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Rebecca M. Herzig. *Suffering for Science: Reason and Sacrifice in Modern America.* New Brunswick: Rutgers University Press, 2005. x + 240 pp. $39.95 (cloth), ISBN 978-0-8135-3662-0.

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White Men, Modern Science, and Self-Sacrifice

At some point in their careers, most researchers realize that their profession involves self-sacrifice. While contemporary scholars do not have to give up body parts in order to be respected as true scientists, academia still expects its members to concede voluntarily–their health, leisure, and time–for the advancement of science. Rebecca M. Herzig, associate professor of women and gender studies at Bates College, explains how the idea that science requires suffering developed as an important part of modern understanding of science and scientific practice. She "seeks to explain why, given the existence of other, less painful alternatives, so many scientists chose to align themselves with this ethos and considers … some of the lasting ramifications of this decision" (p. 7). To "count," self-sacrifice must be freely chosen and not restituted, as Herzig states in the introduction: "The ability to a sacrificial self … was always structured by the ability to consent" (p. 11). Only those who are able to suffer can immolate, namely white men who possess intentional free selves.

Herzig draws her examples of willing victims for the sake of knowledge not only from various academic disciplines, but also from different periods of modern science, and thereby examines this extraordinary topic in a thematic as well as chronological order. She begins her book with the history of the voluntarily suffering self in its context of religious traditions, philosophical debates, and political and economic changes in the nineteenth century in a chapter entitled "Willing Captives." Self-sacrifice was related to Protestant doctrines of salvation and then formed into a "sacred nationalism" during the Civil War (p. 27). In addition, the proprietal constitution of the self limited participation in public–and scientific–interactions to people with a whole self whereas slaves and certain groups of immigrants legally had only partial personhood. In the aftermath of slavery, rapid industrialization and the rise of Darwinism altered the perception of the self insofar as it now applied only to "civilized" and therefore vulnerable individuals. Evolution had brought Westerners the "'capacity to suffer,"' as neurologist S. Weir Mitchell put it (p. 35).

In the following chapter, Herzig connects this formation of the voluntarily suffering self to the reorganization of science after the Civil War. The expansion of higher education in the United States as well as the emerging academic disciplines generated not only standardized scientific practices, but also a novel definition of the scientist, including his motivation to endure pain. But, as Herzig elucidates, the scientist must freely choose his self-sacrifice without counting on compensation; his gift was to be the advancement of knowledge.

The "Purists," as the title of the third chapter indicates, carried this concept to extremes by postulating "pure science." In her informative portrayal of university-based researchers in the late nineteenth century, Herzig illuminates the close bond between concepts of purity and scientists' biographical links to Protestantism. Characteristics of pure science included social isolation, poverty, self-discipline, and devotion to truth. Pure scientists, then, found their ideal workplace in the newly established research universities, which remained white male sites of the production of knowledge long into the twentieth century. Though Herzig mentions all relevant aspects of this development, her study could benefit at this point from a more detailed analysis of the significance of symbolic capital as well as of (financial) resources in this period of modern science. Suffering did not only result in lost body parts but also in reputation and consequently in money.

Herzig subsequently follows polar "Explorers" on their arctic expeditions in the 1890s and 1900s. Motivated by economic and colonialist ambitions, polar explorers and the U.S. government managed nonetheless to represent their journeys as missions for a higher cause. Using a broad range of contemporary sources, Herzig illustrates that "the nobility of polar exploration … emerged

through the suffering it entailed" (p. 69). Simultaneously, this heroic suffering was necessary for the progress of science. Throughout the book, Herzig persistently discloses the inherent notions of race and gender in the concepts of the suffering scientific self. Her account of the "Eskimo" and "Negro" assistants during the polar expedition is especially impressive. The strenuous expeditions were closely tied to questions of representation because the experience and pain of the arctic researcher was "marked directly on the body" (p. 84) through lost limbs, a weathered face, or blinded eyes. By means of highly publicized accounts, the scientist's wounded body was constructed both as a symbol for white noble manhood and for manly scientific labor.

The fifth chapter concentrates on the early "Martyrs" of radiology. The enthusiasm as well as the martyrdom of roentgenologists, who eagerly accepted the deadly injuries of their experiments in the new field, "increased the status of the profession," as Herzig compellingly proves (p. 97). But even as she refers to patients, technicians, and other personnel injured by the novel technique, Herzig never shifts her analysis to the various sufferers of science. While I agree with her conclusion that countless patients in medical tests, assistants in laboratories, or family members were neither seen as scientists nor as self-sacrificing by their contemporaries, a study of their contributions to science and their (presumably) very diverse motivations to participate in these endeavors would be worthwhile for a historian of science.

Herzig concludes her remarkable analysis with a review of Sinclair Lewis's *Arrowsmith* (1925). She interprets this fictional account of the life and work of a bacteriologist as the climax in the history of voluntarily suffering. The norms of scientific self-sacrifice increasingly degenerated modern scientists to "Barbarians," as she entitles this chapter. Herzig concludes that "Arrowsmith's quest for truth appears not civilized but feral" (p. 104). Rational, German-shaped science is both portrayed by Lewis as a male venture and a masculine, unproductive barbarity. Concurrently, "[s]ensitivity becomes equated with civility, which is in turn feminized and racialized" (p. 107).

In her short epilogue, Herzig claims that science had reached "The Ends of Sacrifice" by the mid-1920s. Nonetheless, society and academia maintain their "understandings of the scientist as a willing sufferer" in the twentieth and twenty-first centuries (p. 117). *Suffering for Science* explores the discursive construction of an ethic of self-sacrifice for science in the nineteenth and early twentieth centuries. This *leitmotif*, the extensive sources, and Herzig's analysis make it a truly readable survey of an essential aspect of modern Western science.

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