

publishing, church reform, professionalization, gender dynamics, visual spectacle and social change, and he makes substantial contributions to understanding the relationship between those matters and science. Historians interested in any of these issues will find this book enriching and thought provoking. The author's insights

into the world of Victorian science publishing offer important lessons for our own era's continuing struggle with the question of scientific authority.

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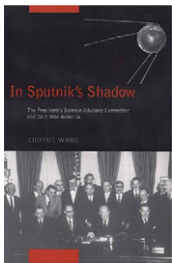
#### Book Review

## To serve at the pleasure of the President

*In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America* by Zouyue Wang, Rutgers University Press (2008), 455 pp. + xix, \$49.95, ISBN 978-0-8135-4331-4

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*In Sputnik's Shadow* is a comprehensive history of the President's Science Advisory Committee (PSAC) from its 1957 inception by President Eisenhower to its dissolution by President Nixon in 1973. In Zouyue Wang's detailed account, the President, the individual members of the Committee and the chair, who was the President's special assistant for science and technology, each played a critical role

in the success and ultimate failure of the science advising system. Wang argues that it was the technological skepticism that the members of PSAC expressed that made them most valuable to the Cold War Presidents. As advocates of arms control and basic research, they provided a welcome balance to the military advisors who had an insatiable appetite for nuclear technology. The lesson of these episodes from the height of the Cold War 'is that scientific and technological dissent forms a vital part of the American democratic experiment.'

By tracing the whole story of PSAC, Wang highlights the dual role that it played in the political system, both guiding policy for science and providing scientific advice for public policy. The members of PSAC were a particular breed of public scientists, those with direct political influence, but somewhat limited authority. Many of them had been in the public eye since the 1940s, either as participants in the Manhattan Project or in the scientists' movement, and they were respected in both scientific and political circles. Wang's analysis adds many new facets to our understanding of the role science played in Cold War culture, not only with regard to science funding, developing new military technologies and the space race, but also in the ways that assumptions about science and scientists were reflected in popular attitudes about patriotism, authority and loyalty.

President Eisenhower established PSAC in the wake of the Soviet launching of their satellite Sputnik in October

1957. Even before Sputnik, he had relied heavily on the Office of Defense Mobilization Science Advisory Committee and its various studies and panels for guidance, and many of the members of ODM-SAC were invited to join PSAC. Although their first tasks were focused narrowly on restoring American scientific prestige after the embarrassment of Sputnik, PSAC soon became Eisenhower's source for clear advice on matters that were not strictly scientific. He assumed that scientists would be objective about everything, and therefore ideal advisors and he appreciated that this group argued against the military-industrial complex that was constantly pushing for nuclear solutions to foreign policy problems. Nevertheless, Wang's narrative makes it clear that others in the government were concerned that scientists in general, but particularly those involved with PSAC would have to choose between competing loyalties to their country and to science.

During the Cold War, 'science' mainly meant physics in the public imagination, and the members of PSAC reflected that emphasis. This account demonstrates how they worked hard to convince the Presidents of the value of basic research over technological or engineering innovations, but physics was still emphasized over chemistry and biology. Wang argues that the representation of scientists from academia, industry and private institutions 'embodied the American scientific establishment'. However, with only three members from medicine or the life sciences in the initial group of sixteen, PSAC's members and focus was heavily skewed towards defense research and development until President Kennedy asked them to evaluate the claims in Rachel Carson's *Silent Spring* in 1962.

The President's willingness to hear advice and his attitude towards scientists determined how successful PSAC could be. Presidents Eisenhower, Kennedy and Johnson were remarkably open to PSAC's recommendations. The few notable exceptions included PSAC's concerns about the scientific merit of the Apollo space program. Wang explains this success as the convergence of changes in American science and society coupled with

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'the ideology of liberal consensus' that the best way to combat communism abroad and perfect American society was through government reform, economic growth and technological progress. The liberal consensus did not survive the 1960s, and the combination of Nixon's personality and political style, the national upheaval about the Vietnam War (and the role of science and technology in fighting that war) and the rise of the counterculture with its widespread critique of technology doomed PSAC. Nixon's 'hostility... and indifference' to science made it easy for him to dissolve PSAC, and Wang laments the loss of respect for scientists that has characterized the administrations of the Republican presidents since Nixon.

During the Cold War, scientists and engineers provided not only the weapons that defined American strength, but also the prestige of intellectual achievement. Scientific authority was considered a reliable source of information about issues far beyond the laboratory in the 1950s, but that authority slowly eroded over the rest of the twentieth century. This valuable book highlights both the opportunities and the limits of that public trust, and adds another element to our understanding of the complex, interdependent relationship between science and the democratic state.

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Book Review

## The historic trajectory of Hubble

**The Universe in a Mirror: The Saga of the Hubble Space Telescope and the Visionaries Who Built It** by Robert Zimmerman, Princeton University Press, 2008. \$29.95 ISBN 978-0691132976

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Robert Zimmerman's *The Universe in a Mirror: The Saga of the Hubble Space Telescope and the Visionaries Who Built It* sees the history of the Hubble Space Telescope (HST) as a perilous saga, from ambitious conception to fraught construction, potential abandonment and ultimate successes. Zimmerman presents his history in two intertwining threads, running the potential and actualized astro-

nomical discoveries of the space telescope alongside the ambitions, hopes, successes and disappointments of the scientists and administrators who built it. The figure standing in most for HST's discoveries is Eta Carinae, a star of significant interest from the time of Herschel, its early obscure homuncular image posing a longstanding technical and astronomical puzzle. Zimmerman repeatedly returns to images of the star, to its refinements over the course of the history he charts. As such, these successive images over time stand as figures for the trajectory of the space telescope, its travails and successes.

At the same time, Zimmerman relates the personal histories of those men and women he regards as the many heroes of this history, giving particular attention to Lyman Spitzer, C. Robert O'Dell, John Bahcall, Nancy Roman, James Westphal and Sandy Faber. But these are just the central actors in Zimmerman's story; they appear alongside scientists, administrators, congressman and corporations. The threads of his history come firmly together in the culmination of this collective work: the stunning

images HST produces once it is in orbit and repaired, free of the visual distortions produced by the earth's atmosphere. Such an image provides the resolution (figuratively and technically) of the puzzle of Eta Carinae, the artifacts of earlier ground-based images firmly dispelled. The book then is as much a celebration of the powers of the telescope, its inspirational conceit and enormous scientific fecundity, as it is of those who contributed to its construction, perhaps none of whom was able to take an active leading role throughout its long twentieth-century history.

There are several things the book is not. It is not a detailed history of the technology, neither is it a critical interrogation of the events. It is not the academic treatment as given in the earlier *The Space Telescope: A Study of NASA, Science, Technology and Politics* by Robert W. Smith to which Zimmerman is indebted as he himself attests in his bibliography. It is essentially a popular history, and as that, a very successful work. It is highly readable and enthusiastic without being rhapsodic, and is written from a point of view that reveals a longstanding intimacy with all things Hubble Space Telescope. A particular strength of the text is a sympathy for the position of administrators in making difficult decisions, such as former NASA Administrator Sean O'Keefe choosing not to service the HST after 2005. Zimmerman also has an eye for character, even if with a somewhat heroizing turn, and gives sympathetic, captivating portrayals of all his central actors.

*The Universe in a Mirror's* final chapter is, perhaps, its most effective. Here, Zimmerman steps back and considers those scientists and administrators who made extraordinary and essential efforts to have the space telescope constructed, but who received little recognition for their

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Zouyue Wang. 0 / 0. "In Sputnik's Shadow" provides a lens to do just that, by tracing the rise and fall of the President's Science Advisory Committee from its ascendance under Eisenhower in the wake of the Soviet launching of Sputnik to its demise during the Nixon years. Members of this committee shared a strong sense of technological skepticism; they were just as inclined to advise the president about what technology couldn't do - for national security, space exploration, arms control, and environmental protection - as about what it could do. Zuoyue Wang examines key turning points during the twentieth century, in *In Sputnik's Shadow* book. Read reviews from world's largest community for readers. In today's world of rapid advancements in science and technology, we n... Start by marking "In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America" as Want to Read: Want to Read saving... | Want to Read. Currently Reading. Read. Other editions. Enlarge cover. *In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America* by Zouyue Wang, Rutgers University Press (2008), 455 pp. + xix, \$49.95, ISBN 978-0-8135-4331-4. Rena Selya\*. Department of History, UCLA, 6265 Bunche Hall, Los Angeles, CA 90095-1473, USA. *In Sputnik's Shadow* is a comprehensive history of the President's Science Advisory Committee (PSAC) from its 1957 inception by President Eisenhower to its dis-solution by President Nixon in 1973. President Eisenhower established PSAC in the wake of the Soviet launching of their satellite Sputnik in October. \*Tel.: +1 310 825 4601. Selya, R. (selya@post.harvard.edu) Available online 5 February 2009. www.sciencedirect.com. *In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America* by Wang, Zuoyue at AbeBooks.co.uk - ISBN 10: 0813546885 - ISBN 13: 9780813546889 - Rutgers University Press - 2009 - Softcover. ISBN 10: 0813546885 ISBN 13: 9780813546889. Publisher: Rutgers University Press, 2009. This specific ISBN edition is currently not available. View all copies of this ISBN edition: Synopsis. About this title. *In Sputnik's Shadow* traces the rise and fall of the President's Science Advisory Committee from its ascendance under Eisenhower to its demise during the Nixon years. Zuoyue Wang examines key turning points during the twentieth century and brings new insights to the intellectual, social, and cultural histories of the era. *In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America*. *In Sputnik's Shadow* provides a lens to do just that, by tracing the rise and fall of the President's Science Advisory Committee from its ascendance under Eisenhower in the wake of the Soviet launching of Sputnik to its demise during the Nixon years. Members of this committee shared a strong sense of technological skepticism; they were just as inclined to advise the president about what technology couldn't do-for national security, space exploration, arms control, and environmental protection-as about what it could do. Zuoyue Wang examines key turning points during the twentieth century, includi