

Exploring Werskey's Central Question: Has Marxist Critique of Capitalist Science Been Absent
from Contemporary STS Scholarship?

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Introduction

In our case two exploration of Werskey's (2007) piece on the British scientific left, I identified and began to unravel a thread of knowledge that emerged from a combination of Werskey's central question and several claims he made. As Werskey (2007) explained, "Oppositional social movements form out of a complex mix of hopes and discontents, both personal and societal, and seem to function best in the middle ground between euphoria and despair. However, these catalysts are unlikely to convert anyone to action...until respected figures are prepared to take risks and stands that create fruitful spaces for agitation" (p. 403). For Werskey, opposition social movements represented viewpoints that emerged from the first two movements of the British Scientific Left and the arguments and beliefs they advanced about the role of science and innovation in society and its parallels to socialist, communist, and capitalist ideologies. Ultimately, Werskey (2007) ponders the existence of a third movement of the critique of capitalist science or, in his words, wonders what are "the prospects of a renewed critique of capitalist science" (p. 447). In doing so, he called out the work of a few contemporary scholars including Donna Haraway as possible examples, but leaves the question open for exploration. My investigation responds to Werskey's central question, with the goal of identifying and teasing apart some contemporary critiques and conceptualizations of science to understand the degree to which they may be Marxist or Marxist-inspired. This paper acknowledges the contributions of Donna Haraway in terms of both Marxist and feminist critique of science, but since we spent ample time on her work in case one and she is acknowledged by Werskey (2007), I have chosen to focus on other contemporary critiques of science.

Shifting Modes of Scientific Knowledge Production

As suggested by Nowotny, Scott, and Gibbons (2001), “co-evolutionary changes” of science and society have “crowded” its “epistemological foundations” (p. 178). As such, they conclude that “irreducible core of cognitive values and social practices, which once enabled good science to be distinguished from bad science . . . has been both invaded—by forces once defined as extra-scientific—and dispersed, or distributed, across more, and more heterogeneous, knowledge environments (Nowotny et al., 2001, p. 178). With respect to this crowded landscape increasingly characterizing the practice and structures of science, Slaughter and Rhoades (2004) implicated neoliberal policies and market influences, which have been instrumental in converging new networks of actors and creating new circuits of knowledge, as representative of a shift in academic science and university knowledge production from the public good knowledge/learning regime, which (in the spirit of Vannevar Bush’s model) considers academic research as a collective labor that should be supported by government funds to pursue basic science that creates serendipitous benefit to the public, to the academic capitalist knowledge/learning regime, which increases the proximity between academe and the private marketplace and redefines the public good as what is good for economic development. While Slaughter and Rhoades (2004) argued that the ascendance of academic capitalism may have dire implications for scientific inquiry by obscuring the importance of pure discovery and thereby endangering the university’s role as a public good, Gibbons (2000), Santos (2006), and Mendoza (2009) acknowledged the need for multiple modes of inquiry, including Mode 2, pluriversity, and use-inspired knowledge, respectively, that reconnects science with the needs of a global society and seeks to solve complex and systemic problems that reach beyond the scope of a single discipline. Although differing standpoints are evident in the arguments of these authors,

all point to shifting and emerging modes of scientific research that are highly context sensitive and application driven, especially when compared to pure or basic forms.

Gibbons et al. (1994), in particular, aligned their depiction of Mode 2 research with interdisciplinarity, by pointing out that Mode 2 knowledge production supports new lines and directions of intellectual dialogue that do not necessarily fit in disciplinary structures or within traditional university boundaries, instead creating a forum that bridges disciplines and bridges the university with many other external loci of research such as government, industry, centers, and think tanks. They offered this interdisciplinary and boundary-crossing distinction of Mode 2 with the acknowledgement that Mode 1 is highly valued, greatly historically successful, and still very much required, but that alternative modes that conjoin science, technology, and society are also required. In this way, Mode 2 knowledge production is distinct in its relationship with society and consideration for people, their perspectives, and their desires.

Harding (2008) points to these epistemological complexities with respect to scientific knowledge production as involving considerable overlap with feminist philosophies and critiques of science and knowledge. In part, these increasingly crowded, heterogeneous, and interdisciplinary modes of knowledge production—also characterized as Mode 2 (Gibbons et al., 1994), pluriversity (Santos, 2006), and triple-helix to the extent they intersect university, industry, and government (Etzkowitz & Leydesdorff, 1997, 2000)—butt against the conventional participants and practices of the sciences. Such a shift has been elevated by feminist scholars of science as a necessity to expand the boundaries of knowledge production through diverse participation and to cast a more watchful eye on the inequitable power structures of the scientific enterprise (Benshop & Brouns, 2003; Collins, 2009; Harding, 1991, 2004, 2008).

Feminist Critiques of Science and Knowledge

Several contemporary critiques of science and knowledge, especially focused on the structures and organization of science were overlooked by Werskey (2007) and could be categorized to varying degrees as Marxist-inspired in the sense that they attempt to illuminate a great historical struggle between two opposed forces—men and women, and ultimately seek a radical change in social hierarchies to locate and obliterate patriarchal social structures and relations that sustain the oppression of women. The academy, a force in the creation and placement of the educated elite and a central figure in the production of new knowledge has, not surprisingly, become a heavily contested ground for critique and action with respect to the structure and practices of science and knowledge production. Several of these contemporary critiques are reviewed in the ensuing sections.

Olympus and the Agora: Critique of Science in a Dutch Context

In their statistical analyses of how gender is organized in Dutch universities, Benschop and Brouns (2003) illuminated the gender hierarchy of science and the emergence of novel and more heterogeneous models of science by invoking contrasting metaphorical images of the “Olympus” and the “Agora”. They discuss the Olympus model of science as an image of the lone male scientist revered for his brilliance atop Mt. Olympus and thoroughly distanced from practical society. In this image, “science is primarily targeted at other scientists” because “only science delivers true and objective knowledge” (p. 207-208). In contrast, the Agora model of science suggests an image more consistent with those explicated by Gibbons et al. (1994), Nowotny et al. (2001), Santos (2006), and Harding (1991, 2004), which “implies a strong network and open interaction between universities, research and education organizations and other social institutions of the knowledge society” (Benschop & Brouns, 2003, p. 208). Specifically, the

Agora model recognizes rather than attempts to disassociate from social and political dimensions of science and advocates for a stronger relationship between knowledge production and actual translation.

These collective explanations of the shifting and intersecting paradigms of Mode 1 or pure scientific knowledge production with Mode 2 or contextualized, interdisciplinary, and socially-oriented knowledge production share a number of distinct parallels with feminist critique and thinking about knowledge and science (Collins, 2009; Harding, 1991; Rose, 1983), which is part of a robust but generally overlooked school of feminist thinking about knowledge and science that has been evolving in the literature over the past several decades.

Sandra Harding: Intersecting Gender, Science, and Knowledge.

In her discussions of gender, science, and knowledge, Harding (1991) presents five specific issues that provide a feminist framework around science and scientific knowledge production. She suggests that 1) science is inherently political, 2) science has progressive and regressive tendencies, 3) the observer and the observed exist in the same scientific plane, thus are “socially situated”, 4) science must decenter privileged White male needs, values, visions and privileged White feminist critique to make room for other claims to and critiques of knowledge, 5) the social sciences provides a framework to help us understand “sciences in society” and “society in sciences” (p. 11-12).

Operating from this framework, Harding (1991) specifically identified the two most common feminist critiques of science as 1) “bad science” and 2) “science as usual” (p. 54). Feminist objections to “bad science” suggest that science has failed to rigorously follow its codified methodological and theoretical principles and practices by historically conducting science androcentrically. This critique assumes that “scientific method is supposed to be powerful

enough to eliminate any social biases that may find their way from the social situation of the scientist into hypotheses, concepts, research designs, evidence-gathering, or the interpretation of the results of research” (Harding, 1991, p. 58). Thus, knowledge claims resulting from androcentric scientific inquiries are “bad” or distorted because they failed to adhere to value-neutrality and impartial objectivity and based generalizations only on data about men.

According to Harding (1991), a second and related objection to “science as usual” flows from Marxist thinking and takes aim at the widespread belief that science is value-free, disinterested, and detached from historical, social, political, and economic forces. In fact, critics of science as usual assert that value-neutrality is a myth, and an individual is simply not capable of transcending these forces and one’s own social location in a hierarchical society where power and resources are distributed inequitably across class, race, and gender. Thus, those doing science “can achieve only a partial view of reality from the perspective of his or her own position in the social hierarchy” but a diverse array of partial views are critical to move beyond the distorted knowledge claims from only the privileged dominant power holders (Harding, 1991, p. 59).

Like Gibbons et al. (1994), Harding (1991, 2004, 2008) sees the sciences and the practice of scientific research as intertwined with cultural contexts and individual social location, ultimately arguing that true separation between context and inquiry is impossible. As a result, embracing various and multiple contexts as part and parcel of how science is structured and performed conjoins the “context of discovery” with the “context of justification” (Harding, 1991, p. 116) and critically attends to decisions about what problem to research, the research design and conduct, and the interpretation and use of results. Such context-sensitive science (Gibbons, 2000) has a number of implications for the accountability and evaluation of scientific discovery with

respect to its social structure, its claims to knowledge, and its interaction with and usefulness to society.

When science is accountable, risk of its misuse and abuse is minimized. For feminists, the misuse of science is a salient topic rooted in the idea that the nature of science itself has historically been organized by a dominant group that was largely White, male, and Westernized. The resulting enterprise essentially has controlled science, who and what science considers, and for whom science is done (Harding, 1991). She and other scholars point to the example of the past and egregious misuses and abuses of biological research that attempted to empirically assert the biological and cognitive superiority of White men over women and (both male and female) persons of color. In essence, they argue that when the social power structure of science is homogenous, so is the production of new knowledge (Collins, 2009; Harding, 1991; Minnich, 2005) leading to partial knowledge and mystified concepts that ultimately promote a master narrative that perpetuates dominant social structures and groups and further disenfranchises and disempowers the “other”. In other words, as articulated by Harding (1991), “whoever gets to define what counts as a scientific problem also gets a powerful role in shaping the picture of the world that results from scientific research” (p. 40).

Academic Capitalism as Gender Theory

While Harding (1991) focused on certain aspects of scientific knowledge and its production with a special focus on standpoint theory, a subset of interdisciplinary scholars have taken on capitalist and neoliberal realities of university science more directly (Slaughter & Leslie, 1997; Slaughter & Rhoades, 2004) and have explicitly merged this critique with radical feminism (Metcalf & Slaughter, 2007, 2008). The recent work of Metcalfe and Slaughter (2007) has advanced the theory of academic capitalism as a gender theory, using it to uncover and critique

the “historically embedded and actively reinforced patriarchy of academe”, which they argue is “becoming further entrenched in higher education institutions by a rational, economic agenda, despite the modest or significant gains of individual women” (p. 11). This framework both parallels and moves beyond a Marxist focus on historic struggles between capital and labor (or the bourgeoisie and the proletariat) by including organizations and individual actors as additional “players in the power dynamics that constitute societies” (p. 11). In terms of its focus on the structures, people, and practices of the academy, the theory seeks to highlight “the active marginalization of fields that are not central to international and global competitiveness” (p. 11), which are often fields containing more women such as the social sciences and humanities. Thus, academic capitalism as gender theory is particularly relevant to a critique of the more mathematically-oriented hard and hard-applied science disciplines, which have been historically male-dominated and are positioned in close proximity to the economic marketplace

Using academic capitalism as a gender theory surfaces and attaches to a number of issues pertaining to the participation of women in science through the suggestion that as women made gains in higher education since the 1970's, men became active in constructing the academic capitalist regime as a strategic effort to continue historic privilege in higher education. Despite marked growth of the number of women pursuing education and careers in the sciences, the framework helps explain a number of inconsistencies with respect to the participation of women in academic science that have not been wholly remedied by equal rights policies or by special programs and organizations dedicated to increasing the participation and retention of women in science education and careers. Some of these inconsistencies pointed to by Metcalfe and Slaughter (2008) stem from research that has found that 1) men outnumber women in the number of patents derived from academic labor, 2) men are more often the CEOs of spin-off companies

created from academic pursuits, and 3) men are more likely to benefit from the licensing of university research products—all hallmark practices of academic capitalism especially prevalent in academic scientific departments of research universities that are characterized by a more applied or entrepreneurial dimension (e.g. engineering). In addition to highlighting the gender implications associated with academic capitalism's influence on disciplinary and departmental hierarchies of the research university, the theory may also be useful in considering additional layers of complexity related to institutional stratification; race, class, and gender in a way that has been overlooked by researchers using large national data sets (e.g. to highlight the positions of women and men in fields close to the market, for example); and may contribute to a more nuanced discussion of the roles of both equal rights and difference feminism in contemporary feminist critiques.

Conclusion

While it seems as if Marxist or Marxist-inspired critiques of capitalist science are present in the literature since the 1980's, it also seems as if a number of critiques stop short of Marxism by embracing capitalist realities of science and the scientific enterprise, rather than questioning or implicating capitalist science and neoliberalism. The convergence of feminism and Marxism, in the critique of science, however, has proffered a robust and growing body of literature that remains largely overlooked and on the fringes. In the current paper, this is most apparent in the work of Metcalfe and Slaughter (2007, 2008), who point to the need for a revolutionary restructuring of the academy to remedy the historical, embedded, and largely unquestioned capitalist patriarchy of higher education. As with any investigation, especially in the context of problem-based learning, I was left with additional questions to explore. One, however, emerged as a frontrunner for further exploration. If the academic capitalist regime is reshaping and

redefining how the public good is conceptualized in academic science and with respect to the dance between science and society, what role should feminists and feminist critiques of science and knowledge take in accommodating or rejecting academic capitalism, or in preserving or reconceptualizing the public good? Perhaps exploring an answer to such a question would assist us in pondering “what mix of discontents, hopes, and leadership might reanimate a (post-Marxist) critique and transformation of capitalist science and the global social system it helps to sustain” (Werskey, 2007, p. 447) and “create fruitful spaces for agitation” (p. 403).

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