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Book Review

Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation. By Lynn Eden. (Ithaca: Cornell University Press, 2004. xvi, 365 pp. \$32.50, ISBN 0-8014-3578-1.)

This book undertakes two ambitious investigations. The first is a history of an axiom that underpinned United States nuclear war strategy during the Cold War: the critical variable in predicting destruction by nuclear bombing is blast damage, not damage by fire. In Lynn Eden's language, planners embraced the "blast damage frame" and dismissed the "fire damage frame" (p. 53). The second investigation is an argument, woven into the history, that this axiom is mistaken.

This history, which is written on social constructionist assumptions, begins before World War II, when the major weapon in the U.S. air force arsenal was the high-explosive bomb designed to destroy discrete targets. Strategic bombing doctrine presupposed this technology. It also assumed that the effects of precisely targeted high-explosive bombs were more predictable than the effects of fire-bombing. Complex and variable weather conditions allegedly made it impossible to predict the consequences of fire-bombing with the required accuracy. Because these assumptions remained in place after 1945, resources for estimating bombing damage were dedicated to predictions of damage by blast. By the mid-1950s, blast damage could be predicted on standards that analysts regarded as acceptable; fire damage could not, a result that seemed to confirm its inherent unpredictability. Original assumptions concerning the calculability of damage by high-explosive and incendiary bombs were institutionalized as cultural routines that produced specific organizational capacities and precluded others. The organizational expertise in place established boundaries for the plausibility of subsequent assumptions. The result: a set of organizational tautologies that exhibited the phenomenon of path dependence. "The effects of learning, high research costs, and self-reinforcing

expectations reinforced choices already made" (p. 285).

Eden's argument that fire damage exceeds blast damage draws largely on her conversations with physicists who study "mass fires." In a cursory review it would be futile to attempt a summary of this argument, which holds that a mass fire creates its own thermal environment, operating as a "fire machine" impervious to weather (p. 158).

Eden works at the intersection of organizational theory, science studies, and the history of U.S. nuclear strategy. *Whole World on Fire* easily qualifies as a rarity: careful, tenacious, and comprehensive research, acute analyses, an elegant synthesis of the history of the U.S. military-scientific establishment, and a lucid exposition of scientific and technological issues. Are these virtues diminished by her facile commitment to an epistemology of social constructionism? Eden disposes of the blast damage frame and the unpredictability of fire damage by arguing that these positions are not truths about the physical world but products of organizational choices. Her book is vulnerable to the same critique. Its main theses are artifacts of interactions between Eden and a small community of scientific and military specialists. Without these "co-narrators," as she acknowledges, Eden could not have written the history of the dominance of the blast damage frame. She could not have understood the evidence on which her account rests or even the problem of her investigation (p. 11). In Eden's hands, social constructionism is a weapon that can easily be turned against the critic who wields it.

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