

## **The Effects of Nuclear Testing in French Polynesia**

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In some ways, the effects of the French's government's nuclear testing in French Polynesia between 1966 and 1995 have been rigorously investigated. Existing research has studied the amount of radiation released in the atmosphere, and its effects on cancer rates. But this research has not been holistic in nature (de Vathaire et al.; Gleize et al.; Challeton-de Vathaire et al.). Scholars and government officials have not addressed the economic impact of nuclear testing on tourism, or the results of economic changes on the health of the indigenous people in French Polynesia. It is important for anthropologists to do ethnographic research in French Polynesia to help study the health issues that may have arisen from the impact of nuclear testing on the local economy, and how these issues might be addressed.

To understand the relationship between the economy and the health of this population, we need to understand the lifestyle of the Polynesian people, and how it has changed as a result of government policies. French Polynesia is a territory consisting of five archipelagos: the Marquesas Islands, Austral Islands, Windward Islands, Leeward Islands, and the Tuamotu-Gambier archipelago. Sixty to eighty percent of the inhabitants live in the Society Islands, consisting of the Windward and Leeward Islands and including the island of Tahiti, located about equidistant between California and Australia. (Many people use Tahiti as a general name for all of French Polynesia.) Most of the medical care is located in Papeete, the main city on Tahiti (Gleize et al.; de Vathaire et al.). French Polynesia was annexed by France in 1847. It is one of the few colonies remaining in the world. French

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Polynesia is administered under France's Ministry of Overseas Departments and Territories. The laws governing the colony are based on the Constitution of the Republic of France (Kahn).

According to the Institute Territorial de la Statistique, ninety-five percent of the children born in French Polynesia are Maori or half-Maori (1988). Maori culture is characterized by a strong attachment to the land that is balanced with an affection for the ocean. The Maori believe that islands are born of deities, and that the features of the land represent features of the deities. The relationship between the land and the people is one of reciprocity. The people care for the land, and in turn the land feeds and provides for the people. This reciprocity can be seen in the custom of a mother burying her child's placenta in the ground. Doctors will save the placenta for the mother and return it to her if she has had to remain in the hospital after delivery of the child (Kahn). By burying the placenta the mother gives to the land and ensures that the land will provide for her children. The placenta does not even have to be buried in land that one owns.

In pre-colonial times all people had access to land through their extended families, each of which jointly owned a tract of land (Kahn). Royal families exercised rights to coastal areas for fishing as well as to tracts of land. The complementary nature of the land and the sea is demonstrated by the custom of bringing coral to religious sites and placing it among the stones. Coral is brought to all religious sites regardless of how far inland they may be (Kahn).

The population was made up of three classes. The first was the king and the high chiefs. These people were on the same level as the gods. They owned land and religious sites. The second class was the royal servants who were delegated land to oversee by the kings. Third was the lower class, who lived on and cultivated the land, paying the upper classes with food for its use (Kahn).

French Polynesia remained relatively undeveloped and isolated until the 1960s. At that time the Centre De Experimentations du Pacifique (CEP) came to French Polynesia to test nuclear weapons. This shift was due to the independence of Algeria, which had also been a colony of France and its previous site for nuclear testing (Kahn). The sudden development of the new test site created a short-lived economic boom in French Polynesia, and as many as ten percent of

the native people were employed by the CEP. Many native islanders moved from the outlying islands to work for the CEP. They resided in shantytowns, creating a population problem in and around the town of Papeete. To compound the problem, better health care and a high birthrate created a nation with a disproportionately large percentage of young people. It was estimated that in 1980, sixty percent of French Polynesians were under 16 (Vesilind).

Between 1966 and 1974, France performed 41 atmospheric nuclear weapon tests in the Mururoa and Fangataufa Atolls. These were followed by 137 underground tests conducted until 1995 (de Vathaire et al.). The two atolls are located approximately 1000 kilometers from Tahiti on the eastern edge of French Polynesia. The majority of the tests were conducted on Mururoa Atoll, with 37 atmospheric tests and 127 underground tests. The remaining and larger tests were conducted at Fangataufa Atoll, the smaller island of the two (IAEA). The atmospheric tests were conducted by suspending the nuclear devices from a balloon. The devices were then detonated in the atmosphere a considerable distance above ground. The underground tests were conducted by drilling holes into the rock beneath either the rim or the lagoon of the atolls. The devices were then placed into the holes and detonated (IAEA). Two different types of nuclear tests were conducted. The first were typical nuclear tests: a nuclear device was exploded with the release of fission energy and radioactive particles. The second type were safety tests: nuclear devices were subjected to "accidental" conditions, or nuclear cores were destroyed by conventional explosives. The second type of test resulted in very little release of fission energy and radioactive particles. There were fifteen safety trials in all, five conducted in the atmosphere and ten conducted underground (IAEA).

After 1974 nuclear testing was halted temporarily. The French Polynesian economy, which had become increasingly dependent on the testing, went into decline. Testimony to the failing economy is the fact that in 1979, 65% of the islands' food was imported. Previously, the islanders had been self-sufficient farmers and fishermen (Vesilind). It is estimated that in 1995, France put the equivalent of \$1.25 billion dollars into the French Polynesian economy to keep it afloat (Benchley).

On September 5, 1995 the French government resumed nuclear

testing on Mururoa Atoll. Many in Tahiti were outraged by the act, which fell two weeks before the 50<sup>th</sup> anniversary of the bombing of Hiroshima. Riots broke out across the city of Papeete (Kahn). Initially, on the day following the nuclear test, the protesting was peaceful. A group of thirty women organized an anti-nuclear sit-in on the runway at the airport. The French police attempted to remove the women, but another group of protesters, who were trying to gain support for a strike to raise the minimum wage, heard of the attempted removal and came to the aid of the women. At this point the police fired tear gas at the angry protesters and fighting broke out. News of this traveled to the local shantytowns; young people flocked to the scene and proceeded to set fire to the airport. The rioters then moved into the downtown area, where they smashed windows and incinerated cars. The violence continued throughout the day and into the night. Not until the pro-independence leader Oscar Temaru requested peace did the rioting stop. By then the city had been paralyzed and suffered economic losses estimated at 51 million dollars (von Strokirch).

Protests against the 1995 tests were not confined to Tahiti. German youths threw food at a French cultural center. In Sydney and Tokyo, thousands of protestors marched through the streets. The strongest protests came from Australians and New Zealanders who objected to nuclear testing in their “backyard” (Sancton). Many critics questioned the need for resuming the tests. The president of France, Jacques Chirac, claimed that the tests were necessary to complete France’s program of scientific research (Sancton). But only two tests were needed to complete the program, the necessity of which was questionable (the French government had previously decided to abandon it in 1994). Many believed that the 1995 tests were simply a display of power and control rather a search for the sake of important scientific knowledge. Even if the tests had scientific justification, however, the French government could be criticized for refusing to do testing in France, instead choosing a location where the indigenous people ultimately had no power to prevent the testing (Sancton).

In response to the political pressure, the French government funded several studies to evaluate the environmental and medical effects of the nuclear tests. The International Atomic Energy Agency (IAEA) was also asked to conduct a study evaluating the effects of nuclear

testing on the Mururoa and Fangataufa Atolls and surrounding areas (de Vathaire et al.). The research team that conducted the study was comprised of scientists and experts from all over the world. The study took two years to complete and engaged about one hundred people in all. The purpose of the study was to assess the radiological safety of the atolls and the possible hazards to people. The researchers concluded that radiation was not a threat to the people or other flora and fauna in the surrounding area (IAEA). The IAEA did not recommend any further environmental monitoring at Mururoa and Fangataufa Atolls, but the agency did recommend the monitoring of radiation concentrations in the rock and test cavities, because the emission of radiation from the rock and cavities may be of particular interest to science in general.

One important aspect that was not covered in the study was the evaluation of possible exposures of people to radiation prior to the study. In other words, the study was not retrospective. Possible problems, such as exposure of workers in the early nuclear testing years, were not evaluated (IAEA). Other studies, however, have attempted retroactively to assess the consequences of so many nuclear tests. Many have focused on the rates of cancer in French Polynesia, comparing it to rates of cancer in other, similar populations. These studies use the Cancer Incidence Registry created by the French government in 1980. This database records all occurrences of cancer treated in hospitals or by doctors on Tahiti and provides information on the patients, diagnoses, and treatments.

For instance, the study by de Vathaire et al. (2000) examines the rates of thyroid cancer in French Polynesia between 1985 and 1995 against the rates of thyroid cancer in native populations in Hawaii and New Zealand. The rates of cancer were surprisingly high compared to the other populations, with two to three times more cases in French Polynesia. But the study attributes these differences to a difference in the accessibility of medical care rather than to nuclear testing. Another study by Gleize et al. (2000) compares the cancer rates of the native population in French Polynesia, mainly the Maoris, to that of immigrants who came from France to Polynesia. The researchers found that natives were at a higher risk for some cancers, but not others. They attribute this difference to variation in diet

between populations rather than exposure to radiation. A third study (2004) uses the same techniques to study the incidence of cancer among children. It fails to find a higher incidence of cancer among children that were born between 1985 and 1989 when compared to children born between 1990 and 1995 (Challeton–de Vathaire et al.).

It is likely that no people were harmed by radiation during the nuclear testing. The French government's position is that the tests did not pose any danger to the regional populations because the closest inhabited island was 120 kilometers away and there are only 2,500 inhabitants living within a 500-kilometer radius. Although this may be true, it is important to remember that the number of indigenous people is naturally small, and any loss has a robust effect on such a small population. It is almost impossible to predict what the consequences of extensive nuclear testing will have on the region a century from now. It is possible that subterranean fractures in the rock layer under the atolls could crack and release radioactive material into the sea (Sancton). The release of so much radiation would have unimaginable consequences on the flora and fauna in the surrounding area, which could in turn have consequences for the native people living in the surrounding area who depend on the land and sea to subsist.

Beyond these speculative possibilities for the future, it seems reasonable to assume that the shift in lifestyle due to nuclear testing has already had adverse health effects on the native people. Unfortunately, information on this shift has not been gathered. The epidemiological studies discussed above (de Vathaire et al.; Gleize et al.) focus simply on rates of cancer, which are the most direct measures of the effects of radiation. Instead of attributing the increased cancer rates to radiation, they attribute the cancer rates to differences in diet and access to medical care. But considering the economic and social changes that nuclear testing has caused, differences in diet and access to medical treatment could also be due to the negative economic impact of nuclear testing.

We have already described the economic repercussions that nuclear testing has caused in Tahiti. At first testing created an economic boom that pushed people in outlying islands to move to the city and become more dependent on the French government for material and nutritional

support. When the nuclear tests were abandoned in 1994, the economy took a downward swing because the government could no longer employ the number of people that it previously had. Then in 1995, when the tests were resumed, the riots in Tahiti led to millions of dollars' worth of damage to the city. Because the riots received international news coverage, the entire world became aware of the nuclear testing and the resulting unrest in the area. This publicity led to a further depression of the economy due to a decline in tourism, which had become the colony's leading industry after nuclear testing. People did not want to visit the location of a potential nuclear test *or* a potential riot, even if that location was a tropical paradise.

The need for more information on this topic is clear. Herein lies the value of anthropological study on the health of indigenous people in French Polynesia. An anthropologist's motivation stems from an interest in all aspects of people's lives. The holistic perspective of an anthropologist assumes that all parts of a culture are interrelated. An event like nuclear testing has consequences, some of which are indirect, such as a negative impact on the local economy and a people's overall health. If many of the health problems are tied to economic problems, an anthropologist may be able to provide information about how the functioning of the economy directly affects the health of the people, and offer possible solutions on how to improve both, thereby improving the overall quality of life (compare the studies of Rasch et al.; Biehl; Phinney) This kind of anthropological study would be useful not only for the people of French Polynesia, but for all governments that must interact with minority or indigenous populations.

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