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## POLICY Series

### America and the World—2017 and Beyond

#### ***Science under the Trump Administration in Historical Perspective, Part I***

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*[This is part one of a two-part series on 'Science and the Trump Administration.' The second essay, by Alex Wellerstein, will be published later this year – ed.]*

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In 1965, four years after leaving the White House, former President Dwight D. Eisenhower published the second volume of his presidential memoirs, which covered the years 1956-1961. In it he recounted how his administration responded to the shock of the 1957 Soviet launch of Sputnik, the world's first artificial satellite. Eisenhower stressed in particular how pleased he was with his designation of James Killian of the Massachusetts Institute of Technology as the nation's first presidential science advisor:

The appointment of Dr. Killian, and later Dr. George Kistiakowsky of Harvard, worked out wonderfully. In character and accomplishment they could have had no superiors. Whatever the task—to build an airframe for the enormous B-70, or solve the metallurgical problem of ways to dissipate the heat for nose-cone re-entries into the earth's atmosphere—the scientific adviser kept me enlightened. My 'wizard' helped me to keep the subject of space away from becoming a 'race' and from deteriorating into a series of stunts. He helped to make certain that the government was supporting both basic and applied research.<sup>1</sup>

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<sup>1</sup> The formal title was special assistant to the president for science and technology. Dwight D. Eisenhower, *Waging Peace, 1956-1961* (Garden City: Doubleday, 1965), 224. For more on Eisenhower and his science advisors, see Zuoyue Wang, *In Sputnik's Shadow: The President's Science Advisory Committee and Cold War America* (New Brunswick: Rutgers University Press, 2008).

In praising his science advisors, he also issued a stern warning to his successors in the White House: “Without such distinguished help, any President in our time would be, to a certain extent, disabled.”<sup>2</sup>

Eisenhower’s warning has never been more applicable and timely, as science, technology, and environmental advising and policy-making in the Donald J. Trump presidency have come under widening public scrutiny and criticism. This is especially true for the American scientific community, which took part in an unprecedented (and global) March for Science on Earth Day 22 April 2017. Critics have pointed to the fact that Trump has denied the scientific consensus on climate change, withdrawn the United States from the Paris Agreement, and taken the longest to appoint a presidential science advisor (he still had not made such an appointment in mid-April 2018, when this article was completed).<sup>3</sup> In contrast, his immediate predecessor Barack Obama not only announced his pick of the physicist John Holdren of Harvard for the position about a month *before* his inauguration, but also pushed for support of science in funding and policy-making.<sup>4</sup> Trump also took the further steps early in his administration of proposing a budget that slashed the science budgets of the National Institutes of Health, the National Aeronautics and Space Administration, the Department of Energy, and the Environmental Protection Agency, and rolling back a number of environmental regulations that the Obama administration had enacted in response to the threat of climate change.<sup>5</sup>

Why has Trump not appointed a science advisor? I believe, as I told *Washington Post* reporter Chris Mooney in October 2017, that there are several factors at work: “The deep divide between the American scientific community and the Trump campaign/administration over key issues, including climate change and nuclear arms control; President Trump’s transactional style of leadership and policy-making, which tends to devalue

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<sup>2</sup> Eisenhower, *Waging Peace*, 224.

<sup>3</sup> Michael D. Shear, “Trump Will Withdraw U.S. from Paris Climate Agreement,” *New York Times*, 1 June 2017, <https://www.nytimes.com/2017/06/01/climate/trump-paris-climate-agreement.html> (accessed March 2018). Chris Mooney, “Trump Has Taken Longer to Name a Science Adviser than any Modern President,” *Washington Post*, 16 October 2017, [https://www.washingtonpost.com/news/energy-environment/wp/2017/10/16/trump-has-taken-longer-to-name-a-science-adviser-than-any-modern-president/?utm\\_term=.23e87aaff940](https://www.washingtonpost.com/news/energy-environment/wp/2017/10/16/trump-has-taken-longer-to-name-a-science-adviser-than-any-modern-president/?utm_term=.23e87aaff940) (accessed March 2018). See also Scott Waldman, “Trump’s Science Advisor, Age 31, Has a Political Science Degree,” 14 February 2018, <https://www.scientificamerican.com/article/trump-rsquo-s-science-advisor-age-31-has-a-political-science-degree/> (accessed March 2018).

<sup>4</sup> Fred Guterl, “Will Trump Negate Obama’s Science Legacy?...A Q&A with Outgoing Science Adviser John Holdren,” *Scientific American* blog, 21 December 2016, a <https://www.scientificamerican.com/article/will-trump-negate-obama-rsquo-s-science-legacy/> (accessed May 2017); Chris Mooney, “Scientists Are Conspicuously Missing from Trump’s Government,” *Washington Post*, 13 March 2017, [https://www.washingtonpost.com/news/energy-environment/wp/2017/03/13/one-big-thing-that-trumps-government-is-missing-scientists/?utm\\_term=.447afbd0e3e2](https://www.washingtonpost.com/news/energy-environment/wp/2017/03/13/one-big-thing-that-trumps-government-is-missing-scientists/?utm_term=.447afbd0e3e2) (accessed May 2017).

<sup>5</sup> See, e.g., Harold Varmus, “An Assault on Health and Science,” *New York Times*, 22 March 2017, A27; *New York Times* editorial board, “The Administration’s War on Science,” *The New York Times*, 27 March 2017, A18. Many of the proposed budget cuts were reversed by the US Congress for 2017; in 2018 the same pattern repeated itself. See Jeffrey Mervis and the *Science* news staff, “Congress Trumps President in Backing Science,” *Science* 356:6337 (5 May 2017): 470-471; Mervis, “Congress Gives Science a Record Funding Boost,” *Science* 359:6383 (30 March 2018): 1447-1448.

long-term planning which is an important function of science advising; and probably the unwillingness of many prominent American scientific and technological leaders to serve under the current administration.”<sup>6</sup> Now it appears that climate change might become a central issue: the Trump White House favors scientists who deny the climate consensus but any such nominee would face strong resistance in the U.S. Senate during the confirmation process.<sup>7</sup>

It should be noted that Trump is not the first recent president to decline to appoint a science advisor early in his administration. President George W. Bush nominated the physicist John Marburger as his science advisor only in June 2001, and only as director of the Office of Science and Technology Policy, not the more powerful position of Assistant to the President, as his predecessors since Alan Bromley under George H. W. Bush had been (and Holdren would become).<sup>8</sup> There was another parallel between the George W. Bush and Trump administrations: both have been accused of taking anti-science and anti-environment positions, especially in their denial of anthropogenic climate change.<sup>9</sup> Further back, in 1973 President Richard Nixon abolished nearly the entire presidential science advisory system that Eisenhower had established because of the scientists’ opposition to many of his policies. Also, President Ronald Reagan made the momentous decision to launch the Strategic Defense Initiative (SDI or “Star Wars”) in 1983 without consulting his own White House Science Council, leading John Bardeen, one of its physicist members and two-time Nobel laureate, to resign in protest.<sup>10</sup>

While science advisors have, for the past fifty years, fared better under Democratic than Republican presidents in general, this pattern has not always held. Besides Eisenhower’s remarkably effective use of science advisors, including the President’s Science Advisory Committee that he established in 1957, another Republican president, Gerald Ford, supported the law that restored science advising in the form of the Office of Science and Technology Policy in the Executive Office of the President (though not a PSAC), and a third GOP president, George H.W. Bush, earned generally good marks from scientists for his valuation of science advice, establishing the President’s Council of Advisors on Science and Technology (PCAST) as a successor to PSAC, and pursuing a generally moderate science policy. In contrast, strained science-government relationship existed during Lyndon B. Johnson’s Democratic administration amidst the Vietnam War controversy.

Does the president need a scientist at his side, as Eisenhower advocated in his memoirs, and does it matter if a president appoints a science advisor early on? Remarkably, even Eisenhower himself did not find it imperative to have a scientist in the White House during his first term. When Vannevar Bush, Director of the powerful

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<sup>6</sup> Mooney, “Trump Has Taken Longer to Name a Science Adviser.”

<sup>7</sup> Waldeman, “Trump’s Science Advisor.”

<sup>8</sup> Jo Marchant, “Bush’s Science Advisor John Marburger Dies, Aged 70,” *Nature* blog, August 2011, [http://blogs.nature.com/news/2011/08/bushs\\_science\\_advisor\\_john\\_mar\\_1.html](http://blogs.nature.com/news/2011/08/bushs_science_advisor_john_mar_1.html) (accessed May 2017).

<sup>9</sup> Andrew Lawler, “President’s New Adviser Ready to Put Science in Its Place,” *Science* 292:5526 (29 June 2001): 2408-2409.

<sup>10</sup> Wang, *In Sputnik’s Shadow*, 305-308, 315-316. But even Nixon realized that he needed a science advisor to help facilitate international scientific affairs and so appointed the National Science Foundation director H. Guyford Stever his advisor for this purpose, 306.

Office of Scientific Research and Development (OSRD) during World War II and arguably the first de-facto full-time presidential science advisor to Franklin D. Roosevelt, made the case for a scientific presence in the White House in a 1953 meeting with officials in the new administration, he was met with skepticism and resistance. A presidential aide argued that they could always call on a scientist from the outside if and when they needed one. Bush, a Republican, retorted that the trouble was that a group of generalists in government might not know *when* it needed scientific and technical advice, adding, “and I have seen fool things done in the White House for that very reason.”<sup>11</sup>

Having benefited from competent and independent science advice in the post-Sputnik days, Eisenhower clearly came to agree with Bush by the end of his presidency. After delivering his famous farewell speech in 1961 warning about not only the military-industrial complex but also a scientific-technological elite that was out of control, he took pains to explain to his science advisors that his target was not them, since they helped him make progress on nuclear arms control, but rather those bomb-pushing scientists who were a force behind the complex itself.<sup>12</sup>

In 1960, Kistiakowsky, Eisenhower’s second science advisor, certainly believed in the value of his office when he briefed Paul Nitze, a member of John Kennedy’s presidential transition team, just four days after the election. He warned Nitze that the new president would need a strong science advisory system to help him manage the ballooning research and development portions of the federal budget, and a science advisor on board early to help him make the large number of subcabinet appointments related to science and technology in the federal agencies. Jerome Wiesner of MIT was soon recruited by Kennedy as his science advisor, and he not only continued his predecessors’ roles in national security, arm control, and space, but also expanded the office’s environmental portfolio with a landmark report by PSAC in 1963. Titled *The Use of Pesticides*, it vindicated Rachel Carson’s warning on the subject in her 1962 book *Silent Spring*.<sup>13</sup> In 1965, during the tenure of Johnson’s science advisor Donald Hornig, the same concern with the environment of science advisors helped produce another important PSAC report titled *Restoring the Quality of Our Environment*.<sup>14</sup> Among other breakthroughs, it sounded the alarm on anthropogenic climate change, which became a central issue in science advising especially under President Obama.

This brief survey indicates that even though it was not always easy for scientists to provide necessary and even essential scientific input in public policy-making in the White House, they often found ways to do so. What is usually called “science policy” actually has a duality that is often overlooked: there is the “science in policy,” i.e., how government uses science and technology in public welfare and policy-making. Then there is the other half, “policy for science,” how government supports the development of science and technology in the nation, including both the “basic and applied research” mentioned in Eisenhower’s memoirs. Without

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<sup>11</sup> Wang, *In Sputnik’s Shadow*, 43.

<sup>12</sup> Wang, *In Sputnik’s Shadow*, 174-177.

<sup>13</sup> The President’s Science Advisory Committee, *Use of Pesticides* (Washington, D.C.: U.S. Government Printing Office, 1963); Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962).

<sup>14</sup> The President’s Science Advisory Committee, *Restoring the Quality of Our Environment* (Washington, D.C.: U.S. Government Printing Office, 1965).

effective scientific leadership at the presidential level, both functions face threats, including opportunity costs. As a consequence, not only is the current president ‘disabled,’ but the nation and the world also suffer in dealing with pressing and long-term challenges in areas such as public health emergencies, natural disasters, science education, climate change, nuclear proliferation, and cyber threats/information warfare that endanger security and elections.

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