

# Water and Warfare

Charlotte  
Grech-Madin

## The Evolution and Operation of the Water Taboo

Where water was once a standard weapon of armed conflict between nation-states, up until the Korean War, the latter half of the twentieth century witnessed a remarkable strengthening of state consciousness against weaponizing water in conflict. Water weaponization is the use of water as physical arms, typically through deprivation (too little water) and inundation (too much), oriented toward strategic and tactical ends. As this normative inhibition—a “water taboo”—evolved in the post-World War II era, it progressively ruled out the use of water as a weapon in a range of armed conflicts that was once acceptable, and where such use may have been strategically beneficial.

This study contends that a taboo against weaponizing water began to emerge in the 1950s, and has developed into an intricate mosaic of principles built through cumulative mechanisms of taboo evolution. The late 1960s and 1970s were a turning point for the taboo, as water became embedded in an international enterprise to delegitimize inhumane warfare and protect civilians and the environment. Rather than an object to be used at will in conflict, water was flagged as warranting restraint.<sup>1</sup> In parallel to this strengthening moral current, nearly all nation-states renounced the weaponization of water and became de facto custodians of water, condemning those few states that continued to weaponize it.<sup>2</sup>

---

*Charlotte Grech-Madin has a Ph.D. from the Department of Peace and Conflict Research at Uppsala University and the UNESCO Category II International Centre for Water Cooperation, Stockholm. An earlier version of this article won the Lawrence Finkelstein Award (International Organization) and Graduate Paper Award (Environmental Studies) from the International Studies Association in 2019.*

---

The author is grateful to Gil Merom, Ashok Swain, and Anders Themnér for their valuable contributions to this project, as well as the anonymous reviewers and participants at the following forums: the 2016–19 World Water Week Conventions, the 2018–19 International Studies Association Annual Conventions, the 2018 Conflict Research Society Conference at Oxford University, and the 2018 Stockholm-Cornell Conference on International Studies. For comments on earlier versions, she especially thanks Andrew Bennett, Johan Brosché, Jeffrey Checkel, Matthew Evangelista, Stefano Guzzini, Kristine Höglund, Desirée Nilsson, Chiara Ruffa, Aaron Wolf, and the Ph.D. cohort at the Department of Peace and Conflict Research at Uppsala University. Special thanks go to Jovanna Grech-Madin and Niklas Karlén for their encouragement.

---

1. International Committee of the Red Cross (ICRC), *Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, June 8, 1977, articles 54, 56, <https://ihl-databases.icrc.org/ihl/INTRO/470>.

2. States that have weaponized water against another state in conflict since 1946 are Cuba, Egypt, Ethiopia, India, Iraq, North Korea, Saudi Arabia, the United States, and Yugoslavia. Pacific Institute, “Water Conflict Chronology” (Oakland, Calif.: Pacific Institute, 2019), <http://www>

How did the water taboo evolve in the contemporary period? How does it influence state behavior?<sup>3</sup> To be sure, the water taboo is not altogether new, having roots in religious, philosophical, and ancient Mesopotamian legal thought.<sup>4</sup> This body of thought lacked cohesion, however, and was most often suppressed by strategic motives to use water. For much of human history, water was a standard weapon that delivered results. Goths cut major aqueducts to besiege Rome and befall the Eastern Roman Empire (537–538 C.E.);<sup>5</sup> Goguryeo forces of Korea drowned 300,000 Chinese soldiers to win the Battle of Salsu (612 C.E.);<sup>6</sup> Mongols opened dikes to flood and sack Baghdad (1258 C.E.);<sup>7</sup> Germans led the Herero people into the Omaheke desert to die of dehydration (1904 C.E.);<sup>8</sup> and Axis and Allied powers poisoned water, flooded land, and bombed dams to undermine one another in World War II (1939–45 C.E.).<sup>9</sup>

Rising scarcity of water has bolstered its military utility. Water is a vital resource that states cannot do without. Over the past half century, water scarcity has accelerated on the wave of population growth, urbanization, and environmental degradation, with half the world's population living in severe scarcity

---

.worldwater.org/conflict/list/; Center for Naval Analyses (CNA), *The Role of Water Stress in Instability and Conflict* (Arlington, Va.: CNA, December 2017); Mara Tignino, *Water during and after Armed Conflicts: What Protection in International Law?* (Leiden, Netherlands: Brill, 2016); American Society of International Law, "Eritrea-Ethiopia Claims Commission (EECC): Partial Award Regarding Western Front, Aerial Bombardment and Related Claims, Eritrea's Claims 1, 3, 5, 9–13, 14, 21, 25 and 26," *International Legal Materials*, Vol. 45, No. 2 (March 2006), pp. 396–429, doi.org/10.1017/S0020782900006239; UN International Criminal Tribunal for the Former Yugoslavia (UN-ICTY), *Final Report of the Prosecutor by the Committee Established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia* (UN-ICTY, June 2000), <https://www.icty.org/en/press/final-report-prosecutor-committee-established-review-nato-bombing-campaign-against-federal>; and Middle East Watch, *Needless Deaths in the Gulf War: Civilian Casualties during the Air Campaign and Violations of the Laws of War* (New York: Human Rights Watch, 1991).

3. I address both questions simultaneously, as there is no clear temporal division between taboo evolution and influence. Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-use of Nuclear Weapons since 1945* (Cambridge: Cambridge University Press, 2007), p. 64.

4. Joseph W. Dellapenna and Joyeeta Gupta, eds., *The Evolution of the Law and Politics of Water* (Dordrecht, Netherlands: Springer, 2009); and Naser I. Faruqui, Asit K. Biswas, and Murad J. Bino, eds., *Water Management in Islam* (Tokyo: UN University Press, 2001).

5. Procopius, *History of the Wars*, Book 5, Part 14, trans. H.B. Dewing (Cambridge, Mass.: Harvard University Press, 1919), <https://www.gutenberg.org/files/20298/20298-h/20298-h.htm>.

6. Ki-baik Lee, *A New History of Korea*, trans. Edward W. Wagner (Cambridge, Mass.: Harvard University Press, 1984).

7. Kaiqi Hua, "Horses, Arrows, and Trebuchets: Picturing the Mongol Military Campaign in Eurasia," in Bryan C. Keene, ed., *Toward a Global Middle Ages: Encountering the World through Illuminated Manuscripts* (Los Angeles, Calif.: J. Paul Getty Museum, 2019), pp. 190–194.

8. Jürgen Zimmerer, "Colonial Genocide: The Herero and Nama War (1904–8) in German South West Africa and Its Significance," in Dan Stone, ed., *The Historiography of Genocide* (New York: Palgrave Macmillan, 2008) pp. 323–343.

9. In World War II, water was weaponized by Finland, Germany, the Netherlands, the Soviet Union, the United Kingdom, and the United States. Pacific Institute, "Water Conflict Chronology."

at least one month per year.<sup>10</sup> Certainly, nonstate actors have viciously capitalized on water stress. Most recently, from 2014 to 2017 the Islamic State (IS) seized water sources in Iraq and Syria, closing dam gates in Ramadi and Fallujah and contaminating water with oil.<sup>11</sup> These tactics sought to “hold the entire region hostage,” effectively creating dependence on IS for water supply and inducing compliance of many pro-government towns.<sup>12</sup> In the face of water’s historical weaponization and continued utility with rising scarcity, it is intriguing that the water taboo has gathered force and influenced state practice today.

This study traces the evolution and operation of the water taboo from the 1950s to the 2010s. I focus on states, as they are the highest-order collective unit of the international community and the most accountable to legal-normative dictates of that community. By contrast, nonstate actors typically conform when they seek recognition or their sponsors require it; this instrumental basis makes nonstate compliance unstable and liable to break when support structures change.<sup>13</sup> The Korean War (1950–53) is the starting point of the analysis, as it was the first major international conflict of the post-World War II order, and one that embodied early ambivalence toward the acceptability of weaponizing water.

The limited research on norms around water weaponization has paid little attention to processes of norm evolution. Some scholars focus on legal norms that apply to protecting water in armed conflict, in a temporally fixed sense.<sup>14</sup> Others focus on environmental implications of war more broadly and corresponding fault lines in the legal landscape.<sup>15</sup> While important, these focuses

10. UN-Water, *The United Nations World Water Development Report 2020: Water and Climate Change* (Paris: UN Educational, Scientific, and Cultural Organization [UNESCO], 2020); and UN-Water, *The United Nations World Water Development Report 2015: Water for a Sustainable World* (Paris: UNESCO, 2015), pp. 10, 13.

11. Marcus D. King, “The Weaponization of Water in Syria and Iraq,” *Washington Quarterly*, Vol. 38, No. 4 (Winter 2016), pp. 153–169, doi.org/10.1080/0163660X.2015.1125835; and Wim Zwijnenburg, “Iraq’s Continuing Struggle with Conflict Pollution,” *Peace Insight*, March 12, 2015, <https://www.peaceinsight.org/blog/2015/03/iraqs-continuing-struggle-conflict-pollution/>.

12. Ambika Vishwanath, “The Water Wars Waged by the Islamic State,” *Stratfor*, November 25, 2015, <https://www.stratfor.com/weekly/water-wars-waged-islamic-state>.

13. Hyeran Jo, *Compliant Rebels: Rebel Groups and International Law in World Politics* (Cambridge: Cambridge University Press, 2015).

14. Tignino, *Water during and after Armed Conflicts*; Frederick M. Lorenz, *The Protection of Water Facilities under International Law* (Paris: UNESCO International Hydrological Programme [IHP], 2003); and Peter H. Gleick, “Water as a Weapon and Casualty of Conflict: Freshwater and International Humanitarian Law,” *Water Resources Management*, Vol. 33 (2019), pp. 1737–1751, doi.org/10.1007/s11269-019-02212-z.

15. Jay E. Austin and Carl E. Bruch, eds., *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives* (Cambridge: Cambridge University Press, 2000), pp. 39–181; Mark P. Nevitt, “Environmental Law in Military Operations,” in Geoffrey S. Corn, Rachel E. VanLangingham, and Shane R. Reeves, eds., *U.S. Military Operations: Law, Policy, and Practice* (Oxford: Oxford University Press, 2016), pp. 401–436; and Michael N. Schmitt, “Green War: An Assessment of the

have led to few insights as to how normative prescriptions around water actually develop and relate to one another as an evolving normative regime—a water taboo. To address the literary gap, I identify five cumulative mechanisms, or pathways, by which the water taboo has evolved and been transmitted to and among states. These are derived from norm life cycle and norm socialization literature,<sup>16</sup> as well as case insights, to include (1) instrumental adaption; (2) moral consciousness-raising; (3) institutionalization; (4) norm grafting; and (5) internalization. The first four mechanisms influence states largely through instrumental thinking (a “logic of consequences”), and the fifth through principled belief in the righteousness of the taboo (a “logic of appropriateness”).

In tracing the water taboo, the study makes three contributions across two research disciplines. First, it extends international relations scholarship on weapons taboos into the realm of water.<sup>17</sup> The protection of water is obviously important, yet it is among the most neglected issues in international relations. Distinct from existing scholarship, this study takes a social norm perspective to establish that there is a taboo dimension to weaponizing water in international conflict. This insight is especially timely in light of the ongoing Syrian and Yemen wars, which have cast water’s involvement in conflict into the recent spotlight.<sup>18</sup>

Second, and more theoretically, the study adds to international relations norm scholarship by conveying the intersectional nature of norms. Norms rarely evolve in isolation. Rather, they can intersect with other principles to gather force, just as several mountain streams flow into a river. The water taboo illustrates connections among several categories of norms, covering anthropocentric and intrinsic value perspectives on water. Altogether, these cate-

---

Environmental Law of International Armed Conflict,” *Yale Journal of International Law*, Vol. 22, No. 1 (1997), pp. 1–109, <https://digitalcommons.law.yale.edu/yjil/vol22/iss1/2>.

16. Martha Finnemore and Kathryn Sikkink, “International Norm Dynamics and Political Change,” *International Organization*, Vol. 52, No. 4 (Autumn 1998), pp. 887–917, doi.org/10.1162/002081898550789; and Thomas Risse, Stephen C. Ropp, and Kathryn Sikkink, eds., *The Power of Human Rights: International Norms and Domestic Change* (Cambridge: Cambridge University Press, 1999), pp. 11–14.

17. Tannenwald, *The Nuclear Taboo*; Alexander Kelle, *Prohibiting Chemical and Biological Weapons: Multilateral Regimes and their Evolution* (Boulder, Colo.: Lynne Rienner, 2014); Richard Price, “A Genealogy of the Chemical Weapons Taboo,” *International Organization*, Vol. 49, No. 1 (Winter 1995), pp. 73–103, doi.org/10.1017/S0020818300001582; Richard Price, “Reversing the Gun Sights: Transnational Civil Society Targets Land Mines,” *International Organization*, Vol. 52, No. 3 (Summer 1998), pp. 613–644, doi.org/10.1162/002081898550671; and Leon V. Sigal, *Negotiating Minefields: The Landmines Ban in American Politics* (New York: Routledge, 2006).

18. Omar El Hattab, “Memories from Syria and Yemen,” UNICEF blog, March 22, 2019, <https://blogs.unicef.org/blog/memories-syria-yemen/>; and Jeannie L. Sowers, Erika Weinthal, and Neda Zawahri, “Targeting Environmental Infrastructures, International Law, and Civilians in the New Middle Eastern Wars,” *Security Dialogue*, Vol. 48, No. 5 (October 2017), pp. 410–430, doi.org/10.1177/096701061716615.

gories form an intricate mosaic of principles that hold a common “tabooness” of weaponizing water in conflict, and collectively crowd out the space of acceptable military use of water in conflict.

Third, the study exposes that the taboo has influenced decisionmakers to restrain a means of violence against civilians and the environment. This finding speaks to peace and conflict research, which is driven by a normative agenda to uncover factors that constrain violence and build sustainable peace. Norms of just war, the responsibility to protect, and democratic peace are frequently in the spotlight, to which the water taboo, which directly protects civilians from colossal suffering, is a fitting complement. Water weaponization can also have flow-on effects to agricultural production; indeed, water is central to food security and ecosystem functioning.<sup>19</sup> Better understanding (and strengthening) the normative restraint of water weaponization has significant implications for human and environmental security.

In the next section, I provide a concise definition of water weaponization. I then outline existing explanations for taboo evolution in general, and present the five mechanisms specific to the water taboo. Next, I outline my process-tracing methodology and, subsequently, trace the water taboo from the Korean War to the Syrian civil war (2011–). During the analysis, I trace each mechanism in turn, but with some interchange between the first and second mechanisms given U.S. early resistance to the taboo. Empirics are drawn from key events, termed “critical milestones,” that consolidated each mechanism. I then discuss the limits of the taboo, especially its extension beyond international conflict. To conclude, I consider challenges to, and merits of, my taboo argument, and its relevance for future research and policy.

### *Defining Water Weaponization*

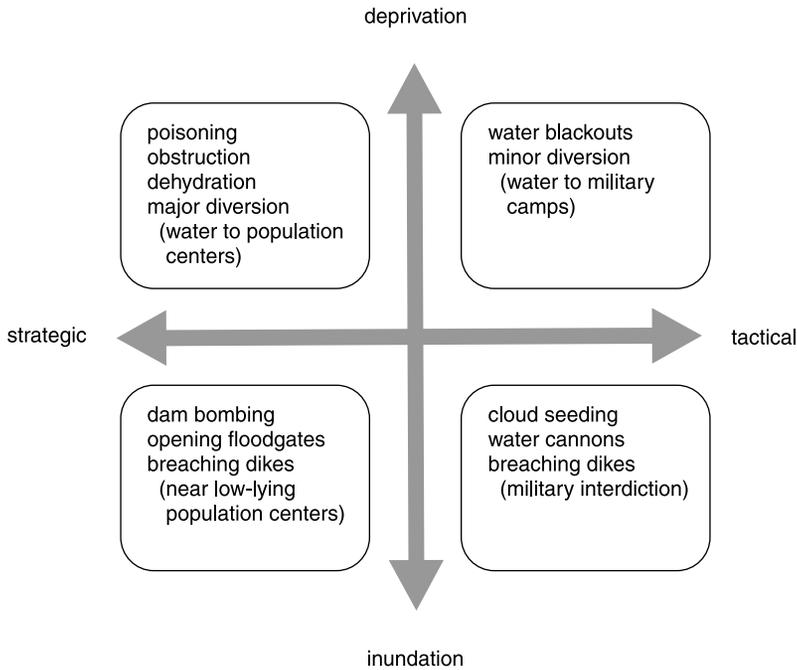
Put simply, water weaponization is the use of water as physical arms to harm and/or gain leverage over an adversary. Water weaponization has gathered scholarly attention only in recent years and remains underconceptualized. Building on early conceptual work by Marcus King and others,<sup>20</sup> I present a fo-

---

19. Margaret R. Biswas, “Nutrition, Food, and Water Security,” *Food and Nutrition Bulletin*, Vol. 20, No. 4 (January 1999), pp. 454–457, doi.org/10.1177/156482659902000410; and Food and Agriculture Organization of the UN (FAO), *New Dimensions in Water Security: Water, Society, and Ecosystem Services in the 21st Century* (Rome: Land and Water Development Division, 2000).

20. King, “The Weaponization of Water”; and Mark Zeitoun, Karim Eid-Sabbagh, and Jeremy Lovell, “The Analytical Framework of Water and Armed Conflict: A Focus on the 2006 Summer War between Israel and Lebanon,” *Disasters*, Vol. 38, No. 1 (January 2014), pp. 22–44, especially pp. 28–29, doi.org/10.1111/disa.12039. King presents the objectives of water weaponization at a case-specific level (Islamic State). I formulate these universally, and additionally separate weaponization into two main types.

Figure 1. The Structure of Water Weaponization



cused classification of water weaponization based on type—deprivation and inundation—and objective—strategic and tactical. Considering both dimensions captures almost all actions that have directly incorporated water as arms, while also speaking to the classic demarcation in security studies between strategic and tactical use of weaponry.<sup>21</sup>

Figure 1 represents the main structure of water as a weapon of conflict. On the vertical axis, deprivation refers to the reduction or complete denial of water needed for basic subsistence, or its degradation. Deprivation is not directly physical violence, but rather works by preventing the fulfillment of basic human needs.<sup>22</sup> Examples include poisoning, scorched-earth destruction of water supply, and water blockade during siege warfare. On the other end of the axis, inundation refers to the rapid release of a large quantity of water through destroying storage infrastructure or opening floodgates. The British “Dam Busters” Operation Chastise in World War II exemplifies this, where the Royal Air Force bombed German dams to inundate land and damage vital in-

21. Carl von Clausewitz, *On War*, abr. ed. (London: Wordsworth, 1997 [1832]), p. 75.

22. Johan Galtung, “Violence, Peace, and Peace Research,” *Journal of Peace Research*, Vol. 6, No. 3 (September 1969), pp. 167–191, especially p. 169, doi.org/10.1177/002234336900600301.

frastructure.<sup>23</sup> In the Netherlands, dikes were routinely breached as part of the Hollandic Water Line to hinder enemy advance.<sup>24</sup>

Additionally, water weaponization can be strategic in orientation. This is when water weaponization fulfills higher-order goals in conflict such as victory and unconditional surrender of the adversary. Water is here used to destroy important areas of land and population centers, typically on a large scale and with the expectation of decisive results. Strategic use can be enacted by surreptitious measures such as poisoning, or through sheer force of outflow by bombing dams and opening floodgates. By contrast, and often less extreme, is tactical weaponization, which aims to fulfill lower-order goals in conflict such as degrading an adversary's fighting capacity. Seeding clouds with silver iodide induces excess rain to disrupt transportation and the flow of military supplies.<sup>25</sup> Intermittently disrupting access to water (water blackouts) or diverting a stream away from a military camp hinders an adversary's war efforts.<sup>26</sup> Dike breaching produces moderate outflow, which floods proximate areas and can be used for military interdiction (tactical). The effect is heightened in low-lying, highly populated countries, where it can become strategic. Taken altogether, water presents a powerful means to achieve results in warfare.

### *Explanation of the Water Taboo*

The water taboo denotes a normative inhibition on using water as a weapon of conflict. A taboo in its broadest sense is a shared moral revulsion that prohibits a given behavior. It is a forceful form of a norm, in that it construes behavior as especially dangerous, with the expectation of awful consequences or punishment if violated.<sup>27</sup> The water taboo refers to this danger: water is life, and its

---

23. Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann, eds., *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (Geneva: ICRC and Martinus Nijhoff, 1987), p. 667.

24. Adriaan M.J. de Kraker, "Flooding in River Mouths: Human Caused or Natural Events? Five Centuries of Flooding Events in the SW Netherlands, 1500–2000," *Hydrology and Earth System Sciences*, Vol. 19, No. 6 (2015), pp. 2673–2684, doi.org/10.5194/hess-19-2673-2015.

25. Hearing on S. Hrg. 93, Weather Modification, before the Subcommittee on Oceans and International Environment of the Comm. on Foreign Relations, 93rd Cong. 2d sess., March 20, 1974, p. 89, <https://www.govinfo.gov/content/pkg/CHRG-93shrg29544O/pdf/CHRG-93shrg29544O.pdf>.

Historically, cloud seeding has been most effective in Southeast Asia, where there are heavy rains and underdeveloped lines of communication.

26. For water blackouts during the 1991 Gulf War, see UNICEF, "Iraq: Cleaning Up Neglected, Damaged Water System, Clearing Away Garbage," *Press Centre*, May 27, 2003, [https://www.unicef.org/media/media\\_6998.html](https://www.unicef.org/media/media_6998.html).

27. Tannenwald, *The Nuclear Taboo*, pp. 10–11; A.R. Radcliffe-Brown, *Taboo* (Cambridge: Cambridge University Press, 1939), pp. 18–19; and Hutton Webster, *Taboo: A Sociological Study* (Stanford, Calif.: Stanford University Press, 1942).

weaponization holds genocidal potential. As the taboo has evolved, it has commanded power to shame and ostracize those who violate it.

#### WHAT DRIVES TABOO EVOLUTION?

In this analysis of the water taboo, evolution is taken to mean the rise, gradual diffusion, and entrenchment of an international shared belief in restraining water weaponization. Scholarship on the development of weapons taboos offers frameworks for how the water taboo may have evolved in the contemporary period. Nina Tannenwald highlights realist and rationalist explanations that compete with her norm-based account of a nuclear taboo in international politics.<sup>28</sup> From these perspectives, the nuclear taboo developed as a function of material power and interests: realists envisage the taboo as simply reflecting the dominant view of the most powerful nuclear states (particularly the United States), and so best suited to serve their interests; rationalists add that nuclear weapons are uniquely destructive, and thus in states' best interest to constrain them.

Applying realist and rationalist explanations to the water taboo is unsatisfactory. First, the water taboo developed in the face of initial and significant resistance from powerful states, especially the United States, on the grounds that it would deprive militaries of a useful tool of warfare. Indeed, water had long been weaponized in conflict, from ancient water diversion by Assyrians, Mongols, and Romans, to medieval scorched-earth water poisoning and twentieth-century dam bombing. It was against the long-standing strategic utility of water that the taboo developed. This utility is examined in the study alongside the taboo.

Second, and in critique of a rationalist account, water weaponization is not uniquely destructive or blunt. Richard Price conveys that most weapons "share comparably dubious qualities," in the sense that use of high explosives and "being torn apart by burning shrapnel" is obviously horrific. Yet, these "conventional" weapons have not become "rationally" taboo.<sup>29</sup> Bombs dropped from high altitudes or delivered from ground or sea cannons some distance from the target produce civilian casualties.<sup>30</sup> The civilian death estimate for the Vietnam War is 2 million to 4 million.<sup>31</sup> If an aversion to destructive weapons were the sole explanatory factor for restraining water

28. Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo," *International Security*, Vol. 29, No. 4 (Spring 2005), pp. 5–49, especially pp. 6–7, 11–12, doi.org/10.1162/isec.2005.29.4.5.

29. Price, "Chemical Weapons Taboo," p. 75.

30. Larry May, *War Crimes and Just War* (Cambridge: Cambridge University Press, 2007), p. 122.

31. Marilyn B. Young, "Bombing Civilians from the Twentieth to the Twenty-First Centuries," in Yuki Tanaka and Young, eds., *Bombing Civilians: A Twentieth-Century History* (New York: New Press, 2009), pp. 154–174, especially p. 157.

weaponization, then little distinction should exist between it and other widely harmful weapons that are used. Destructiveness and bluntness may have contributed to the water taboo's development, but alone do not guarantee the normative proscription of a weapon.

Furthermore, water can be weaponized in a more limited and discriminate manner if desired, such as through temporary blockade or diversion.<sup>32</sup> In the 1991 Gulf War, experts suggested that a water cutoff "could be calibrated to allow the bare minimum necessary for humanitarian aims" while still putting pressure on Saddam Hussein's regime.<sup>33</sup> Where highly discriminate weapons have been developed, such as precision-guided munitions, these only gained traction with the revolution in military affairs of the 1990s, increasing in the 2000s, and have been far from universal in the post-World War II period.<sup>34</sup> While rationalist and realist factors may have partly contributed to the water taboo's development, a more complete explanation must consider the moral dimension of the taboo. Implicating water in conflict, especially in an existentially harmful manner and against civilians, brings with it significant moral qualms that gained prominence in the latter half of the twentieth century.

Pursuing the moral explanation, I turn to constructivist scholarship in international relations that identifies key mechanisms by which international moral norms develop. Martha Finnemore and Kathryn Sikkink famously present three stages of a norm life cycle: norm emergence (persuasion), norm cascade (socialization and institutionalization), and norm internalization (habit).<sup>35</sup> Thomas Risse, Stephen Ropp, and Kathryn Sikkink identify three comparable mechanisms, with a focus on the socialization stage: instrumental adaption and strategic bargaining, moral consciousness-raising (persuasion and shaming), and institutionalization.<sup>36</sup> Both models place attention on norm entrepreneurs, which are actors that introduce and promote norms in a given context, as well as epistemic communities—groups of experts who endorse a shared set of normative beliefs.<sup>37</sup>

I draw upon these models to identify five mechanisms by which the water

32. Historically, a "starve and dry" strategy of siege warfare was reversible, where water flow would be blocked or diverted until enemy surrender, and then restored.

33. Peter Schweizer, "The Spigot Strategy," *New York Times*, November 11, 1990, <https://www.nytimes.com/1990/11/11/opinion/the-spigot-strategy.html>.

34. During the 1991 Gulf War, 90 percent of all bombs were unguided. Thomas W. Smith, "The New Law of War: Legitimizing Hi-Tech and Infrastructural Violence," *International Studies Quarterly*, Vol. 46, No. 3 (September 2002), pp. 355–374, doi.org/10.1111/1468-2478.00237.

35. Finnemore and Sikkink, "International Norm Dynamics." Dominant mechanisms are in parentheses.

36. Risse, Ropp, and Sikkink, "The Power of Human Rights."

37. Peter M. Haas, "Introduction: Epistemic Communities and International Policy Coordination," *International Organization*, Vol. 46, No. 1 (Winter 1992), pp. 1–35, especially p. 3, doi.org/10.1017/s0020818300001442.

taboo has developed: instrumental adaption, moral consciousness-raising, institutionalization, norm grafting, and internalization. Instrumental adaption refers to the adjustment of behavior in response to reputation pressures as a norm is followed by a growing number of states. Moral consciousness-raising involves active appeal to humanitarian principles and the perceived moral high ground, often through persuasion and shaming those who deviate. Institutionalization occurs when a norm becomes codified in rules of international organizations and international law. In norm grafting, a norm becomes closely associated with (grafted by) congruent norms that are firmly established, which in turn bolsters its legitimacy.<sup>38</sup> Internalization refers to a norm's detachment from instrumental thinking as it becomes internally and automatically perceived as the appropriate thing to do. Building on each other, these mechanisms diffused and entrenched taboo thinking around water among nation-states.

#### RESEARCH DESIGN: "EXPLAINING-OUTCOME" PROCESS TRACING

In this study, I process trace how each of the five mechanisms identified above strengthened the taboo in a cumulative and logically continuous, albeit sometimes overlapping, way.<sup>39</sup> There are, however, several varieties of process tracing by which to pursue this objective. The following analysis employs a case-centric variant termed "explaining-outcome" process tracing.<sup>40</sup> The aim is not to build or test a generalizable causal mechanism between cause and effect (X and Y), as some forms of process tracing do. Instead, the ambition is to craft a "sufficient explanation of the [case-specific] outcome"—here, the evolution of the water taboo.<sup>41</sup> To develop this explanation, I combine existing theory with inductive discovery: the case is traced with an eye to recognizing when evidence is consistent with norm theory, while I also uncover case-specific insights (notably, norm grafting).<sup>42</sup> In all, "explaining-outcome" process tracing is an iterative research strategy that considers a combination of theoretically derived and case-specific mechanisms that account for an outcome.

Process tracing involves careful description of empirical material over time

38. Grafting is not in the norm life cycle literature, but it appears in Price's study on the anti-personnel land mines ban. Price, "Reversing the Gun Sights," pp. 627–631.

39. On mechanism continuity, see Derek Beach, "It's All About Mechanisms—What Process-Tracing Case Studies Should Be Tracing," *New Political Economy*, Vol. 21, No. 5 (2016), pp. 463–472, especially p. 465, doi.org/10.1080/13563467.2015.1134466.

40. Derek Beach and Rasmus B. Pedersen, *Process-Tracing Methods: Foundations and Guidelines* (Ann Arbor: University of Michigan Press, 2013).

41. *Ibid.*, p. 11. In this way, the study is oriented toward case-specific theory development, rather than theory testing.

42. For more on deductive-inductive process tracing, see James Mahoney, "Process Tracing and Historical Explanation," *Security Studies*, Vol. 24, No. 2 (2015), pp. 200–218, especially pp. 215–216, doi.org/10.1080/09636412.2015.1036610.

and from multiple sources. Description is beneficial, as it enables a relatively fine-grained look into the trajectories of taboo evolution.<sup>43</sup> As data, I draw on discourse of key decisionmakers, military manuals and target lists, legal codes, and historical scholarship.<sup>44</sup> Observable implications of the five mechanisms include discourse expressing concern for reputation loss or punishment (instrumental adaption); discourse appealing to moral principles or shaming another state (moral consciousness-raising); codified agreements on water weaponization (institutionalization); reference to congruent norms (norm grafting); and discourse that water weaponization is simply “not done” or “not compatible with our identity and values” (internalization). As key decisionmakers, I place added focus on U.S. leaders and their advisers. The logic here is that the United States is the biggest military power of the post-World War II period, and so could have afforded to ignore or even abuse international norms.<sup>45</sup> Moreover, it has been noncontiguous to most adversaries in conflict; hence, there would have been little threat of a retaliatory attack on the U.S. water supply if water had been weaponized. If leaders of such a strong state were to pay attention to the taboo (as I here show that they do), then one could assume that other (weaker) states should take even greater care toward it. I also give special attention to the secretary-general of the United Nations (UN), as the position holds considerable moral power in the international community and the secretary-general’s comments are noticed and distributed worldwide. Supplementing these, I look to international legal codes, thus broadening the focus to UN member states at large.

Given the long time span of the analysis, my empirical material is based on temporal snapshots—what I term “critical milestones.” Critical milestones are significant moments of mechanism consolidation that perpetuate the path of taboo evolution.<sup>46</sup> These include critical conferences, conventions, major international conflicts, and a landmark UN Security Council debate. Critical milestones were inductively determined by considering all events broadly relating to water weaponization and identifying those that had a significant impact on

---

43. On the merits of descriptive inference in process tracing, see David Collier, “Understanding Process Tracing,” *PS: Political Science & Politics*, Vol. 44, No. 4 (October 2011), pp. 823–830, doi.org/10.1017/S1049096511001429.

44. This project’s data collection, including elite interviewing, was approved by the Uppsala Ethical Review Board, Etikprövningsnämnden, April 11, 2018.

45. Rosemary Foot and Andrew Walter, “Global Norms and Major State Behaviour: The Cases of China and the United States,” *European Journal of International Relations*, Vol. 19, No. 2 (June 2013), pp. 329–352, especially p. 330, doi.org/10.1177/1354066111425261.

46. Critical milestones bear resemblance to “critical junctures” of historical institutionalism. Critical milestones are conceptually less restrictive, however, as they need not be path-breaking (produce dramatic changes), but rather moments of consolidation (definitive strengthening) that perpetuate an existing path.

taboo evolution. A focus on milestones is of value as it allows for a finer level of detail in the study than otherwise possible.<sup>47</sup>

### *Evolution of the Water Taboo, 1950s–2010s*

The long historical record of weaponizing water, and its wide usage in World War II, provided two precedents for how water weaponization might be viewed in the postwar international order. For one, water's strategic effectiveness in past conflicts simply could have set a precedent for continued use. Indeed, strategic manuals operational in the Korean War appeared to view water as yet another strategic weapon.<sup>48</sup> The prevailing Geneva Conventions made no mention of inhibiting strategic use of water.<sup>49</sup> Second, and more contemporary, World War II presented some consideration (albeit instrumental) to protecting civilians, as seen in the restraint of chemical weapons on the battlefield.<sup>50</sup> Was water to continue as a conventional strategic weapon or become a success story of civilian protection? As follows, I trace the evolution of the taboo in international politics. Table 1 displays the critical milestones and mechanisms central to this development.

#### FROM BUSINESS AS USUAL TO EARLY INSTRUMENTAL ADAPTION IN KOREA

With the onset of the Korean War in 1950, water was firmly in the game as a standard tool for both sides. At midnight on April 8, 1951, North Korean forces released small flood waves from the Hwacheon Dam on the Han River, a key watercourse running southwest to Seoul. As the surge traveled, it inundated downstream areas and damaged a series of floating bridges of the UN Command. The act was a provocation not only against UN forces, but also against South Korean industry, which relied on the dam for electricity generation. To preclude future weaponization, the next day, April 9, the 7th Cavalry Regiment of the U.S. Army was ordered to capture and disable the dam. When

47. On snapshots to focus process tracing, see Collier, "Understanding Process Tracing," p. 824.

48. U.S. War Department, *Rules of Land Warfare*, Field Manual No. 27-10 (Washington, D.C.: U.S. Government Printing Office [GPO], 1947 [October 1, 1940]), [https://www.loc.gov/rr/frd/Military\\_Law/pdf/rules\\_warfare-1940.pdf](https://www.loc.gov/rr/frd/Military_Law/pdf/rules_warfare-1940.pdf); and U.S. Office of Strategic Services (OSS), *Special Operations Field Manual—Strategic Services (Provisional)*, No. 4 (Washington, D.C.: OSS, February 23, 1944), <https://www.soc.mil/OSS/assets/special-operations-fm.pdf>.

49. See especially ICRC, *Convention (IV) Relative to the Protection of Civilian Persons in Time of War*, August 12, 1949, <https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Treaty.xsp?documentId=AE2D398352C5B028C12563CD002D6B5C&action=openDocument>. Only poisoning water with chemical and biological agents was prohibited. ICRC, *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, June 17, 1925, <https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/INTRO/280>.

50. John Ellis van Courtland Moon, "Chemical Weapons and Deterrence: The World War II Experience," *International Security*, Vol. 8, No. 4 (Spring 1984), pp. 3–35, doi.org/10.2307/2538560.

Table 1. Critical Milestones for the Water Taboo

Mechanism/Year	Milestone
1st mechanism	
Instrumental adaption	
1950–53	Korean War, U.S. deceit around dam bombings in North Korea
1965–75	Vietnam War, U.S. denial of alleged dike bombings in North Vietnam
2nd mechanism	
Moral consciousness-raising	
1961	Resolution on the Use of International Non-Maritime Waters (Salzburg Resolution), Institut de Droit International, Salzburg
1966	Helsinki Rules on the Uses of the Water of International Rivers, International Law Association Conference, Helsinki
1972	Declaration of the UN Conference on the Human Environment (Stockholm Declaration), Stockholm
1972	UN Secretary-General Kurt Waldheim denounces alleged U.S. dike bombings in North Vietnam
1974–75	U.S.-Soviet collaboration against environmental modification
3rd mechanism	
Institutionalization	
1976	Madrid Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict (Madrid Rules), International Law Association Conference, Madrid
1976	Environmental Modification Convention
1977	Geneva Conventions Additional Protocol I
4th mechanism	
Norm grafting	
1977	UN Water Conference, Mar del Plata
1989	UN Convention on the Rights of the Child
5th mechanism	
Internalization	
1992	Rio Declaration on Environment and Development, UN Conference on Environment and Development (Earth Summit), Rio de Janeiro
1992	UN Economic Commission for Europe Water Convention
1997	UN Watercourses Convention
2010	UN Resolution on the Human Right to Water and Sanitation
2011–	Syrian Civil War, global reaction to water weaponization
2016	UN Security Council Debate on Water, Peace and Security
2019	Geneva List of Principles on the Protection of Water Infrastructure
2019	International Law Commission Draft Principles on the Protection of the Environment in Relation to Armed Conflicts

NOTE: Other events were considered as potential milestones, from minor conflicts to the 2017 UN Security Council meeting on Preventive Diplomacy and Transboundary Waters. See UN Security Council, *Maintenance of International Peace and Security: Preventive Diplomacy and Transboundary Waters*, S/PV.7959 (June 6, 2017), <https://www.securitycouncilreport.org/un-documents/document/spv7959.php>. These events were omitted from the analysis where they were less influential for the taboo, and more relevant to transboundary water governance or water as a potential source rather than weapon of conflict.

attempts over the next three weeks to take the dam by land proved difficult, an air raid was called for, and over two days—April 30 and May 1—Skyraiders dropped two 2,000-pound bombs and eight Mark 13 torpedoes on the dam. Commanding officer of the U.S. Navy Attack Squadron VA-195, Richard Merrick, reported the attack on May 1 in a routine tone: “One bridge strike, one close air support, an Armed Reco [reconnaissance], and a Dam Torpedo strike was (*sic*) launched. Eight torpedoes dropped (2 by VC-35).”<sup>51</sup> A number of sluice and spillway gates were destroyed, effectively negating the military threat of the dam.

Military attitudes at the time were accepting of the dam attack. In an act of overt glorification, Attack Squadron VA-195 was renamed from “Tigers” to “Dam Busters.”<sup>52</sup> Although the attack was primarily defensive, U.S. military manuals in operation permitted offensive use, including all but the most existential water weaponization. U.S. Field Manual 27-10 (1940, operative 1950s) prohibited use of poisoned weapons, but stated that the provision “does not prohibit measures being taken to dry up springs, to divert rivers and aqueducts from their courses, or to contaminate sources of water by placing dead animals therein . . . provided such contamination is evident or the enemy is informed thereof.”<sup>53</sup> This view was extended in the U.S. Strategic Services Field Manual (1946), to include attacks on water and waterways as acceptable industrial and military sabotage. Floods were listed as an available method of “sabotage by destruction.”<sup>54</sup>

The year 1952 saw more dam attacks, with little moral reproof among the Allies. From June 23 to 24, and again June 26 to 27, the UN Command launched air attacks against hydroelectric generators that were part of North Korea’s Sui-Ho Dam. The attacks cut off electricity in North Korea and parts of Manchuria for a fortnight. Given that electricity generation was the main target—transformers, penstocks, and power distribution facilities—rather than the dam’s storage structure, the attacks were somewhat less of a water weapon. Nonetheless, international reactions to the event focused solely on its strategic dimension, with near to no concern for possible effects on civilian water (given that electricity was needed to power water turbines) or the attacks’

---

51. Quoted in National Naval Aviation Museum, “The U.S. Navy’s ‘Dambusters’ at Hwachon Dam,” *History Up Close*, May 1, 2015, Naval History and Heritage Command, [https://www.history.navy.mil/content/history/museums/nnam/education/articles/history-up-close/the-u-s—navy\\_s-dambusters-at-hwachon-dam.html](https://www.history.navy.mil/content/history/museums/nnam/education/articles/history-up-close/the-u-s—navy_s-dambusters-at-hwachon-dam.html).

52. *Ibid.* This glorification was also seen eight years prior, when the successful British “Dam Busters” Operation Chastise of May 16 and 17, 1943, in Germany boosted Britain’s morale and reputation; Squadron leader Guy Gibson was decorated with the Victoria Cross.

53. U.S. War Department, *Rules of Land Warfare*, p. 8, para. 28. Only the use of water as a conduit “calculated to spread contagious disease” was deemed unacceptable.

54. OSS, *Field Manual*, p. 14, para. 32(b).

potential to alter the flow of the Yalu (Amnok) River. The British Labour Party condemned the attacks on political grounds, citing improper strategic consultation between the United States and Britain.<sup>55</sup> Some members of the U.S. Congress saw the attacks as a military success, and instead criticized the fact that they were not conducted earlier.<sup>56</sup>

As the Korean War progressed, military planners found themselves competing with a fast-growing international movement against indiscriminate brutality in wartime. Partly facilitating this was the rise of what James Sheehan calls the “civilian state,” characterized by “increasing penetration of civilian habits and values into military institutions.”<sup>57</sup> It was directly counter to this movement that, in the final months of the Korean War, Allied military planners and leaders considered more intense tactics to gain military advantage and end the war. Where previously they authorized raids on dams as a defensive maneuver or tactical means to halt electricity generation, they now considered offensive use against North Korean civilians. In March 1953, the Formal Target Committee of the U.S. Far Eastern Air Force (FEAF) began studying the connection between flood-control reservoirs and 422,000 acres of rice in key agricultural areas of South Pyongan and Hwanghae. FEAF Chief of Intelligence Gen. Charles Banfill and his staff estimated that destroying the rice would create a food crisis and redirect enemy troops’ attention away from the battlefield. Commander of the UN Command Gen. Mark Clark endorsed the idea, notifying the U.S. Joint Chiefs of Staff that he planned to rupture twenty dams to flood agricultural areas and ruin 250,000 tons of rice.<sup>58</sup> The harm enacted upon civilians was to be large and at odds with the growing public sentiment of civilian protection.

Several features of the subsequent planning and execution of flooding exhibit awareness that such activity, if enacted publicly, would be unacceptable to the international community. These include personal qualms of decision-makers, deceit, and tactical delay. FEAF Commanding Gen. Otto Weyland declared himself “skeptical of the feasibility and desirability” of dam attacks, aware that the brutality would be negatively received by Allies.<sup>59</sup> He nonetheless authorized them, though crucially under the official guise of “military in-

---

55. To appease them, British Prime Minister Winston Churchill appointed a British deputy for the UN Command in Korea, which U.S. Defense Secretary Robert Lovett publicly supported.

56. Conrad C. Crane, “Exerting Air Pressure and Globalizing Containment: War Termination in Korea,” in Matthew Moten, ed., *Between War and Peace: How America Ends Its Wars* (New York: Free Press, 2011), p. 238.

57. James J. Sheehan, *Where Have All the Soldiers Gone? The Transformation of Modern Europe* (New York: Houghton Mifflin Harcourt, 2008), p. 178.

58. Crane, “Exerting Air Pressure,” p. 253.

59. Quoted in Richard Rhodes, *The Twilight of the Bombs: Recent Challenges, New Dangers, and the Prospects for a World without Nuclear Weapons* (New York: Alfred A. Knopf, 2010), p. 175.

terdiction" (i.e., tactical use) to inundate rail lines. Historian Conrad Crane observes that "among themselves [the planners] considered the rationale a 'mode of deception.'"<sup>60</sup> That the military engaged in straight deceit suggests that framing such activity in its basic form—existential destruction of rice crops through flooding—was expected to otherwise be intolerable. By mid-May 1953, attacks were carried out on the Toksan, Chasan, and Kuwonga Dams in North Korea, inundating nearby rice fields and villages to significant effect. As Crane notes, "The flash flood from Toksan scooped clean twenty-seven miles of river valley, and both raids sent water into the streets of Pyongyang."<sup>61</sup> At this point, the FEAF Formal Target Committee entertained the idea of dropping propaganda pamphlets on affected areas, which would reassign blame to the Chinese for the attacks and loss of water for agriculture. Although not carried through, the idea indicated real reputational concerns on the part of the FEAF.

The execution of the 1953 dam attacks embodied early instrumental adaption to prevailing attitudes of the international community. By this mechanism of taboo evolution, states adjust their behavior to wider pressures to appease others and retain legitimacy as a "civilized" state.<sup>62</sup> States may "talk the talk," without believing in a given taboo, though in their compliance, they add strength to that very taboo.<sup>63</sup> Through careful framing, the Allies instrumentally created a semblance of observance to the broader civilizing movement. The attacks were officially reported in FEAF press releases, with mention only to rail and road bridges affected. Through publicly suppressing the existential component of the attacks, the operation received little attention in the world press, which was preoccupied with other UN air campaigns. As Crane observes, "Since no mention was made of targeting rice crops, reservoirs did not seem to merit any consideration in the press as particularly promising or questionable objectives."<sup>64</sup> Further reflecting instrumental thinking, the United States was keen to problematize water weaponization when used by the adversary, as evident in the 1953 Korean War Atrocities hearing before the U.S. Senate. Of the acts listed as "atrocious" and offensive to "every civilized conscience" was "the deliberate withholding of food and water."<sup>65</sup> From

60. Crane, "Exerting Air Pressure," p. 254.

61. Conrad C. Crane, "Searching for Lucrative Targets in North Korea: The Shift from Interdiction to Air Pressure," in Jacob Neufeld and George M. Watson Jr., eds., *Coalition Air Warfare in the Korean War, 1950–1953* (Washington, D.C.: GPO, 2005) p. 172.

62. On the emergence of a "civilized" family of nations, see Gerrit W. Gong, *The Standard of "Civilization" in International Society* (Oxford: Clarendon, 1984).

63. This stage of norm evolution is compatible with a rationalist view of states as self-interested. Risse, Ropp, and Sikink, *The Power of Human Rights*.

64. Crane, "Exerting Air Pressure," p. 254.

65. Senate Committee on Government Operations, Hearing on S. Res. 40, Korean War Atrocities, before the Subcommittee on Korean War Atrocities of the Permanent Subcommittee on Investiga-

December 2 to 4, 1953, U.S. soldiers testified that North Korean forces had frequently denied drinking water to UN prisoners of war—an act that was considered in the hearing as within the scope of war crimes.<sup>66</sup> While it was not rational for the United States and its allies to admit to weaponizing water, it was in their interest to expose the enemy as doing so.

#### INSTRUMENTAL ADAPTION TO THE TABOO: U.S. RESTRAINT IN VIETNAM

Of all the Cold War conflicts, the Vietnam War should have seen the weaponization of water continue as usual. From the internationalization of the conflict in 1965, until its end in 1975, the United States showed little normative restraint, short of using nuclear weapons, in its attempts to win the war. A massive bombing campaign, Operation Rolling Thunder, was launched in March 1965 under President Lyndon Johnson, followed by (B-52) air raids and use of chemical defoliants (notably, Agent Orange), napalm, and even mines. Upward of 2 million Vietnamese were killed in the war. Water weaponization would have seemed yet another standard addition to the lethal mix of weapons. Indeed, for two millennia the Vietnamese had maintained a large system of dikes for irrigation and flood mitigation. These were vital to food production during the war, especially in the Red River delta—the “rice bowl” of North Vietnam and then-home to 15 million Vietnamese.<sup>67</sup>

In the years leading up to the United States’ involvement in Vietnam, water weaponization retained legitimacy in the U.S. military. Any evolving taboo sentiment around water was to contend with water’s continued military utility, and larger and more harmful ways to instrumentalize it through megadams and even atomic bombs. The U.S. Army Corps of Engineers, responsible for military hydrology in the period, reaffirmed its view that water was a standard weapon of conflict. In a study on military uses of water, the Corps recognized water’s “importance in military planning and operations, both in offense and defense,” and lauded World War II uses of water, such as the British Dam Busters’ raid on German dams, and German flooding of Italian rivers.<sup>68</sup> It also outlined a systematic approach to planning and execut-

---

tions, 83d Cong., 1st sess., pt. 1, December 2, 1953 (statement of Gen. Matthew B. Ridgway, Chief of Staff, United States Army), p. 5, [https://www.loc.gov/rr/frd/Military\\_Law/pdf/KW-atrocities-part1.pdf](https://www.loc.gov/rr/frd/Military_Law/pdf/KW-atrocities-part1.pdf).

66. *Ibid.*, parts 1, 2, and 3, <https://www.loc.gov/item/2011525374/>. On deprivation, see the testimony of Corporal Lloyd Kreider, pt. 1, p. 52; Sergeant Wendell Treffery, pt. 2, p. 89; Mr. Charles E. Kinard, pt. 2, pp. 100–101, 103; Mr. Roy P. Manning, pt. 2, pp. 129–130; and Colonel Robert Abbott, pt. 3, pp. 183–186.

67. “Vietnam: The Battle of the Dikes,” *Time*, August 7, 1972, <http://content.time.com/time/subscriber/article/0,33009,879148,00.html>.

68. U.S. Army Corps of Engineers, *Applications of Hydrology in Military Planning and Operations* (Washington, D.C.: Army Map Service, June 1957), pp. 1–5, <https://web.mst.edu/~rogersda/umrcourses/ge342/APPLICATIONS%20OF%20HYDROLOGY.pdf>.

ing artificial floods, based on predetermined hydrological data and on-site field investigation.<sup>69</sup>

Adding to water's military utility at the time was a growing technological capacity for dam construction and destruction. The Corps acknowledged that "since the advent of the atomic bomb, dams formerly believed impregnable to bombing attack may now become formidable weapons of war."<sup>70</sup> A 1963 U.S. Defense Intelligence Agency report further stressed the military significance of "high dams" and their potential for "disastrous damage to downstream military and civilian installations . . . and causing loss of life."<sup>71</sup> Water was clearly strategic, though the rising technological capacity to weaponize it also raised some apprehension among senior officers in the Corps, who recommended a "great deal of cognizance" be taken around weaponizing water.<sup>72</sup>

In 1966, in the midst of Operation Rolling Thunder in Vietnam, U.S. Assistant Secretary of Defense John McNaughton entertained the idea of breaching dikes in the high monsoon period to flood crops and induce a food crisis. According to the *Pentagon Papers*, McNaughton suggested that the weaponization of water, "if handled right—might . . . offer promise. It should be studied. By shallow-flooding the rice, it leads after time to widespread starvation (more than a million?) unless food is provided—which we could offer to do at the conference table."<sup>73</sup> Breaching dikes, typically producing medium to low-intensity human suffering, offered high-intensity, flow-on effects when executed in key agricultural areas. McNaughton's suggestion of a flood-induced food crisis was short-lived, however, as President Johnson quickly shut it down for fear of a North Vietnamese propaganda backlash.<sup>74</sup> U.S. pilots were given firm orders to avoid bombing dikes, as recognized by the North Vietnamese who then used dikes as a safe haven to store supplies, fuel pipelines, electric power plants, and even anti-aircraft batteries.<sup>75</sup>

At this point, it is fitting to ask whether Johnson placed the dikes off limits because they simply did not have sufficient strategic value. In early 1967, a Central Intelligence Agency report suggested that bombing the Red River dikes would redirect North Vietnamese resources away from the battle effort and toward food importation, to the extent that, "depending on the success of

69. Ibid., pp. 11–12.

70. Ibid., p. 15 (incorr. 13).

71. U.S. Defense Intelligence Agency, *Computation of Outflow from Breached Dams*, B-147-63 (Washington, D.C.: Army Map Service, June 1963), p. 1, <https://digitalcommons.unl.edu/dodmilintel/83/>.

72. U.S. Army Corps of Engineers, *Applications of Hydrology*, p. 15 (incorr. 13).

73. U.S. Department of Defense, *The Pentagon Papers: The Defense Department History of United States Decision Making on Vietnam*, Vol. 4, Senator Gravel ed. (Boston: Beacon, 1971), p. 43.

74. Crane, "Exerting Air Pressure," p. 238.

75. Ward Thomas, *The Ethics of Destruction: Norms and Force in International Relations* (Ithaca, N.Y.: Cornell University Press, 2001) pp. 152–153.

interdiction efforts, such imports might overload the transportation system."<sup>76</sup> Indeed, on a similar strategy enacted in the Korean War, General Clark reported that dam-bombing to flood rice crops had been "as effective as weeks of rail interdiction."<sup>77</sup> Targeting water storage facilities remained a strategic option in the war.

In early 1972, U.S. President Richard Nixon and Secretary of State Henry Kissinger held discussions on the strategic benefits of bombing dikes. According to the now-declassified White House Tapes, on April 25, shortly before a large escalation of the war, Nixon and Kissinger debated ways to ramp up through an "all-out bombing attack." Nixon insisted, "I still think we ought to take the dikes out now. Will that drown people?" Kissinger replied, "About two hundred thousand people."<sup>78</sup> Nixon clearly saw the strategic value of water, though Kissinger proved reluctant to touch the dikes. Revisiting the issue a week later, on May 4, Nixon declared: "We need to win the goddamned war . . . and . . . what that fella [?] said about taking out the goddamned dikes, all right, we'll take out the goddamned dikes. If Henry's for that, I'm for it all the way." White House Chief of Staff Harry Haldeman responded, "I don't know if he's for the dikes." Nixon agreed, "No, I don't think he's for the dikes, but I am."<sup>79</sup>

Putting aside the still-debated question of whether the United States did or did not intentionally bomb dikes in Vietnam, the fact that this strategic option to help end the war was neither publicly expressed nor turned into an official presidential order, despite Nixon's strong private interest in it, is puzzling. Rather, there were significant political reasons at play to instrumentally restrain the weaponization of water during the war. Indeed, the option to bomb the dikes, among other massive uses of force, had earlier been entertained by Nixon and Kissinger in Operation Duck Hook of 1969, a plan to take "measures of the greatest consequence" against North Vietnam if it did not agree to a diplomatic solution to end the war by November 1.<sup>80</sup> The operation was later canceled, largely as a result of the expected "major American and worldwide furore" over escalation of the war.<sup>81</sup> During a review of Vietnam prior to his in-

---

76. U.S. Department of Defense, *The Pentagon Papers*, p. 140.

77. Quoted in Crane, "Exerting Air Pressure," p. 253.

78. White House Tapes, audiotape 332, April 25, 1972, Old Executive Office Building, conversation 332-25, Richard Nixon Presidential Library and Museum, National Archives, Yorba Linda, California.

79. *Ibid.*, audiotape 719, May 4, 1972, Oval Office, conversation 719-22.

80. Henry Kissinger to President Nixon, "Meeting in Paris with North Vietnamese," August 6, 1969, with Memorandum of Conversation attached, August 4, 1969, p. 3, National Security Archive, George Washington University, Washington, D.C., <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB193/HAK-8-6-69.pdf>.

81. Richard Nixon, *RN: The Memoirs of Richard Nixon* (New York: Simon and Schuster, 1990 [1978]), p. 404.

auguration, Nixon considered dike bombing alongside using nuclear weapons. With apparent regret, he rejected both, saying “[I] could not allow my heart to rule my head”—his heart seeking to firmly knock out the adversary, his head alert to the expected public outcry.<sup>82</sup> Indeed, contemporaneous to Nixon’s decisionmaking was a mounting consciousness-raising in the international community to protect water for civilians. It is to this second mechanism that I now turn.

#### MORAL CONSCIOUSNESS-RAISING: A TRANSNATIONAL WATER COALITION

More than ever before, the Vietnam War gave rise to a heightened awareness and popular sensitivity to civilian casualties, of which water was a direct component. A North Vietnamese propaganda campaign sought to expand the “moral battlefield” to the American public and the world, through appealing to humanitarian principles and universal values of “fairness, love and freedom.”<sup>83</sup> At the campaign’s core was a call to safeguard the dikes as vital to agriculture and civilian livelihoods. Internal dialogue from the Nixon administration reflected awareness of this propaganda and its potential to undercut the United States’ moral character on the world stage. On May 5, 1972, one day after discussing the possibility of bombing dikes, among other targets, President Nixon scolded Kissinger: “The only place where you and I disagree . . . is with regard to the bombing. You’re so goddamned concerned about the civilians and I don’t give a damn. I don’t care.” Kissinger replied, “I’m concerned about the civilians because I don’t want the world to be mobilized against you as a butcher. We can do this without killing civilians.”<sup>84</sup> By this point in the war, it was clear that weapons involving intense civilian suffering, as many water weapons were, were not politically feasible at home or in the broader international community.

#### BEGINNINGS OF A WATER COALITION

The beginnings of a transnational coalition against water weaponization can be traced to the 1960s and a global legal effort to develop cooperative standards for transboundary water governance. Spearheading this effort was a team of legal experts—an epistemic community—operating from platforms such as the Institut de Droit International and the International Law Association (ILA).<sup>85</sup> The experts shared a goal to delegitimize the long-

82. *Ibid.*, p. 347; and Tannenwald, *The Nuclear Taboo*, p. 229.

83. J.D. Crouch II and Patrick J. Garrity, *You Run the Show or the Show Runs You: Capturing Professor Harold W. Rood’s Strategic Thought for a New Generation* (Lanham, Md.: Rowman and Littlefield, 2015), p. 189.

84. White House Tapes, audiotope 720, May 5, 1972, Oval Office, conversation 720-19.

85. Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building* (Cambridge, Mass.: MIT Press, 2005), especially pp. 93–122.

standing principle of “absolute national sovereignty,”<sup>86</sup> which permitted unbridled use of water within a nation-state, and instead sought to introduce more cooperative water principles of “equitable and reasonable use” and “no harm.” The latter principles were formally articulated in the Institut’s 1961 Salzburg Resolution on the Use of Non-Maritime International Waters. Article 2 stipulates that a state’s control of transboundary waters is limited “by the right of utilization by other States interested in the same watercourse or hydrographic basin.”<sup>87</sup> Article 4 adds that states can use water only where it preserves “the enjoyment of the advantages to which [other states] are entitled,” referring to the avoidance of harm.<sup>88</sup> These early prescriptions were strengthened with the ILA’s 1966 Helsinki Rules on the Uses of the Water of International Rivers.<sup>89</sup> Article 4 declares that states are entitled to a “reasonable and equitable share in the beneficial uses of the waters of an international drainage basin.” The Rules condemn actions that would cause “substantial injury” to a co-basin state.<sup>90</sup> Although nonbinding, the Salzburg and Helsinki codes set the standards for international watercourses and for the binding codification of key facets of the water taboo in decades to come.

#### EXPANSION OF THE WATER COALITION WITH THE VIETNAM WAR

By the early 1970s, the North Vietnamese propaganda campaign had gained significant sympathy around the world. On July 24, 1972, UN Secretary-General Kurt Waldheim publicly declared that he had information on the U.S. bombing of dikes from “private channels to Hanoi” that he could not verify, but that nonetheless caused him great concern. He stated, “If those allegations were correct . . . I deeply deplore such bombings and appeal for a stop to them.”<sup>91</sup> Waldheim’s discourse reflected a clearly troubled conscience and con-

86. This principle (the Harmon Doctrine) allows a nation-state absolute rights to use water within its borders, even if detrimental to downstream states. Stephen C. McCaffrey, “The Harmon Doctrine One Hundred Years Later: Buried, Not Praised,” *Natural Resources Journal*, Vol. 36, No. 4 (Fall 1996), pp. 965–1007, <https://www.jstor.org/stable/24885775>.

87. Institute of International Law, *Utilisation of Non-maritime International Waters (Except for Navigation)*, Salzburg sess., September 11, 1961, art. 2, [https://www.idi-iiil.org/app/uploads/2017/06/1961\\_salz\\_01\\_en.pdf](https://www.idi-iiil.org/app/uploads/2017/06/1961_salz_01_en.pdf).

88. *Ibid.*, art. 4; and Salman M.A. Salman, “The Helsinki Rules, the UN Watercourses Convention and the Berlin Rules: Perspectives on International Water Law,” *International Journal of Water Resources Development*, Vol. 23, No. 4 (2007), pp. 625–640, especially p. 628, doi.org/10.1080/07900620701488562.

89. International Law Association (ILA), *The Helsinki Rules on the Uses of the Waters of International Rivers*, August 14–20, 1966, Report of the 52d Conference (London: ILA, 1967), pp. 484–532, [https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA-HelsinkiRules1966-as\\_amended.pdf](https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA-HelsinkiRules1966-as_amended.pdf).

90. *Ibid.*, article 5(2)(k).

91. Quoted in “Nixon Blast on Vietnam Chills Waldheim,” *New York Post*, July 28, 1972, Items-in-[Vietnam]–bombing of the dikes in North [Vietnam] by the U.S. Air force—press clippings, container S-0901-0003: Vietnam and Indo-China 1972–1981, No. 14-00001, UN Archives, <https://bit.ly/3vnMTfN>.

cern for civilian protection, as he continued, “I am deeply concerned about this development and I appeal to stop this kind of bombing which could lead to enormous human suffering, enormous disaster.”<sup>92</sup> Waldheim was not alone. Just a week prior, on July 17, the general secretary of the World Council of Churches, Eugene Carson Blake, penned a letter to Nixon that criticized the dike bombings, describing them as an issue of “moral import” on which he felt “conscious-bound” to raise.<sup>93</sup>

A growing appeal to conscience around dike bombings represented the onset of moral consciousness-raising. This mechanism of taboo evolution sees proponents of a taboo employ moral persuasion and shaming to prompt states to conform to their identity as “civilized” members of a community. Emotion and logical reasoning are both employed to this end. Besides Waldheim and Blake, one of the most committed allies of consciousness-raising during the war was activist-actress Jane Fonda. Capitalizing on her celebrity status, Fonda traveled to Hanoi in July 1972 to “expose and try to halt the bombing of the dikes.”<sup>94</sup> Reflecting on the trip, she notes, “Many had gone before me but perhaps it would take a different sort of celebrity to get people’s attention. Heightened public attention was what was needed to confront the impending crisis with the dikes.”<sup>95</sup>

For Fonda, the trip was about consciousness-raising—a “call to service” to garner popular resistance to the weaponization of water.<sup>96</sup> Upon her return to the United States, Fonda presented footage of the trip to a New York press conference, declaring, “I believe in my heart, profoundly, that the dikes are being bombed on purpose.”<sup>97</sup> By problematizing the bombings through emotion and (mostly unconfirmed) evidence, Fonda epitomized the qualities of a moral norm entrepreneur who sought to shame the United States and advance the idea of restraining a form of water weaponization in conflict. Unlike Waldheim, however, Fonda’s advocacy was to have only marginal influence globally, given her broader vilification by the world press and Nixon as being “anti-American.”<sup>98</sup>

92. Quoted in Robert Alden, “Dikes Hit, Waldheim Says; Rogers Quickly Denies It,” *New York Times*, July 25, 1972, <https://www.nytimes.com/1972/07/25/archives/dikes-hit-waldheim-says-rogers-quickly-denies-it-rogers-disputes.html>.

93. Quoted in “Church Aide Charges U.S. Bombs Dikes,” *International Herald Tribune*, July 21, 1972, Container S-0901-0003, UN Archives.

94. Jane Fonda, “The Truth about My Trip to Hanoi,” *Jane Fonda*, July 22, 2011, <https://www.janefonda.com/the-truth-about-my-trip-to-hanoi>.

95. *Ibid.*

96. Celebrities can raise an issue’s profile through mobilizing popular support. Princess Diana advanced the burgeoning land mines ban by visiting minefields in Angola and Bosnia in 1997.

97. Quoted in “Hanoi Voice Is Heard, U.S. Admits,” *Washington Post*, July 26, 1972, Container S-0901-0003, UN Archives.

98. This characterization was facilitated by a picture of Fonda sitting on a North Vietnamese anti-aircraft gun—the same type used to shoot down U.S. planes.

U.S. PUSHBACK: DENIAL AND NORTH VIETNAMESE CRYING WOLF

Growing charges of U.S. culpability for dike bombings hit a nerve with the Nixon administration. On June 29, 1972, Nixon publicly recognized that bombing dikes would cause “extraordinary” civilian casualties, and that, as a result, “we have orders out not to hit dikes.”<sup>99</sup> Waldheim’s charges against the United States on July 24 were unsurprisingly met with similar denial. Within hours, U.S. Secretary of State William Rogers declared that Waldheim’s information was part of a “carefully planned campaign by the North Vietnamese and their supporters to give worldwide circulation to this falsehood.”<sup>100</sup> U.S. State Department Spokesman Charles Bray added currency to the impression of North Vietnamese “crying wolf,” as he publicly read two articles from a North Vietnamese newspaper that stated that dikes had been damaged by natural floods (not U.S. bombing) the year prior, and had not yet been repaired.<sup>101</sup> At a White House news conference on July 27, Nixon hit back against Waldheim, describing his claims as “hypocritical” and noting that “the Secretary-General, just like his predecessor, seized upon this enemy-inspired propaganda.”<sup>102</sup> Nixon reaffirmed that water was off limits for bombing given its high potential for civilian suffering, declaring, “If it were the policy of the U.S. to bomb the dikes, we would take them out, the significant part, in a week. We don’t do so . . . because we are trying to avoid civilian casualties, not cause them.”<sup>103</sup>

The Nixon administration’s outright denial reflected continued instrumental adaption to the prevailing moral climate. To retain international legitimacy and the moral high ground, the administration “talked the talk” of civilian protection around water, even while Nixon incontrovertibly did not believe in it. The administration also actively stifled those alleging it did not meet the expected restraint around water. Even more than with Waldheim, Fonda’s charges were actively denied. U.S. Ambassador to the UN George H.W. Bush accused Fonda of lying and painted her as imperiling American values through siding with the North Vietnamese. The Nixon Justice Department also attempted to put Fonda on trial for treason, though to little avail. There was value for the United States in being seen as a custodian of prevailing norms, both to appease a then-casualty-averse domestic audience and to maintain face internationally. Consistent U.S. denial affirmed to the international community that targeting water was unacceptable; indeed, if not for the United States’ per-

---

99. Quoted in “Hanoi’s Choice . . . Washington’s Evasion,” *New York Times*, July 26, 1972, Container S-0901-0003, UN Archives.

100. Quoted in “U.N. Chief Says U.S. Hits Dikes,” *Washington Post*, July 25, 1972, Container S-0901-0003, UN Archives.

101. “Roger Blasts Waldheim on Dikes,” *Daily News*, July 25, 1972, Container S-0901-0003, UN Archives.

102. Quoted in “Nixon Blast on Vietnam Chills Waldheim,” July 28, 1972.

103. Quoted in “Vietnam: The Battle of the Dikes,” August 7, 1972.

ception of an evolving taboo, there would have been little need for the Nixon administration to publicly deny dam bombings.

#### MORAL CONSCIOUSNESS-RAISING BY THE POWERFUL: THE TABOO WIDENS

By mid-1972, U.S. denial of weaponizing water began to give way to a more active endorsement of the need to protect water, both for civilians and for the environment. A classified U.S. cloud-seeding program in Vietnam, Cambodia, and Laos, employed since early 1967, was wound down on July 5, 1972, following a presidential decision against weather modification.<sup>104</sup> Reports of alleged U.S. dike bombing, intentional or not, stopped in August 1972. At this point in the war, a global humanitarian movement to protect civilians was at fever pitch, alongside rising concerns for the impact of science and technology on the environment (especially Agent Orange in Vietnam), both of which provided a climate receptive to increased moral considerations around water. From June 5 to 16, 1972, the UN General Assembly convened the first global environmental conference, the UN Conference on the Human Environment, in Stockholm with the aim to “protect and improve the human environment and to remedy and prevent its impairment.”<sup>105</sup> The resulting Stockholm Declaration forged a basic common outlook for environmental protection, pivoting around the premise of avoiding harm to other states: “States have . . . the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States.”<sup>106</sup> A U.S. Senate hearing on cloud seeding in Vietnam reflected analogous concern within the U.S. Department of Defense that seeding clouds may have caused harm to neighboring states through denying water to rice paddies.<sup>107</sup>

In an unlikely collaboration for the time, the two superpowers of the Cold War era joined forces to campaign against environmental modification. Starting in 1972, the U.S. Senate held hearings on weather and environmental modification techniques for military purposes. In 1974, the Soviet Union proposed a draft convention to restrain their use to the UN General Assembly, and from 1974 to 1975, the United States initiated and held three sets of discussions with the Soviets to develop a global agreement against military use of environ-

104. U.S. National Security Council (NSC), National Security Decision Memorandum 165: International Aspects of Weather Modification, May 2, 1972, *Federation of American Scientists*, [https://fas.org/irp/offdocs/nsdm-nixon/nsdm\\_165.pdf](https://fas.org/irp/offdocs/nsdm-nixon/nsdm_165.pdf). The program’s classified nature meant that it generated almost no reaction in civil society and did not factor into the taboo’s evolution.

105. UN General Assembly (UNGA), *Resolution 2581, United Nations Conference on the Human Environment*, A/RES/2581, December 15, 1969, <https://digitallibrary.un.org/record/202662>.

106. UN, *Report of the United Nations Conference on the Human Environment, Stockholm, June 5–16, 1972*, A/CONF.48/14/Rev.1-EN, principle 21 (New York: UN, 1973), p. 5, <https://digitallibrary.un.org/record/523249?ln=en>.

107. Hearing on S. Hrg. 93, Weather Modification, March 20, 1974, p. 111.

mental modification (later, the Environmental Modification Convention).<sup>108</sup> As negotiations went on, the Soviets yielded some preferences to harmonize views with the United States.<sup>109</sup> Where only a short time prior the United States had been at the receiving end of criticism around weaponizing water, it and the Soviet Union were now key proponents of restraining environmental modification, which, by close implication, afforded protection to water.

The entrepreneurship of the superpowers mattered for the water taboo in two ways. First, restraint was now exercised by those critical to its adoption. A common criterion of a “critical state” is a state “without which the achievement of a substantive norm goal is compromised.”<sup>110</sup> Thus, restraint by states that had never before weaponized water would not have been so critical to the taboo. The United States and the Soviet Union, on the other hand, had previously weaponized water in conflict, then came to restrain such weaponization against their strategic interests. Second, through their influence, the superpowers set a precedent for other states to follow. What they do shapes the rules for others in the international community and, in the case in question, helped set in motion the ensuing mechanism of institutionalization around water.

#### PROGRESSIVE INSTITUTIONALIZATION: CODIFYING RESTRAINT

The years 1976 and 1977 marked several critical milestones for the evolving taboo. According to Finnemore and Sikkink, for a norm to reach a “tipping point” by which it widely diffuses, it must typically undergo institutionalization in rules of organizations and international law.<sup>111</sup> At its Madrid Conference held from August 30 to September 4, 1976, the ILA adopted the Resolution on the Protection of Water Resources and Installations in Times of Armed Conflict (Madrid Rules) with guidelines for protecting water to ensure civilian and environmental protection (table 2). Drawing inspiration from the body behind the 1977 Geneva Conventions’ Additional Protocol I,<sup>112</sup> the Madrid Rules affirmed principles of Protocol I. Significantly, the ILA’s preliminary report on the rules acknowledged the influence of the recent environmental movement on the water taboo, stating, “It is only in the last decade that the new awareness of the world-wide threat to human environment has meant a

---

108. U.S. Department of State, “Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques,” Narrative, n.d., Bureau of International Security and Nonproliferation, <https://2009-2017.state.gov/t/isn/4783.htm#narrative>.

109. Lawrence Juda, “Negotiating a Treaty on Environmental Modification Warfare: The Convention on Environmental Warfare and Its Impact upon Arms Control Negotiations,” *International Organization*, Vol. 32, No. 4 (Autumn 1978), pp. 975–991, especially p. 982, [doi.org/10.1017/S0020818300032057](https://doi.org/10.1017/S0020818300032057). See Juda also for Soviet motives behind developing an agreement.

110. Finnemore and Sikkink, “International Norm Dynamics,” p. 901.

111. *Ibid.*, p. 900.

112. The Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law.

Table 2. Codified Prohibition of Water Weaponization, 1976–77

Codes	Water Deprivation	Water Inundation
Madrid Rules (1976) <sup>a</sup>	<ul style="list-style-type: none"> <li>• interference with the hydrological balance</li> <li>• diversion</li> <li>• poisoning</li> <li>• rendering water unfit for human consumption</li> </ul>	<ul style="list-style-type: none"> <li>• interference with the hydrological balance</li> <li>• flooding</li> <li>• destruction of water installations</li> </ul>
Environmental Modification Convention (1976) <sup>b</sup>	<ul style="list-style-type: none"> <li>• environmental modification with “widespread, long-lasting or severe effects”</li> </ul>	<ul style="list-style-type: none"> <li>• environmental modification with “widespread, long-lasting or severe effects”</li> <li>• manipulation of hydrosphere (changes in weather patterns, clouds and precipitation)</li> </ul>
Protocol I (1977) <sup>c</sup>	<ul style="list-style-type: none"> <li>• attack, destruction, removal or rendering useless drinking water installations and supplies and irrigation works</li> <li>• starvation of civilians, including inadequate water under Article 54 (3b)</li> </ul>	<ul style="list-style-type: none"> <li>• damage to works or installations containing dangerous forces, notably dams and dikes</li> </ul>

<sup>a</sup>International Law Association, *Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict*, Madrid, August 30–September 4, 1976 (London: ILA, 1978), articles 1, 3, 4, 5, [https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA-Resolution\\_on\\_Protection\\_of\\_Water\\_Resources\\_and\\_Water\\_Installations-Madrid1976.pdf](https://www.internationalwaterlaw.org/documents/intldocs/ILA/ILA-Resolution_on_Protection_of_Water_Resources_and_Water_Installations-Madrid1976.pdf).

<sup>b</sup>UN General Assembly, Resolution 31/72, *Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques*, A/RES/31/72, December 10, 1976, articles 1, 2, <https://digitallibrary.un.org/record/199627>.

<sup>c</sup>International Committee of the Red Cross, *Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, June 8, 1977, articles 54, 56, <https://ihl-databases.icrc.org/ihl/INTRO/470>

turning point also in the considerations concerning the protection of water and water installations in times of armed conflict.”<sup>113</sup> Three months after the adoption of the Madrid Rules, on December 10, 1976, the UN General Assembly adopted the Environmental Modification Convention (ENMOD). The treaty implored states not to employ environmental modification for military purposes having widespread, long-lasting, or severe effects on a state party (table 2). Mara Tignino notes that most military strategies involving water fall under the convention’s scope, provided that they produce sufficient damage.<sup>114</sup> The convention entered into force in 1978.

Simultaneous to codes of environmental protection were legal efforts to pro-

113. ILA Committee on International Water Resources, 1974, quoted in Tignino, *Water During and After Armed Conflicts*, pp. 45–46.

114. Tignino, *Water during and after Armed Conflicts*, pp. 18–19.

tect civilians through restraining water weaponization. The Geneva Protocol I, adopted one year after ENMOD, was a critical milestone in clarifying and extending the protection of civilians to the realm of water. Article 54 prohibits an array of deprivation techniques, namely “to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as . . . drinking water installations and supplies and irrigation works.”<sup>115</sup> Article 56 extends this, with a prohibition on inundation: “Works or installations containing dangerous forces, namely dams, dykes . . . shall not be made the object of attack, even where these objects are military objectives, if such an attack may cause . . . severe losses among the civilian populations.”<sup>116</sup>

Altogether, the Madrid Rules, ENMOD, and Protocol I were critical to the taboo’s crystallization, as they firmly signaled the unacceptability of weaponizing water within the international community (table 2). Indeed, Article 85(3c) of Protocol I acknowledges that an attack against water installations causing civilian losses is a “grave breach” of international humanitarian law (IHL). In a revealing application of the strengthening taboo, a 1976 update to U.S. Field Manual FM 27-10 omitted a section that previously permitted measures to dry up springs and divert rivers and aqueducts.<sup>117</sup> That is not to say, however, that the global protection of water in conflict was comprehensive at this point. Protocol I granted some concessions for use, whereby water can be weaponized when it solely sustains and/or supports armed forces (Article 54(3)). Thus, tactical weaponization of water, directed toward combatants, would seem permissible, but not strategic weaponization that causes higher civilian losses.<sup>118</sup> On the environmental front, Protocol I, and to a lesser extent ENMOD, established a high threshold for environmental harm: that which is widespread, long term, and severe—the “triple cumulative standard.”<sup>119</sup> Tignino conveys that, in a strict interpretation of this standard, water would be protected only against an environmental catastrophe or “ecocide.”<sup>120</sup> Nevertheless, the texts established that the weaponization of water had limits.

115. ICRC, *Protocol I*, June 8, 1977, art. 54.

116. *Ibid.*, art. 56.

117. U.S. Department of the Army, *The Law of Land Warfare*, Field Manual No. 27-10 (Washington, D.C.: GPO, July 15, 1976 [1956]), para. 37(b), [https://www.loc.gov/rr/frd/Military\\_Law/pdf/law\\_warfare-1956.pdf](https://www.loc.gov/rr/frd/Military_Law/pdf/law_warfare-1956.pdf).

118. U.S. Field Manual 27-2 forbids poisoning water but allows “non-poisonous methods to destroy military food and water supplies in order to deprive the enemy combatants of their use.” U.S. Department of the Army, *Your Conduct in Combat under the Law of War*, Field Manual No. 27-2 (Washington, D.C.: U.S. Department of the Army, November 23, 1984), p. 10, [https://www.loc.gov/rr/frd/Military\\_Law/pdf/conduct-in-combat-1984.pdf](https://www.loc.gov/rr/frd/Military_Law/pdf/conduct-in-combat-1984.pdf).

119. Protocol I requires all three criteria to be met, whereas ENMOD requires one.

120. Tignino, *Water during and after Armed Conflicts*.

## GRAFTING LIFE ONTO WATER

Complementing the expanding civilian and environmental protection of water was a grafting of the existing “right to life” principle onto water. By this mechanism of taboo evolution, norm entrepreneurs closely associate water with congruent norms that are already established, under the logic “If A, why not B?” (If human rights are to be protected, why not water?). Such grafting allows water to assume some of the legitimacy of the original principle, adding credence to the water taboo. Norm grafting has precedent in bolstering prohibitory norms. Human rights pioneer Raphael Lemkin aligned his efforts to condemn genocide with existing regimes against piracy and the narcotics trade. On the latter, Lemkin reasoned: “It seems inconsistent with our concepts of civilization that selling a drug to an individual is a matter of worldly concern, while gassing millions of human beings might be a problem of internal concern [i.e., not internationally prohibited].”<sup>121</sup> On chemical weapons, Price conveys how the norm against poisons was invoked to facilitate the rise of a chemical weapons taboo. The chemical weapons taboo, in turn, provided a referent for the later anti-personnel land mines ban through “the grafting of normative justifications from one weapons category onto another.”<sup>122</sup>

From the late 1970s onward, the existing human right to life became grafted onto water, as reflected in various international statements and conventions (table 3). The Action Plan of the 1977 UN Water Conference acknowledged water as a right for the first time, hailing it as vital for human needs. UN Commentary on the 1986 Declaration on the Right to Development stated that the conditions of underdevelopment, where humans are “denied access to such essentials as food [and] water,” represent an obvious “mass violation of human rights.”<sup>123</sup> More specific to life, the milestone UN Convention on the Rights of the Child in 1989 was one of the first to explicitly link water to life, specifying that a child’s health required clean drinking water. The Dublin Principles of the International Conference on Water and the Environment in January 1992 recognized water as essential to life. The Earth Summit six months later attached basic human needs to water, a position reflected in the 1997 UN Watercourses Convention. The latter conveyed that states do not have the right to deny or exploit watercourses in a way that deprives co-riparian states of sufficient water to meet vital human needs. Ultimately,

121. Raphael Lemkin, “Genocide before the U.N.: Importance of Resolution Declaring Crime International Is Stressed,” Letters to the Times, *New York Times*, November 8, 1946.

122. Price, “Reversing the Gun Sights,” p. 629.

123. UN Department of Public Information, *The United Nations and Human Rights 1945–1995*, Vol. 7 (New York: UN Department of Public Information, 1995), p. 76, <https://digitallibrary.un.org/record/205690>.

Table 3. Water as Linked to the Right to Life

All Times	In Times of Conflicting water Use
<p>UN Water Conference (1977): "All peoples . . . have the right to have access to drinking water in quantities and of a quality equal to their basic needs."<sup>a</sup></p> <p>Convention on the Rights of the Child (1989): "States Parties recognize the right of the child to the enjoyment of the highest attainable standard of health . . . through, inter alia . . . the provision of . . . clean drinking water."<sup>b</sup></p> <p>Dublin Principles (1992): "Fresh water is a finite and vulnerable resource, essential to sustain life."<sup>c</sup></p> <p>Earth Summit (1992): "In developing and using water resources, priority has to be given to the satisfaction of basic needs."<sup>d</sup></p>	<p>UN Watercourses Convention (1997): "In the event of a conflict between uses of an international watercourse, it shall be resolved . . . with special regard being given to the requirements of vital human needs."<sup>e</sup></p>
<p><sup>a</sup>UN, <i>Report of the United Nations Water Conference</i>, E/CONF.70/29, Mar Del Plata, March 14–25, 1977 (New York: UN Publication, 1977), pt. 1, chap. 1, Res. 2(a), <a href="https://digitallibrary.un.org/record/724642?ln=en">https://digitallibrary.un.org/record/724642?ln=en</a>.</p> <p><sup>b</sup>UN General Assembly, <i>Convention on the Rights of the Child</i>, A/RES/44/25, November 20, 1989, art. 24(2c), <a href="https://undocs.org/A/RES/44/25">https://undocs.org/A/RES/44/25</a>.</p> <p><sup>c</sup>World Meteorological Organization (WMO), <i>International Conference on Water and the Environment: Development Issues for the 21st Century: The Dublin Statement and Report of the Conference</i>, Dublin, January 26–31, 1992 (Geneva: WMO, 1992), Principle 1, <a href="https://wedocs.unep.org/handle/20.500.11822/30961">https://wedocs.unep.org/handle/20.500.11822/30961</a>.</p> <p><sup>d</sup>UN, <i>Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources</i>, Agenda 21, 1992, chap. 18, para. 8, <a href="https://www.un.org/esa/dsd/agenda21/res_agenda21_18.shtml">https://www.un.org/esa/dsd/agenda21/res_agenda21_18.shtml</a>.</p> <p><sup>e</sup>UN General Assembly, Resolution 51/229, <i>Convention on the Law of the Non-Navigational Uses of International Watercourses</i>, A/RES/51/229, July 8, 1997, art. 10, <a href="https://digital.library.un.org/record/240629?ln=en">https://digital.library.un.org/record/240629?ln=en</a>.</p>	

grafting had significant implications for water weaponization. Not only would weaponization risk civilian and environmental harm, but it also incontestably risked contravention of the human right to life.

INTERNALIZING THE TABOO

As states progressively became inducted into a strengthening legal-normative regime to protect water from conflict, the water taboo began to assume a degree of internalization or "taken-for-grantedness." Geoffrey Brennan and colleagues describe this mechanism as "below the radar of conscious inten-

tionality,” whereby a norm becomes so accepted that it is seen as noncontroversial and rather what is habitually or “normally” done.<sup>124</sup> As internalization occurs at a deep, intangible level, it is difficult to discern and date. Where states comply with the taboo against their own expedient interests to act otherwise, it could be said that the directives of the taboo are no longer contingent on instrumental thinking, but rather internalized as right. Further, if compliance with the taboo remains relatively constant over time, across different governments and varying elevations of armed conflict, there is reason to assume that a significant degree of internalization has occurred. At this point, the taboo essentially detaches from instrumental calculus, including reputation concerns, to assume a life of its own in political affairs.<sup>125</sup>

The extent to which the water taboo is internalized in individual nation-states is an empirical question that should be investigated in future research, not assumed away a priori. Speaking from a U.S. perspective, Col. Lawrence Wilkerson conveyed that among U.S. decisionmakers there is a profound understanding that “water is more or less the last place you go.”<sup>126</sup> Within the U.S. government, “there is a policy that we will not use water and food as a weapon,” which, he added, has long been an “unspoken policy.”<sup>127</sup> Aggregating up to the international community, three trends can be observed that suggest a process of internalization has been under way since at least the 1990s: (1) rejection of water’s strategic value; (2) continued confirmation of the taboo; and (3) firm backlash against instances of water weaponization.

First, the taboo has strengthened in the face of strategic imperatives to use water for military advantage and of heightened technological capacity to weaponize it. Rising water scarcity has augmented water stress in many countries. Contributing to this is climate change; in the 2010s, the UN Security Council recognized it as a “threat multiplier” for other security risks.<sup>128</sup> Certainly, climate change-induced droughts have heightened the value of water, and its disruption. Within this context are relatively easy methods to compromise scarce water through poisoning.<sup>129</sup> In Afghanistan, water trucks destined

124. Geoffrey Brennan et al., *Explaining Norms* (Oxford: Oxford University Press, 2013), p. 180.

125. Sheri Berman, “Review: Ideas, Norms, and Culture in Political Analysis,” *Comparative Analysis*, Vol. 33, No. 2 (January 2001), pp. 231–250, especially p. 240, doi.org/10.2307/422380.

126. Author interview with Col. (ret.) Lawrence Wilkerson, Special Assistant [1989–1993] to Chairman of the Joint Chiefs of Staff, Gen. Colin Powell, and Chief of Staff [2002–2005] to Powell as U.S. Secretary of State, Williamsburg, Virginia, April 30, 2018.

127. *Ibid.*

128. UN Security Council (UNSC), *Chair’s Summary of the Debate of the Security Council Held on 11 July 2018 on the Subject ‘Understanding and Addressing Climate-Related Security Risks,’* S/2018/749, July 31, 2018, <https://www.securitycouncilreport.org/un-documents/document/s2018749.php>; and UNSC, *Statement by the President of the Security Council*, S/PRST/2011/15, July 20, 2011, <https://www.securitycouncilreport.org/un-documents/document/cc-sprst-2011-5.php>.

129. Dan Kroll, “Monitoring for Terrorist-Related Contamination,” in Satinder Ahuja, ed., *Handbook of Water Purity and Quality* (New York: Academic Press, 2009), pp. 343–379; and Timothy P.

for U.S. military forces and Afghan police were poisoned with cyanide and mustard gas in 2009, allegedly by the Taliban.<sup>130</sup> In the 1999 Kargil War between India and Pakistan, poisoning Indus water, along with starting landslides to withhold and then release water with force, was seen by Indian military officers as strategically viable: “[India] understands the value of water to make sure Pakistan behaves.”<sup>131</sup> The construction of mega-dams has raised capacity for weaponization. In the 1991 Gulf War, Turkey and Syria considered strategic use of Euphrates and Tigris dams to restrict flows to Iraq,<sup>132</sup> while U.S. Chairman of the Joint Chiefs of Staff Colin Powell noted that “we knew how to hit the dams” to flood Baghdad.<sup>133</sup> In both wars, weaponization was swiftly dismissed, however, as “not done,”<sup>134</sup> “unrighteous,”<sup>135</sup> against essential human needs,<sup>136</sup> “terrible,”<sup>137</sup> and an action “our lawyers would veto.”<sup>138</sup>

From a rationalist perspective, it is worth considering here whether states uphold the taboo less out of belief, and more to avoid being tried and convicted by international courts and tribunals. Indeed, the Statute of the International Criminal Court (ICC) declares starvation through deprivation of water and food a war crime. The Statute was adopted late in the taboo’s development, however, in 1998, with entry into force in 2002, and is only applicable to states party to it. While the ICC may have held deterrent value in recent years, it cannot account for long-term restraint of water weaponization between states.<sup>139</sup> The International Court of Justice (ICJ), established in 1945, has ruled on only three water-specific cases, none pertaining to wartime.<sup>140</sup> Tribu-

---

Allman and Kenneth H. Carlson, “Modeling Intentional Distribution System Contamination and Detection,” *Journal of the American Water Works Association*, Vol. 97, No. 1 (January 2005), pp. 58–61, doi.org/10.1002/j.1551-8833.2005.tb10808.x.

130. WikiLeaks, “Criminal Event, Sabotage RPT 2-377: 0 INJ/DAM,” October 27, 2009, <https://wikileaks.org/afg/event/2009/10/AFG20091027n2331.html>.

131. Author interview with Lt. Gen. (ret.) Vinod Bhatia, Indian Army 1974–2014, and Director General Military Operations, New Delhi, November 1, 2018. For water’s strategic utility to India, see Charlotte Grech-Madin, *The Water Taboo: Restraining the Weaponisation of Water in International Conflict*, Ph.D. dissertation, Uppsala University, 2020.

132. “Syrians, Turks Will Not Cut Iraq’s Water Supply—For Now,” *Straits Times*, February 14, 1991, Factiva news database.

133. Colin Powell, interviewed by PBS, *Frontline*, 1996, <https://www.pbs.org/wgbh/pages/frontline/gulf/oral/powell/1.html>.

134. Author interview with Bhatia.

135. Author interview with Maj. Gen. (ret.) Dhruv C. Katoch, Indian Army, 1972–2010, New Delhi, October 23, 2018.

136. Tacan Ildem, spokesperson, Turkish Embassy, Washington D.C., in Valerie Reitman, “Water is the Key to Future Order, Progress in Mideast,” *Los Angeles Daily News*, February 24, 1991, Factiva.

137. Powell, PBS interview.

138. Colin Powell and Joseph E. Persico, *My American Journey* (New York: Random House, 1995), p. 504.

139. On accountability to the ICC for water weaponization, see UNSC, *Maintenance of International Peace and Security: Water, Peace and Security*, S/PV.7818, November 22, 2016, pp. 48, 70, <https://www.securitycouncilreport.org/un-documents/document/spv7818.php>.

140. For the first two rulings, see ICJ, *Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, September 25, 1997, para. 112, <https://www.icj-cij.org/en/case/92/judgments>; and ICJ, *Pulp Mills on the*

nals also have questionable influence, with a mixed record in convicting users of water as a weapon. German High Commissioner Arthur Seyss-Inquart was condemned to death at the Nuremberg Trials for his reign in the Netherlands, which included opening dikes during Allied advance.<sup>141</sup> Yet, the environmental damage of the air campaign conducted by the North Atlantic Treaty Organization in Yugoslavia, including water shortages, was not investigated by the Committee of the International Criminal Tribunal for the former Yugoslavia, partly as a result of difficulties in applying the triple cumulative standard of environmental harm.<sup>142</sup>

Turning to the second trend, there has been continued confirmation of the taboo since the 1970s across different legal instruments and periods of peace and conflict. The substance of ENMOD was reaffirmed at the 1992 UN Conference on Environment and Development (Earth Summit) in Rio de Janeiro, along with the principle of avoiding harm to other states. The UN Economic Commission for Europe's (UNECE) Water Convention opened for signature that same year,<sup>143</sup> and five years later, in 1997, the UN Watercourses Convention was crafted. Both conventions were milestones for the taboo, as they established clear frameworks for transboundary water governance at the regional (UNECE) and global (UN) levels, and reaffirmed taboo principles of equitable and reasonable use and avoiding (significant) harm.<sup>144</sup> The UN Watercourses Convention also served as a reminder of existing legal principles protecting water installations, facilities and other works in armed conflict (Article 29).<sup>145</sup>

More recently, the secretariat of the Global High-Level Panel on Water and Peace, the Geneva Water Hub, has partnered with organizations such as the UN Environment Programme and UNICEF to further systematize international law around water. In the wake of the Panel's 2017 report on water vulnerability during armed conflict,<sup>146</sup> the Geneva Water Hub and partners began drafting principles to protect water infrastructure; a list was released in 2019.<sup>147</sup> Parallel action has been taken by UNICEF to promote IHL around water infrastructure, and the UN International Law Commission to sharpen legal

---

*River Uruguay (Argentina v. Uruguay)*, April 20, 2010, para. 101, <https://www.icj-cij.org/en/case/135/judgments>. A third ruling, *Costa Rica v. Nicaragua 2009*, was less relevant to water weaponization.

141. Noam Chomsky, *American Power and the New Mandarins* (New Delhi: Penguin, 2003), p. 15.

142. UN-ICTY, *Final Report of the Prosecutor*, para. 15.

143. In full, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

144. Since 2013, the UNECE Convention has opened for accession to all UN member states.

145. UN, *Yearbook of the International Law Commission, 1994, A/49/10, Vol. 2, Part 2* (New York and Geneva: UN, 1997), p. 131, [https://legal.un.org/ilc/publications/yearbooks/1990\\_1999.shtml](https://legal.un.org/ilc/publications/yearbooks/1990_1999.shtml).

146. Global High-Level Panel on Water and Peace, *A Matter of Survival: Report of the Global High-Level Panel on Water and Peace* (Geneva: Geneva Water Hub [GWH], 2017).

147. GWH, *Geneva List of Principles on the Protection of Water Infrastructure* (Geneva: GWH, August 2019).

protection of the environment in conflict.<sup>148</sup> After more than five years of preparation, in July 2019, the Commission endorsed twenty-eight draft principles (DPs) on environmental protection in conflict.<sup>149</sup> These consulted existing laws to reaffirm that IHL “shall be applied to the natural environment, with a view to its protection” (DP 14) and reemphasize ENMOD (DP 19).

Grafting the human right to life onto water also became stronger from the 1990s to 2010s. In 1995, the UN Committee on Economic, Social and Cultural Rights (CESCR) explicitly recognized water as essential to an adequate standard of living, and in 2000 as requisite for attaining the highest standard of health.<sup>150</sup> In September 2002, the Johannesburg Declaration, arising from the World Summit on Sustainable Development, labeled water a “basic requirement.”<sup>151</sup> Two months later, the CESCR extended water beyond the right to life, to now a right in and of itself.<sup>152</sup> This human right to water per se is less than settled, and efforts to formalize it encountered resistance at the 2009 World Water Forum from Canada, Russia, and the United States, which called for further examination of threats to drinking water.<sup>153</sup> Nonetheless, non-binding CESCR interpretations of the right culminated in the milestone UN Resolution on the Human Right to Water and Sanitation in 2010, formally acknowledged by 122 countries.<sup>154</sup> The weaponization of water in conflict would, by implication, contravene the direct right of people to safe drinking water. Indeed, the 2016 UN Security Council debate on Water, Peace and Security featured strong support by states for the right to water during conflict.<sup>155</sup>

148. UNICEF, *Water Under Fire: For Every Child, Water and Sanitation in Complex Emergencies* (New York: UNICEF, 2019). For ILC reports on environmental protection, see UN Office of Legal Affairs, *Analytical Guide to the Work of the International Law Commission: Protection of the Environment in Relation to Armed Conflicts*, ILC, 2021, [https://legal.un.org/ilc/guide/8\\_7.shtml](https://legal.un.org/ilc/guide/8_7.shtml).

149. UNGA, *Protection of the Environment in Relation to Armed Conflicts: Text and Titles of the Draft Principles Provisionally Adopted by the Drafting Committee on First Reading*, A/CN.4/L.937, June 6, 2019, <https://legal.un.org/docs/index.asp?symbol=A/CN.4/L.937>.

150. UN CESCR, *General Comment No. 6: The Economic, Social and Cultural Rights of Older Persons*, E/1996/22, December 8, 1995, para. 32, <https://www.refworld.org/pdfile/4538838f11.pdf>; and UN CESCR, *General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12)*, E/C.12/2000/4, August 11, 2000, para. 11, 12(a), (b), (d), 15, 34, 36, 40, 43(c), 51, <https://www.refworld.org/pdfile/4538838d0.pdf>.

151. UN, *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August–4 September 2002*, A/CONF.199/20, chap. 1, Annex, para. 18 (New York: UN, 2002), p. 3, <https://digitallibrary.un.org/record/478154?ln=en>.

152. UN CESCR, *General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant)*, E/C.12/2002/11, January 20, 2003, <https://www.refworld.org/docid/4538838d11.html>.

153. PLOS Medicine Editors, “Clean Water Should Be Recognized as a Human Right,” *PLOS Medicine*, Vol. 6, No. 6 (2009), p. e1000102, [doi.org/10.1371/journal.pmed.1000102](https://doi.org/10.1371/journal.pmed.1000102).

154. UNGA, *Resolution 64/292, The Human Right to Water and Sanitation*, A/RES/64/292 July 28, 2010, <https://digitallibrary.un.org/record/687002?ln=en>. The United States called for the vote but abstained, citing legal issues regarding the text’s compatibility with existing international law.

155. See especially the statements of Russia, Portugal, and Palua in UNSC, *Maintenance of International Peace and Security*.

The third, and most significant, trend is that deviant behavior around water has been met with international denouncement. Water weaponization in the Syrian civil war, and the international reaction it has garnered, constitutes a critical milestone in the recent internalization of the taboo. A case of patent deviation, both rebels and fighters loyal to the government of Bashar al-Assad targeted water in Aleppo, including air strikes on water facilities.<sup>156</sup> Following reports in May 2014 of water supplies being cut there, UN Secretary-General Ban Ki-moon decried water deprivation as a “clear breach” of humanitarian law and implored all parties to restore supply.<sup>157</sup> UN special rapporteurs to water and health, Catarina de Albuquerque and Anand Grover, respectively, reiterated that “interference with water supplies even in the context of an ongoing conflict is entirely unacceptable,” reflecting Ki-moon’s sentiment.<sup>158</sup> In November 2015, Switzerland established the Global High-Level Panel on Water and Peace in Geneva, convened by fifteen countries, to further strengthen the global architecture protecting water. The UN and the World Bank subsequently initiated a High-Level Panel on Water in January 2016, comprising eleven heads of state and government, to safeguard water access for all. Both panels reflected clear international commitment to protect water in the face of conflict.

Beyond UN personnel and panels, the international community at large has actively condemned the weaponization of water. On November 14, 2016, following new attacks on water in Syria a month prior, Senegal circulated a concept note imploring UN member states to address water as “a method of war, in flagrant violation of the relevant provisions of international humanitarian law.”<sup>159</sup> On November 22, 2016, the UN Security Council responded in a landmark debate on water, peace, and security—the first of its kind to focus on water’s protection during armed conflict.<sup>160</sup> Representatives of more than sixty states participated. All speakers exhibited unanimous belief that water be directed toward peace, not conflict. While the debate was formal and informational, some emotive, moral discourse shone through on restraining water weaponization. Malaysia viewed contamination and destruction of water

156. Sowers, Weinthal, and Zawahri, “Targeting Environmental Infrastructures,” pp. 416–419. The Syrian civil war is not interstate oppositional (as the Assad government, supported by Russia and Iran, opposes nonstate insurgents), placing it outside this study’s focus. It has garnered significant reaction among states, however, relevant to the water taboo.

157. UN Spokesperson, “Statement Attributable to the Spokesman for the Secretary-General on Syria,” UN Secretary-General, May 16, 2014, <https://www.un.org/sg/en/content/sg/statement/2014-05-16/statement-attributable-spokesman-secretary-general-syria>.

158. Quoted in “Syria: Violation of the Right to Water in Aleppo Unacceptable, Say UN Experts,” Office of the United Nations Commissioner for Human Rights, May 16, 2014, <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=14613&LangID=E>.

159. Fodé Seck, *Concept Note for the Security Council Open Debate on Water and Peace and Security, To Be Held on 22 November 2016*, S/2016/969, November 15, 2016, p. 2, <https://www.securitycouncilreport.org/un-documents/document/s2016969.php>.

160. UNSC, *Maintenance of International Peace and Security*.

sources as “callous”; Indonesia deemed it “reprehensible”; and Uruguay declared fighting around water to be “lamentable.” Pakistan cautioned and condemned “any use of water as an instrument of war,” and India stated that turning water into a security problem would “be doing an injustice to humankind as a whole.” Romania depicted water weaponization as representing the “horrors of war,” and Brazil declared that it was of “utmost importance” that all conflict parties abide by the Geneva Protocol I to protect water.<sup>161</sup>

In October 2019, allegations came of Turkey disrupting water pumping of the Allouk water station in northeast Syria.<sup>162</sup> Despite Turkish denial,<sup>163</sup> Andrei Engstrand Neacsu, the director of the Red Cross Middle East and North Africa unit, expressed worry that the laws of war were being breached.<sup>164</sup> UNICEF’s representative in Syria, Fran Equiza, deemed water interruptions an “unacceptable risk.”<sup>165</sup> Germany, Belgium, and Kuwait jointly called on all conflict parties to ensure the functioning of the station.<sup>166</sup> Six months later, a group loyal to warlord Khalifa Haftar in Libya cut water to Tripoli to force the release of detained family members.<sup>167</sup> The UN’s humanitarian coordinator for Libya, Yacoub El Hillo, condemned the cutoff as “particularly reprehensible” and “abhorrent,” and affirmed that water “should never be used as a pressure card nor a weapon of war.”<sup>168</sup>

On the whole, international reaction toward water weaponization in the 2010s had three effects on the taboo: (1) it confirmed the prior existence of the taboo; (2) it reflected a deep-seated, likely internalized, belief in the immorality of weaponizing water; and (3) it consolidated the taboo through publicly reaffirming its status and introducing it onto the Security Council agenda. Although the taboo is widespread today, it is likely not universally held or fully

161. Ibid.

162. “Turkey/Syria: Weaponizing Water in Global Pandemic?” *Human Rights Watch*, March 31, 2020, <https://www.hrw.org/news/2020/03/31/turkey/syria-weaponizing-water-global-pandemic>.

163. Burak Bir, “YPG/PKK Makes Propaganda over Water Shortages in N Syria,” *AA*, March 28, 2020, <https://www.aa.com.tr/en/middle-east/ypg-pkk-makes-propaganda-over-water-shortage-in-n-syria/1783255>.

164. “Syriska Armén Nàra al-Hol-làgret” [Syrian army near the al-Hol camp], *SVT Nyheter*, October 17, 2019, <https://www.svt.se/nyheter/utrikes/syriska-armen-nara-al-hol-lagret>.

165. Fran Equiza, “Interruption to Key Water Station in the Northeast of Syria Puts 460,000 People at Risk as Efforts Ramp up to Prevent the Spread of Coronavirus Disease,” UNICEF, March 23, 2020, <https://www.unicef.org/press-releases/interruption-key-water-station-northeast-syria-puts-46000-people-risk-efforts-ramp>.

166. Permanent Mission of the Federal Republic of Germany to the UN, *Statement by the Co-penholders for the Syria Humanitarian File—Germany, Belgium and Kuwait—at the UN Security Council Briefing on the Humanitarian Situation in Syria*, November 14, 2019, <https://new-york-un.diplo.de/un-en/news-corner/191114-syr-hum-stmnt/2270280>.

167. Yacoub El Hillo, “Statement by Yacoub El Hillo, Humanitarian Coordinator in Libya, on the Disruption of Water and Electricity Supply,” UN Support Mission in Libya, April 10, 2020, <https://unsmil.unmissions.org/statement-yacoub-el-hillo-humanitarian-coordinator-libya-disruption-water-and-electricity-supply>.

168. Quoted in *ibid.*

internalized by states. Russia stands out as being especially skeptical of including water in the scope of the Security Council. This is perhaps unsurprising, given Russia's general aversion to an expansion of the Security Council mandate beyond a traditional security focus. To Russia, water is best viewed through the prism of sustainable development and thus addressed by other UN bodies.<sup>169</sup> Indeed, Russia was an initiator of the UN Water for Life Decade (2005–15) and has praised the “positive experience” of the UNECE Water Convention, of which Russia is party.<sup>170</sup>

### *Limits of the Water Taboo*

In tracing the evolution of the water taboo, scholars must also consider its limitations. Doing so precludes the “nice-norm” bias of norm scholarship, where studies focus on the unidirectional development of norms, to the neglect of their challenges or failures.<sup>171</sup> In practice, a taboo may at times be compromised if not fully internalized by a state. The water taboo's influence has on occasion wavered around low-intensity (typically tactical) weaponization and in systemic bombing campaigns. Low-intensity weaponization is less visible and may trigger a moral aversion to harm more slowly, while also avoiding bad media optics. The analysis indicates that there was little moral backlash to dam bombings in the Korean War when framed as tactical interdiction of rail lines.<sup>172</sup> The taboo may also fall short of full restraint during systemic bombing. In the 1991 Gulf War, coalition attacks on major dams and dikes were ruled out as part of the United States Central Command's (CENTCOM) Joint No-Fire Target List.<sup>173</sup> Powell reflected that “I'm not sure that's one we ever would have done because the loss of civilian life would have been terrible.”<sup>174</sup> Unguided bombs from the widespread coalition air campaign, however, damaged some Iraqi water pumping and treatment facilities.<sup>175</sup> Tactical weapon-

169. This view has been supported to some degree by Argentina, Brazil, and Colombia, among others. UNSC, *Maintenance of International Peace and Security*, pp. 30, 34, 61.

170. *Ibid.*, p. 22.

171. On the nice-norm bias in international relations, see Jeffrey W. Legro, “Which Norms Matter? Revisiting the ‘Failure’ of Internationalism,” *International Organization*, Vol. 51, No. 1 (Winter 1997), pp. 31–63, doi.org/10.1162/002081897550294; and Ryder McKeown, “Norm Regress: US Revisionism and the Slow Death of the Torture Norm,” *International Relations*, Vol. 23, No. 1 (March 2009), pp. 5–25, especially p. 7, doi.org/10.1177/0047117808100607.

172. Other tactical water weaponization, such as minor flooding in the Indo-Pakistan War (1965), Yom-Kippur War (1973), and Iran-Iraq War (1980–88), also invoked little international reaction.

173. Michael W. Lewis, “The Law of Aerial Bombardment in the 1991 Gulf War,” *American Journal of International Law*, Vol. 97, No. 3 (July 2003), pp. 481–509, especially p. 489 n. 76, doi.org/10.2307/3109837; and Michael Evans, “Civilian Risks Keep Strategic Sites Off Allied Target List,” *Times*, February 15, 1991, Factiva.

174. Powell, PBS interview.

175. UNSC, Letter Dated 20 March 1991 from the Secretary-General Addressed to the President of

ization also was not fully restrained. On one occasion, CENTCOM's targeting committee requested to take out a small dike used by Iraqis as a supply line. Col. Raymond Ruppert, CENTCOM's judge advocate, approved it.<sup>176</sup>

#### BEYOND INTERNATIONAL CONFLICT

Outside the scope of international conflict, the water taboo's influence is limited. In civil wars, there may not be a properly functioning state, and norms are disrupted.<sup>177</sup> As such, one could expect to see a different level of compliance with the taboo in this context. Further, the taboo likely has limited influence on indirect weaponization, particularly outside armed conflict. Indirect weaponization includes structural violence such as the construction of waterworks that reduce communities' water access, as well as denial of food aid (which equates to denying "virtual water"—the water embedded in food and its production<sup>178</sup>) and unequal water governance practices to coerce populations in occupied territories; each of these warrant future research to assess the extension of the taboo. The clearest limitation, however, is the taboo's reach beyond the state.

#### NONSTATE ACTORS AND THE TABOO

Although the water taboo holds meaning to nation-states in international conflict, it reaches only weakly to nonstate actors. Most contemporary water weaponization is by rebels operating under their own military codes.<sup>179</sup> The Middle East and Northern Africa especially have hosted volatile use of water at the subnational level.<sup>180</sup> King outlines water weaponization by IS in Syria and Iraq, as well as Fulani militants (Hausa-Fulani herders) in the Middle Belt of Nigeria.<sup>181</sup> Al-Shabaab has poisoned drinking wells and destroyed levees

the Security Council, S/22366, March 20, 1991, p. 8, <https://digitallibrary.un.org/record/110156?ln=en>; Middle East Watch, *Needless Deaths*, pp. 165–183; "Allied Jets Search for Iraqi Missiles; Baghdad Reeling," *St. Louis Post-Dispatch*, January 20, 1991, Factiva; and "Text of Iraq's Communique Agreeing to Withdrawal," Associated Press, February 15, 1991, Factiva.

176. Frederic L. Borch, *Judge Advocates in Combat: Army Lawyers in Military Operations from Vietnam to Haiti* (Washington, D.C.: GPO, 2001), p. 170, [https://www.loc.gov/rr/frd/Military\\_Law/pdf/JAs\\_combat.pdf](https://www.loc.gov/rr/frd/Military_Law/pdf/JAs_combat.pdf).

177. Stathis N. Kalyvas, *The Logic of Violence in Civil War* (Cambridge: Cambridge University Press, 2006), pp. 52–86.

178. John Anthony Allan, "Virtual Water: A Strategic Resource: Global Solutions to Regional Deficits," *Groundwater*, Vol. 36, No. 4 (July 1998), pp. 545–546, [doi.org/10.1111/j.1745-6584.1998.tb02825.x](https://doi.org/10.1111/j.1745-6584.1998.tb02825.x).

179. For examples of nonstate weaponization, see Pacific Institute, "Water Conflict Chronology:"

180. Sowers, Weinthal and Zawahri, "Targeting Environmental Infrastructures."

181. King, "The Weaponization of Water"; and Marcus D. King, "Water Stress, Instability, and Violent Extremism in Nigeria," in David Reed, ed., *Water, Security and U.S. Foreign Policy* (New York: Routledge, 2017), pp. 128–149.

in Somalia to render roads unusable for military forces.<sup>182</sup> In Afghanistan, Taliban forces have poisoned water with an ancient warfare tactic of placing dead animals and/or hundreds of human bodies into community wells to render water undrinkable.<sup>183</sup> These groups are less socialized to the normative injunction against weaponizing water in the international community. Norms are a matter of community and lie at the heart of how a community is defined.<sup>184</sup> Rebel groups generally engage in socialization within their own group; the extent to which “outside” norms of international law are followed is calculated.<sup>185</sup> Hyeran Jo finds that legitimacy-seeking rebel groups may conform to IHL when seeking financial support or recognition from political constituencies or civil society that care about humanitarian values. These groups—“compliant rebels”—appear mainly strategically motivated, and liable to alter their commitment if support structures change.<sup>186</sup>

Limited nonstate accountability further weakens the water taboo’s influence beyond nation-states. If the UN Security Council were to concern itself with water weaponization by IS, typical measures at its disposal would yield little effect on the group; as Tobias von Lossow observes, “Being ostracised by the community of states, appeals or sanctions have no traction with IS.”<sup>187</sup> That is not to entirely rule out some taboo-like understandings among nonstate actors. IS willingly flooded areas for strategic purposes, but also sought to maintain stable water supply as part of its state-building ideals in the region.<sup>188</sup> In the Syrian civil war, loyalist and rebel fighters at times cooperated to maintain water supply for civilians in Aleppo and Damascus.<sup>189</sup> These local understandings proved precarious, however, as seen in September 2016, when water again became weaponized by all sides to the conflict.<sup>190</sup>

182. Marcus D. King, “Dying for a Drink,” *American Scientist*, September/October 2019, p. 296, doi.org/10.1511/2019.107.5.296; and Pacific Institute, “Water Conflict Chronology.”

183. Tim De Young and Adam Gravley, “Coordinating Efforts to Secure American Public Water Supplies,” *Natural Resources & Environment*, Vol. 16, No. 3 (Winter 2002), pp. 146–152, https://www.jstor.org/stable/40924170; and Holger Jensen, “After Getting U.S. Help, Taliban Blow Back in Our Faces,” *Deseret News*, September 23, 2001, https://www.deseret.com/2001/9/23/19607893/after-getting-u-s-help-taliban-blow-back-in-our-faces.

184. Hedley Bull, *The Anarchical Society: A Study of Order in World Politics*, 3rd ed. (Basingstoke, U.K.: Palgrave, 2002 [1977]), p. 13.

185. On rebels’ political and military calculations, see Tanisha M. Fazal and Margarita Konaev, “Homelands versus Minelands: Why Do Armed Groups Commit to the Laws of War?” *Journal of Global Security Studies*, Vol. 4, No. 2 (April 2019), pp. 149–168, doi.org/10.1093/jogss/ogz005.

186. Jo, *Compliant Rebels*.

187. Tobias von Lossow, “Water as Weapon: IS on the Euphrates and Tigris” (Berlin: Stiftung Wissenschaft und Politik, January 3, 2016), p. 5.

188. King, “The Weaponization of Water.”

189. “Using Water as a Weapon in Syria,” *Stratfor*, August 11, 2015, https://worldview.stratfor.com/article/using-water-weapon-syria.

190. “Syria Conflict: Air Strikes Leave Aleppo ‘Without Water,’” BBC, September 24, 2016, https://www.bbc.com/news/world-middle-east-37460849.

## *Conclusion*

This article has argued that a water taboo in the international community of states exists, and that it has evolved in the face of strategic imperatives to weaponize water. In the Korean War, the taboo emerged in competition with a strong strategic temptation to inundate agricultural land for military advantage. Where the taboo gained early traction in the UN Command, it did so mainly out of instrumental concerns for reputation and a perceived need to satisfy the burgeoning norm of civilian protection. With the internationalization of the Vietnam War a decade later, however, the taboo was picked up by key individuals and organizations representing transnational civil society that appealed to humanitarian principles and, by the early 1970s, was endorsed by the superpowers themselves as part of civilian and environmental protection initiatives. The institutionalization of water's restraint in international humanitarian and environmental law in the mid-to-late 1970s further consolidated the illegitimacy of weaponizing water in conflict, at least at the level of high-intensity (typically strategic) harm. From the creation of water-specific international conventions in the 1990s, to the Syrian civil war of the 2010s, the taboo has shown signs of deeper internalization that has prompted significant moral censure against those few states that deviate from its prescriptions.

The insights of this study contribute to the broader constructivist literature on weapons taboos in conflict. As with other normatively prohibited weapons—atomic, biological, chemical (ABC), and, less so, land mines—water as a weapon has acquired what Price describes as “a politically successful degree of odium” that distinguishes it from more “conventional” weapons.<sup>191</sup> Water is somewhat linked to existing taboos, whereby it can be a conduit for ABC agents, even carrying all three at once. Water's protection is not simply a by-product of existing taboos, however; water can be used in diversely harmful ways beyond an ABC carrier. To be sure, this study indicates that norms of civilian and environmental protection contributed to the water taboo, but the universality, existential value, and vulnerability of water have also given it a force of its own.

Skeptics of a water taboo would claim that political leaders have simply articulated taboo-like sentiments to mask underlying rationalist reasons for restraining water weaponization. The logic here would be that (1) the weaponization of water no longer holds strategic utility anyway, or (2) states restrain weaponization given the fear of legal punishment. As indicated in the study, these explanations are insufficient. Water weaponization held strategic

---

191. Price, “Chemical Weapons Taboo,” p. 80.

value throughout the critical milestones analyzed. Surprisingly, the taboo has been endorsed not only by states vulnerable to being harmed by water weaponization, but also by powerful states (including the superpowers)—those likely to lose out, strategically, from restraining use. The evidence is incontrovertible that President Nixon desired to weaponize water. That he and Secretary of State Kissinger showed restraint around water is thus highly significant, all the more so given that they usually did not hesitate to add weaponry onto the battlefield. Second, a fear of punishment and the rise of culpability in recent years with the ICC have perhaps contributed to restraint. Nevertheless, international courts have thus far been uninvolved in water issues during conflict, and hold limited power to enforce their jurisdiction.

The analysis here entreats more in-depth research on the operation of the taboo within specific nation-states and conflict settings. Given the international perspective of this study (with the exception of some focus on U.S. administrations), it is generally difficult to detect how, and to what extent, the taboo is internalized in domestic leaderships and institutions. How do key decision-makers in times of conflict perceive the taboo? How does the taboo influence state decisionmaking? Although I have here traced the taboo's evolution and operation across periods of both peace and conflict, the scholarly task ahead is to deepen analysis of the taboo's influence in more armed conflicts. Through a set of detailed case analyses, more fine-grained empirical testing of the taboo can be done to complement the broader insights of this study.

Beyond interstate relations, future research would do well to move to the level of civil wars and look at nonstate weaponization there. It would be beneficial to investigate whether nonstate actors are subject to analogous or differing norms around water. Certainly, taboos (and international law) face different challenges within a state given the international norm of state sovereignty over internal affairs, and because nonstate warring parties are not members of the international community of states. The taboo's influence (if any) on indirect forms of water weaponization also warrants study, including outside conflict.

Policy measures are needed to uphold and further strengthen the taboo. Water as a weapon is unique from other weapons in that it is almost fully reliant on the taboo to restrain use. The necessity of water means that one cannot physically reduce or eliminate the body of the weapon itself. As such, water cannot be subjected to nonproliferation and disarmament regimes, unlike most other weapons. This characteristic makes the normative prohibition of its weaponization all the more critical. To further strengthen the taboo, it would be desirable to create a single cohesive legal convention to prohibit all hostile uses of water. Doing so would help streamline existing legal principles around water—what Tignino describes as a “complex mosaic of corps of

norms”—of which many overlap and already convey a similar “tabooeness” around water weaponization.<sup>192</sup> A starting point is to convene a panel of experts to reinterpret existing legal principles on water, with an eye toward finding compatibility among them. Practitioners have recently recognized this need, notably the Geneva Water Hub and partners who drafted a list of principles on water’s protection in armed conflict in 2019.<sup>193</sup>

In addition, efforts need to be made to denounce lower-level, tactical weaponization of water, as well as nonstate use. Concerning the former, one measure is to raise awareness of the dire effects of tactical weaponization; many of these effects are disruptive to ecosystem health, though fall short of the triple cumulative standard of environmental harm. To this end, there is a need to lower the legal threshold for harm around water, so that legal instruments formally capture a broader array of harmful uses. To address nonstate use, policy efforts may need to extend beyond social enforcement to instead use incentives or, alternatively, emphasize the synergies between the water taboo and existing “local norms, conventions and codices of behaviour” found in nonstate networks.<sup>194</sup>

Although the normative system around water has strengthened between states, its future remains unclear. As taboos are a human construction, they are not immutable.<sup>195</sup> In the coming years, nonstate actors will likely be further enticed by the rising utility of weaponizing water in water-scarce contexts. Under extreme pressure, nations too may consider weaponizing water. Emerging cyber technologies offer an expedient means to attack waterworks: cyberwarfare redefines the battlefield, increasing the ease, cost, and anonymity of weaponizing water. According to Michael Schmitt, cyber is among the easiest means of disrupting access to water today: “Dropping bombs on water, that’s hard. But dropping electrons on water, that’s how you interfere with delivery.”<sup>196</sup> Cyberattacks can disrupt water quantity by controlling a dam’s sluice gates, and quality by stopping water treatment or increasing additives such as chlorine. The health and safety implications are great. In 2013, hackers accessed the command and control system of a small New York flood-control dam.<sup>197</sup> Al-

192. Tignino, *Water during and after Armed Conflicts*, p. 4.

193. GWH, *Geneva List of Principles on the Protection of Water Infrastructure*.

194. Jutta Bakonyi and Kirsti Stuvøy, “Violence and Social Order beyond the State: Somalia and Angola,” *Review of African Political Economy*, Vol. 32, No. 104–105 (2005), pp. 359–382, especially p. 362, doi.org/10.1080/03056240500329379.

195. On the risks of transgressing the nuclear taboo, for instance, see Nina Tannenwald, “How Strong Is the Nuclear Taboo Today?” *Washington Quarterly*, Vol. 41, No. 3 (Fall 2018), pp. 89–109. doi.org/10.1080/0163660X.2018.1520553.

196. Author phone interview with Michael Schmitt, judge advocate, U.S. Air Force, 1979–99, May 2, 2018.

197. Mark Thompson, “Iranian Cyber Attack on New York Dam Shows Future of War,” *Time*, March 24, 2016, <https://time.com/4270728/iran-cyber-attack-dam-fbi/>.

though no harm came of it, the potential to remotely disrupt critical water infrastructure was clear. Schmitt argues that IHL should recognize this risk.<sup>198</sup> A next step is to develop a rule “that says you may never conduct a cyber operation that interferes with the delivery of water to the civilian population.”<sup>199</sup>

If a future transgression of the taboo were to occur, as recently seen in Syria (albeit in an internal armed conflict), this could spell two outcomes for the future of the taboo. First, it could reinforce the taboo, as Syria has done, by reminding the international community of the dire humanitarian consequences of its infringement. Conversely, it could expose fault lines and begin to unravel the taboo as more nation-states follow suit. Given the intersubjective nature of a taboo, continued vigilance and advocacy will be needed to prevent the weaponization of water in international conflict.

---

198. Author interview with Schmitt.

199. Ibid. See also Michael N. Schmitt, ed., *Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations* (Cambridge: Cambridge University Press, 2017), especially rules 140, 141, 143, 529–533, 537–538.