



# College Historical Society

## The Original Debating Society

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**Gold Medallist in History**

**253rd Session**

**College Historical Society**

### **“To what extent did environmental concerns shape global responses to the United States of America’s 1954 Castle Bravo Hydrogen Bomb test?”**

Immediately following the conclusion of the Second World War, the USA decided that its existing testing grounds in Nevada were too near to inhabited American land for higher yields to be tested. In response, they turned to the Bikini and Enewetak Atolls in the Marshall Islands, which were under United Nations Trusteeship after their recent liberation from the Japanese Empire. This Trusteeship was administered by the US.<sup>1</sup> Upon, apparently consensually, removing the inhabitants of the islands, the US tested hydrogen bombs in the region from 1946 until 1958.<sup>2</sup> These tests, and the arrangements put in place by the US to facilitate them, raised a variety of legal, ethical and environmental concerns. In an era when scientists were only beginning to understand the environmental and medical effects of radioactive exposure,<sup>3</sup> the highly damaging Castle Bravo test on 1 March 1954 served as a particularly potent warning about the severe global impacts of an environmental disaster on the scale of a war between nuclear powers.

Global legal experts found many issues with the tests, including the unilateral establishment of large ‘danger areas’ surrounding the islands, the USA’s responsibilities as the trustee of the islands and their inhabitants, and where the burden of blame should lie in the event of environmental pollution causing direct injury. Castle Bravo caused many to question the legality of the USA’s

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<sup>1</sup> Emanuel Margolis, “The Hydrogen Bomb Experiments and International Law.” *The Yale Law Journal*, vol. 64, no. 5, 1955, p. 630.

<sup>2</sup> Jeffrey Sasha Davis, “Representing Place: ‘Deserted Isles’ and the Reproduction of Bikini Atoll.” *Annals of the Association of American Geographers*, vol. 95, no. 3, 2005, p. 608.

<sup>3</sup> John Robert Whitehurst, “Diagnosing the Nation: Scientists, Mothers, and Physicians Confront Nuclear Testing and Civil Defense Through Medical Activism, 1958–1963.” *Peace & Change*, vol. 46, no. 1, 2021, p. 37.



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behaviour, as this explosion released a cloud of radioactive material, which drifted on poorly predicted winds to cover inhabited islands and a Japanese fishing vessel.<sup>4</sup> The first problem is that of the 'danger areas', the first of which was established in 1948 around the Enewetak Atoll. 1953 saw a 'danger area' of a similar size instituted around the Bikini Atoll, extending the combined area to roughly 50,000 square miles, consisting mostly of open ocean. These were intended to warn vessels that nuclear tests could be occurring nearby and thus to stay away. Following the spread of radioactive fallout from Castle Bravo in March 1954, they were extended to cover around 400,000 square miles.<sup>5 6</sup> A primary concern regarding the 'danger areas' was their inherent violation of the freedom of the open sea: No nation should be empowered to claim sovereignty over large sections of the sea in a time of peace. Experts generally agreed that any claim to humanitarian motive in the attempts to prevent undue harm to vessels in the area should be rejected, on the grounds that the active danger being guarded against was also unilaterally imposed by the USA.<sup>7</sup>

However, a more pressing concern for many was the destruction and radioactive contamination of land being administered in trust by the US government. The US was bound under the Trusteeship Agreement for the Former Japanese Mandated Islands to act as the Administering Authority for the Marshall Islands, which obliged them to work to protect and further the economic interests of the Islands and their inhabitants. There was also an explicit duty to protect the health of the inhabitants, while protecting them from loss of land or resources.<sup>8</sup> Castle Bravo alone, one of 23 tests held on or above the Bikini Atoll between 1946 and 1958,<sup>9</sup> was responsible for the complete destruction of at least three islands, while the fallout affected multiple communities residing on different islands and atolls within the Marshalls.<sup>10</sup> As such, the US clearly contravened the

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<sup>4</sup> Margolis, "Experiments and International Law", p. 637.

<sup>5</sup> Shigeru Oda, "The Hydrogen Bomb Tests and International Law." *Die Friedens-Warte*, vol. 53, 1955, pp 130-1.

<sup>6</sup> Margolis, "Experiments and International Law", pp 630-1.

<sup>7</sup> *Ibid.*, pp 635-6.

<sup>8</sup> Margolis, "Experiments and International Law", pp 643-635.

<sup>9</sup> Davis, "Representing Place", p. 607.

<sup>10</sup> Steve Brown, "Archaeology of Brutal Encounter: Heritage and Bomb Testing on Bikini Atoll, Republic of the Marshall Islands." *Archaeology in Oceania*, vol. 48, no. 1, 2013, p. 29.



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Trusteeship Agreement on these fronts, which caused multiple nations, including the USSR, India and Syria, to support petitions from the islands' inhabitants to halt testing within the Marshalls.<sup>11</sup>

The establishment of expansive danger areas and the violation of the Trusteeship Agreement were certainly pressing issues for those within international legal spheres. However, they can hardly be read as being shaped by environmental concerns. They were the result of legal and political approaches to the Castle Bravo incident, particularly in the context of the Cold War. The USA was at this point attempting to position itself as the global leader in a struggle against Communism, which it justified with humanitarian concerns and claims that the USSR was a threat to global peace. The hydrogen bomb tests were a part of this struggle, necessary for maintaining order via the threat of nuclear arms. However, this claimed moral imperative for conducting nuclear tests was endangered when the US appeared to be breaching international law themselves in its pursuit.<sup>12</sup> The political issues raised by these breaches were of far greater concern for many than the environmental matters which also arose from the tests. Another aspect of this general indifference towards environmental concerns which must be considered is that there were few international regulations which dealt explicitly with environmental affairs, and thus the US could not be accused of breaking explicit laws or guidelines.

Although international bodies had expressed significant environmental concerns by this point, very little binding legislation existed by 1954 to compel governments to pursue environmentalist policies or to sanction nations which dealt major damage to areas of shared access such as the high seas. The Institute of International Law had passed a resolution in 1937 condemning pollution of the seas, and encouraging governments to limit the levels of waste and contamination they introduced to marine environments, but the Castle Bravo incident proved this insufficient for meaningfully protecting environmental interests. This led to proposals to enshrine the rights and

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<sup>11</sup> Merze Tate and Doris M. Hull, "Effects of Nuclear Explosions on Pacific Islanders." *Pacific Historical Review*, vol. 33, no. 4, 1964, pp 387-8.

<sup>12</sup> Margolis, "Experiments and International Law", p. 646.



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responsibilities of maritime states regarding pollution in international law.<sup>13</sup> The only shared marine resources with legal protections were fish stocks, as contaminating these would have a direct economic impact upon many nations. The Castle Bravo fallout contaminated much of the fish stock of the north-west Pacific, and this was one of multiple environmental effects of the test which would have a direct effect upon Japan.<sup>14</sup>

Japan was immediately confronted with the dangers posed by the fallout of the Castle Bravo test since the *Fukuryu Maru*, a Japanese fishing vessel, was in the path of the cloud of radioactive debris. All 23 crew members were hospitalised due to radiation sickness, and in September one died due to the injuries he sustained. Upon inspection, the fish they had caught were all found to be contaminated and unsafe for consumption, leading to the entire catch being disposed of<sup>15</sup>. It was notable that the *Fukuryu Maru* had been around 73 miles away from the island when the test occurred, placing the vessel around 19 miles beyond the danger area surrounding it.<sup>16</sup> According to American officials, the range of the danger areas extended beyond the expected area of risk. This was supposedly to protect seafarers even in the event of an accident or a change in wind direction spreading the radioactive material further than predicted,<sup>17</sup> increasing questions about both the legality and the effectiveness of these areas.

This event, along with increasing numbers of fish caught within the Pacific and eventually within Japanese territorial waters testing as unsafe for humans to eat due to the presence of radioactive isotopes, had significant consequences for the Japanese fishing industry. Tuna prices dropped dramatically, and exports of Japanese fish plummeted as its safety was questioned. The centrality of fish to the Japanese diet should not be underestimated, as the faith of many Japanese citizens in the safety of the predominant source of protein in their regular food intake was effectively

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<sup>13</sup> Ibid., p. 643.

<sup>14</sup> Ibid., p. 640.

<sup>15</sup> Oda, "Tests and International Law", pp 126-7.

<sup>16</sup> Ibid., pp 130-1.

<sup>17</sup> Lemeyo Abon et al., "The Survivors." in *Grappling with the Bomb: Britain's Pacific H-Bomb Tests* (ANU Press, 2017), p. 49.



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shattered.<sup>18</sup> The Japanese Tuna Fisheries Association estimated that the damages to their industry alone, one of a large variety of fisheries operated in Japan, amounted to a total of around \$5.7 million.<sup>19</sup> As a result of this, experts at the time agreed that the US should be held liable for the damages caused to Japanese nationals by the fallout of Castle Bravo.<sup>20</sup> However, in a move which outraged many at the time, the Japanese government renounced its claim to a majority of the damages. Having entered negotiations with the US government seeking a settlement for around \$6 million, the Japanese government eventually accepted \$2 million, which was explicitly understood by both negotiating sides to completely settle any damages incurred by Japan as a result of the 1954 test. The reasoning for this capitulation by the Japanese negotiators was unclear, but the move infuriated many Japanese citizens.<sup>21</sup> This inadequate settlement, combined with the awareness that the *Fukuryu Maru* and most of the affected fish stocks had been outside the danger areas, led to a widespread call across Japanese society for nuclear weapons tests to be halted, and for atomic energy more generally to be brought under international control.<sup>22</sup>

Japan's concern was well-founded, as it was highly aware of its proximity to three major nuclear testing hotspots at the time: The Marshall Islands, Siberia and Christmas Island, where the UK was conducting early tests.<sup>23</sup> Japanese scientists were also actively monitoring and measuring the atmospheric results of nuclear tests, and became suspicious that more were taking place globally than were being admitted to.<sup>24</sup> The strength of anti-nuclear sentiment in the country was most clearly exhibited in 1956, when the lower houses of the Japanese Diet unanimously passed a resolution calling for a cessation of nuclear tests.<sup>25</sup> The direct impact of the fallout upon Japanese

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<sup>18</sup> Margolis, "Experiments and International Law", p. 638.

<sup>19</sup> Oda, "Tests and International Law", pp 127.

<sup>20</sup> *Ibid.*, pp 135.

<sup>21</sup> *Ibid.*, pp 127.

<sup>22</sup> Zengo Ōhira, "The Freedom of the Seas and Japan." *The Annals of the Hitotsubashi Academy*, vol. 5, no. 1, 1954, pp 95-6.

<sup>23</sup> Tate & Hull, "Effects of Nuclear Explosions", p. 389.

<sup>24</sup> Committee of the Investigation on Artificial Radioactivity, Meteorological Society of Japan. "The Thermo-Nuclear Experiment and Its After Effects on the Atmosphere and the Ocean." *Bulletin of the American Meteorological Society*, vol. 38, no. 8, 1957, pp 453-4.

<sup>25</sup> Tate & Hull, "Effects of Nuclear Explosions", p. 389.



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citizens also mirrored other contemporary Japanese concerns regarding access to the Pacific. The first was the Syngman Rhee Line, instituted by the Korean government in 1952 as an expansion of the American-installed MacArthur Line. This doctrine exercised Korean jurisdictional control over any ships which entered their territorial waters, which many Japanese fishing vessels traditionally did to access the Yellow Sea. Aggressive and occasionally violent Korean enforcement of the Rhee Line enraged many Japanese, and raised fears regarding human-induced dangers while seafaring.<sup>26</sup> The second was the 1953 Australian Pearl Fisheries Bill, which extended Australia's claim to exclusive pearl fishing rights to cover the entire continental shelf, including the Arafura Sea near New Guinea where Japanese fishermen traditionally harvested pearls.<sup>27</sup> The Japanese objected to other nations extending territorial rights into areas of ocean they had traditionally accessed, and the prospect of losing fish stocks which were more valuable or closer to the main Japanese islands was a growing anxiety. The Castle Bravo test and the resulting damages to fisheries and people touched directly upon these national concerns. As such, it can be convincingly argued that the strong Japanese response to the incident was largely fuelled by the environmental consequences of the test and their potential impacts upon Japanese citizens, rather than the broader political impetus which sustained many other international responses regarding the danger areas or the destruction of land held in trust.

Of course, the destruction of land held in trust was of considerably more immediate concern for those who lived within the Marshall Islands. As already mentioned, the Castle Bravo test destroyed some islands in the Bikini Atoll and spread radioactive material across islands which had been evacuated and others which were still inhabited. The Marshallese responses are complex to examine, shaped largely by the environmental concerns one would expect from people whose homes were directly impacted by the incident, but also by indigenous concepts of relationship with the land and their administrative dependence on the USA.

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<sup>26</sup> Ōhira, "The Seas and Japan", pp 87-9.

<sup>27</sup> *Ibid.*, pp 90-2.



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The natives of the Bikini Atoll were moved from their islands in 1946 by US officials, allowing nuclear tests to occur there after Nevada was deemed unfit for the detonation of high-yield devices.<sup>28</sup> The islanders appear to have willingly left their homes, persuaded that the tests were necessary for the advancement of world peace, but navy records indicate that they apparently never asked when they could return, nor were they ever informed.<sup>29</sup> The Bikinians chose to initially move to Rongerik Island,<sup>30</sup> before moving to Kili in 1948 following food shortages.<sup>31</sup> They remained on Kili until the end of the tests in 1958 and beyond, waiting to be told that the atoll was safe for human habitation again. However, the effects of the fallout from Castle Bravo were catastrophic and have prevented anyone from permanently returning.

The radioactive fallout cloud from the blast covered the nearby Rongelap and Uterik islands, then populated by native Marshallese. Not understanding what it was, children played with the material as if it were snow. Most of these children would develop skin lesions and lose their hair shortly afterwards.<sup>32</sup> By 1980, 19 out of 21 children on the island had developed thyroid tumours or other illnesses associated with radiation exposure.<sup>33</sup> While flies living on these islands saw their population sizes and rate of genetic mutation return to near normal levels by 1957, those on Bikini itself had not. This indicated that it took between 26 and 40 generations for these to recover on the islands which suffered less serious levels of radiation, and an indeterminate amount longer for those directly impacted by the bomb. In humans, genetic radiation damage could remain for hundreds of years at a minimum.<sup>34</sup> The key issue in terms of unaffected humans returning to live on Bikini was that, even though the atmospheric levels of radiation were deemed safe, the radioactive material stored in the soil and plant matter rendered any food produced on the island

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<sup>28</sup> Tate & Hull, "Effects of Nuclear Explosions", p. 380.

<sup>29</sup> Jonathan M. Weisgall, "The Nuclear Nomads of Bikini." *Foreign Policy*, no. 39, 1980, p. 78.

<sup>30</sup> *Ibid.*, p. 79

<sup>31</sup> *Ibid.*, pp 81-2.

<sup>32</sup> Abon et al., "The Survivors", p. 40.

<sup>33</sup> Weisgall, "Nuclear Nomads", p. 84.

<sup>34</sup> Wilson S. Stone and Florence D. Wilson, "Genetic Studies of Irradiated Natural Populations of *Drosophila*. II. 1957 Tests." *Proceedings of the National Academy of Sciences of the United States of America*, vol. 44, no. 6, 1958, p. 572.





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unsafe for consumption.<sup>35</sup> The presumption that background levels of radiation were safe was also later disproved, since the American scientists considered 100 millirems above background level as the threshold for safety in the Marshalls, while the EPA limit on American soil was only 15 millirems above background level<sup>36</sup>. For the foreseeable future, the Bikini Atoll and other islands are unsafe for permanent human habitation, and the original inhabitants no longer have access to their traditional lands.<sup>37</sup>

The concept of land ownership holds particular significance across the various Marshallese island cultures. Pre-Christian traditions persist despite the islanders' predominantly Christian faith, chief among which is the concept that the living members of a community are merely the most visible aspect of a much larger, equally active community. Family land is viewed as the remaining physical presence of previous generations in the present day, nourished by their bodies upon death as they are assimilated into the earth by the practice of burial.<sup>38</sup> This vital importance of intergenerational land ownership was disregarded by the USA during their nuclear tests in the region, and the destruction of multiple islands, alongside the uninhabitability of many remaining islands due to irradiation, can be viewed as highly imperialistic acts of cultural suppression.

The US consistently displayed a lack of understanding regarding the Bikinians' customs and requirements. The initial move to Rongerik was only agreed to because the Bikinians assumed their stay on the island would be short, with local custom stating that Rongerik was a cursed place where evil spirits poisoned the fish and rendered them inedible.<sup>39</sup> Rongerik's size, about a quarter the landmass of the Bikini islands, also posed obvious problems for long-term self-sufficiency.<sup>40</sup> When food shortages took hold and the Bikinians asked to leave the island, the Associated Press

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<sup>35</sup> Hill Williams, "Bikini Nine Years Later." *Ekistics*, vol. 24, no. 142, 1967, p. 264.

<sup>36</sup> Davis, "Representing Place", p. 617.

<sup>37</sup> Weisgall, "Nuclear Nomads", pp 85-91.

<sup>38</sup> Marshall Islands Nuclear Claims Tribunal: "In the Matter of the People of Enewetak", *International Legal Materials*, vol. 39, no. 5, 2000, p. 1220.

<sup>39</sup> Weisgall, "Nuclear Nomads", p. 80.

<sup>40</sup> Robert C. Kiste, "The Relocation of the Bikini Marshallese." in *Exiles and Migrants in Oceania*, edited by Michael D. Lieber, University of Hawai'i Press, 1977, p. 74.





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questioned why they would want to, with a Navy general stating that Bikini and Rongerik were ‘as alike as two Idaho potatoes.’<sup>41</sup> A further mischaracterisation of life for the Marshall Islanders was their depiction as ‘nomadic’ in newsreels, and thus content to allow the US to use and potentially destroy lands upon which they had no permanent claim.<sup>42</sup>

In terms of mid-20<sup>th</sup> century environmentalism, the Marshall Islanders’ struggles to prevent further testing and claim recompense for the damages done to their homes and way of life can be viewed as an example of what Guha terms ‘the environmentalism of the poor’. This term refers to a social justice cause which is inextricably linked with a concern for the environment, particularly in situations where defence of the environment can be reasonably equated with the defence of people and their livelihoods.<sup>43</sup> The form of these environmentalist responses has been varied. Aside from Marshallese petitions in 1954 and 1956 to halt testing,<sup>44</sup> the main avenue the islanders have pursued is to seek financial compensation through various legal systems. At various points from the 1950s, the USA were compelled to compensate residents of various islands for the loss of their lands and resources, with these payments totalling hundreds of millions of dollars.<sup>45</sup> One tribunal in 2000, upon finding that the USA owed over \$300 million even when taking previous compensatory payments into account, stated that the Enewetak people ‘have suffered damage beyond that which money can compensate. The destruction and disruption of their community and the attendant lifestyle and values cannot be compensated with an award of dollars. The passage of time and changes in culture preclude a return to the way things were half a century ago’.<sup>46</sup> Other islanders have responded by attempting to capitalise on the tourism which global awareness of the Castle Bravo test has generated. The Bikini Atoll in particular was rebranded as a luxury diving spot, where tourists may view the sunken fleet of ships which were destroyed as part of the

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<sup>41</sup> Weisgall, “Nuclear Nomads”, p. 81.

<sup>42</sup> Davis, “Representing Place”, p. 615.

<sup>43</sup> Ramachandra Guha, *Environmentalism: A Global History* (Longman, 2000), pp 99-105.

<sup>44</sup> Tate & Hull, “Effects of Nuclear Explosions”, pp 384-7.

<sup>45</sup> Tribunal, “The People of Enewetak”, pp 1216-7.

<sup>46</sup> Tribunal, “The People of ENewetak”, p. 1229.



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experiments regarding the hydrogen bombs' destructive capabilities.<sup>47</sup> While this industry is run by the Bikinians, and profits are shared equally among them, its existence also reflects an acceptance that the lifestyle which had existed on Bikini before the tests is impossible to truly recover, and raises concerns regarding the eventual permanent return of residents to the island.<sup>48</sup> The islanders' attempts to rebuild and move on from the horrific damage inflicted upon their homes are themselves an environmental response, to utilise Guha's theories. The protection and compensation of those affected by human-instigated environmental disasters are important causes which are recognised as a form of post-war environmentalism. As such, the responses of the Marshallese are perhaps unsurprisingly those which have been most shaped by environmentalist practices and thought.

As with any major event, global responses were highly varied in their motivations and content. The context of an environmental disaster which occurred in the pursuit of the Cold War arms race complicates matters, as most responses could be viewed as politically motivated. Indeed, many of the international responses were. However, as the Japanese responses show, a politically charged response can also have intrinsic environmental motivations, with the preservation of their fish stocks and the safety of their seafaring citizens held as paramount. The responses of the affected Marshallese islanders, meanwhile, amount to part of a relatively new and radical form of environmentalism: The environmentalism of the poor in the face of a superpower inflicting major environmental and ecological damage upon their home. As such, we can conclude that environmental concerns, taking a broad variety of aspects, informed multiple integral facets of the global response to the Castle Bravo tests.

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<sup>47</sup> Davis, "Representing Place", p. 618.

<sup>48</sup> Davis, "Representing Place", pp 620-1.



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