



Nuclear Weapons and Nuclear Testing: Marshall Islands

SCNC3001UN

Summer 2021

Meeting Times: M,Tu,W, Th

Professor Emlyn Hughes

Seminar: 3 points

ewh42@cumc.columbia.edu

Course Description:

From 1946 to 1958, the US tested 67 nuclear weapons in the Marshall Islands, an isolated small island nation located just west of the international date line and just north of the equator in the Pacific Ocean. These tests included over a dozen hydrogen bombs. The total explosive power from the test was equivalent to dropping a Hiroshima-size bomb every day for 12 years.

The story of the US nuclear weapons testing program in the Marshall Islands can be viewed as the collision of a powerful nuclear weapons state, eager to aggressively pursue a thermonuclear weapons development program, and an indigenous population in a remote location. After World War II, the Marshall Islands became a US territory, as specified by a UN treaty, and the US immediately initiated a testing program to be conducted in the northern expanse of the islands. The testing was done in an overtly public manner and driven at the time by a Cold War mentality. As a result of the testing, the Marshallese people were both driven away from their homes and lands and exposed to radioactive fallout. A classified human subject health monitoring program was

implemented under the name Project 4.1. From these tests, the US government was able to study the effects of nuclear fallout and the correlation to cancer rates in the Marshallese population, exposed at different distances from the test sites and over a time period of decades. This monitoring program is funded and still exists today.

The course begins with discussions of the Marshallese islands and culture, portrayed primarily through geography, history and artifacts, prior to the nuclear weapons program (before 1946), presented in parallel with the basic physics of nuclear weapons. The nuclear weapons testing program will use primary text written by the US military and declassified US government documents laying out the US government strategy towards the Marshall Islands. The course will proceed to an example of modern-day Marshallese poetry specifically focused on the impact from the nuclear testing program and its aftermath. We will discuss the impact of the nuclear weapons on Marshallese voice songs impacted by thyroid cancer as well as declassified documents from Project 4.1 on the Marshallese health, including discussions on the impact of radioactive contamination to miscarriage rates and Marshallese responses. We will also read excerpts from the Solomon report which was commissioned by the US government during the Kennedy administration and has recently been de-classified, and sets the stage for decades of US policy towards the Marshall Islands. In open, public videos, the US government referred to the Marshallese as “friendly savages”; the role of race and racism will also be a topic of discussion, including a reading on political theory. A decade later the French government engaged in a similar nuclear weapons testing program near an indigenous island population. Some reading materials inspired by the French military nuclear Pacific program will be interspersed throughout the course, including a romance novel as well as some writings on history and nuclear activism in the Pacific.

This course is about the violent intersection of science and culture. Students will investigate the Marshallese culture prior to the nuclear weapons testing program and then study the ways in which the culture and people were affected by the program. They will also consider the challenges the Marshallese face today. The course will end on a series of group research projects to compare and contrast the Marshall Islands case with those of other indigenous populations affected by nuclear testing performed by other nuclear weapons states. For the course’s Final Project, students will apply the tools learned in this course about nuclear weapons and culture and apply them to either the French government’s nuclear testing program in French Polynesians or Algeria, the Soviet Union testing in Kazakhstan, the British testing by the Aborigines in Australia or the Chinese nuclear testing near various ethnic groups at the Lop Nor site.

Student Learning Outcomes:

Through engagement with course readings, assignments, seminar presentations, discussions and museum tours, at the end of the course, students should be able to:

- Demonstrate knowledge of how nuclear weapons work, develop a historical foundation for major events related to the development of nuclear weapons, and consider the environmental and human health impacts of nuclear weapons testing on the Marshallese people
- Demonstrate an understanding of the Marshallese culture prior to the testing, the impact of testing, and present-day challenges
- Apply the knowledge of nuclear weapons and understanding of the Marshall Islands case to investigate the nuclear testing legacy of other indigenous populations in other parts of the world

Course Policies and Expectations:

- Attendance and participation are mandatory
- Each student is allowed one unjustified absence for the entire length of the course, with the exception of religious holidays
- Medical absences must be justified by a medical certificate
- Each absence beyond the authorized threshold will lower a student's grade
- In addition to attendance students should plan on being punctual. Please note that 3 lateness are equivalent to 1 full absence
- All assignments handed in late without the authorization of the instructor will be penalized

Grading breakdown:

- Class attendance and participation: 25 %
- Homeworks: 25%
- Midterm: 25%
- Final report: 25 %

Primary Literature:

- (1) Samuel Glasstone, *Effects of Nuclear Weapons* (US Department of Defense, 1962)
- (2) *Republic of the Marshall Islands*, 2011 Census Report
- (3) Teresia K. Teaiwa, *bikinis and other s/pacific n/oceans*, *The Contemporary Pacific* 6 (1) p. 87-109
- (4) Genz, Joseph H., Noelani Goodyear-Ka'ōpua, Monica C. LaBriola, Alexander Mawyer, Elicita N. Morei, and John P. Rosa, *Militarism and Nuclear Testing in the Pacific*, (Volume 1 of Teaching Oceania Series, edited by Monica C. LaBriola. Honolulu: Center for Pacific Islands Studies, University of Hawai'i–Mānoa, 2019)
- (5) Simon Winchester, *PACIFIC*, (Chapter 2: *The Great Thermonuclear Sea*), p. 29-83, HarperCollins Publishers, 2015)
- (6) Craig Santos Perez, *from Unincorporated Territory*, (Tinfish Press, 2008)
- (7) Chantal Spitz, *Island of Shattered Dreams* (Huia Publishers, 2007)
- (8) Kathy Jetnil-Kijiner, *IEP Jaltok Poems from a Marshallese Daughter* (Univ. Arizona Press, 2017)
- (9) Jessica Schwartz, *Radiation Sounds: Marshallese Music and Nuclear Silence*, (Duke Univ Press, expected 2020)
- (10) Solomon Report, *A Report by the U.S. Government Survey Mission to the Trust Territory of the Pacific Islands*, (Commissioned by President J. Kennedy, October 9, 1963)

(11) Achille Mbembe, *Necropolitics*, (Duke Univ. Press, 2019), p 66-93 (Duke University Press 2019)

Secondary Bibliography

- Holly Barker, *Bravo for the Marshallese: Regaining Control in a Post-Nuclear Post-Colonial World*, (Wadsworth Cengage, 2012)
- Giff Johnson, *Don't Ever Whisper, Darlene Keju, Pacific Health Pioneer, Champion of Nuclear Survivors*, (self-published)
- Barbara Rose Johnston & Holly Barker, *Consequential Damages of Nuclear War*, (Routledge, 2017)
- Barbara Rose Johnston, *Half-Lives and Half-Truths: Confronting the Radioactive Legacies of the Cold War*, (School for Advanced Research Press, 2017)

Disability Services:

If you require additional assistance with reading assignments or exams because of a disability, please check in with Disability Services in 802 Lerner Hall. More information is available at: <https://health.columbia.edu/content/disability-services>

Faculty Statement on Academic Integrity:

The intellectual venture in which we are all engaged requires of faculty and students alike the highest level of personal and academic integrity. As members of an academic community, each one of us bears the responsibility to participate in scholarly discourse and research in a manner characterized by intellectual honesty and scholarly integrity.

Scholarship, by its very nature, is an iterative process, with ideas and insights building one upon the other. Collaborative scholarship requires the study of other scholars' work, the free discussion of such work, and the explicit acknowledgement of those ideas in any work that inform our own. This exchange of ideas relies upon a mutual trust that sources, opinions, facts, and insights will be properly noted and carefully credited.

In practical terms, this means that, as students, you must be responsible for the full citations of others' ideas in all of your research papers and projects; you must be scrupulously honest when taking your examinations; you must always submit your own work and not that of another student, scholar, or internet agent.

2021 SUMMER Schedule:

Session 1: Monday, May 3

Introduction: Course Overview and Logistics

Presentation of the course: Themes, course syllabus, homework and grading, oral presentations, exams.
Discussion of goals of the weekly lectures and those of the weekly seminar.

Nuclear game: <https://k1project.columbia.edu/content/nuclear-diplomacy-simulation>

Session 2: Tuesday, May 4

Nuclear Weapon Principles and the Republic of the Marshall Islands (RMI)

Describe types of energy released during nuclear weapon explosion. Understand geography and demographics of the Marshall Islands and some of the challenges the Marshallese face today. Discuss the history of the US nuclear testing program as told by a Pacific Island scholar and a British author.

- Glasstone, “Effects of Nuclear Weapons”, *General Principles of Nuclear Explosions*, Chapter I, p 1-12.
- Republic of the Marshall Islands, 2011 Census Report, p 13-30.
- Teaiwa, *bikinis and other s/pacific n/oceans*, p. 87-109
- Winchester, *The Great Thermonuclear Sea*, p. 29-83

Session 3: Wednesday, May 5

Nuclear Weapons Principles and the Republic of the Marshall Islands (RMI)

Further discussion of nuclear testing history in the Marshall Islands from a nuclear militarism perspective. Summarize the story of the Marshall Islands nuclear testing. Focus on the Bravo bomb and its impact on the Marshallese.

- Republic of the Marshall Islands, 2011 Census Report, p 31-63.
- *Militarism and Nuclear Testing in the Pacific*, p. 1-25
- Homework #1 due

Session 4: Thursday, May 6

Explosions and History

Understand the basics of how nuclear weapons work and the US government justification to continue nuclear testing after Hiroshima and Nagasaki. Discuss an activist Marshallese government leader's response to nuclear testing in the world after having witnessed the Bravo bomb. Expansion of the study to the French nuclear testing program in the Pacific: similarities and differences.

- Samuel Glasstone, "Effects of Nuclear Weapons", *Description of Nuclear Weapons*, Chapter II, p 28-68
- *Militarism and Nuclear Testing in the Pacific*, p. 26-46
- Tony DeBrum interview, Marshall Islands Foreign Minister (deceased), nominee for 2017 Nobel Peace Prize, (K=1 Project footage)
- *Marshalling Peace*, (<https://k1project.columbia.edu/marshalling-peace>), CC undergraduate film

Session 5: Monday, May 10

Explosions and History

"Nuclear colonialism" has emerged as a new concept pioneered by indigenous leaders from the Pacific community. Discuss the role of modern-day nuclear activism; this topic is of relevance to your Final project! Summarize the history of nuclear testing in the Pacific. After today, we begin moving to subtopics and themes.

- *Militarism and Nuclear Testing in the Pacific*, p. 47-59
- Homework #2 due

Session 6: Tuesday, May 11

Explosions and History

Blast is a property of all bombs, whether nuclear or chemical. Describe the difference between a nuclear and chemical blast and how the nuclear blast affected the Marshallese people who were living within a few hundred miles of the nuclear tests. Begin the discussion of how the Marshallese people communicate their loss from the testing program, including guidance on poetry reading in this week's seminar.

- Samuel Glasstone, "Effects of Nuclear Weapons", *Air Blast Phenomena*, Chapter III, p 102-120
- *from Unincorporated Territory*, p. 1-41

Session 7: Wednesday, May 12

Explosions and Legends II

Pacific Island communication has a long oral tradition, and poetry has been a particularly effective outlet for nuclear activism. Detailed discussion of loss, poetry and nuclear activism, guided by “ from Unincorporated Territory”.

- *from Unincorporated Territory, p. 41-96*
- Homework #3 due

Session 8: Thursday, May 13

Heat, Art and Love

Tremendous heat and subsequent destructive fires were witnessed and experienced by the Marshallese, in particular for the Bravo bomb. Understand the level of heat emitted from a nuclear weapon. The fires destroyed their islands. We will also discuss Marshallese culture, loss of land, exodus and their extraordinary expertise in sailing and ocean navigation.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Thermal Radiation and Its Effects*, Chapter VII, p 316-350
- Handicraft and Navigation, Photo collection from Alele museum (Majuro, RMI), handout
- Island of Shattered Dreams, p. 1-90

Session 9: Monday, May 17

Heat, Art and Love

A modern view of the Marshallese exodus is a topic of great importance. A New York Times magazine on Alson Kelen, a Marshallese member of their Nuclear Commission and great modern-day navigator, describes the loss of traditional navigation expertise in the modern world. Island of Shattered Dreams is a love story of displaced Pacific Islanders from the French Nuclear testing program. Discuss impact on the people of displacement from nuclear testing.

- “The Secret of the Wave Pilots”, *NY Times*, March 20, 2016, <https://www.nytimes.com/2016/03/20/magazine/the-secrets-of-the-wave-pilots.html>
- Island of Shattered Dreams, p 91-180
- Homework #4 due

Session 10: Tuesday, May 18

Nuclear Fallout and Poetry

Within moments, blast, light-speed radiation and heat pass through the islands and disappear. Residual radiation from fallout lasts minutes, hours, days, months, years, decades, centuries depending on the radioactive isotope. 70 years later the Marshall Islands is contaminated, and Marshallese people suffer from increased cancer rates and death. Kathy Jetnil-Kijiner, a Marshallese poet and activist, communicates the Marshallese suffering through her poetry and videos.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Residual Nuclear Radiation and Fallout*, Chapter IX, p 414-450
- Kathy Jetnil-Kijiner, “IEP Jaltok Poems”, p. 1-40
- Video, Kathy-Jetnil Kijiner, “Anointed”, <https://www.youtube.com/watch?v=HuDA7izeYrk>

Session 11: Wednesday, May 19

Nuclear Fallout and Poetry

The topic of fallout is a huge issue for the Marshallese today. On March 1, every year, the country mourns the anniversary of the destruction from the Bravo shot. Continued seminar discussion on the physics properties of fallout and the poetry of Kathy Jetnil-Kijiner.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Residual Nuclear Radiation and Fallout*, Chapter IX, p 451-488
- Kathy Jetnil-Kijiner, “IEP Jaltok Poems”, p. 41-80
- Homework #5 due

Session 12: Thursday, May 20

Health and Lies

Review the health effects on people from radiation exposure as reported primarily from the studies coming from exposures at Hiroshima and Nagasaki. Even today, these studies are the basis of all modern-day radiation safety guidelines around the world. We will also begin a discussion of a recently de-classified US government report of enormous relevance to the Marshallese on the US strategy towards the Marshall Islands, commissioned by the Kennedy administration in the early 1960s, shortly after the nuclear testing ended.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Effects on Personnel*, Chapter XI, p 547-600
- A.M. Solomon, “A Report by the US Government Survey Mission to the Trust Territory of the Pacific Islands, CONFIDENTIAL”, October 9, 1963, p S1- S14

Session 13: Monday, May 24

Health and Lies

Continued seminar discussion of the health effects of radiation exposure from nuclear weapons and the Solomon report. Seminar debate: Despite independence, is the US still today a colonial power in the Marshall Islands? Midterm discussion and review.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Effects on Personnel*, Chapter XI, p 601-627
- A.M. Solomon, “A Report by the US Government Survey Mission to the Trust Territory of the Pacific Islands, CONFIDENTIAL”, October 9, 1963, p S15- S32
- Homework #6 Due

Session 14: Tuesday, May 25

MIDTERM EXAM

Session 15: Wednesday, May 26

FINAL PROJECT DISCUSSION

Session 16: Thursday, May 27

Marshallese Song and Cancer

Discussion of radiation protection; comparison of radiation protection to biohazard. Marshallese music and song are strong traditions in the community. Thyroid cancer and subsequent loss of voice were common occurrences in the Marshallese community as a result of the nuclear testing. Discussion of loss for cancer victims and their families resulting from a manmade source.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Principles of Protection*, Chapter XII, p 627-650
- Jessica Schwartz, “Marshallese Music and Nuclear Silence”, Marshallese musical recordings from thyroid cancer victims, and excerpts from book, if not complete

Session 17: Tuesday, June 1

Marshallese Song and Cancer

Concluding discussion on radiation protection and thyroid cancer, in particular. The US government provided health services to the Marshallese after the nuclear testing. Motivated by Marshallese videos, recorded by former Columbia students in the Marshall Islands, further broad seminar discussion on Marshallese health today. This discussion will not be limited to health effects coming solely from nuclear testing, but include the impact of the US presence on Marshallese health and society generally.

- Samuel Glasstone, “Effects of Nuclear Weapons”, *Principles of Protection*, Chapter XII, p 651-664
- Interview with Kwajalein Senator David Paul on Marshallese health, (K=1 Project Footage)

Session 18: Wednesday, June 2

Project 4.1. Human Subject Testing and Race

Probably the top horror story (war crime) from nuclear testing in the Marshall Islands was Project 4.1: “Study of Response of Human Beings Accidentally Exposed to Significant Fallout Radiation”. Here the topic of “friendly savages” and skin color becomes an issue.

- Film: “Nuclear Savage: The Islands of Secret Project 4.1”, Adam Horowitz, <https://vimeo.com/ondemand/28826>
- Project 4.1, Archival documents
- Achille Mbembe, *Necropolitics*, (Duke Univ. Press, 2019), p 66-93

Session 19: Thursday, June 3

Project 4.1 Human Subject Testing and Race

Seminar discussion of Project 4.1. Analysis of the evidence as to whether the US government actions were deliberate and premeditated versus just a health response to an accident and crisis. Did the fact that the Marshallese have dark skin matter?

- Project 4.1, Archival documents
- Final Project abstracts due
- Achille Mbembe, *Necropolitics*, (Duke Univ. Press, 2019), p 66-93

Session 20: Monday, June 7

Environmental Contamination (65 years later)

The K=1 Project performed five years of research on radioactive contamination to the northern Marshall Islands using primarily Columbia undergraduate researchers. These studies were published in the Proceedings of the National Academy of Science and receive high exposure in the Press, both nationally and internationally. Discussion of radioactive contamination to the Marshallese land and food and the impact that this has on the Marshallese today.

- M.K.I.L. Abella *et al.*, “Background gamma radiation and soil activity measurements in the northern Marshall Islands”, *Proceedings of the National Academy of Science*, <https://www.pnas.org/cgi/doi/10.1073/pnas.1903421116>
- C.E.W. Topping *et al.*, “In Situ measurement of cesium-137 contamination in fruits from the northern Marshall Islands”, *Proceedings of the National Academy of Science*, <https://www.pnas.org/cgi/doi/10.1073/pnas.1903481116>

Session 21: Tuesday, June 8

Environmental Contamination (65 years later)

Not only was the Marshallese land contaminated from nuclear testing, but also the ocean and lagoon. Seminar discussion of how important the ocean is with regard to nuclear testing. This topic is almost never discussed or studied, since it does not affect people directly, but just the marine life. Discussion of what one does with nuclear waste in preparation for the guest lecture on April 19.

- E.W. Hughes *et al.*, “Radiation Maps of Ocean Sediment from the Castle Bravo Crater”, *Proceedings of the National Academy of Science*, <https://www.pnas.org/cgi/doi/10.1073/pnas.1903478116>
- M.B. Gerard, “A Pacific Isle, Radioactive and Forgotten”, *New York Times*, Dec 3, 2014, Op Ed

Session 22: Wednesday, June 10

Women's Health

The Marshallese refer to radiation as a “poison”. A topic that is rarely discussed since it logically leads to unending liability issues if future generations are harmed by radiation contamination and subsequent health effects on women. Professor Alcalay conducted a series of interviews in 1981 and 2002 of Marshallese women exposed to fallout from the US nuclear weapons testing.

- “Women’s health and miscarriages”, translated interviews in Marshallese conducted by Glenn Alcalay, example:
<https://soundcloud.com/glenn-atomic-atolls/ruth-ann-matthew-ebeye-2002?in=glenn-atomic-atolls/sets/2002-interviews>
- Search through <https://www.atomicatolls.org>

Session 23: Thursday, June 11

After studying the website, www.atomicatolls.org, come into seminar with English-translated interviews of Marshallese women that you found interesting. Round table discussion of what is learned from this website on the topic of women’s health.

Women's Health

Marshallese Women’s Health

- <https://www.atomicatolls.org/1981-interviews>

Session 24: Monday, June 14

Final Project Presentations