Recent Trends in the Historiography of Science in the Cold War

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Paul Erickson, Judy L. Klein, Lorraine Daston, Rebecca Lemov, Thomas Sturm, and Michael Gordin. *How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality.* Chicago: University of Chicago Press, 2013. 272 pp., illus., index. ISBN 9780226046631. $38.00 (cloth).

Jamie Cohen-Cole. *The Open Mind: Cold War Politics and the Sciences of Human Nature*. Chicago: University of Chicago Press, 2014. 368 pp., illus., index. ISBN 9780226092164. $48.00 (cloth).

Paul Erickson. *The World the Game Theorists Made*. Chicago: University of Chicago Press, 2015. 384 pp., illus., index. ISBN 9780226097176. $35.00 (paper).

David Kaiser and W. Patrick McCray, eds. *Groovy Science: Knowledge, Innovation, and American Counterculture*. Chicago: University of Chicago Press, 2016. 416 pp., illus., index. ISBN 9780226372914. $25.00 (paper).

The entanglements between the world of knowledge and the world of Cold War politics have been a subject of heated debates among political and intellectual historians and cultural critics since at least the 1970s. The war in Vietnam provided the original context for this debate in America, translating the guilt about the atomic bomb and the anger at the war in Vietnam into a normative tale of "Cold War science" that conjured up the military-industrial-academic-complex and Big Science at the foreground, with a "Faustian bargain" plot in the background.[1] Since the end of Cold War, the topic has

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1. On the role of Vietnam War and ethics-driven debates on Cold War science, see Sarah Bridger, *Scientists at War: The Ethics of Cold War Weapons Research* (Cambridge, MA: Harvard University Press, 2015).

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become a growing field of research that moved the story (or, rather, stories) of science during the Cold War beyond its original focus on physics and the United States, and beyond its original frame, if not its politics. As Hunter Heyck and David Kaiser have put it in 2010, discussing the last trends in the scholarship on science in the Cold War, this "second generation" historical work "is much more international and multidisciplinary in perspective, and Faust is but one of many of narrative frames."[2] Taken together, the new historiography elucidated the complex dynamics in the history of knowledge in the second half of the twentieth century, at the same time pointing to the limitations of "Cold War" as an explanatory category. As Heyck and Kaser observe, this is exactly "what good 'second generation' historical work always does—they take the draft of history written by the first generation and add complexity and nuance, particularizing the grand narrative and often destabilizing it."[3]

The four remarkable books discussed here, all published by the University of Chicago Press within last three years, represent an important new development in this "second generation" historiography. All four focus exclusively on an American story, revisiting some of the well-worn themes—for example, the rise of the military-industrial-academic complex and the Cold War think tank complex in the United States—from a fresh perspective. Each of these books has been extensively reviewed individually; this essay rather considers these works collectively to focus on three of the overarching themes in this most recent wave of new scholarship: (1) the meanings of "interdisciplinarity," (2) the meanings of "Cold War," and (3) Cold War time frames.

THE MEANINGS OF ''INTERDISCIPLINARITY''

It has become a commonplace to suggest that interdisciplinarity was a distinctive feature of the scientific landscape during the Cold War throughout the natural and social sciences alike.[4] As David Engerman has concisely put it,

2. Hunter Heyck and David Kaiser, "Introduction: New Perspectives on Science and the Cold War," *Isis* 101 (2010): 362–66, on 363.

3. Ibid., 364.

4. See, for example, Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: University of Chicago Press, 1997); Jeff Hughes, *The Manhattan Project: Big Science and the Atom Bomb* (Cambridge: Icon Books, 2002); David C. Engerman, *Know Your Enemy: The Rise and Fall of America's Soviet Experts* (New York: Oxford University Press, 2009); Mark

interdisciplinarity was promoted throughout the social sciences in Cold War America "as a means to policy relevance."[5] Where the new scholarship departs from the earlier studies is in its broader historiographical frame that embeds science within major cultural and political narratives of the time. This approach demonstrates that interdisciplinarity was promoted not only as a *means* to practical results, but also as an *end* in itself. As Jamie Cohen-Cole argues in *The Open Mind: Cold War Politics and the Sciences of Human Nature*, the widespread excitement about interdisciplinarity in post-war America was "an expression of historically and culturally specific values" that made up American mid-century liberalism (67). In the McCarthyite climate of the early Cold War, interdisciplinarity was embraced across the social sciences not just as an approach to research and collaboration but also as a virtue in itself, epitomizing a certain type of person: the virtue of interdisciplinarity "marked an individual as creative, practical, open-minded, tolerant, and scientific," that is to say, an ideal citizen in American liberal democracy (67).

All four books discussed here leave traditional disciplinary frameworks behind, using broadly defined historical phenomena as a lens through which to survey the intellectual geography of both academic and political cultures in midcentury America. For example, Cohen-Cole uses "open-mindedness" as such a broad frame of his study, aiming to show how this value has become widely perceived as a cultural norm and a model of exemplary citizenship, a tool of psychological analysis, a model of human nature, and a cultural value associated with interdisciplinary research. In a similar vein, the authors of the collective monograph *How Reason Almost Lost Its Mind* explain, they are "after a different quarry [than more traditional studies in the history of science]: not the emergence of a specific theory or science, or the establishment of a particular institution, or the trajectory of an influential individual, but rather a change in what it *meant* to be rational in the age of nuclear brinkmanship" (21). The story in *How Reason Almost Lost Its Mind* unfolds over the same time span as the one depicted in *The Open Mind*, but it traces a different interdisciplinary movement of comparable ambition, which grew out of a distinct set of Cold War concerns—the perennial anxiety of a nuclear holocaust. The new American "Action Intellectuals" such as Thomas Schelling, Hermann Kahn, Anatol Rapoport, and Herbert Simon engaged in sustained interaction across

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Solovey. *Shaky Foundations*: *The Politics-Patronage-Social Science Nexus in Cold War America* (New Brunswick, NJ: Rutgers University Press, 2013).

5. David C. Engerman, "Social Science in the Cold War," *Isis* 101 (2010): 393–400, on 396.

the gamut of social and human sciences, in order to engineer a new form of practical reason suitable for the historical moment defined by the nuclear standoff between the United States and the Soviet Union. The outcome was a peculiar style of thinking and an approach to decision making, which was characterized by "stripped-down formalism, economic calculation, analogical reasoning from experimental microcosms, and towering ambitions" behind what was understood to be "the most important conversation one could be having about what intellectuals could accomplish at that historical moment" (5). While quite a different beast than the interdisciplinary movement self-identified with open-mindedness that Cohen-Cole discusses in his book, both open-mindedness and formalistic rationality coexisted as approaches to human mind and human behavior that swept across a range of different disciplines in the human sciences, from mathematics to psychology to economics to political science.

That interdisciplinarity was embraced by the adherents of open-mindedness as much as the proponents of formalistic Cold War rationality might not be surprising, given that there was a spacious institutional niche for wide-ranging interdisciplinary projects with quite different intellectual drivers and political stakes. Earlier studies have demonstrated that at the height of Cold War, a parallel system of "universities without students" became a permanent fixture of the postwar American scientific landscape, constituting what historian Philip Mirowski has aptly called a Cold War "think tank complex."[6] Most influential of these sheltered transdisciplinary incubators, such as a prototypical think tank—the RAND Corporation—or the influential JASON consultancy group, have been subjects of book-length studies. New historiography brings in a bird's eye view of this institutional landscape, at the same time zooming into the detailed ecology of some of the elitist special-purpose interdisciplinary units, ranging from famous RAND Corporation and semi-institutionalized summer studies to temporary working groups, academic "salons," and even political dinner clubs and cocktail parties, all of which emerge as key sites of knowledge-making in the social and human sciences during the Cold War. Much like the prototypical RAND and other think tanks, the "salons" and other more quotidian gatherings epitomized the new forms of life and new institutional spaces outside of the established academic institutions with their

6. Philip Mirowski, "A History Best Served Cold," in *Uncertain Empire: American History and the Idea of the Cold War*, ed. Joel Isaac and Duncan Bell (New York: Oxford University Press, 2012), pp. 61–74.

rigid disciplinary structures and divisions. These new intellectual spaces were extremely exclusive and "closed" to outsiders. It is deeply ironic that these exclusive places served, as Cohen-Cole's *Open Mind* details, as the spaces where open-mindedness was discussed, performed, and even enacted by its interdisciplinary adherents, American cognitive scientists.

THE MEANINGS OF THE "COLD WAR"

The question that the physicist Alvin Weinberg grappled with in his influential 1961 article that popularized the notion of "Big Science" was, as he put it in the title, the "impact of large-scale science *on the United States*."[7] The same year, President Eisenhower famously warned of the effects of "the military industrial complex" *for American democracy*. A decade later, the radical structural critiques of the New Left turned the underlying "big question" around, shifting the focus of public scrutiny from American democratic institutions to science itself, and spreading provocative claims about non-neutrality of scientific knowledge and the social construction of science. Some of the New Left arguments were replicated by historians of science, setting up the frame of reference for the discussion of the relation between science and Cold War politics centered on the ways in which the new system of state patronage justified by the Cold War had transformed academic life from its prewar status.[8] Most notably, in the late 1980s Paul Forman famously argued that military sponsorship had altered the nature and character of physics as a discipline, causing the physicists to shift from fundamental questions of basic physics toward specific problems that had relevance to military gadgeteering.[9] Historians have quickly contested Forman's view. Daniel Kevles, for instance, criticized Forman's failure to acknowledge that there is no "true path" of American physics that could have been "altered" or distorted as a result of Cold War military funding—"physics is what physicists

7. Alvin M. Weinberg, "Impact of Large-Scale Science on the United States," *Science* 134, no. 3473 (1961): 161–64 (emphasis added).

8. See Bridger, *Scientists at War* (ref. 2); and Simone Turchetti, "Looking for the Bad Teachers: The Radical Science Movement and Its Transnational History," in *Science Studies During the Cold War and Beyond: Paradigms Defected*, ed. Elena Aronova and Simone Turchetti (New York: Palgrave Macmillan, 2016), pp. 77–98.

9. Paul Forman, "Behind Quantum Electronics: National Security as Basis for Physical Research in the United States, 1940–1960," *Historical Studies in the Physical and Biological Sciences* 18 (1987): 149–229.

do."[10] The influential debate between Paul Forman and Daniel Kevles has set up the frame of reference for much of the "first generation" discussion of the relation between science and the Cold War.

The recent wave of the "second generation" historiography rekindles the question about the relation of American political culture and American science by situating American political culture—or, rather, cultures—in their local and fine-grained scientific contexts. In this new historiography the "Cold War" enters the new historiography not just as a "context" or an *explanans*—an almost taken-for-granted historiographical category—but as the tangible source of the interdisciplinary endeavors under study, revealing as much about "the Cold War" in its relation to intellectual life in America as about the associated scientific practices of the era.[11]

In *How Reason Almost Lost Its Mind*, the metaphysics of Cold War thinking is revealed through the "microphysics" of what the authors label "the Cold War rationality"—the style of formalistic, algorithmical, and automated decision-making designed to replace human judgement, emotions, and the inadequacies of human reason. The Cuban Missile Crisis, one of the most studied episodes in twentieth-century history, has become a pivotal event for the fortification of this new brand of rationality "summoned into existence in order to tame the terrors of decisions too consequential to be left to human reason alone" (2). At another level, the Soviet blockade of West Berlin and the airlift of 1948–1949—flying daily food supplies to the three western zones of the city—enters the story as a tangible logistical problem, and a testing ground, for a new mix of operation research, linear programming, and computer software that constituted one of the incarnations of Cold War Rationality. Paul Erickson (also one of the authors of *How Reason Almost Lost Its Mind*) has developed some of these themes in his own book-length study of the game theoretic incarnation of Cold War rationality. *The World the Game Theorists Made* unravels the microcosms of Cold War rationality further, showing that in the 1960s-era debates over national security, the Cold War itself came to be understood *as* a "game," in the technical sense of game theory. Quickly moving beyond places like the Center for Research on Conflict Resolution and other exclusive incubators of the game theory approach to politics, the

10. Daniel Kevles, "Cold War and Hot Physics: Science, Security, and the American State, 1945–56," *Historical Studies in the Physical and Biological Sciences* 20, no. 2 (1990): 239–64.

11. For a book-length critique of the tendency to treat the "Cold War" as the *explanans* rather than an *explanandum*—a phenomenon to be explained—see Isaac and Bell, *Uncertain Empire* (ref. 6).

metaphor of international conflict rationalized as a "game" took hold and became current, as "game matrices became seemingly indispensable to talk about the the challenges of nuclear strategy, the possibility of arms control, and the resolution of international conflicts" (189).

Both *The World the Game Theorists Made* and *How Reason Almost Lost Its Mind* define the Cold War quite explicitly as nuclear brinkmanship. In this sense, they take the phrase "Cold War" in its original meaning, as it was implied in George Orwell's 1945 essay "You and the Atomic Bomb," in which he coined the term "Cold War."[12] In the United States, however, the term became popularized through the writings of the American pundit Walter Lippmann, who in a series of influential articles published in 1947, defined the "Cold War" in terms of the civilizational clash and ideological conflict between the American-led world of liberal democracy and the Soviet-dominated communist bloc.[13] Regardless of the accuracy of Lippmann's characterization, in the United States the term "Cold War" has, as the historian Anders Stephanson has argued, effectively acquired this distinct meaning as a cultural and ideological clash. Against this backdrop, Cohen-Cole's *The Open Mind* provides a rich historical layer to this story, unraveling the ways in which the Cold War was rationalized in midcentury America as the ideological and intellectual struggle for liberal democracy against the threats of its ideological foes. At the center of Cohen-Cole's account is a familiar narrative of the cultural Cold War—the establishment and unraveling of the so-called "post-war liberal consensus." *The Open Mind* charts the history of this consensus, or Cold War centrism, "by tracking the tools of psychological analysis through which intellectuals produced" a very specific political order. "It was not Zeitgeist, nor hegemonic ideology" that produced the Cold War liberal consensus, Cohen-Cole argues, but "specific psychological technologies" (7).

COLD WAR TIME FRAMES

One of the distinctive trends in the "second generation" scholarship on science in the Cold War is the extension of the temporal frame to the wartime and

12. George Orwell, "You and the Atomic Bomb," *London Tribune*, 19 Oct 1945. See discussion in Naomi Oreskes, "Science in the Origins of the Cold War," in *Science and Technology in the Global Cold War*, ed. Naomi Oreskes and John Krige (Boston: MIT Press, 2014), 11–29.

13. On the genealogy of the term "Cold War" in the United States, see Anders Stephanson, "Cold War Ground Zero," in Isaac and Bell, *Uncertain Empire* (ref. 6), 19–50.

even the interwar periods. As recent studies have demonstrated, many Cold War projects and new kinds of work pursued in new institutional niches were rooted in wartime innovations or originated from concerns and practices that long predated the Cold War.[14] The well-known story is the extension of the wartime influx of military funding and push for interdisciplinarity (because "war *is* interdisciplinary," as the radical historian Howard Zinn perceptively noted in 1969) to the postwar era, in the name of national security.[15] While expanding the time frames to the second World War and the interwar years, few accounts of science in the Cold War, however, follow the story beyond the 1960s. As the classic narrative goes, the Cold War system of science has become the target of the campus revolts of the late 1960s and has been largely dismantled: the militarization of science in the United States was replaced by its privatization, which for the most part has been told as a different story.

New historiography extends the conventional Cold War time frame, bringing "the long 1970s" into the picture. As David Kaiser and Patrick McCray explain in their introduction to *Groovy Science*,

> one inspiration for this volume [was] the opportunity to revisit Cold War historiography. For nearly three decades, historians have interrogated the massive transformations of American science and technology that unfolded between the early 1940s and the early 1960s. . . . The relationship between power, patronage, politics, and practice are far less understood for the late 1960s and 1970s. (4)

One of the overarching narratives about the 1970s that emerges from these recent books is centered on the ways in which the *ends* of ambitious Cold War interdisciplinary programs were challenged during the turmoil of the late 1960s and the 1970s, while the particular *means* were preserved within particular disciplines. As the authors of *How Reason Almost Lost Its Mind* underscore, although most of the components of Cold War rationality did not originate in the Cold War, "it was the Cold War that consolidated and glamorized them" (10). But what appeared glamorous and radical in the 1950s and early 1960s lost its urgency and much of its coolness by the 1970s. The result was the fragmentation of Cold War rationality within the realms of particular disciplines:

14. See, for example, Zachary Lockman, *Field Notes*: *The Making of Middle East Studies in the United States* (Stanford, CA: Stanford University Press, 2016); Joel Isaac, *Working Knowledge*: *Making the Human Sciences from Parsons to Kuhn* (Cambridge, MA, and London: Harvard University Press, 2012).

15. Zinn cited in Bridger, *Scientists at War* (ref. 1), 155.

as the authors put it, "There are still no doubt vigorous discussions over this or that aspect of game theory or rational choice theory, economic optimization versus satisficing, the psychology of judgement and decision making, or even nuclear strategy. But no matter how intense, these are mostly specialist discussions conducted within disciplines, not cutting across them" (187).

In a similar fashion, in *The World the Game Theorists Made*, Erickson traces a genealogy of the main theoretical tool of the Cold War rationalists—game theory—from its beginning in World War II to its peregrinations across economics, psychology, social sciences, and evolutionary biology. By the 1970s, the Cold War context that gave game theory its particular urgency in the 1950s and through the 1960s had faded, marking the end of the coalescence of the political significance, iconic Cold War institutions, and transdisciplinary networks that made game theory a "mathematical currency" of the period. Game theory continued to unfold in the 1970s and on, but "as a creature of particular disciplines: a modeling technique like any other, to be integrated with solid empirical research and qualified with all kinds of special conditions and caveats" (25).

At the same time, the 1970s also saw the emergence of *new* interdisciplinary projects that embraced interdisciplinarity as a virtue in itself. In the 1970s and on, however, interdisciplinarity became associated with new type of science as well as with new virtues. Challenging a commonly held view that the counterculture of the 1970s was antirationalist and opposed to science, the authors of *Groovy Science* (edited by Kaiser and McCray) demonstrate that the critique of the Cold War militarization of science often took a pro-science form, with new interdisciplinary collaborations being forged as "some forms of groovy science adapted resources and forms of knowledge that had been characteristic of earlier Cold War science and turned them toward new ends" (5). For example, in his essay "Santa Barbara Physicists in the Vietnam Era," Cyrus C. M. Mody follows several physicists from the physics department of the University of California, Santa Barbara, who responded to Vietnam-era soul-searching by founding start-up companies aimed to forge "new ties among industrial, academic, government, and civil-society organizations" (99). Another essay, Peter Neushul and Peter Westwick's "Blowing Foam and Blowing Minds: Better Surfing through Chemistry," documents how the surfers and backyard tinkerers at the very center of the countercultural movement transformed surfboard manufacturing to become a highly technological pursuit reliant on industrial petrochemicals. As Neushul and Westwick argue, "the military-industrial complex . . . enabled the backyard-craftsman, individualized

model of surfboard production—and that in turn reflected the context of sixties do-it-yourself, small technology ideals" (64). Thus, in a particularly groovy twist to the story, the volume demonstrates that interdisciplinarity continued to flourish at the center of what the authors call "groovy science," aligned with new ends ranging from surfing equipment to cheese making, and from "humanistic psychology" to "socially relevant" physics, and embedded with countercultural virtues such as cooperation and communalism.

Overall, these books unwrap the larger story of how scientific research, cultural currents, and political cultures created the intellectual landscape of mid- to late-twentieth-century America at the same time as they produced warheads and missiles. By combining broad historiographical frames with fine-grained historical analysis of scientific cultures that cut across natural, social, and human sciences and spanned from the prewar years to the "long 1970s," this new historiography sheds new light on some of the well-worn themes in the history of sciences during the Cold War, opening a window onto the complex intellectual geography of the political and scientific worlds originally created by the American military-industrial-academic complex to fight the Cold War.