

# Our Things

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## Abstract

Ignorance of the nuclear bomb explosions history grows in the general public as the memory of Hiroshima fades. *Our things* is an artistic response, based on scientific research and documentation, to the current context of modernisation and perpetuation of nuclear arsenals, as well as the possible resumption of testing. Through artistic installations and performances, the goal of this research-creation project is to reveal to a wide audience, in an accessible and sensitive way, the environmental and health damages generated by the military nuclearisation of the world. This project was initially formalised during a residency at the research unit CERI (Sciences Po Paris), and a first VR version this artistic project is presented through the Styly platform during ISEA 2024. In this immersive environment, the participant can listen, through spatialised data sonification, to the chronology and different characteristics of nuclear explosions, as well as their lasting effects.

## Keywords

Installation, sonification, spatialisation, 3D audio, environnement, nuclearisation, decolonisation

## Introduction

*Our Things* is a research-creation project, based on scientific research, to unfold an up-to-date history of the nuclearisation of the world.

Incredulity about the seriousness of the world situation, despite widespread attention to environmental issues, was the starting impulse for creating artistic installations and performances. The aim is to create immersive experiences, through data sonification and spatialisation, of current knowledge about nuclear explosions.

This is an act of memory about historical and geographical facts, towards today's awareness. Documenting the past can be seen as a way of getting in touch with our "apocalyptic blindness" (Günther Anders), and a way of overcoming the difficulty of believing in present-day issues, of even just imagining them. This project is both about the past of the nuclearisation of the world, and about what it is doing to the present, its environmental damage, for which citizens are expressing their attention and concern. Let's take a look at the past, for which the current state of knowledge has become a decisive instrument of non-proliferation. Let's show what has been done, that still weighs heavily on the present.

This proposition is also motivated by the urgent need to update Isao Hashimoto's animated and musical cartography, "1945-1998", integrating existential and environmental critical issues. This work became a reference milestone, which had accumulated more than a 14 millions views in 2012, being broadcast continuously at United Nations headquarters. Its contribution to knowledge is widely recognised, as it unfolds all the nuclear explosions that took place between 1945 and

1998, in a way that is immediately graspable. However, dating from 2003, it stops short of North Korea's nuclear tests, and, more important, it smoothes out certain phenomena related to explosions that should be distinguished, as they express both geopolitical and environmental stakes of the nuclear armaments. Finally, as it dates from 2003, it cannot take in account the current knowledge and research works that reveals whole sections of the history of the nuclearisation and its impacts up to today.

For instance, research conducted by the Nuclear Knowledges Institute about French Polynesia, is now a milestone for the protection of victims' rights. Thomas Stadius and Sébastien Philippe indeed showed in the book "Toxique" how the native population had been exposed and unprotected despite information available at the time that should have implicated evacuations and actions. Similar events have happened in the Marshall Islands and Australia, on the lands of First Nations. Thus, I believe that using sonification and spatialization technologies is a complementary approach to reveal up-to-date data to the public, and could help in uncovering hidden stories and amplify marginalised voices.

A first virtual immersive version of the project will be presented in the Styly platform ISEA 2024. Australia, hosting the conference, is a country that have been exposed to nuclear explosions with the British nuclear tests. Therefore, the sound spatialisation for ISEA 2024 is elaborated from a center point in Meanjin (Brisbane).

**Why calling it "our things"?** Like everyone else on the planet, I have to deal with all the visible and invisible "things" that result from nuclear explosions: bombs, holes, craters, burns, waste, particles... At this level, they should be considered as "our things". This constitutes my starting point for considering the current "negative commons" (as denoted by Alexandre Monnin) that we are inheriting: the bomb arsenals are getting modernised, with all their technical and logistical realities. "Our things" refers thus to such "ruined ruins" of past explosions, being the trace of the "ruinous ruins" in progress. I hope that artistic statement can also contribute to point the way to another state of the world.

**Towards decolonisation.** I am a French citizen. I dare to mention it to situate the perspective I am coming from: France is an actual nuclear armed country, a former colonial empire that has conducted nuclear explosions in French Polynesia. Historically, the government had forbidden the teaching of the consequences of a nuclear explosions as early as the 1950's, fostering a positive image of the deterrence strategy. De facto, "our" nuclear arsenal is called "La dissuasion" ("the deterrence" in english), making us believe that these bombs are not meant to explode, and would, on the contrary, prevent such things to happen. Yet, nuclear arms have already exploded, notably in the Pacific, with health and environmental consequence still lasting today, and to

remain in the future. Hopefully, this installation can reach citizens of nuclear democracies who are disconnected from these realities and issues, in a way that respects the memories of exposed populations, and in the case of the Pacific, especially the First Nations.



Figure 1. A map of the Pacific, showing nuclear explosions sites of the USA, the United Kingdom and France. Between 1946 and 1958, in the Marshall Islands, American nuclear bomb explosions reached, cumulatively, a total yield of 7,000 times that of Hiroshima. France and United Kingdom also conducted thermo-nuclear tests in the Pacific

### Immersive environment

The immersive dimension of the installation consists of a binaural sound virtual environment to be listened to with headphones combined with minimalist visual components. The sound and video creations are based on data sonification, visualisation and spatialisation. The visual consists of a world map on which the different sites of explosions are marked, which constitutes a support and guide to the listening.

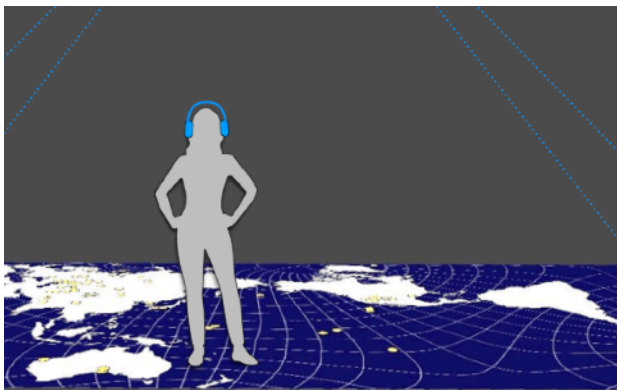


Figure 2. Installation sketch.

Immersive technology is used to create an experience in which the public would *feel implied* in these historical facts and realities. Even if they seem to have occurred far, we are not protected by any geographical distances, any ocean or frontier. There is no "far away", and the whole "critical zone" of the earth is concerned (since the particles released into the stratosphere get homogenised on a global scale).

**Data sonification.** A central aspect of the installation lies in the sonification process of data related to the nuclear explosions that occurred from 1945. Interestingly, one of the earliest applications of sonification was the Geiger counter, where sound click density increases with the intensity of the surrounding ionizing radiation.

Sonification is applied to different data types. First, it varies according to the nature of the explosion - atmospheric/subterranean/submarine/high-altitude - enabling the listener to identify the nature of the explosion from different sound characteristics. The listeners should thus be able to hear different types of explosion: atmospheric or a grounded ones. Second, sonification is designed to evoke the yield of the explosion, in order to distinguish between low yield and high yield nuclear testing.

Another sonification challenge lies in evoking the presence of radioactive fallout from atmospheric testing on a global scale, which is dealt with various type of so-called infinite reverberation processes, creating a lasting sonic drone. In addition to these data sonification, we also use human voice, calling the "given names" of the nuclear testing, which adds human sounds to the general environment, with the purpose of creating an uncanny effect.

The data sonification process raises several questions that are continually critically investigated. Which data aspects should be made sensible to listeners? What should we focus on? There is a clear challenge in the perception of abstract objective data. There are also difficult choices in trying to convey general aspects that are not entirely quantifiable, or at least that have not been quantified by scientific research yet (and that might actually not be quantifiable ever). Currently, there are still unknown lasting effects of nuclear testing.

Another challenge lies in the question of the temporal format: how can we retrace 70 years of nuclear explosions in just several minutes? Should we pay attention to the detail of each explosion or to a more global time average ?

Finally, the information detail on the explosions varies depending on each country, which raises the issue of granularity of information we can actually display.

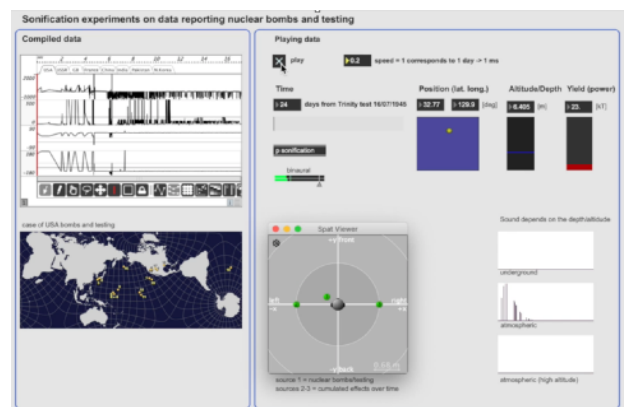


Figure 3. Sonification application (Max/MSP)

**VR version of the installation.** At ISEA 2024, a first VR version will be created for the Styly platform. For this version, the sound spatialisation will be centred in Meanjin (Brisbane).

## Transdisciplinary and collaborative creation process

The project is at the intersection of the fields of scientific research and art. On the one hand, the work is part of a regular dialogue with Nuclear Knowledges researchers (in particular Benoît Pelopidas, Thomas Fraise, Austin Cooper), and on the other hand, created in collaboration with Frédéric Bevilacqua (Head of the research team Interaction-Sound-Music-Movement of the STMS-lab) for the development of data sonification and spatialisation. Finally, for future developments, we will also consider participatory design approach, in order to further experiment and discuss the different design choices.

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