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**CONTINENTAL LIVES AND
ANTI-COLONIAL STRUGGLES
IN ARID, PLENTIFUL LANDS**

TERRA NUCLEUS: RADIATING DESERT LIVES

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Since 1945, colonized deserts have been used by the U.S., the USSR, the U.K., France, and Israel in order to “test” their nuclear arsenal. In this text that links the Chihuahan, Mojave, Turkestan, Western Australian, Sahara, and Naqab deserts, Samia Henni unpacks this history of continental nuclear colonialism and its toxic consequences on environments that are all but empty.

Since the onset of the nuclear age, the United States of America (U.S.), the Union of the Soviet Socialist Republics (USSR, now Russia), the United Kingdom (U.K.), France, and Israel, have conducted their nuclear weapons activities in colonized deserts. These Cold War programs have not only destroyed human, animal, vegetal, and other lives, but have also contaminated hundreds of thousands of square kilometers of natural, living, and built environments. Desert territories were chosen because the colonial or imperial administrations considered them to be “empty,” or “deprived of life.” For instance, General Charles Ailleret, the head of France’s nuclear program in colonized Algeria, stated in his memoirs that the Sahara was “a land of thirst and fear, from which all life was reputedly absent”; and that it was characterized by “the total absence of animal and vegetal lives.” This common colonial misconception of the desert dominated repeatedly the justification for turning deserts (their overground and underground) into radioactive sites.

Contrary to this colonial distortion, deserts are not devoid of life. Desert territories—which comprise approximately one-third of the Earth’s land surface—host human, non-human, biological, and microbiological lives. They support sedentary, semi-nomadic, nomadic, animal, vegetal, and mineral forms of existence. Even though the presence of life in desert territories is evident, to this day, one repeatedly hears and reads the same old colonial platitudes.

This is because industrialized subjectivities and exploitative authorities are constantly searching for and in need of so-called “empty”

places to be “filled” through occupation, extraction, mining, production, and accumulation.

These mechanisms are often intertwined with various forms of silencing the damage and destruction that are caused in desert territories, as it was argued and illustrated in the recently published book I had the chance to edit, *Deserts Are Not Empty* (2022).

It is believed that 2,121 nuclear bombs tests (atmospheric and underground) were conducted since the detonation by the U.S. Army in July 1945 of Trinity, the very first nuclear weapon, in the so-called Jornada del Muerto Desert, in New Mexico, before they dropped their atomic bombs on Hiroshima and Nagasaki in August 1945. The devastating consequences of nuclear weapons have not prevented several countries from investing huge amounts of capital to research, design, produce, and test this lethal military technology. Nuclear explosions have both instant and delayed destructive effects. Within seconds or minutes, the blast, shockwaves, thermal radiation, and ionizing radiation cause substantial obliteration. The delayed effects of radioactive fallout cause damage over an extended period of time, ranging from a few hours to many years. The fallout consists of weapons debris, fission products, and radiated soil and matter. These radioactive particles have different sizes and carry various levels of radioactivity.

Following the exposure of human bodies to nuclear weapons tests, numerous diseases were reported from the 1950s to the present, such as leukemia, lymphoma, thyroid cancer, breast cancer, melanoma, bone cancer, brain tumors, and gastrointestinal tract cancers. Furthermore, when energy is released by the splitting of uranium or plutonium atoms in atomic bombs, or the fusion of hydrogen atoms in hydrogen bombs, radioactive particles fall to earth, contaminating air, earth, water, food supply, as well as the built and natural environments with their various forms of life. These contaminations started

with Trinity and continue to this day by means of wind currents that cause far-reaching environmental damage.

The U.S. detonated its nuclear bombs tests in various sites, including the Nevada Desert and the Marshall Islands, between 1945 and 1992. Most of the bombing occurred in the Nevada National Security Site, which is located on Western Shoshone lands, known as Newe Sogobia, at about 105 kilometers northwest of the city of Las Vegas. The military area covered roughly 3,500 square kilometers of desert on which airstrips, paved roads, and more than 1,000 buildings were constructed. This massive area was exposed to over 1,000 nuclear explosions, both over and under the ground of the lands of the Shoshone people and without their consensus. In an article titled, "A Message From the Most Bombed Nation on Earth," published on Al Jazeera on August 29, 2020, Ian Zabarte, the Principal Man of the Western Bands of the Shoshone Nation of Indians, indicated: "You never know what is killing you when it is done in secret." He described the devastating effects of the nuclear military industrial complex on every family, both mentally and physically, in addition to the killing of the flora and fauna of the Shoshone lands.

As a result, he indicated: "We have watched our people die. Some of the strongest defenders of our land, of our people, just gone."

Four years following the U.S.'s first atomic explosions, the Soviet Union conducted its nuclear weapons tests in the Steppe, in northeast Kazakhstan (then the former Kazakh Soviet Socialist Republic). Known as the Semipalatinsk Test Site, and covering 18,000 square kilometers, this nuclear zone was exposed to about 456 nuclear devices (both atmospheric and underground) between 1949 and 1989. Codenamed Pervaya Molniya (or First Lighting), the first Soviet atomic bomb, ended the U.S. monopoly of the most devastating weapon of mass destruction, while contaminating human and nonhuman lives. The Kazakh health authorities estimate that up to 1.5 million people were exposed to radioactive fallout. Either detonated on metal towers or dropped from aircrafts before the 1963 Limited Test Ban Treaty—prohibiting nuclear weapons testing in the atmosphere, which was signed by the U.S., the U.K., and the USSR—and then exploded under the ground of the Steppe desert, the nuclear bombs generated extremely high levels of DNA

mutations in individuals who were exposed to the radiation, as well as in their children. Following the collapse of the Soviet Union in 1991, the newly independent Kazakhstan inherited the radioactive site and the irreversible consequences of the atomic bombs.

While the U.S. and USSR were contaminating desert territories and lives, the U.K. was preparing for the detonation of its first nuclear bomb. Codenamed Operation Hurricane, the atomic bomb exploded in October 1952 in the Montebello Islands in Western Australia. Further bombs exploded in Emu Field in the desert of South Australia and Maralinga in the western areas of South Australia. Twelve major atmospheric nuclear bombs tests were conducted between 1952 and 1957 on Australian territories, and nine followed between over the Central Pacific Ocean from 1957 to 1958—before the 1963 Ban Treaty. In addition, a series of a few hundreds of so-called "Minor Trials" were performed between 1953 and 1963, using in some cases highly radiative and toxic components, including plutonium and uranium. According to the Comprehensive Nuclear-Test-Ban Treaty (CTBT), some of the atmospheric explosions were considerably more powerful than the bombs dropped on Hiroshima and Nagasaki. Beginning in 1962, twenty-four U.K. atomic bombs were conducted jointly with the U.S. at the Nevada Test Site, the last of which was shot in 1991. In March 2017, Sue Coleman-Haseldine, a Kokatha (Aboriginal Australian people of the state of South Australia) nuclear bomb test survivor, addressed more than 120 Governments at the United Nations to defend a treaty to prohibit and eliminate nuclear weapons. She testified and asserted that: "Aboriginal people were still living close to the test sites and were told nothing about radiation. Some communities were so contaminated that most people developed acute radiation sickness." The transcription of her speech is available on the website of the International Campaign to Abolish Nuclear Weapons (ICAN).

France became the fourth country to make its entry into the exclusive club of nuclear weapons of mass destruction in February 1960, with the detonation of its first atmospheric nuclear bomb in Reggane, in colonized Algerian Sahara. Between February 1960—about five years after the outbreak of the Algerian Revolution, or the Algerian War of Independence (1954–1962), and four years after the first exploitation of Algerian oil—and February 1966, France detonated seventeen nuclear bombs (four atmospheric and thirteen underground) in the Algerian Sahara and tested other nuclear technologies and weapons, in spite of Algeria's



Fig.1



Fig.2

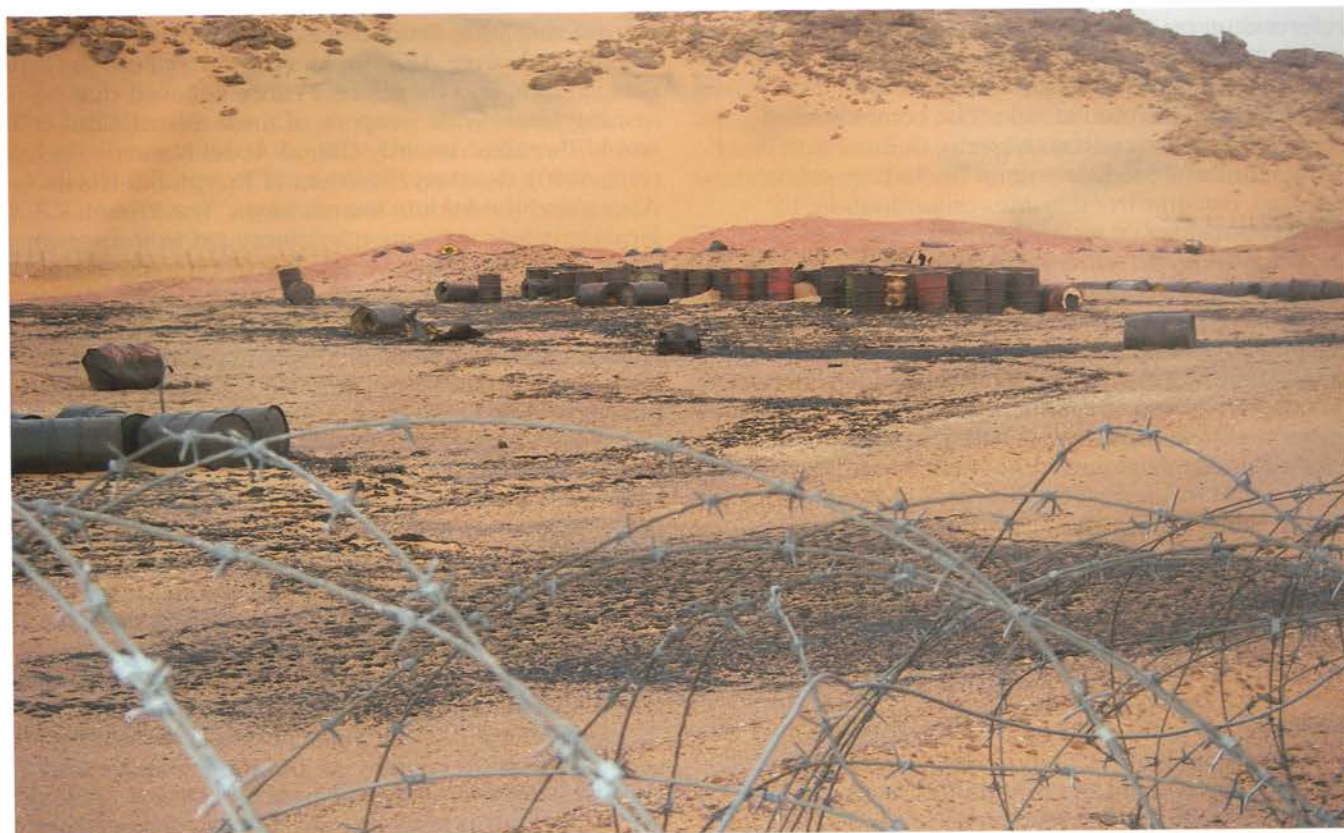


Fig.3



Fig.4

referendum on self-determination, which was approved by 75 percent of French voters on January 8, 1961, and its independence in 1962, after 132 years of French colonial rule. The bombs spread radioactive fallout across Algeria, Central and West Africa, and the Mediterranean (including southern Europe), causing irreversible contamination. In 1966, France moved its nuclear weapons testing from independent Algeria to the Mururoa and Fangataufa atolls in colonized Ma'ohi Nui (so-called French Polynesia), in the southern Pacific Ocean. Despite objections and protests and the atmospheric bombs ban, the French colonial authorities conducted nearly 200 atmospheric and underground nuclear experiments there between 1966 and 1996, further toxifying colonized environments.

Bruno Barrillot, winner of the 2010 Nuclear-Free Future Award and co-founder of the Observatoire des armements, a French independent non-profit center of expertise and documentation founded in 1984 in Lyon, denounced the French government's silence toward its nuclear bombs and their radioactive heritage in the Algerian Sahara. He published various articles and books and initiated numerous campaigns along with his team at the Observatoire. One of the testimonies published in 2003 in Barrillot's *Les irradiés de la république: les victimes des essais nucléaires français prennent la parole* (The Irradiated of the Republic: the Victims of the French Nuclear Tests Speak Out), titled "Enfouissement des matériels contaminés" (Burying of Contaminated Materials), asserts that: "after the departure of the French, many people went to retrieve equipment from the spaces and facilities, despite the bans" and that "there was no particular medical follow-up of the population around Reggane." This treatment of Saharan people and territory confirms the mistreatment of colonized deserts and the disregard of their irreversible destruction and contamination.

Over the course of the Suez Crisis of 1956, also known as the Second Arab Israeli War or the Tripartite Aggression, French colonial authorities concretized the promise to provide Israeli colonial authorities with nuclear weapons and expertise.

During that year, France's struggle to maintain its colonial rule over Algeria, Morocco, and Tunisia was evident, and therefore, France believed that arming Israel with weapons of mass destruction would threaten not only Gamal Abdel Nasser (1918–1970), the then President of Egypt, but North Africa and the Middle East at large. The French Israeli nuclear agreements culminated in the secret construction of a nuclear reactor in Dimona, located in the Naqab desert. Today called the Shimon Peres Negev Nuclear Research Center (formerly the Negev Nuclear Research Center), the center benefited from French nuclear weapons knowledge that was being developed and conducted in the colonized Algerian Sahara.

Unlike the U.S., Russia, the U.K., and France, Israel had never officially acknowledged or given evidence of its production and possession of nuclear weapons, but it had publicly recognized the existence of the reactor in Dimona. In 1970, it was accepted that the U.S. deemed Israel to be in possession of nuclear weapons, however, Israel is still operating until the regime of the so-called "nuclear ambiguity," or "nuclear opacity." Israel became the sixth country to join the exclusive toxic club. The secret building of Israel's military nuclear infrastructure in Dimona, which was supported by their French counterparts, was outside of the International Atomic Energy Agency (IAEA), an organization established in July 1957, to seemingly promote "the world's atoms for peace."

France was, however, one of the original signatories of the Euratom Treaty that established the European Atomic Energy Community in March 1957—at the same time as the Treaty of Rome, which established the European Economic Community, now the European Union. Despite France's awareness of the protocols of these supranational and international institutions, it proceeded in secretly supporting Israel in acquiring nuclear weapons, learning to become a nuclear power (without announcing it), and exploiting a colonized desert to build its massive nuclear military infrastructure.

Today, Israel continues to operate under the regime of "opacity" and "secrecy." The Guardian newspaper reported on February 18, 2021, that "Israel is carrying out a major expansion of its Dimona nuclear facility in the Naqab desert, where it has historically made the fissile material for its nuclear arsenal." The construction work, kept secret, is visible in satellite images published by an independent research group. Maintaining a policy of deliberate "ambiguity" is part of Israel's colonial

project, which seems to be tolerated by both allies and adversaries.

The U.S., Russia, the U.K., France, and Israel have not signed or ratified the 2017 United Nations' Treaty on the Prohibition of Nuclear Weapons. According to ICAN, the Treaty "prohibits nations from developing, testing, producing, manufacturing, transferring, possessing, stockpiling, using or threatening to use nuclear weapons, or allowing nuclear weapons to be stationed on their territory. It also prohibits them from assisting, encouraging or inducing anyone to engage in any of these activities." When a nation that possesses nuclear weapons, or hosts another nation's nuclear weapons, signs the treaty, it automatically agrees to destroy them and remove them by a given deadline. However, Israel, unlike the U.S., Russia, the U.K., and France, has not adhered to the 1968 United Nations' Treaty on the Non-Proliferation of Nuclear Weapons, whose objective, according to the UN is "to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy and to further the goal of achieving nuclear disarmament and general and complete disarmament."

The U.S., Russia, the U.K., France, and Israel have used desert territories, without the consent of the inhabitants, to conduct their nuclear weapons programs. Such destructive practices have affected human and non-human lives present in deserts, which were, and still are, fallaciously deemed "empty." These desert lives have been, and still are, racialized—continuously subjugated to the violent racial and racist dynamics that underpin colonial conceptualization and destruction of the desert.

**Under the false banner of
"emptiness," and the inanity that
"there is nothing at all in the desert,"
those living in occupied deserts
have been forcibly displaced,
denomadized and, in some cases,
exterminated—either immediately or
gradually.**

As environmental critic Rob Nixon argues in his 2011 book *Slow Violence and the Environmentalism of the Poor*, maintaining media attention on the temporalities of toxicity

is challenging: "not only because it is spectacle deficient, but also because the fallout's impact may range from the cellular to the transnational and (depending on the specific character of the chemical or radiological hazard) may stretch beyond the horizon of imaginable time." ■

Samia Henni is the author of *Architecture of Counterrevolution: The French Army in Northern Algeria* (EN, 2017; FR, 2019), the editor of *War Zones: gta papers 2* (2018) and *Deserts Are Not Empty* (2022), and the curator of *Discreet Violence: Architecture and the French War in Algeria* (2017–21), *Archives: Secret-Défense?* (2020), and *Housing Pharmacology* (2020). Her teaching and research interests include the history and theory of the built and destroyed environments in relation to colonialism, displacement, gender, Islamophobia, resource extraction, wars, and nuclear weapons. She teaches at Cornell University.

Fig.1-4 Photographs by Bruno Barrillot, the co-founder of the Observatoire des armements in Lyon, France. The images were taken during a visit to France's nuclear sites in Reggane and Ecker in the Algerian Sahara, with the filmmaker Larbi Benchiha and his team in November 2007. / Courtesy of the Observatoire des armements.
Fig.5-8 Screenshots of *At(h)ome*, a film directed by Elisabeth Leuvrey based on the fieldwork and photographs of Bruno Hadjih. The film was released in 2013 and produced by Les écrans du large. / Courtesy of Elisabeth Leuvrey.
Samia Henni and The Funambulist thank Patrice Bouveret and Elisabeth Leuvrey for agreeing to publish the photographs that illustrate this article.



Fig.5



Fig.6

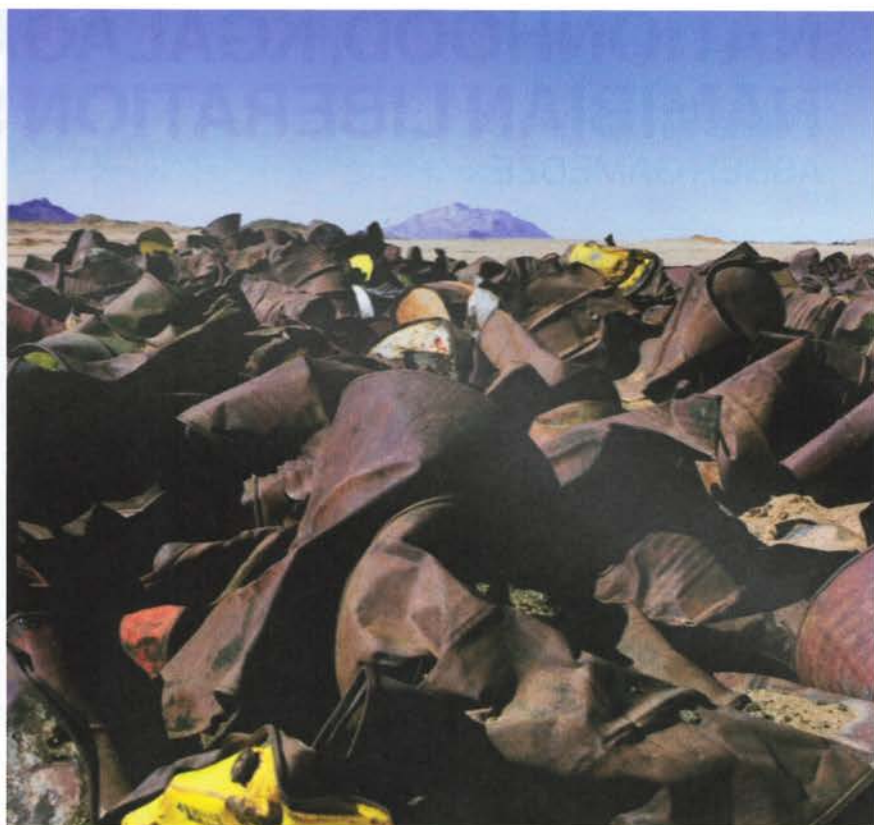


Fig.7

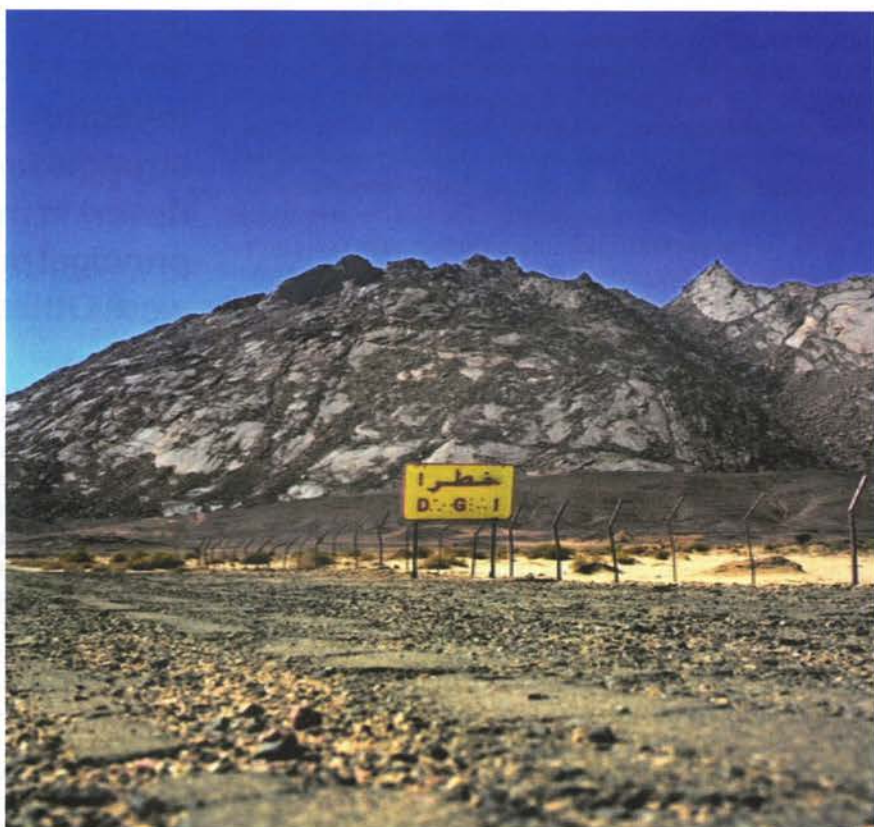


Fig.8