shift. In "Do Artifacts Have Politics?," Langdon Winner gives two prominent examples in which technology has taken a political meaning. The first example

he provides is the case of the two hundred or so low-hanging overpasses on Long Island, New York built by Robert Moses from the 1920s to 1970s that have as little as nine feet of clearance at the curb (Winner 2). These overpasses allowed automobile-owning middle and upper class whites to travel freely, but prohibited poor people (usually racial minorities) who regularly used public transit, from travelling on the overpasses (Winner 3). Consequently, Winner explains: "one consequence was to limit access of racial minorities and low-income groups to Jones Beach, Moses' widely acclaimed public park" (2-3). Thus, Moses was able to utilize technology for his own personal interest in limiting people of low socioeconomic status into his popular public park. The second example of technology taking on political meaning in Winner's article is Cyrus McCormick's addition of pneumatic molding machines to his 1880s reaper manufacturing plant in Chicago (3). These molding machines were "a way to 'weed out the bad element among the men,' namely, the skilled workers who had organized the union local in Chicago" (Winner 3). Because unskilled laborers could man the new machines, the purpose of the machines was to destroy the union of skilled laborers (Winner 3). Accordingly, both of these examples illustrate how technology and more extensively, science, can be utilized in a political manner in order to fulfill personal interests.

Despite Merton's belief that the institutional goal of science was the extension of certified knowledge, science and technology today greatly contrast with Merton's ideals. While 20th century sociologists and psychologists such as Robert Merton and John Dewey believed in the ideal nature of science—a means to discover new knowledge—their conception of science was gradually forgotten in the 20th and early 21st centuries. The RAND Corporation's focus in the Cold War, the commercialization of universities, and

the utilization of technology as a political device all contributed to a loss of the Mertonian ideals of pure science, while emphasizing personal and governmental interests in the 20th and early 21st centuries.

Works Cited

Cooper, Mark H. "Commercialization of the University and Problem Choice by Academic Biological Scientists." *Science, Technology, & Human Values* 34.5 (2009): 629-53. Print.

Hounshell, David A. *The Cold War, RAND, and the Generation of Knowledge, 1946-1962*. Santa Monica, CA: RAND, 1998. Print.

"John Dewey Quotes (Author of Experience and Education)." *John Dewey Quotes*. 2011. Web. 01 Nov. 2011. <http://www.goodreads.com/author/quotes/42738.John_Dewey>.

Merton, Robert King. *Social Theory and Social Structure*. New York: Free, 1968. Print.

Winner, Langdon. "Do Artifacts Have Politics?" *The Whale and the Reactor a Search for Limits in an Age of High Technology.* Chicago: Univ. of Chicago, 1986. 19-39. Print.