

The Impact of American Environmentalism and Nuclear Accidents on the Nuclear Taboo

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Introduction

Nuclear weapons have not been used in conflict since the attacks on Hiroshima and Nagasaki during World War II. Some argue that states have avoided nuclear conflict because of deterrence theory, the idea that states avoid launching a nuclear attack due to Mutually Assured Destruction (MAD). One explanation of the nonuse of nuclear weapons is the normative taboo against use. Some attribute the nonuse of nuclear weapons to the fear of the sheer scale of destruction capabilities that they maintain, as a supplement to deterrence theory, the nuclear non-use taboo. Norms, an expected behavior among a specific population, are thought to shape national security decisions, and by extension, nuclear weapons use and the taboo. Values and cultural tendencies inform the creation of norms, and public opinion on nuclear technologies shapes the norms surrounding them, spawning institutions like the Nuclear Non-Proliferation Treaty. This begs the question: what else shapes the nuclear taboo?

While nuclear deaths resulting from conflict have all but vanished, deaths related to radioactivity in weapons or energy production have not. During and following the Cold War, nuclear technologies began to demonstrate flaws, resulting in radioactive pollution accidents in several countries around the world. Each accident saw varying degrees of media attention and all faced anti-nuclear protests of some kind following their incident. In particular, the plutonium fire and the FBI raid at Rocky Flats brought thousands of protestors against nuclear weapons during the 1970s and 1980s. Several other accidents involving nuclear energy prompted anti-nuclear protests, including Three-Mile Island, Chernobyl, and Fukushima Daiichi. Knowing the backlash caused by nuclear accidents, this research posits that nuclear accidents and environmental norms shape the nuclear taboo. For international relations, this is important because maintaining norms

that stigmatize nuclear technology, such as non-proliferation and nonuse, should continue to steer nuclear actors away from the use of such weapons.

Historical Background

In the late 1950s, the United States was ramping up the nuclear arms race with the Soviet Union, devoting large sums of resources toward building a massive arsenal. In the wake of this development, mistakes in the production of nuclear technologies broke into several accidents, polluting the environment and often affecting the health of the public or officials that worked in the nuclear facilities. One such event occurred at a weapons plant outside of Denver, Colorado in September of 1957: the Rocky Flats facility's plutonium fire that scattered radioactive ash across the metro area (Cohen, 2012). Concerned with the potential of adverse health effects and environmental impacts, protests occurred outside of the complex several times dating back to the 1970s (New York Times, 1978). Throughout the years, thousands protested against nuclear weapons, in favor of "peace" as many protestors claimed. Rocky Flats was also notorious for its pollution of soil and water from its mismanagement of nuclear waste when creating plutonium "triggers" for nuclear weapons which prompted the raid of the Department of Energy's facility by the FBI in 1989 (Coates, 2014). The raid of Rocky Flats in 1989 brought media attention to the situation and official remediation to the Superfund site under the second Bush administration.

In March of 1979, a nuclear power plant near ten miles outside of Harrisburg, Pennsylvania suffered an accident, named for the location of the event, Three Mile Island (Filburn & Bullard, 2016). A series of events began with failures of a pump responsible for steam generation and cooling of the fission process that led to release of radioactive contamination into the surrounding area (Filburn & Bullard, 2016). Throughout the day on

March 28, onsite workers struggled to get the plant under control and eventually reestablished a cooling process to prevent further damage. However, this wasn't without releasing large amounts of radioactive gas into the building that caused a large-scale evacuation within two days of the event (Filburn & Bullard, 2016; Walsh, 1981). Several days after the accident and evacuation, approximately 1,000 protestors rallied in Harrisburg in response to the Three Mile Island accident. One month later, an anti-nuclear protest in Washington, D.C. occurred with more than 100,000 thousands attendees driven by the events at Three Mile Island just weeks earlier (Walsh, 1981; Mohr, 1979).

One cannot mention nuclear accidents without mentioning the disaster at the nuclear reactor in Chernobyl, Ukraine. After a power surge in April 1986, a fire not unlike the one at Rocky Flats broke out, spewing massive amounts of radioactive material when compared to the aforementioned incident (U.S.NRC, 2018). The aftermath included the deaths of two plant workers hours after the event, 28 total deaths of plant workers, over 100 cases of acute radiation sickness, and 6,000 cases of thyroid cancer in children (U.S.NRC, 2018). The events in Ukraine in 1986 shocked the world and caused support of nuclear energy to plummet in the same decade that record protests occurred protesting for disarmament and against nuclear weapons. Western Europe had the most adverse reaction to the incident, drawing out hundreds of thousands of protestors across several countries (Bernstein, 1986; Giugni, 2004; p.55).

The focus of environmental and anti-nuclear movements shifted throughout the Cold War, beginning with public concerns surrounding atmospheric weapons testing and the case of "radioactive milk." Public concerns with environmental contamination and health impacts from nuclear weapons tests helped create early arms control measures like the Limited Test Ban of 1963 and organize movements like with Greenpeace (Devall, 1991; Rubinson, 2018, p.67). Some

argue that the environmental movement saw its beginnings in the early pushback against nuclear testing during the 1950s and 1960s (Rubinson, 2018, p.100). Environmental and anti-nuclear movements consistently crossed during the Cold War with nuclear issues often becoming the center of attention for environmentalists across the world.

Theory

Norms and Decision-Making

Scholars often struggle with using norms and constructivism to explain political situations due to the difficulty that comes with quantifying norms and their ability to shift over time. However, those such as Finnemore and Sikkink have established a definition of norms and normative behavior that this paper will track: an assessment of a given behavior that produces stigma among a population group (1998, p. 892). Additionally, it is important the process behind norm creation whereby a norm emerges, followed by a “tipping point” of support by actors which creates a norm cascade into institutions, eventually leading to a population’s internalization of the norms (Finnemore & Sikkink, 1998, p. 898). Katzenstein, Wendt, and Jepperson take norms as a concept a step further than this when they theorized that states make security decisions based on culture and identity (1996, p.34). States that make decisions based on culture and identity may be less likely to enter into conflict with another state due to the existence of norms that complicate the perception of “what is best” for the state. These theories establish the foundation for assumptions surrounding the nuclear taboo and run counter to the realist approach of deterrence and the liberal approach of institutionalized cooperation.

Nuclear Weapons and Norms

Acknowledging the existence of norms in the global system does not explain nuclear norms in the nuclear age. Tannenwald notes that deterrence fails to completely explain the nonuse of nuclear weapons, especially with regard to non-nuclear and nuclear powers (Tannenwald, 1999, p. 433) In the 20th century, several conflicts broke out between nuclear powers and non-nuclear states, including the United States against Chinese forces in the Korean War and North Vietnamese forces in the Vietnam War, the Soviet Union in Afghanistan, and Britain with Falklands against Argentina (Tannenwald, 1999, p. 433-434). The lack of action on the part of nuclear powers seems to demonstrate an inconsistency with deterrence as the explanation for nonuse. Deterrence theory argues that states avoid using nuclear weapons against another state for fear of retaliation. However, the nuclear powers in these conflicts did not need to fear reaction from their adversaries, as they did not have the nuclear weapons to retaliate.

Norms disrupt realist decision-making patterns with regard to nuclear weapons by presenting leaders with more complex costs like the moral implications of using such a destructive force (Tannenwald, 1999, p. 440). Tannenwald theorized that norms shifted regarding nuclear weapons where the United States gradually shifted away from actual use of nuclear weapons to the absence of consideration of nuclear weapons for conflict (1999, p.442-462). Security officials in the United States government considered using weapons in the Korean War, but by the 1991 Gulf War, using nuclear weapons was ruled out by the US, despite the fact that there was no deterrent against use (Tannenwald, 1999, p.442-462).

The importance of norms comes from their ability to change, making them difficult to measure at times and potentially difficult to rely upon when they increase the firebreak¹ of

¹ The moral and psychological gap in those with nuclear authority that hinders the transition of use of conventional weapons to the use of nuclear weapons.

nuclear weapons. Initially, American opinion of the first use of nuclear weaponry was that it was justified and that the atomic bomb was positive, but this belief did not hold (Stokes, 2015; Saad, 2016). However, modern opinion has shifted away from that belief, and beginning with President Johnson, the US began to stress the “unconventional” nature of atomic weapons, commencing the taboo against nuclear weapons use (Schelling, 2007, p. 9) As support of the attacks on Japan continues to wane, norms of nonuse strengthen. It appears that the fear accompanied by nuclear weapons use and the destructive capability and targeting of innocents triggers an aversion to weapons use, not unlike the reaction of Ronald Reagan that left him depressed following a screening of *The Day After*² (Koch & Wells, 2021). In 2007, several international relations experts called for the end of all nuclear weapons citing the danger involved with nuclear war and former political leaders’ wishes to accomplish disarmament (Schultz et al., 2007).

Environmental Norms Impact Nuclear Norms

Environmental norms may also inform the basis of the taboo argument. Nonuse nuclear norms center around the idea that there exist opportunities to use nuclear weapons for a country’s interests and lack of threat of retaliation. However, constructivists state that a nuclear-capable state will not use those weapons due to the disproportionality or potential destruction to life inextricable from using a weapon in conflict (Koch & Wells, 2021). Environmental nuclear norms build upon this whereby some fear of nuclear pollution prevents countries from normalizing the use of nuclear weapons because of the major damage done to human health and the environment. In the extreme case, Carl Sagan outlines the possibility of environmental “catastrophe” if nuclear war were to break out with large-scale fires from a countervalue attack

² 1983 film that portrays a nuclear war between the United States and the Soviet Union that leads to massive death and destruction.

on cities causing a smoke plume that would absorb most sunlight being absorbed causing massive climate impacts (1983, p. 264). In one-sided nuclear war, such a catastrophe would not occur, but normative resistant the idea of inflicting nuclear pollution appears even with the father of the nuclear bomb, Samuel Cohen, who used ecologically-charged language regarding a measure to use nuclear weapons in Vietnam (Tannenwald, 1999, p.454). To “Create wasteland with low yield nuclear weapons in the southern part of North Vietnam” was deemed “virtually unthinkable” by Cohen and “unthinkable” by President Johnson in 1968 (Tannenwald, 1999, p.454).

The massive implications of a nuclear war violate international environmental norms such as state responsibility which would ultimately place blame on the state that began the nuclear conflict (Nanda, 2006). Codified in the Rome Statute of the International Criminal Court “infliction of environmental damage during war is a criminal act” is laid out in Article 8(2)(b)(iv) and stands as an international norm accepted by the United Nations. The International Court of Justice acknowledged the threat of nuclear weapons as the “environment is under daily threat and that the use of nuclear weapons could constitute catastrophe for the environment” (Nanda, 2006).

Important to this research is a 2020 survey that demonstrated a relationship between the opinion of nuclear weapons and energy (Baron & Herzog). The authors posit a “strong confluence of associations with nuclear power and nuclear weapons” (Baron & Herzog, 2020). Additionally, for much of its history, the relationship of nuclear energy with nuclear weapons has been difficult to separate due to the perceived closeness between energy and weapons. This research demonstrates quantitative data to support the long-held belief that citizens conflate nuclear energy and weapons.

Methodology

This research builds off of the aforementioned theories surrounding norms, culture, and how they affect decision-making. This paper will synthesize public opinion data on nuclear weapons and energy, informed by Baron and Herzog's research (2020) establishing a quantitative connection between atomic energy and weapons perceptions. Additionally, it will examine the anti-nuclear movement during the Cold War as it shifted between opposing nuclear energy and weapons. Comparing opinion data and reporting on the time period covering environmental and anti-nuclear responses to nuclear accidents will demonstrate the gradually heightening environmentally-focused stigma surrounding nuclear weapons use that culminated in the Rocky Flats raid and rejection of nuclear weapons use in decision-making. Additionally, this paper will compare environmentalist sentiments in public opinion and demonstrations to measure the cultural impact of such events with intent on finding a shift in anti-nuclear behavior or nuclear concern due to the accidents.

Evidence

As early as the 1950s, Americans faced the reality of the nuclear age, and with it, the seeds of the early environmental movement when radioactive material appeared in milk (Rubinson, 2018, p44, 101). Rachel Carson's 1962 *Silent Spring* furthered environmentalism and anti-nuclear sentiment in the United States and the West. In *Silent Spring*, Carson notes the similarities between harmful pesticides and nuclear technology, saying "the parallel between chemicals and radiation is exact and inescapable" (Carson, 2002. p.208). The major nuclear accidents and protests preceding the eventual 1989 raid of the Rocky Flats facility exemplify the

increasing concern for the environment and nuclear weapons use. Partially relying on the quantitative connection between nuclear energy and nuclear weapons from Baron and Herzog, one can make connections between weapons and energy perceptions.

Nuclear Reactions

Following the accident at Three Mile Island, public support of nuclear energy generation fell from 70% to 50% in the United States (Pedraza, 2013). Additionally, new nuclear reactors were not constructed in the US until 2013, and following Three Mile Island, several other countries either reduced the number of or canceled the construction of new nuclear generation sites (Pedraza, 2013). Aside from public opinion shifts following Three Mile Island, there appears to be a strong connection between anti-nuclear weapons and anti-nuclear energy parties, such as Physicians for Social Responsibility that opposed nuclear weapons one year after protesting nuclear energy due to Three Mile Island (Rubinson, 2018, p.128). People like the activist Frances Crowe demonstrate the ties of perception of nuclear weapons and energy as “opposing nuclear power was a continuation of her previous activism against nuclear weapons” (Rubinson, 2018, p.88). Crowe’s activism demonstrates the link that people perceive between nuclear weapons and energy and how populations often do not distinguish between the two holistically.

Following the events at Three Mile island in April 1979, over 10,000 protestors gathered at Rocky Flats to rally against its role in making plutonium triggers for nuclear weapons and this protest came just one week before the demonstration in Washington, D.C. against Three Mile Island and nuclear energy (*The Sumter Daily Item*, 1979). It isn’t a coincidence that the protests at Rocky Flats came so shortly before the Washington demonstration, and the simultaneous

nature of opposition to nuclear weapons and energy speaks to the discomfort with nuclear processes in general. Pictured at the 1979 Rocky Flats protest were people holding signs protesting different aspects of the functions of the plant, such as one with “CLOSE ROCKY FLATS” and crossed out nuclear bombs or another with “HEAL MOTHER EARTH” (Daniel et al., 2013, p. 88-89). The coexistence of these two protests demonstrates the broader influence that ramping environmentalism had on beliefs of nuclear weapons and energy.

1986’s Chernobyl elicits a number of reactions of varying degrees, particularly dependent on proximity to the events. As noted previously, hundreds of thousands of protestors rallied against nuclear energy across Europe, in Germany, Italy, France, and parts of the former Soviet Union like Belarus (Giugni, 2004). Demonstrators in Germany attempted to attack a nuclear power plant in protest of nuclear energy following Chernobyl (Berstein, 1986). Just as in the United States, demonstrations consistently carried environmental fears of nuclear technology which is illustrated well by German nuclear physics professor and protestor, Jens Scheer: “Nuclear energy, whether military or civilian, is a war against man and nature” (Bernstein, 1986). Protests on the same scale were not noted in the United States. However, the Chernobyl accident strengthened opposition to nuclear energy also following the events of Three Mile Island as shown in a Gallup opinion poll from the time. Opposition to having a nuclear power plant near respondents’ area increased from 45% in 1976 to 60% in 1979 after Three Mile Island and again to 73% following the Chernobyl accident (Saad, 2016). In addition to the public backlash following Chernobyl, governments acknowledged the potential for catastrophic danger resulting from a nuclear accident by signing onto the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*. These conventions exemplify government acknowledgment of the

dangers of nuclear technologies and the possibility of accidents that comes from them, especially due to the public perception that conflates weapons and energy.

Protests at Rocky Flats continued, eventually reaching its peak in October 1983, several years prior to the FBI's raid. At least 15,000 protesters gathered around the Rocky Flats facility, forming a nearly complete human chain around the complex in opposition to the revitalized nuclear weapons buildup (Dodge, 2013). According to Colorado State Historian, Dr. William Convery,

"By the 1980s, Americans were becoming more convinced that an atomic exchange with the Soviet Union really served nobody's interests at all, and because of the increased evidence of health risk, because of the anti-war movement and the anti-atomic weapon movement, Coloradans began protesting in more visible ways against Rocky Flats"

(Colorado Experience | Colorado's Cold War | Season 2 | Episode 205, 2014).

Convery's assessment of American attitudes toward nuclear technologies is consistent with this paper's other findings on nuclear attitudes during the time period. The Rocky Flats protestors represent a section of the population that has pushed against the need for nuclear technologies in any capacity. The potentially harmful impacts to health from a contaminated environment shaped their opposition to nuclear conflict and weapons use, which makes a strong case in favor of the idea that environmental norms and nuclear accidents shape the nuclear non-use taboo.

Trends Across the Latter 20th Century

After public concerns of radiation pollution in the 1950s and, pushed the US government to make headway with the Limited Test Ban of 1963. Environmental and anti-nuclear movements picked up more steam in the late 1960s and early 1970s. *Earth Day's* establishment

in 1969 demonstrated increasing popular support of the environmental movement as populations became more aware of the environment stemming from work like that of Rachel Carson's *Silent spring* from 1962 (Freudenberg & Steinsapir, 1991; Fazzi, 2016, p.147).

Hot off of the heels of anti-nuclear energy protests in the 1970s around the world, anti-nuclear demonstrations once again turned their attention to nuclear weapons in the 1980s with the nuclear freeze movement. In 1982 and 1983, millions of people across the western world protested against nuclear weapons. In New York City (1982), approximately one million people demonstrated against nuclear weapons and called for the end of their testing and production (Schell, 2007). Not long after in Europe (October 1983), more than one million protested across a week and a half against nuclear weapons and cruise missiles (Drozdiak, 1983). Protests against nuclear weapons continued across the West during the 1980s informed by the health, security, and environmental fears built up throughout the anti-nuclear movement.

The response to nuclear accidents demonstrates the extent to which environmental norms shape beliefs about nuclear weapons and technology. In the 1980s, anti-nuclear protesters from the Nuclear Weapons Facilities Task Force (NWFTF) argued that nuclear weapons “were dangerous not only because they increase the likelihood of nuclear war, but because they continued to harm the people they were meant to protect” (Rubinson, 2018, p.116). In addition to the nuclear accidents of the time period that informed anti-nuclear fears, movements like the NWFTF (and later Abolition 2000) that fought against nuclear weapons testing which they perceived to harm civilian populations and contaminate the environment.

Along with the decline in the frequency of nuclear accidents, environmentalist sentiments have also declined substantially. From 1989 to 2021, people worried about several environmental concerns significantly less, according to Gallup polling data. Individuals worried a “great deal”

about pollution of rivers, lakes and reservoirs declined from 72% to 53%, and the story remains the same for nearly every subject that Gallup polled on, including air pollution (63% to 41%), soil and water contamination by toxic waste (69% to 53%), and loss of natural habitat for wildlife (58% in 1989 to 44% in 2008) (Gallup, 2021). Americans do not appear to be as concerned about the pollution of their nearby environments. Since the events of Chernobyl and Three Mile Island, opposition to nuclear energy in polling has mostly remained the same at around 50% (Reinhart, 2019). This comes after the events of the Fukushima Daiichi nuclear reactor meltdown in 2011 and the peak of nuclear support in 2010 (Reinhart, 2019). The years following Fukushima Daiichi saw a sharp decline in support for nuclear energy, denoting another connection between the perceptions of nuclear technologies following an accident. There is a clear link between environmental norms and beliefs and nuclear-related accidents.

The scale and frequency of protests as direct responses to nuclear accidents and the consistent occurrence of demonstrations concerned with nuclear pollution substantiates the cultural impact of those nuclear accidents. Each accident was met with public backlash and simultaneously fueled both the anti-nuclear and environmental movements. Without the stigma caused by the anti-nuclear and environmental movements and other nuclear accidents, the raid of Rocky Flats likely would not have happened. The continually waning support of nuclear energy and weapons culminated in the 1980s with the large-scale protests, leading to the “tipping-point” for environmental-nuclear norms. The Rocky Flats raid stands as an important example of the institutional acceptance of the pushback against the existence of nuclear weapons by the American government.

Discussion

How does this research demonstrate that nuclear accidents and environmentalism impact weapons norms? This research displays the inseparable nature of the anti-nuclear and environmental movements and opinions of the 20th century as demonstrations totaling millions of people around the world pushed their governments to make changes. Nuclear accidents caused environmental and anti-nuclear backlash, and the backlash in the United States helped set the stage for greater acceptance by the government that nuclear weapons were no longer acceptable in the status quo. Americans' environmental, health, and security concerns during the Cold War were not limited merely to radical, fringe groups that had no chance at change.

If this research is taken as reality, what does that mean for nuclear weapons in the post-Cold War world? It should be noted that the environmental concerns of the 20th century have shifted in western world. Climate change is at the forefront of the environmental movement of the 21st century, and as renewable energy increasingly becomes the focus of the debate, nuclear energy may be perceived as a more viable option. When deterrence fails, a more relaxed stance on nuclear energy may mean less environmental concern being placed on the impacts of limited nuclear weapons use. Leadership may see limited use as a more acceptable possibility or disregard the potentially catastrophic nature of nuclear weapons use, especially in conflicts between a nuclear and non-nuclear state such as between Israel and the Arab coalition. Very little prevents a country like Israel from using its nuclear arsenal if it sees itself in a pinch, and it's history of disproportionate conflict response (such as with the Palestinians) raises questions about the strength of its commitment to using nuclear weapons only in retaliation.

Conclusion

Do nuclear accidents and nuclear accidents affect the nuclear taboo? The public opinion and social movements that follow nuclear accidents are consistent with this paper's hypothesis. Nuclear accidents appear to have a substantial impact on the cultural value of nuclear weapons in the United States, constraining the potential for the United States and its nuclear allies when not deterred from using weapons. The fears of lasting impact from radioactive pollution originating from these accidents heightens the moral cost of using such a weapon, and the complete resistance to using nuclear weapons in conflict by the Gulf War correlates well with the '89 raid of Rocky Flats. The buildup of nuclear and environmental fears leading up to this point combined with the raid and knowledge of American security decisions demonstrates a tipping point sometime in the 1980s when the anti-nuclear movement was at its height.

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