ELSEVIER

Endeavour Vol. xxx No. x

Full text provided by www.sciencedirect.com

ScienceDirect

Stephen Jay Gould and the value-neutrality of science during the late Cold War

Myrna Sheldon

Ohio University, United States

Stephen Jay Gould was a paleontologist and scientific celebrity at the close of the twentieth century, most famous for his popular writings on evolution and his role in the American creationist controversies of that era. In the early 1980s, Gould was drawn into the ''nuclear winter'' episode through his friendship with Carl Sagan, an astronomer and popular science celebrity. Sagan helped develop the theory of nuclear winter and subsequently used the theory as evidence to petition the United States government to scale back its nuclear armament. The theory of nuclear winter claimed that even a small nuclear exchange could result in a atmospheric blackening akin to the extinction event of the late Cretaceous. Gould was not a climate scientist but he testified before the U.S. House of Representatives as an expert on historical extinction events. Gould's insistence on the value-neutrality of nuclear winter reveals much about the moral politics of science in late Cold War America. Coming at the heels of leftist scientific activism of the 1980s, the nuclear winter episode demonstrates how value-neutrality emerged the salient feature of scientific involvement in American politics in this period.

"Science can offer the world no real defense against the consequences of nuclear war." This uncompromising declaration was penned by an assembly of scientists convened by the Pontifical Academy of Science at the behest of Pope John Paul II in the fall of 1982. In their "Declaration on Prevention of Nuclear War," this international group of scientists renounced technological solutions to the threat of nuclear disaster. "There is no prospect," they averred, of "making defenses sufficiently effective to protect cities" from the peril of a nuclear attack. Although science had birthed the weapons that threatened the "very survival" of human civilization, it could not now offer any new defense, prevention or eradication of this potential apocalypse. But the Pontifical Academy of Science did not believe that scientists ought to simply sit by as the nuclear threat grew. To the contrary, the declaration asserted that it was the duty of "every person of good will" to address "the greatest moral issue that humanity has ever faced." The assembly appealed to scientists around the world to use their intellect and talents to explore "means of avoiding nuclear war and developing practical methods of arms control." Their message, contained in a document that excoriated the Cold War arms race between the US and the USSR, was all too clear. Scientist should use their research to halt the nuclear arms race and end nuclear proliferation, not to develop new weapons or defense technologies.[1]

The Vatican's prominent anti-nuclear stance was a response to a new era of Cold War geopolitics. The relative calm of the previous decade's détente had ended in 1979 when the Soviet Union's intervention in Afghanistan initiated the Soviet-Afghan War.[2] For half a generation, the relationship between the two superpowers had shown a cautious easing of tensions, even as the pace of nuclear production increased. But with the USSR's expansions in central and eastern Europe and a newly elected Ronald Reagan (who had campaigned for the American presidency on an anti-détente platform) the world found itself in the early 1980s with all the hostility of the first days of the Cold War, but with far larger weapon stockpiles. The two superpowers had built a doomsday machine piece by piece, and now these stockpiles threatened to erupt in a nuclear apocalypse.[3] How were "people of good will" to respond to this newly urgent crisis? The Vatican came firmly down on the side of dismantling the world's nuclear edifice, and the Pope sought the cooperation of scientists to help with this aim. But another world leader had a dramatically different vision of the role that scientists ought to play in this moment. In the spring of 1983, only a few months after the Pontifical Academy published its declaration, President Reagan called upon American scientists to launch the Strategic Defense Initiative (SDI) in his infamous "Star

Corresponding author: Sheldon, M. (sheldonm@ohio.edu).

[1] In its declaration, the Pontifical Academy highlighted both "the current arms race" and "proliferation of nuclear weapons" as key reasons for its concerns about nuclear war. The Pontifical Academy of Sciences, "Declaration on Prevention of Nuclear War," September 1982 in Box 757, Folder 5 in SJ Gould Papers, Stanford University, Calif.

[2] John Lewis Gaddis, *The Cold War: A New History* (New York: Penguin Books, 2006), 211.

[3] This alludes to the "doomsday machine" in in Stanley Kubrick's 1964 film, *Dr. Strangelove*, when the title character asks a Soviet ambassador, "Of course, the whole point of a Doomsday Machine is lost, if you *keep* it a *secret*! Why didn't you tell the world, EH?"

www.sciencedirect.com 0160-9327/
http://dx.doi.org/10.1016/j.endeavour.2016.10.003

Please cite this article in press as: Sheldon, M., Stephen Jay Gould and the value-neutrality of science during the late Cold War, Endeavour (2016), http://dx.doi.org/10.1016/j.endeavour.2016.10.003

Wars" speech.[4] In a televised address before the nation, he urged "the scientific community in our country, those who gave us nuclear weapons to turn their great talents now to the cause of mankind and world peace: to give us the means of rendering these nuclear weapons impotent and obsolete."[5] Reagan's imagined SDI altered the US nuclear strategy overnight. Rather than the doctrine of mutually assured destruction that had governed the actions of both countries since the late 1950s, SDI was to be a system of anti-ballistic missile defenses in space, capable of neutralizing an attack from the Soviet Union after the deployment of a nuclear strike.[6] Rejecting calls for a nuclear freeze,[7] Reagan believed America would be made safe by the innovation of the country's scientists.

For anti-nuclear activists and much of the American scientific community, Reagan's proposal was impossible at best and foolhardy at worst.[8] Several prominent nuclear physicists and weapons engineers openly questioned the feasibility of SDI.[9] Many other scientists joined their voices with the chorus of anti-nuclear sentiment that increased in volume during the early 1980s. In the few years after Reagan's election, anti-nuclear protests erupted around the nation and the world on an unprecedented scale—during the summer of 1982 the largest American anti-nuclear demonstration was held in New York City when almost one million protestors marched to end nuclear warfare. At the time, it was the largest political demonstration in U.S. history.[10] It was in this tense atmosphere that one group of scientists published the findings of their research on the long-term climactic effects of nuclear war, a phenomenon they termed "nuclear winter."[11] The concept behind nuclear winter was fairly simple—smoke and dust resulting from a nuclear blast would be enough to cause global temperatures to plummet or even produce near-total darkness for a period of months.[12] Even those human populations that were not directly effected by an initial nuclear exchange would not be able to survive the worldwide collapse of agriculture during the extended winter. A team of researchers published a paper in *Science* in December of 1983, detailing the phenomenon of nuclear winter. (The piece came to be known as the TTAPS paper, for the last names of its authors.)[13] Reagan's SDI proposal indicated a belief that the United States could win—and survive—a nuclear exchange with the Soviet Union. Nuclear winter was an argument that it could not.

The nuclear winter episode reveals much about the persona of the scientist and the ethical rhetoric of science's public role in the late Cold War. In this moment, the Pope sought the international scientific community's help in constructing a more peaceful world with fewer nuclear weapons. His was a vision of "the scientist" as a nationless vocation, a timeless calling that found its corollary in the historic institution of the Catholic Church, safeguarding the world against the evils of human action. In contrast, Reagan called exclusively upon American scientists, invoking their duty to make the world safer through the strength of America's own defensive technologies.[14] Both these world leaders had a particular vision of the virtues that ought to animate the scientific community—nuclear innovation on the one hand, advocacy for a nuclear freeze on the other. But America's most prominent public scientists answered the Pope's moral exhortation, rather than Reagan's call to national defense. In both its scientific and public iterations, the scientists involved with the nuclear winter theory presented it as an argument against the nuclear arms race. The phenomenon was even folded into the Vatican's ongoing scientific studies on nuclear war, when a contingency of American scientists presented nuclear winter at a Pontifical Academy of Science workshop in the early months of 1984. Nuclear winter was a theory that had clear political resonances. Why then, did scientists argue so strongly that their actions were not based on political motivations? Indeed, the perception that science was inherently free of even positive moral characteristics was pervasive in these discussions. The executive officer of the American Academy for the Advancement of Science, William Carey, writing on the nuclear winter episode in the pages of *Science*, even lamented that the "vacuum of internal values" in science put it in danger of being "invaded by prevailing external values."[15] Hardly half a generation earlier, and for a century before that, Americans who championed modern science did so because they believed that science contained the values of democracy.[16] To be scientific was to be open-minded; science was a means to cultivate civic virtue, it was not simply a set of dispassionate facts to be presented to the rest of society.[17] But here, in the final decade of the Cold War, science was vacated of its internal virtue. The scientists who were most prominently involved with publicizing nuclear winter consistently presented it as a fact to be reconciled with, not a scientific theory conjured for political ends.

The value-neutrality of nuclear winter was directly shaped by one of its more famous scientific publicists—the paleontologist and public science writer, Stephen Jay

[4] Reagan, "Presidential Address: 'Star Wars Speech,'" March 23, 1983.
[5] Ibid.
[6] Frances FitzGerald, *Way Out There In the Blue: Reagan, Star Wars and the End of the Cold War* (New York: Simon & Schuster, 2001), 19.
[7] Here "nuclear freeze" refers to the call by anti-nuclear activists for the end of testing, production and deployment of nuclear weapons (and should not be confused with the climatic cooling effects described by the nuclear winter theory).
[8] Rebecca Slayton, "Discursive Choices Boycotting Star Wars Between Science and Politics," *Social Studies of Science* 37, no. 1 (2007): 27–66. Slayton analyzes the nationwide boycott by scientists of SDI funds. As Oreskes and Conway highlight, this was an unprecedented move by American scientists, as "scientists had never before refused to build a weapons system when the government had asked." Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (New York: Bloomsbury Press, 2010), 43.
[9] Oreskes and Conway, *Merchants of Doubt*, 41–46.
[10] K. Harvey, *American Anti-Nuclear Activism, 1975–1990: The Challenge of Peace* (New York: Springer, 2014), 1.
[11] Richard Turco et al., "Nuclear Winter: Global Consequences of Multiple Nuclear Explosions," *Science* 222, no. 4630 (1292 1283): December 23, 1983.
[12] Importantly, the TTAPS paper highlighted the effect that the burning of cities and forests would have on this phenomenon. The former was of particular concern, because of the "large stores of combustible materials" in cities. Turco et al., "Nuclear Winter," 1290.
[13] Turco et al., "Nuclear Winter."
[14] Reagan, "Presidential Address."
[15] William D. Carey, "A Run Worth Making," Science 222, no. 4630 (December 23, 1983): 1281.
[16] Andrew Jewett, *Science, Democracy, and the American University: From the Civil War to the Cold War* (Cambridge: Cambridge University Press, 2012), 4–5.
[17] Jamie Cohen-Cole, *The Open Mind: Cold War Politics and the Sciences of Human Nature*, 1 edition (University of Chicago Press, 2014).

Please cite this article in press as: Sheldon, M., Stephen Jay Gould and the value-neutrality of science during the late Cold War, Endeavour (2016), http://dx.doi.org/10.1016/j.endeavour.2016.10.003