Silent evidence.
On nuclear mounds, craters and caves

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Abstract
This essay focuses on three sites – the Niagara Falls Storage Site, NY, the Nevada Test Site north of Las Vegas, NV, and the Waste Isolation Pilot Plant, near Carlsbad, NM – where the ground still shows the scars of atomic testing and where nuclear waste is stored, shielded by artificial mounds or in deep underground caves. Sites that following the categorization proposed by Alois Riegl in his fundamental text on the cult of monuments would be defined as unintentional monuments.

The mounds, craters and caves that punctuate these sites, along with others dispersed both through the US and other countries that experienced nuclear testing and activity, testify of the great sacrifices that were inflicted upon territories that, realistically, will never return to their original condition.

Keywords: Atomic power, nuclear testing, nuclear waste, landscape, monument.

A new era

Dealing with the heritage of the Manhattan Project does not simply mean expressing one's position as being against or in favor of nuclear weapons or nuclear energy for civil use. Either we like it or not, and whether we accept it or not, the Trinity test held on July 16, 1945, ushered humankind into a new era (Figure 01).

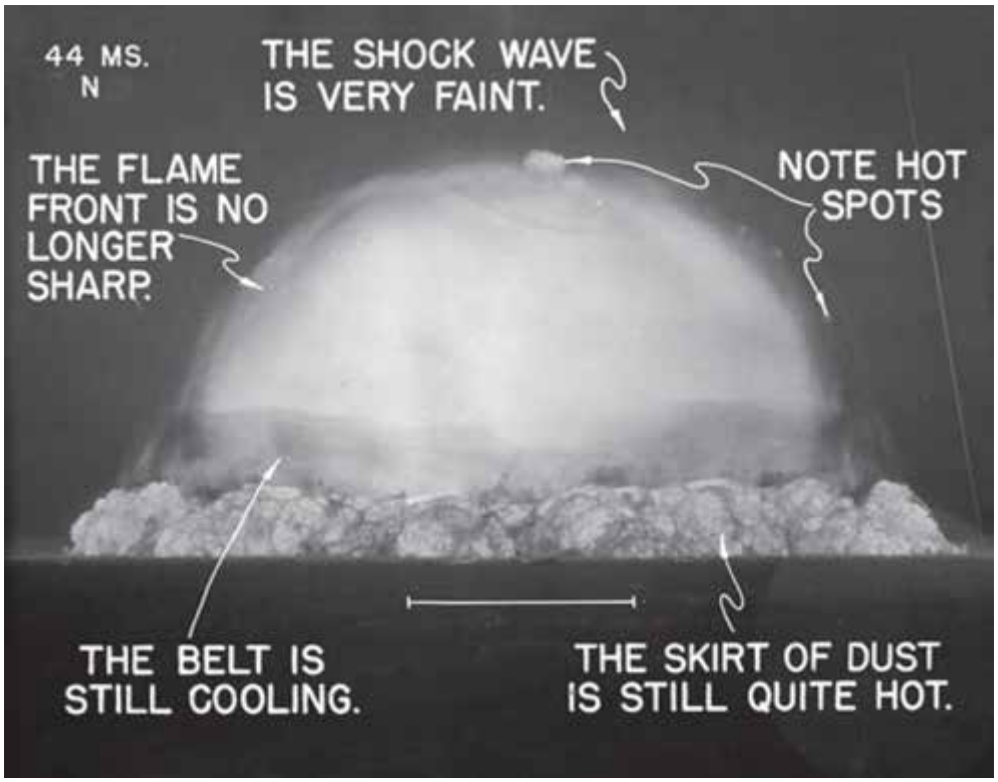


Figure 01: Annotated photograph of the Trinity test. Courtesy of Los Alamos National Laboratory.

We cannot pretend it never took place; we cannot simply go back to pre-atomic life. We should be aware that, as Günther Anders has stated, "we entered the Atomic Age in 1945 not because we fabricated three atomic bombs, but because we possessed the recipe for producing countless more."[1] We have to remember, and understand,

1 " . . . nicht dadurch sind wir 1945 in das atomare Zeitalter eingetreten, dass wir drei Atombomben fertiggestellt hatten, sondern dadurch, dass wir das nicht-physische Rezept für zahllose andere besassen" (Anders 1980, 37, auth. trans.).

what happened. Doing this is essential if we want to understand the world we live in today and avoid repeating the mistakes of the past, especially when it comes to the handling and disposal of nuclear waste and the safeguarding of the future of countless generations to come.

While historian Donald Worster has asserted that the Age of Ecology began with the Trinity test (1977, 339), philosopher Peter Sloterdijk (2002) further developed Anders's point of view, declaring that over the course of the twentieth century we have been led to question the man's existence as a Being in "breathable" space due first to poisonous gas and then to atomic bombs, for these offered means that could bring about a complete destruction of the environment human life requires. Arthur Koestler expressed a similar concept: "From the dawn of consciousness until 6 August 1945, man had to live with the prospect of his death as an individual; since the day when the first atomic bomb outshone the sun over Hiroshima, mankind as a whole has had to live with the prospect of its extinction as species" (Boyer, 2009, 3).

Unintentional monuments

If Alois Riegl had written his fundamental text on the cult of monuments today (Riegl, 1903), he would certainly see the test sites and mounds of nuclear waste as fascinating and exceptional examples of what he defined as unintentional monuments. Riegl made clear that it is we who define the value of unintentional monuments, and that there is a subtle and mutable threshold that divides what we want to preserve from what we allow to be destroyed. As Kurt W. Forster would remind us, for Riegl the very idea of the monument proved to be at once historically determined and relative to the values of each era. The Swiss historian has underlined that "Riegl's patient study of historic monuments raised issues other than scholastic distinctions [. . .] At the heart of the matter beats the destructive force of time; and beneath it, like a murmur of the Heart, the mortality of culture itself" (Forster, 1982, 31).

And while the historical value of a monument, which is based on scientific criteria and perceived through reason, is defined by a mutable threshold determined by the people and culture of a specific period, the age-value of monuments is more universal and enduring, touching the masses, regardless of their experience or education in the same manner as religious feelings do (Riegl, 1903). We should also remember that "Riegl had entitled his essay the modern cult of monuments. Under Riegl's dry prose one can find a belief that heritage in a secular society will fill the void left by religion. The cult of heritage would turn into a mass-movement that ignored borders and national identities" (Arrhenius, 2012, 103). Shifting from European theory to an American context, one could link the kind of religious feeling Riegl evokes to what David Nye has defined as the experience of the technological sublime (1994, XIII), something

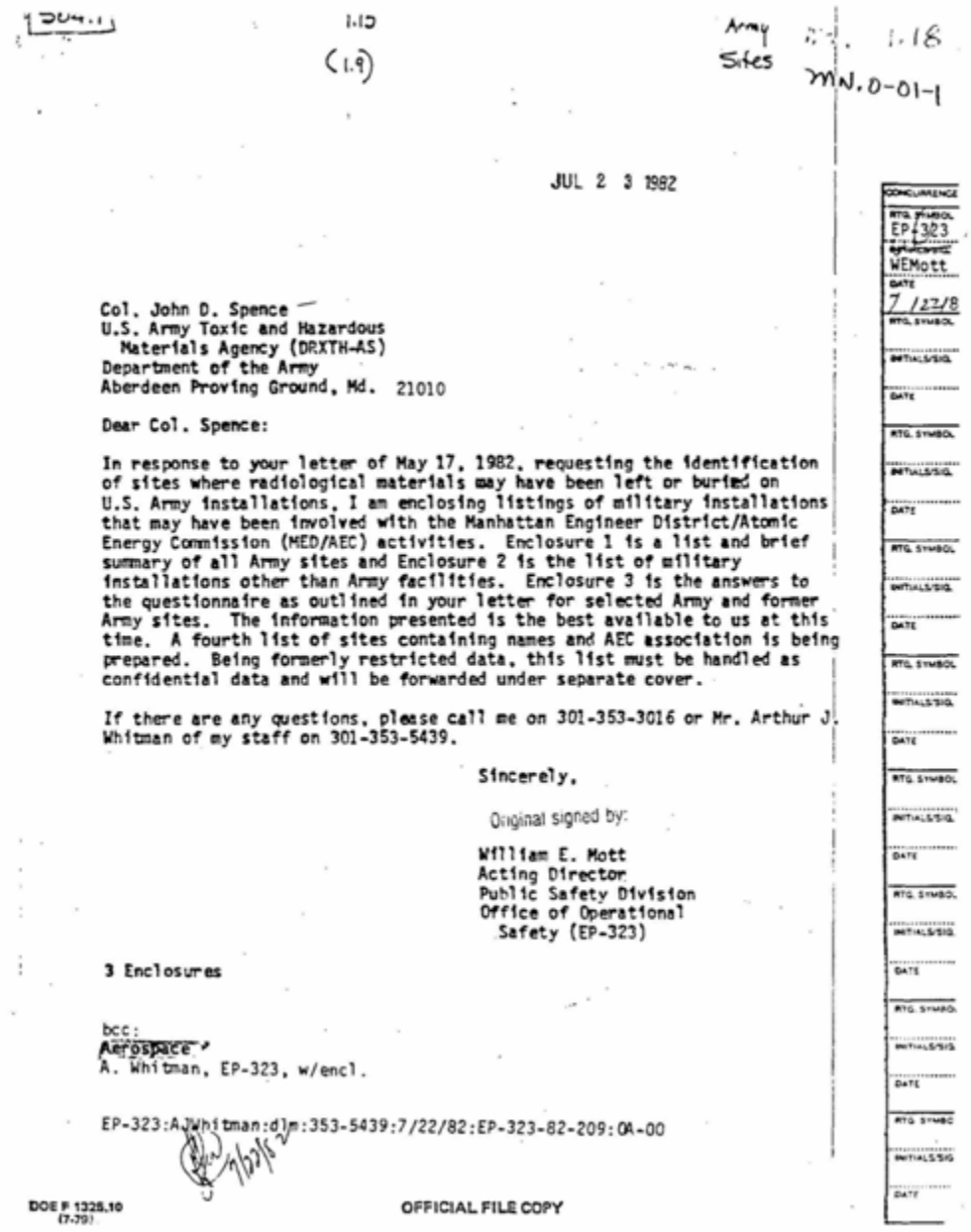
that taps into fundamental hopes and fears [. . .] an essentially religious feeling, aroused by the confrontation with impressive objects [. . .] an integral part of collective consciousness [. . .] In a physical world that is increasingly desacralized, the sublime represents a way to reinvest the landscape and the works of men with transcendent significance.

It should come as no surprise that Nye himself mentions the Manhattan Project and the atomic tests in his work (1994, 224–56).

This essay focuses on three sites – the Niagara Falls Storage Site in Lewiston, NY, the Nevada Test Site north of Las Vegas, NV, and the Waste Isolation Pilot Plant, near Carlsbad, NM – where the ground still shows the scars of atomic testing and where nuclear waste is stored, shielded by artificial mounds or in deep underground caves. Following the fact that the nuclear waste will remain active for thousands of years, Riegl's notion of age-value is pushed to its limit, evoking a future so distant that our limited sense of time as human beings can barely grasp it.

Niagara Frontier mounds

In response to Colonel John Spence's request in 1982 for a list of where "radiological materials may have been left or buried on U.S. Army installations", Department of Energy public safety division director William Mott sent him a letter with several attachments (U.S. Department of Energy, 1982). Mott's reply indicates that forty years after the beginning of the nuclear program, even the U.S. Army did not know where all of the radioactive materials produced had been buried (Figure 02).



Army Sites 1.18
MN.0-01-1

JUL 2 3 1982

Col. John D. Spence
U.S. Army Toxic and Hazardous
Materials Agency (DRXTH-AS)
Department of the Army
Aberdeen Proving Ground, Md. 21010

Dear Col. Spence:

In response to your letter of May 17, 1982, requesting the identification of sites where radiological materials may have been left or buried on U.S. Army installations, I am enclosing listings of military installations that may have been involved with the Manhattan Engineer District/Atomic Energy Commission (MED/AEC) activities. Enclosure 1 is a list and brief summary of all Army sites and Enclosure 2 is the list of military installations other than Army facilities. Enclosure 3 is the answers to the questionnaire as outlined in your letter for selected Army and former Army sites. The information presented is the best available to us at this time. A fourth list of sites containing names and AEC association is being prepared. Being formerly restricted data, this list must be handled as confidential data and will be forwarded under separate cover.

If there are any questions, please call me on 301-353-3016 or Mr. Arthur J. Whitman of my staff on 301-353-5439.

Sincerely,

Original signed by:

William E. Mott
Acting Director
Public Safety Division
Office of Operational
Safety (EP-323)

3 Enclosures

bcc:
Aerospace
A. Whitman, EP-323, w/encl.

EP-323:AJWhitman:dlm:353-5439:7/22/82:EP-323-82-209:OA-00

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Figure 02: Cover letter typed by William E. Mott introducing the List of Army sites that have or may have handled nuclear materials for the AEC or MED, 1982. Courtesy of U.S. Department of Energy.

While Mott declared with certainty that activities related to the Manhattan Project, and later to the Atomic Energy Commission, had taken place in specific locations, the information available about others—such as the Picatinny Arsenal, Dover, NJ, or the Twin Cities Army Ammunition Plant, New Brighton, MN—was either vague or conflicting. The list shared by Mott included several sites in Western New York State. This included the Lake Ontario Ordnance Works in Lewiston, NY, that along with the Linde Ceramic plant, located in the nearby city of Tonawanda, was among the facilities in the Niagara Falls area that made a significant contribution to the Manhattan Project. In fact, the abundance of hydroelectric power facilitated an unusually intense concentration of electrochemical plants in the area, including those of Union Carbide, Hooker Chemical, Carborumdum, Linde Air, and U.S. Vanadium. These

companies contributed to the uranium enrichment process and the production of other materials necessary for the construction of the atom bomb.
A few companies in particular, namely Linde Ceramics in Tonawanda and Bethlehem Steel in Lackawanna, played particularly key roles in the production process that led to the realization of the first atomic bomb. While this program did significantly boost the local economy at the time, it has left behind a serious and enduring threat, for it resulted in the creation of polluted areas and facilities that remain such for centuries to come.

Within this framework, the story of the Lake Ontario Ordnance Works is of particular interest, something Kevin Lynch acknowledges by mentioning it in his analysis of the waste we produce in his book Wasting Away (1990, 75). Originally conceived as a TNT production plant, from 1944 to 1952 the Manhattan Engineer District and the Atomic Energy Commission used the site as a radioactive waste deposit that later became known as the Niagara Falls Storage Site.

Looking at excerpts from local newspapers that refer to the Lake Ontario Ordnance Works site, it is revealing to see how in just a few months' time, the information printed in newspapers about this site went from being clear and transparent—as in the lengthy article on the TNT plant that had been located there since 1942 (Garnish, 1943)—to being vague and misleading, as is evident in the short article of October 1943 (Courier-Express Niagara Falls Bureau, 1943), stating that the TNT plant had been shut down and the land was to be returned to the farmers, when in reality the area was going to be transformed into a landfill for the burial of the radioactive remains generated by New York state's nuclear activities in Buffalo, Tonawanda, and Rochester, such as research byproducts from the Strong Memorial Hospital. In fact, from 1944 to 1952, first the Manhattan Engineer District and then the Atomic Energy Commission deposited radioactive waste in three areas at the Niagara Falls Storage Site, formerly the Lake Ontario Ordnance Works. In the years that followed, the Army Corps of Engineers consolidated the nuclear waste in a single area to allow the cleanup and repurposing of the rest of the site. In 1980, nearly twenty-five years after the intervention by the Army Corps of Engineers, the Department of Energy built an Interim Waste Containment Structure designed to work efficiently for a minimum of twenty-five and a maximum of fifty years (Figure 03).

Figure 03: The mound covering the Interim Waste Containment Structure designed by the Army Corps of Engineers to consolidate the nuclear waste from the Linde plant. Courtesy the author.

In the past decades, several landfills containing various types of domestic waste have been located around the

containment facility. The gas produced by the decomposition of waste is collected and used to heat some large greenhouses built in the vicinity. The greenhouses are particularly used to grow tomatoes that are sold across the state and probably beyond. Not far from the Niagara Falls Storage Site, 15 miles south as the crow flies, the Linde Ceramic plant processed uranium ore for the Manhattan Project. The radioactive remains of the building are now buried under a mound named Ashland site, enclosed by a fence and facing the Niagara River (Figure 04).

Figure 04: The Ashland site mound covered by a snow cap. Courtesy the author.

Desert scars

The U.S. conducted 1,054 nuclear tests from July 1945 to September 1992. Some of these were run by the Los Alamos scientists, some by the military, and others by the Atomic Energy Commission, which was established in 1946. Of these tests, 904 were carried out at the Nevada Test Site, 106 in the Pacific Ocean, 3 in the South Atlantic Ocean, and 17 in other U.S. locations (U.S. Department of Energy, 2000). The Trinity test, the first test run on July 16, 1945 in a remote desert area of New Mexico that was then part of the Alamogordo Bombing Range (today the White Sands Missile Range), was an atmospheric one. After this event and the release of the nuclear bombs on Hiroshima and Nagasaki in August 1945, the U.S. government decided to conduct over a hundred atmospheric and underground tests far from home in the Pacific Ocean—at the Marshall Islands, Johnston Atoll, and Christmas Island—as well as over the South Atlantic Ocean. This series of tests began in June 1946 and ended in November 1962.

Already in the early 1950s a sum of different factors, including the Cold War climate, the Korean War, and the logistical complications of carrying out atomic testing in the Pacific Ocean, pushed the U.S. government to select an alternative site. The location chosen was eighty miles northeast of Las Vegas and came to be known as the Nevada Test Site (NTS). The large majority of tests—both atmospheric and underground—carried out by the U.S. government between January 1951 and July 1962 were conducted at the NTS. From 1962, all experimentation was conducted underground, again mostly at the NTS, although some tests were also run at the Nellis Air Force Range, on Amchitka Island off the coast of Alaska, in central and northwestern Nevada, and in Mississippi, Colorado, and New Mexico.

Following the 1963 signing of the Limited Test Ban Treaty, which prohibited all but underground nuclear blasts, a series of tests was carried out to open the way for the civilian use of nuclear weapons. Military seismic tests were

run—first on the NTS and then all over the country—in order to distinguish natural earthquakes from underground nuclear tests. The Plowshare Program, terminated in 1975, foresaw the use of nuclear weapons for engineering projects, such as creating canals and harbors (Figure 05).

Figure 05: A permanent stable cavity formed by one of the underground nuclear tests as part of Operation Plowshare in 1961. Courtesy of Los Alamos National Laboratory.

The Sedan Crater, produced in 1962 as part of the Plowshare Program, measures nearly four hundred meters in diameter and is a hundred meters deep (Figure 06). The fallout generated by the explosion that created the crater exposed more than ten million people to radiation, raising serious doubts about the legitimacy of the program.

Figure 06: Sedan Crater. Courtesy of Los Alamos National Laboratory.

After decades of atmospheric tests that dramatically polluted large swathes of American soil with radioactive contaminants, the 1963 treaty accidentally could have served as the basis for underground pollution too, such as the diffusion of radiation through cracks in the earth and observation conduits in a gaseous form and the

contamination of groundwater and workers. Just imagine what would have happened if Project Gasbuggy, the first commercial application of nuclear explosions for natural gas stimulation (Zavattaro, 2005, 24), had led the way to nuclear fracking. Luckily, the high levels of radioactivity in the process's final product and the high cost of production halted further experimentation.

A nuclear oasis

A four-lane road wide enough to accommodate special trucks carrying transuranic nuclear waste[2] was built in the late 1990s in southern New Mexico (Lippard, 2014, 20). Since then, these trucks have used it to travel to the Waste Isolation Pilot Plant (WIPP), which was officially inaugurated in 1999 near Carlsbad, a city famous for both the Carlsbad Caverns (a part of the National Parks System) and Project Gnome.[3]The WIPP is a deep geological repository designed for the permanent disposal of transuranic radioactive waste—in other words, for ten thousand years (Figure 07).

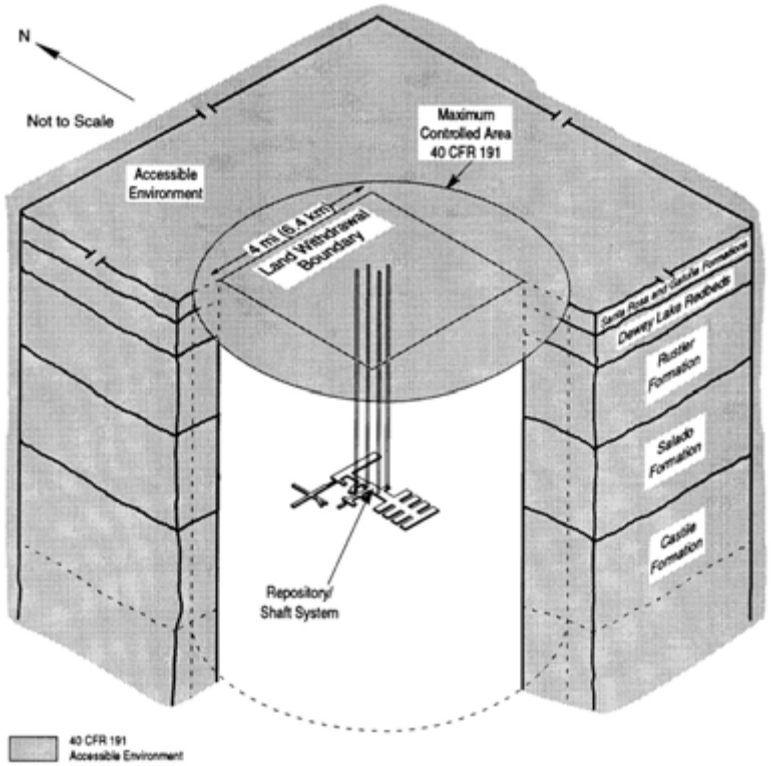

Figure 07: Artist's concept of the WIPP disposal system showing the controlled area and accessible environment tor 40 CFR 191, Subpart B, and the repository/shaft system. The repository/shaft system scale is exaggerated. On the land surface, the land-withdrawal boundary is shown at the same scale as the maximum extent of the controlled area. From Trauth et al. (1993).

The WIPP is one of what Andrew Blowers (1999) has named nuclear oases, often peripheral and remote landscapes

2 All stages of the nuclear cycle—the mining of radioactive ore, enrichment, fuel fabrication and reprocessing, the production of energy and the management of waste—involve risk. The radioactive life of spent fuel varies from thousands to several hundred thousand years, depending if it was generated by reprocessing (High-Level Waste [HLW]), reactor operations (Intermediate-Level Waste [ILW]), or different sets of routine operations (Low-Level Waste [LLW]). When the nuclear plants are decommissioned, several decades are usually required for the site's clean-up and restoration, as well as for the management of the waste it produced. Transuranic, or low-level, waste remains radioactive for approximately twenty-five thousand years. It usually consists of materials that have come into contact with uranium, plutonium, or other radioactive elements in the production of nuclear weapons or fuel, such as tools, gloves, and machinery.

3 The Gnome detonation, which was a part of Operation Plowshare, took place on December 1, 1961. A three-kiloton nuclear device buried in sedimentary salt was detonated before the physicist Edward Teller and more than five hundred other observers. Even if it had been planned as a fully contained explosion, radioactive smoke and steam quickly began to rise from the shaft and leaked out into the atmosphere. In the explosion cavity, the intense radiation created by the blast turned the salt shades of green, blue, and violet. It was only in 1977—sixteen years later—that the Department of Energy began the site decontamination process.

struck by economic marginalization and environmental degradation whose inhabitants are imbued with a sense of powerlessness and a culture of acceptance, thereby offering the ideal place for managing nuclear waste. These oases also became the places where conflicts over the future of the nuclear industry arise. Blowers divided the sites dealing with nuclear reprocessing and waste management into two groups: those that have been operating for several decades, such as the nuclear military reservations of Hanford, Washington, and the plant at Savannah River, South Carolina; and those he defines as "greenfield" locations, economically vulnerable areas where the nuclear industry is introduced for the first time generating patterns of spatial inequality, such as the WIPP itself, or the proposed deep disposal facility at Yucca Mountain, Nevada.[4]

Since 2014, when twenty-one workers at the WIPP were exposed to doses of plutonium sufficient to lead to cancer after an explosion, which caused an airborne release of radiological material, there are growing concerns about the safety of the repository. The safety of the facility was also a focus of studies carried out in the 1990s by the Sandia National Laboratories entitled Expert Judgment on Markers to Deter Inadvertent Human Intrusion into the Waste Isolation Pilot Plant (Trauth, Hora, and Guzowski, 1993). As Van Wyck has underscored,
for the WIPP, no one was particularly concerned that the interred waste be recoverable; the main concern was that the geological matrix be predictably stable over a (very) long period of time. The EPA [Environmental Protection Agency], which became responsible for the oversight of any nuclear waste disposal, subsequently added a layer of complexity to the decidedly material problem of stability and (relative) permanence. They decreed that any waste repository must be marked with signs—the "most permanent markers"—the purpose of which would be to deter "inadvertent human intrusion" into the repository for a regulatory period of ten thousand years (2012, 66).

The problem was not simply dealing with the enduring nature of the hazardous materials, or that of the structure of these markers. Rather, it was one regarding semiotics, signs, and memory, and concerned how best to transmit to future generations an awareness and understanding of the presence of the deadly materials buried in the underground repository—even in a future so remote that none of the languages spoken around the world at the time might still be comprehensible.[5] In the 1990s Michael Brill and Safdar Abidi conceived a variety of proposals – named respectively "Landscape of Thorns", "Spike Field", "Spikes Bursting Through Grid", "Leaning Stone Spikes", "Menacing Earthworks", "Black Hole", "Rubble Landscape", "Forbidding Blocks" (Trauth, Hora, and Guzowski 1993, F59–F75)– for a "monument to waste" that "perform[s] the threat that lies beneath" (Van Wyck 2004, 150). At the time of writing, none one of them has yet been realized.

Landscapes of Risk
The nuclear industry, whether put to civil or military use, represents a cornerstone of today's techno-scientific society, which Ulrich Beck defined in his book Risk Society: Towards a New Modernity (1992). According to Beck's thinking, we are individually unable to face or deal with nuclear activities and yet we collectively accept in a fatalistic way the consequences it brings.[6] What Beck articulates is not a recent phenomenon, namely the fact that nuclear energy has made mankind less free and more interdependent, and that nuclear energy's potential had to engender a race to military power was clear from the very beginning of the Atomic Age, as proven by books such as No Place to Hide.[7] The writer William Kittredge noted that the greater environmental awareness that came at the end of the twentieth century allowed us to understand that during the Cold War
we felt great destructiveness was permissible in defense of ourselves and our people . . . Great sacrifices were regarded as absolutely necessary, including the devastation caused by nuclear testing, and even the lives of luckless citizens who turned up downwind. Gonna bake a cake, gotta break some eggs. The Cold War was an

4 The deep disposal facility at Yucca Mountain was designed to contain seventy thousand tons of spent fuel. After an investment of ten billion dollars and many years of study that encountered irresolvable geological, environmental, and design problems, President Barack Obama canceled the program in 2010.

5 See Lynch (1990, 77).

6 Andrew Blowers has further elaborated on the role of nuclear industry in Beck's Risk Society: Towards a New Modernity: "Risk Society provides grand generalization on the mega risks which threaten to engulf us all. But, and again the nuclear oases make the point, risk is uneven, likely to be experienced by some communities more than others [. . .] Risk Society clearly identifies the nuclear industry as a key example, it is concerned with the problems of risk at the broad, abstract societal level rather than with the specific problems of risk facing local communities" (1999, 257).

7 See Bradley (1948).

orgy of mutual distrust and paranoia, and it was hard to think of a response, once we were in it, other than gearing up to defend ourselves. Now history has moved on and we are no longer compelled to maintain such vast military forces. But nothing has changed. (1997, 8)

It could be said that a good number of the great sacrifices that Kittredge referred to were inflicted upon territories that, realistically, will never return to their original condition. In the case of sites associated with the Manhattan Project and its legacy, aesthetic considerations permeated with nostalgia are much less important, considering that many of these landscapes are hostile or deadly to forms of life, and will continue to be for millennia to come. What scientists, engineers, and experts have been trying to do since the second half of twentieth century is "clean up" these territories, which means achieving the stabilization, removal, and long-term containment of the radioactive byproducts that have rendered them threatening. These efforts can prove satisfactory interventions when the initial level of radioactivity is low, but when the level is higher, we rarely have solutions to the dramatic environmental problems it poses, or at least, a properly in-depth cleanup with the means we do possess would prove prohibitively expensive. It also goes without saying that the only funding available for the cleanup of areas polluted with nuclear waste is public while it is usually private corporations that run the plants and create the pollution, making money in the process.

Considering the kind of impasse we are at today when it comes to dealing with atomic energy's byproducts, we might agree with Jacques Derrida's identification of nuclear energy as the most extreme pharmakon (1981; 1984), a type of substance that can both injure and be a remedy; we must not forget the contributions of nuclear medicine and the diagnostic abilities it affords. At the same time, we must recognize that we live in a society in which the threats generated by scientific development and technological innovation cannot be managed confidently (Anders, 1956; 1980), for it is now capable of exposing us to unprecedentedly large-scale and enduring environmental-pollution phenomena. In this respect, one need only call to mind the Three Miles Island, Chernobyl and Fukushima accidents, as well as the Manhattan Project's own dangerous legacy at sites such as Hanford. In the meantime, mounds, craters and caves that punctuate the US landscape in sites as the Lake Ontario Ordnance Works, the Nevada Test Site and the Waste Isolation Pilot Plant stand as silent evidence of the new era opened by the discovery of atomic power.

References

Anders, Günther (1956) Die Antiquiertheit des Menschen: Über die Seele im Zeitalter der zweiten industriellen Revolution. Munich: Verlag C. H. Beck'sche, Repr. 2002.

Anders, Günther (1980) Die Antiquiertheit des Menschen: Über die Zerstörung des Lebens im Zeitalter der dritten industriellen Revolution. Munich: Verlag C. H. Beck'sche, Repr. 2002.

Arrenius, Thordis (2012) The Fragile Monument. On Conservation and Modernity. London: Artifice books on architecture.

Beck, Ulrich (1992) Risk Society: Towards a New Modernity. London: Sage Publications.

Blowers, Andrew (1999) Nuclear Waste and Landscapes of Risk. Landscape Research 24 (3), pp. 241-264.

Boyer, Paul S. (2009) Sixty Years and Counting: Nuclear Themes in American Culture, 1945 to the Present. In Mariner, R.B. and Piehler, K.G. (eds.) The Atomic Bomb and American Society: New Perspectives. Knoxville: University of Tennessee Press, pp. 3-20.

Bradley, David (1948) No Place to Hide. Boston: Little and Brown.
Courier-Express Niagara Falls Bureau (1943) Status of TNT plant unchanged. Buffalo Courier-Express, October 27, 1943.

Derrida, Jacques (1981) Plato's Pharmacy. Dissemination. London: Athlone Press, pp. 61-172.
Derrida, Jacques (1984) No Apocalypse, Not Now (Full Speed Ahead, Seven Missiles, Seven Missives). Diacritics 14 (2), pp. 20-31.

Forster, Kurt W. (1982) Monument/Memory and the Mortality of Architecture. In Hays, K.M. (ed.) Oppositions Reader: Selected Readings from a Journal for Ideas and Criticism in Architecture, 1973–1984. Ed. New York: Princeton Architectural Press, 1998, pp. 18-35. Orig. publ. in Oppositions 25, pp. 2-19, 1982.

Garnish, Howard J. (1943) Vast plant turns out explosives on onetime frontier farmlands. Buffalo Courier-Express, March 28, 1943.

Kittredge, William (1997) Eating Ourselves Alive. In Hanson, D.T. (ed.) Waste Land: Meditations on a Ravaged Landscape. New York: Aperture, 1997, p. 8.

Lippard, Lucy R. (2014) Undermining: A Wild Ride Through Land Use, Politics, and Art in the Changing West. New York: The New Press.

Lynch, Kevin (1990) Wasting Away. Ed. Micheal Southworth. San Francisco: Sierra Club Books.

Nye, David E. (1994) American Technological Sublime. Cambridge, MA: The MIT Press, Repr. 1996.

Riegl, Alois (1903) The Modern Cult of Monuments: Its Character and Its Origin. Trans. Forster, K.W. and Ghirardo, D. Oppositions 25, 1982, pp. 21-51. Repr. in Hays, K.M. (ed.) Oppositions Reader: Selected Readings from a Journal for Ideas and Criticism in Architecture, 1973–1984. New York: Princeton Architectural Press, 1998, pp. 621-651. Orig. publ. as Der moderne Denkmalkultus: Sein Wesen und seine Entstehung. Vienna: W. Braumüller.

Sloterdijk, Peter (2002) Terror from the Air. Los Angeles: Semiotext(e), Repr. 2010.
Trauth, Kathleen M., Stephen C. Hora, and Robert V. Guzowski (1993) Expert Judgment on Markers to Deter Inadvertent Human Intrusion into the Waste Isolation Pilot Plant. Albuquerque and Livermore: Sandia National Laboratories.
[Online] available at: http://prod.sandia.gov/techlib/access-control.cgi/1992/921382.pdf.

U.S. Department of Energy (1982) List of Army sites that have or may have handled nuclear materials for the AEC or MED.

U.S. Department of Energy (2000) Nevada Operations Office. United States Nuclear Tests: July 1945 through September 1992. DOE/NV–209 REV15.

[Online] available at: https://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/doe%20nv%202000e.pdf

Van Wyck, Peter (2004) American Monument: The Waste Isolation Pilot Plant. In Ed. Zeman, S.C. and Amundson, M.A. (eds.) Atomic Culture: How We Learned to Stop Worrying and Love the Bomb. Boulder: Univ. Press of Colorado, pp. 149-172.

Van Wyck, Peter (2012) An Archive of Threat. Future Anterior 9 (2), pp. 53-80.

Worster, Donald (1977) Nature's Economy: A History of Ecological Ideas. Cambridge: Cambridge University Press.

Zavattaro, Peter (2005) EG&G: Historic Involvement in the Nuclear Weapons Program. Las Vegas: NTS Historical Foundation.