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The Planetary Test

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In 1945 in the New Mexico desert the first nuclear device was detonated. The result of one of the most massive scientific efforts on earth, the Trinity test would pioneer the design of the bomb later named »Fat Man« and dropped on Nagasaki. The test was soon ceasing to be a test and became a reality. Robert Oppenheimer, the scientific director of the Manhattan Project, upon witnessing the explosion cited the Bhagavad Gita: »If the radiance of a thousand suns were to burst into the sky, that would be like the splendor of the Mighty One.« And then, as the large cloud grew over the desert, another line came to his lips from the same scripture: »I am become Death, the shatterer of worlds.« He would soon turn against his own invention, unable to stomach the implications of what he had helped to construct—a technology that would shatter the world. A machine designed for nothing but death, but in doing so, transforming all life on earth.[1]

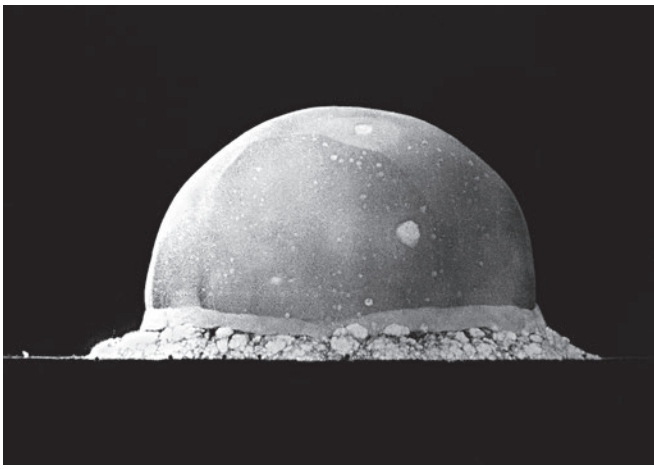

Fig 1: Trinity Test Fireball at 16ms, Trinity, New Mexico, July 16, 1945

The Trinity test marked a pivotal moment when species survival and technology were intimately and horrifically intertwined. Since then, every element of life is penetrated by technology. The very shell of the planet transformed geologically by radiation. Today, one of the main markers used by science to demarcate for the newly coined geological era of the Anthropocene is this test. It demarcates a moment when human materials and technologies have

1 J. Robert Oppenheimer: Atom Bomb Pioneer, Dies, in: The New York Times (19. 02. 1967), under: https://archive.nytimes.com/www.nytimes.com/learning/general/onthisday/bday/0422.html (28 January 2019).

entered the earth's crust and can be scientifically measured, and it also marks the start of a new technical era that has reshaped the planets climate and geology. The Trinity test inaugurated the rise of the American Empire and the start of the Great Acceleration and the Information Age, both driven by the new energy and computational machines unlocked through the war. This test is therefore demarcating a moment when technologies and life could no longer be separated. It is also the moment that marks design as the new technnology for transforming human life at a planetary scale, sometimes through computation and calculation, and sometimes by using populations—both human and animal—as media.

Oppenheimer's statement on what is until today one of the largest and most technically intensive and expensive design projects in human history would be uncannily repeated by the designer Victor Papanek some thirty years later to describe a new feature defining man. Humans, Papanek would argue, are no longer defined by language or tool making, the nascent and related sciences of sociobiology, cybernetics, and ethology had all changed this. Bees had languages, and animals could construct vast architectures. Rather, humans are special because: »Mankind is unique among animals in its relationship to the environment. All other animals adapt *autoplastically* to a changing environment (by growing thicker hair etc.) […] only mankind transforms earth itself to suit its needs and wants *alloplastically*. This job of form-giving and reshaping has become the designer's responsibility.«[2] Humans, Papanek argued, make climates rather than adapt to environments. Humankind destroys but also *makes* worlds. Papanek's statement demonstrates an emergent consciousness at the time of environment as no longer a force external to the body or the habitat, but rather as a medium, like other mediums of film, or photography, or metal, to be given form and reshaped. Papanek's words signal what I label *the planetary turn* in design: The reinvention of human life and habitat as an experiment, even opportunity, for design intervention and growth at terran scales. Design, he implied, should no longer be concerned with adaptation to environments but rather to alloplasty—the forming and reshaping of the earth. It is our gift, or curse, to deny adaptation and desire technical and design interventions. Papanek signals the growing ecological understanding that emerged from a history of experiments that transformed life itself during and after the Second World War. Papanek's colleague and inspiration, the architect Richard Neutra, named this condition »the planetary test«.

2 Victor Papanek: Design for the Real World. Human Ecology and Social Change, Chicago 1971, p. 220.

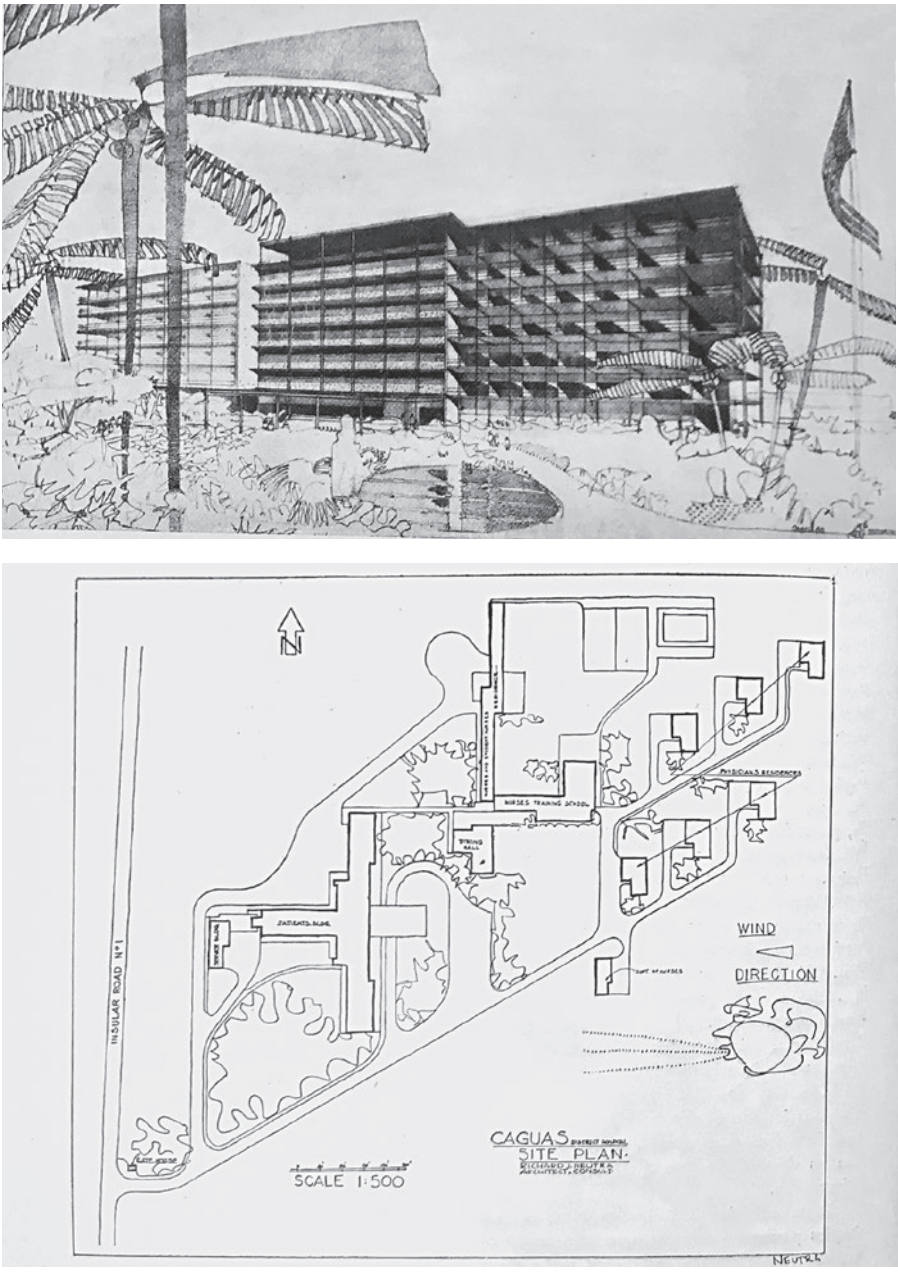

Fig. 2 a+b: Richard Neutra, Architecture of Social Concern in Regions of Mild Climate, (São Paulo: Gerth Todtmann, 1948).

1. The First Planetary Test

As design, and design thinking, becomes one of the dominant discourses in both the »creative« industries and the academy, it becomes incumbent to ask about what forms of design are being suggested here, and what these forms might have to do with contemporary obsessions that link the management of climate change to novel forms of habitat, calculation, and computation. To paraphrase the on-going question designers faced in the first few decades after the Second World War: How will we survive through design? In this essay I will turn to Papanek's inspiration for thinking about survival through design, to the figure of Richard Neutra, to elaborate on what an ethical speculative design might look like. For Trinity was not the only planetary test sponsored by the Americans throughout the war. In 1943, in the midst of the war, Neutra was commissioned by the government of Puerto Rico to design a new infrastructure of hospitals and schools. Famously, he labelled the project in Puerto Rico a »Planetary Test«, an »experiment«, and a »laboratory«.[3]

While Puerto Rico had been a colony of the United States since 1898, with its acquisition from the Spanish, the island's planned development had been of limited interest to its colonizers, until the Second World War. The sudden investment in human wellbeing and effort to »reconstruct« Puerto Rico came only as a result of the United States' increasing strategic concern to the territory as a source of military recruitment for soldiers and as a naval base. The United States' initially promised 50 million dollars were to be invested in the project.

In response to this request, Neutra produced a number of prototypes and processes investigating new forms of communal living, infrastructures of hospitals and schools, and a myriad of designs for ventilation and climate control in the sub-tropical environment of the island without the use of energy. His prime concern was to improve social condition with limited capital outlay through attention to the management of climate. He offered designs that used the sea breezes, light, and temperatures to control the buildings' ecologies. He also proposed networked communities that rethought education, health care, and habitat as interconnected.

3 See, for example, Richard Neutra: Comments on Planetary Reconstruction, in: Arts and Architecture 61/12 (1944), pp. 20–22; Richard Neutra: Projects of Puerto Rico: Hospitals, Health Centers, and Schools, in Architecture d'Aujourd'hui 16/5 (1946), pp. 71–77; Richard Neutra: Designs for Puerto Rico (A Test Case), unpublished, 1943; Richard and Dion Neutra Papers (Collection Number 1,179), Department of Special Collections, Charles E. Young Research Library, UCLA. In these articles he labels the project a »test« and an »experiment«. I want to thank Daniel Barber for alerting me to, and sharing these materials, with me.

Central to the project was the broader reconceptualization of temperate climate zones as ideal sites for human habitation, and as the locations from which to test the forms of habitat for the future. Neutra stressed importing his styles and innovations developed for the warm climates of California into Puerto Rico, and after the war, more globally. His emphasis, mirrored almost verbatim by Papanek 30 years later, was on the global South, the non-cosmopolitan, and the non-urban zones of the world as the locations from which architectural innovation would spring, and to which novel technical and material advances must be deployed. These zones, he argued, had the climate within which construction and lifestyle might be rethought; a climate, Neutra emphasized, that facilitated rethinking the boundaries of the building, the relationship between individuals and the environment, and the styles of construction. Climate above all was now becoming a medium that could be exported across the globe.[4] As the architectural historian Daniel Barber notes, this project in Puerto Rico signaled a moment when the discourse of the »international« became the discourse of the »planetary« on the very site of designing habitation, environment, and climates. Climate control equating with planetary control, and temperate climates and their attendant architectures of climate control increasingly becoming the standard for not only newly decolonized nations but also for the ›good‹ life. This project also went on to influence the future of design through groups such as the Form and Climate Research Group which started at the Columbia Graduate School of Architecture in the 1950's.[5]

Neutra's project for Puerto Rico also marks a new moment where logistics and ecology merged, as architecture and planning took on military logistics and precision to new ends. Neutra would write »we must abolish the bombs but maintain the precision and quality level of their manufacture and convert it all to peaceful, planned pursuits.«[6] Neutra would later elaborate that for technical and supply chain reasons: »The young architect thus becomes apart from any sentimentality, interested in the *population* of the globe.«[7] This interest, he continued, stems from the fact that the building materials, forms of energy, and clients arrive from many places and must be temporally coordinated in the emerging consumer supply chains after the war. The ability to envision recreating climates and managing populations across the globe, the transfer of building forms and new materials across myriad temperate zones, the sharing of architectural techniques, and a new

4 Cf. Richard Neutra: Architecture of Social Concern in Regions of Mild Climate, São Paulo 1948.

5 Daniel Barber: The Form and Climate Research Group, or Scales of Architectural History, in: The Avery Review 15 (2016), under: http://averyreview.com/issues/15/the-form-and-climate-research-group (28 January 2019).

6 Neutra: Comments on Planetary Reconstruction (as note 3).

7 Neutra: Architecture of Social Concern (as note 4), p. 38.

emphasis on architecture as a logistical process all borrowed from the military practices of coordinating materials and movements across geographies during the war. If the military had conducted a total war at the level of populations, then population was now also the target of architecture and design practice that would manage this new »planetary economy« and a global population, an experiment that Neutra conducted through his work and as the US representative for CIAM in San Francisco at the inauguration of the United Nations in 1945.[8] Within this context of both growing globalization and modernist architectural ideals of international style, this conception of a »planetary experiment« is, therefore, not insignificant. Neutra's project marks the moment when design would come to manage the futures of both geophysical forces and geopolitics through »tests« and »experiments«, or, as we might label it presently, through prototypes, versions, and demos.

A test, however, is not a simulation. The »planetary test« that has now become our habitat is not a representation and does not predict a stable set of outcomes. Rather, the forms of testing, experimentation, and speculation that emerged out of the Cold War calculations anticipating nuclear armageddon and the efforts to construct and control the future of populations in decolonizing territories, such as rapid rural assessment and new demographic techniques in international development, derivative trading instruments in finance, climate modelling, scenario planning in energy and insurance industries, systems modelling in industry, environmental, and the demoing, prototyping, and versioning in architecture and urban design are ways of inhabiting disasterous conditions and managing uncertainty without endpoint. Experiments are not projects, their endings are unclear, and failures are just lessons. We test to fail and improve, to build another improved version. No longer linked to calculatable endpoints or utopian dreams of a better world, this form of demoing and testing has now become the central vision in design, planning, and engineering for managing human (and planetary) life in an age of real and imagined terran scale disasters. Neutra's »planetary test« has now become a global infrastructure of »smart« cities, resilient infrastructures, big data collection, and real estate speculation on precarity.

These two tests thus offer both lessons for design and warnings. In our present, as we calculate and analyze the potential for catastrophe, the rich enter their bunkers and walled compounds, and the rest of the planet is left to die exposed to the trauma of modern experiments, empires, and economies. The result is that we are left to ask what would an ethical design look like in the face of our contemporary anthropocenic condition?

8 Neutra: Comments on Planetary Reconstruction (as note 3).

2. Planetary Futures

Perhaps this question is brought home by the case of Puerto Rico. The island was severely damaged, and continues to suffer, as a result of the massive devastation wrought by Hurricane Maria in September of 2017. Despite decades of organization and protest, demands for either autonomy or full statehood, Puerto Rico has been left a territory of the United States, technically under its care but unable to exert political power through representation. Its citizens are technically citizens of the United States, but are incapable of exercising their full rights through representation in Congress or the White House, and are subsequently never the recipients of the forms of aide or care that have been sent to other cities, such as Houston, similarly affected by storms. The island demonstrates most viscerally the uneven and violent results of our planetary efforts at alloplastic design. This neglect is historical. The plans for Puerto Rico that Neutra suggested were never implemented, the experiment never conducted. Puerto Rico became a »laboratory«, as Neutra states, but not for developing health care, education, and housing for its own people, but rather as a case study within the fields of design.

But history teaches us that not all tests have the same results, and not all experiments are realized or reveal the same thing. Imaginaries and speculations, demos and prototypes serve different functions and offer different capacities for

Fig 3: Puerto Rico destruction after Hurricane Maria.

the future. Without dismissing Neutra's complicity in imperial projects or vestigial modernism, we are also prompted to ask about the possibilities of rethinking our world in terms of our technologies of computation and calculation. The possibility that feminist Donna Haraway labels »cyborg«, and one that haunts later works of design thinking in the 1970's—mainly activating the possibility that in our own failure to control our technologies and calculate their actual effects at the scale of the planet we might actually recognize our humility and indebtedness to each other and to our machines, an indebtedness that emerges through and not against certain technologies.

Neutra's original designs for Puerto Rico's emerging local government had troublesome modernist elements and imported styles from his work in California, but they also sought to produce relationships to the locale, to recognize histories of colonialism, and to rethink relationship to the self and environment. These relations to the environment Neutra would continue to develop throughout his later work and in his 1954 text *Survival through Design*.[9] In his later work he embraced the emergent sciences of communication and control—cybernetics—that also emerged from the same war time milieu in order to revise ideas of human relations to the environment in terms of relationships and communication. In turn Neutra proposed a series of projects that would embrace the idea of climate control through the manipulation of local metereological features, and rethought space not only in technical or material terms, but also as a psychic and affective project. His goal was also to produce new forms of sentiment, sensation, and wellbeing: »What is most sought for in all my effort of design«, wrote Neutra a few years later, »is what is psychosomatically just. The psychosomatically healthy must not be warped or perverted from its organic originality by any glorified technology.«[10] He was not against technology, but rather desirous of developing and advancing technologies of construction, design, and process that work with, and for, humans. Technology must be integrated with and operate on the same principles as the psyche. And architecture, itself a form of technology, reflects and advances psychology in this formulation. Within his re-conception of architecture, as architectural historian Sylvia Lavin notes, lies a libidinization of habitat and a reimaging of architecture as a matter of relations between subjects and environments, and between inhabitants of the space.[11] This relationality can open up to new possibilities—possibilities that lie still latent, perhaps, in the unbuilt conception of a new infrastructure for what was hoped to soon become a former colony that was envisioned as networks of relations—between social services,

9 Cf. Richard Neutra: Survival Through Design, Oxford 1954.
10 Richard Neutra: World and Dwelling, London 1962, p. 9.
11 Cf. Sylvia Lavin: Form Follow Libido, Cambridge 2007.

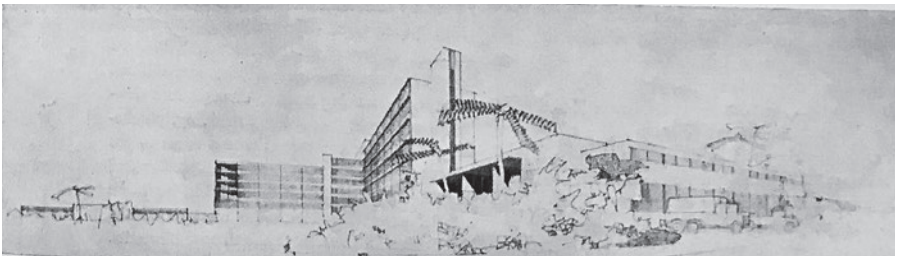

Fig 4: Neutra, Projects of Puerto Rico, 1944.

between forms of knowledge, between the weather outside and the interior of homes, hospitals, and schools.

Neutra simultaneously affirmed the specificity of Puerto Rico while arguing that architectural and design practices could coordinate new ecologies of emerging nations and peoples through shared methods and attitudes without resolving or homogenizing the differences in climate, territory, culture, or politics. He suggested design as a logistical practice of coordinating differentials rather than homogenization and sameness.

Therein lies the possibility and danger of thinking and practicing design at a planetary scale. The »planetary« as a condition, following Neutra in his hybridization of psychoanalytic modes of envisioning new forms of care through crafting climates with militaristic logistical logics, is not about homogeneity but rather about differences—different temporalities (geological, historical, evolutionary, climactic, colonial for example), and different materialities (algorithms, flesh, minerals, building materials for example) that are networked into systems without necessarily being homogenized in form or content. The military logistics that underpinned these planetary tests were created to allow the transfer of men, materials, communication, and violence across vastly different territories. The ethical challenge today, in our time, when climate and security are so closely intertwined, is to envision different forms of relationality and new capacities from the logistical logics we have inherited.

To think the planetary and design together, therefore, is to think on how differences produce our contemporary condition through logistical integration without homogenization; coordinated through the modification of environment to make the world a temperate zone for human habitation. And these tests, initially conducted throughout the Global South, would become the petri dishes cultivating these differences into networks of knowledge and technical production for engineering, design, and architecture. Experiments that, Neutra argued and Papanek repeated, might eventually feedback, in cybernetic manner, to the destroyed cities of Europe and the environmentally devastating practices of America. This is the

weak cyborg dream that lies latent within our new technical world. The chance to think design at a planetary scale in order to address the local and the global not as homogenizing forces but as a matter of networking diversities and locales, and in order to rethink interiority and exteriority, self and environment, in ways that perhaps might produce new forms of relationality and care, and open new imaginaries of what is a person, a building, a city, a territory, or even a planet.

Arguably, Neutra symbolizes a moment when environment ceases and ecology emerged as not only one of the central sciences of the later 20th century and our present, but also as an epistemology and practice of understanding relations between the many agents—human, animal, geological, metereological, and technical—of our earth. Ecological thinking views these entities as linked together and co-dependent, rather than maintaining the human as outside of or in need of isolation and defense from a world understood as violent and antagonistic. This possibility also emerged from our inability to control our own constructions, to recognize that we are within our systems, no longer masters of our earth, a consciousness that life always overruns the experimental protocol. Or perhaps that experiments truly reveal greater truths, in this case the truth that we do not fully know or command life itself; that the future is not calculatable, and that terminal violence is not inevitable. This »failure« or perhaps success of the test opens the possibility that we might yet learn from the many others—human and non-human—who have in the past been silenced or been invisible.

J. Robert Oppenheimer perhaps summed it up best: »In some sort of crude sense, which no vulgarity, no humor, no overstatement can quite extinguish, the physicists have known sin; and this is a knowledge which they cannot lose.« Perhaps Neutra's libidinal architectural conceptions are a response to also knowing this violent sin of architecture's complicity in this war. From this knowledge of our failability and our relation and indebtedness to the lives we injure or destroy perhaps there are other imaginaries possible. Only through the activation of the comprehension that our planetary condition is grounded in uncertainty and diversity may we begin to ask not only how we may survive through design, but how do we wish to live?

Picture Credits:

Fig. 1: Trinity Test Fireball at 16ms, Trinity, New Mexico, July 16, 1945
https://de.wikipedia.org/wiki/Trinity-Test#/media/File:Trinity_Test_Fireball_16ms.jpg

Fig. 2: Neutra Projected plans for Puerto Rico, 1946 Architecture Aujourd'hui

Fig. 3: Puerto Rico destruction after Hurricane Maria. Photo Credit: Erika P. Rodriguez for the New York Times, September 21, 2017

Fig. 4: Neutra, Projects of Puerto Rico, 1944, p.21