

ECOLOGICAL URBANISM

**Edited by Mohsen Mostafavi
with Gareth Doherty**

**Harvard University
Graduate School of Design**

Lars Müller Publishers

Underground Future

Peter Galison

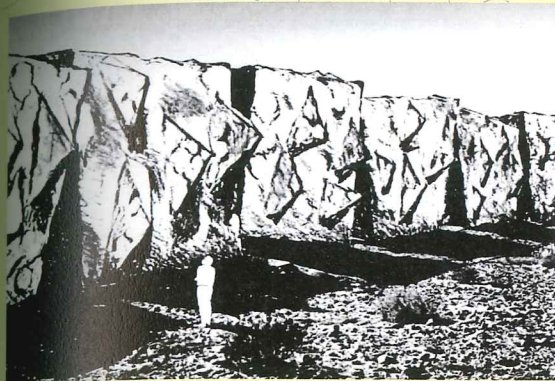
Half a mile underground, 25 miles east of Carlsbad, New Mexico, lies a series of high-ceilinged parallel bays cut into a 250-million-year-old dried seabed of rock salt. Fluorescent light illuminates the center corridor-spine that bisects these bays, but that brightness fades quickly into the darkness down corridors to the right and left. Electric carts dart back and forth through a dry wind blown through the mine. In one gallery, a heavy-duty mining truck tears at an off-white salt wall, delivering bits to a parade of dump trucks. Far down a finished "room," an orange lift sits poised, waiting for a canister of dangerous transuranic waste to be lowered down to it, robotically. The machinery rotates the steel case, inserts it into a cylindrical boring in the salt wall, and seals it with a long concrete plug. Elsewhere sit rows of 55-gallon drums piled high and deep. Once each bay is filled, workers seal the gallery with a huge steel barrier, and leave it for all time.

This is the Waste Isolation Pilot Plant (WIPP)—a Department of Energy facility that will be the final resting place for plutonium and other long-lived contaminated materials discarded during the production of nuclear weapons that began at Los Alamos in 1943 and continued for more than half a century. The moment digging stops, the huge geological pressure at this depth squeezes the salt out into the dug-out spaces, surrounding and encapsulating the million or so cubic feet of radioactive detritus. Eventually, the slow creep of the salt walls into the cut-out voids—about 3 inches per year—crushing the waste and, it is

hoped, sealing it from human contact for the very long term.

This is the great waste of our civilization, the remains of the nuclear bomb-making that, at its peak, produced an arsenal of more than 20,000 warheads. Over the years, the planned target for nuclear weapons changed: first, it was to have been Nazi Germany—Los Alamos scientists thought that they were in a deadly race to get the bomb before Werner Heisenberg and his team of physicists and chemists. After the defeat of Germany, the target shifted to Imperial Japan: in Hiroshima and Nagasaki, World War II cascaded into Nuclear War I. Within a year or two of Allied victory, the confrontation shifted toward one of the United States and Western Europe against the Soviet Union and Eastern Europe—until the Soviet Union itself fell apart. Enemies came and went. Plutonium stays. And will remain: its half-life is more than 24,000 years.

By the end of the WIPP Site's first decade (1999–2009), the underground complex was about half full; if plans come to fruition, it will, over the coming few decades, be stacked to its design capacity. Although the vast majority of weapons-related transuranic waste will by then have been removed from production factories all across the United States—from Hanford, Washington, to Savannah River, South Carolina—the waste itself will remain dangerously radioactive for a time long, compared with recorded human history. And so, as mandated



FORBIDDING BLOCKS

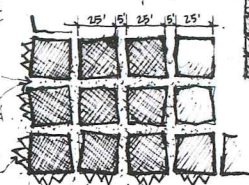
exploded landscape, but geometrical, an irregular regularity... ordered but not respected

massive effort to deny use

too narrow to live in, farm in

spikes inside, near blocks, also concrete

spikes outside



hollow square of blocks around a rubble core



Forbidding Blocks. Left, concept by Michael Brill, illustration by Safdar Abidi; right, concept and illustration by Michael Brill.

in the legal action that withdrew land for this purpose, it is required that this place be marked, that future humans be warned away from digging here, for a period of at least 10,000 years.

Ten thousand years: some twice the time since the beginning of human writing. How could we warn our future 400 generations hence? How to imagine our world? The Department of Energy, through its Sandia National Laboratories, commissioned a study to assess how this might be done. Anthropologists, archeologists, physicists, semioticians—a host of experts worked to design a monumental marker that would stand for us, for the legacy of nearly 100 years of nuclear weapons production. One called for gigantic spikes, another for a black surface that would become unbearably hot in the desert sun.

But our attention is drawn to another of these forever monuments designed for the DOE, one that is in fact a city that is not a city. Titled “Forbidding Blocks,” the structure represents, according to its creators, “a massive effort to deny use,” an “exploded landscape, but geometrical ... an irregular regularity ... ordered but not respected ... too narrow to live in, farm in ...” A mimetic city without any inhabitants—or even any real possibility of visitors—this was an urban form of unpassable roads and unlivable blocks.

It is a terrifying monument put in place to indicate that we were here and no one else ought to follow, to show an unknowable 10,000-year

future that we have, knowingly, spoiled this territory to save elsewhere. Perhaps this is the ultimate ecological urbanism: a city of the abject. An impossible city. An environmental megalopolis on the surface warning of an underground complex composed of the waste produced in the making of weapons designed to destroy cities. It is a site for thought—perhaps the most elaborate, deliberate attempt to create something that will last as close as we can come to forever. In a peculiar way, it is an optimistic monument. If nuclear weapons are actually used in all-out warfare, there will be other, bigger, more terrifying monuments to our failure.