

**Eliyahu Keller** Paolo Soleri's Nuclear  
Revelation and the  
Scale of Apocalypse

*If the desert purges the fake and accentuates the truth, as its devotees insist, then in architecture it seems to expose some very strange truths.*

Reyner Banham, Scenes in American Deserts

*The bomb is the Judeo-Christian gift to the planet.*

Paolo Soleri, Hiro-Naga and the Ecominutiae

Abstract: Created against the backdrop of an imminent nuclear confrontation, the architectural drawings and narratives authored by architect Paolo Soleri offer unique insights into the relationship between apocalyptic imagination, the invention of atomic weapons, and radical visions of future architecture. This paper examines Soleri's architectural representations—including his less-known works created towards the end of the Cold War—theoretical writings, intellectual influences, personal letters and geography of operation, and places those within the nexus of a strictly American nuclear eschatology. Examined through this lens, Soleri's visions do not offer a promised future for a humanity at stake. Rather, they expose the limits of architectural imagination in face of the unimaginable, and reveal the complicity of architecture, however speculative, in bringing about the end of the world.

Keywords: nuclear, apocalypse, Soleri, architectural representation; Cold War.

## Introduction: Speculative Architectural Imagination in the Nuclear Age

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Nuclear Revelation

The development, use, and proliferation of nuclear weapons, and the ensuing fear of a nuclear apocalypse have been some of the determining factors in shaping the history of the twentieth century. As the images of the unprecedented devastation of Hiroshima and Nagasaki circulated after the end of WWII, they were coupled with the further development of nuclear and thermonuclear weapons, making the prospect of global annihilation all but possible. As government propaganda promoting the benefits of atomic energy dissipated, the initial faith in the promise brought by “harnessing of the basic power of the universe” (Truman 1945) was replaced with fears of an ultimate, world-ending war (Boyer 2013). These were often visualized through fictional narratives in popular media, in which America’s greatest cities and their architectural icons were depicted in ruin and collapse. No longer presenting architecture as a symbol of capitalist progress (Willis 1995), these images imbued architecture with a meaning that stemmed from its destruction: an object through which the magnitude of an unfathomable apocalyptic destruction could be imagined, if not understood.

Responding to these fears, architects and planners formed various alliances with the federal government to promote solutions that would mitigate the anticipated destruction of such imagined attacks, from private and public fallout shelters to urban plans for dispersal as part of the establishment of a robust civil defense (Farish 2003; Light 2003; Monteyne 2010). Absent from the historical accounts of these solutionist approaches, however, is the way in which nuclear apocalyptic thinking influenced speculative architectural visions and images: a prevalent form of postwar architectural production and work (Klotz 1988, 398).

During the postwar decades, various architects, primarily in Western Europe and in the United States, began to produce speculative architectural propositions, many of which sought to critique and challenge modernism’s technological promise (Klotz 1988, 410), and the failed belief that resulted not only in an impoverished built environment but also the unimaginable destruction and violence of the two World Wars. Few of these addressed the nuclear question directly, placing architecture, within a post-nuclear war context.<sup>1</sup> In the US, the birthplace of atomic weapons, the images of nuclear apocalypse permeated architectural imagination in ways that confronted the projective nature of architectural speculation with the representational paradox that characterized nuclear apocalyptic thinking. Namely, what is a discipline predicated on imagining the future

<sup>1</sup> In 1966 Ron Herron of the British group Archigram imagined an ark-like ‘Walking City’ in a post-nuclear war world. In 1968, the Japanese architect Arata Isozaki, created a collage titled *Re-Ruined Hiroshima*, in which he reflected on the cyclicity of construction and destruction by embedding an already-ruined future architecture within a photograph of Hiroshima taken after the detonation of the nuclear bomb.

to do when faced with an event which poses a threat not only to cities and buildings, but the very possibility of the future; and one for which there is no precedent or referent (Derrida 1984, 23)?

One such case is that of the prominent postwar visionary architect, Paolo Soleri, who from the mid-1960s established himself as an ecological architectural prophet, and as an outsider and antagonist to mainstream architectural thinking. Whether at the time of its inception, in various consecutive occasions, or in the recent present, Soleri's work has been lauded for its ecological imperative, for its unique alliance with the technological discourses of its time, and for its visionary appeal (Lima 2003; Busbea 2020; Huxtable 1970). These studies, however, failed to examine a unique, though latent, aspect of Soleri's work: its professed eschatological character (P. Soleri 1981), and its relation to the contemporaneous history of nuclear culture and fears.

Using the lens offered by the field of nuclear criticism—a branch of studies established towards the end of the Cold War, which examines “the applicability of the human potentiality for nuclear self-destruction to the study of human cultural myths, structures, and artifacts” (Scheick 1990,4)—I seek to frame Soleri's proposition as a quintessential product of the nuclear age, and as a unique testimony of the historical conditions, which architectural imagination was responding to during the Cold War. Soleri's work demonstrates the ways in which speculative architectural representation acts as a register of its historical conditions and how it uniquely responds and incorporates those in its projections. Indeed, and however subtle the nuclear contamination of Soleri's work may be, this essay argues that it is essential for understanding the particularities of his apocalyptic architectural vision.

### **Almost by Accident**

On February 20, 1970, the exhibition, *The Vision of Paolo Soleri*, opened its doors. Surrounding the crowds tightly packed in the Corcoran Gallery in Washington, DC were sprawling layouts offering a vision of the future. The lengthy sheets, some over ten meters long, were filled with drawings of compacted and organic-looking cities; architectural silhouettes that resemble rising mushrooms, an agglomeration of cooling towers, or flying saucers resting within a desolate landscape. When they approached the walls, the gallery's visitors would discover the drawings' intricacy and find within the plans, sections, and elevations some of densest city-architectures ever to be designed.

The show exceeded the expectations of organizers and audience alike. A retrospective exhibition of the architect's work to date, it followed the 1969 publication of Paolo Soleri's book, *Arcology: The City in the Image of Man* (P. Soleri 1969). To be certain, the Italian-born architect was not unheard of at the time. With a doctorate from Turin University completed immediately after WWII, Soleri began what would become an abrupt apprenticeship with the American master architect, Frank Lloyd Wright. Still, when he returned to the US in 1956, Soleri was still an "outsider" virtually unknown both to the public and to the profession" (Wall 1970, 1). It was the explosive Corcoran exhibition that not only exposed his work to a wider public but solidified him as someone that, despite a clear architectural megalomania, the professional community could not ignore.<sup>2</sup>

The decades in which Soleri established himself as an architectural visionary were ones in which the physical and economic landscape of the US was shaped by a constellation of nuclear anxieties, plans for urban renewal and dispersal, and environmental degradation (McNeill 2010, 444). Indeed, though admittedly conceived in relation to an impending ecological disaster, his proposition also echoed the underground imaginations characteristic of the nuclear age (Williams 2008, 206–207). When Soleri had initially left the US in 1950, the Soviet Union had only recently tested its first atomic device. When he returned six years later, the threat was already thermonuclear. The consistent possibility of a world-ending confrontation, most radically approximated during the 1962 Cuban Missile Crisis, pushed the superpowers to sign treaties and agreements designed to prevent such cataclysmic turns (Burr and Rosenberg 2010, 88–89). The relative nuclear stability, continuing up until the early 1970s, was contradicted by a growing counter-cultural movement and a surge in urban and social unrest (Suri 2010, 470), all of which were part of Soleri's stated concerns. By 1970, and as crowds were lining up to see the architect's vision of an environmentally-sound architectural humanity, these too were seemingly winding down. The war in Vietnam was still raging, the Civil Rights Movement had formally ended, Apollo 11 had traveled to the moon and back, and the recently inaugurated Richard Nixon was moving the US towards a decade of détente. The Doomsday Clock, published by the Bulletin of Atomic Scientists to signal humanity's distance from nuclear oblivion, was resting at a comfortable distance: ten entire minutes from midnight and universal death.

With the events of the Cold War serving as a backdrop, Soleri was developing a philosophy of cultural and spiritual densification expressed through architectural means that would become his most significant contribution to architectural discourse. Presented in the namesake book,

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<sup>2</sup> In 1970 alone there were at least 21 articles about the exhibition, published in popular magazines and newspapers, such as *The Washington Post*, *The New York Times*, *The Wall Street Journal* and *Rolling Stone Magazine*, and in professional journals such as *Architectural Forum*, *Architectural Record*, and *Progressive Architecture*.

Arcology was meant to be more than a combination of terms or a new style (P. Soleri 1969, 23). Rather, as one of Soleri's avid followers noted, it was an evolutionary discipline which was the "result of the realization that at a certain point in the historical development of society, architecture becomes inseparable from ecology" (Skolimowski 1971, 35).

For their creator, arcologies were meant to be "of such miniaturizing force as to alter substantially the local ecology in the human direction" (P. Soleri 1969, 15). Meant to "take the place of the natural landscape inasmuch as it would constitute the new topography," these ultra-dense architectures were designed to contain "all the elements that make the physical life of the city possible" (15). A vector of human ingenuity consolidated into architectural form, these radically interior environments would sustain their own microclimate, while affording an "uncluttered and open landscape" outside their enormous walls (13).

The megalomaniac scale of Soleri's intentions fostered an array of reviews, many of which described the proposition in sublime or biblical terms.<sup>3</sup> A relatively late review was written by the American geographer Edward Higbee with the heralding title, *Soleri: Plumber with the Mind of St. Augustine* (Higbee 1971). An outsider to architectural circles and a geographer concerned with American agriculture and conservation (Sears 1970), Higbee was a fitting figure to reflect on Soleri's vision. Observing the aftermath of the explosive exposition, he noted those critiquing Soleri to be representatives of a "fearful" culture that is "beset with social anxieties" (Higbee 1971, 18). For the critics, Higbee remarked, urban density, intense social interaction, and human diversity were reasons to be alarmed (18).

The prophetic undertones of Soleri's project were not lost on Higbee, who, like many others, offered a hagiographic view of the work. Ada Louis Huxtable, for instance, cast Soleri as a modern-day Cassandra and framed the architect's utterance to be a truth so virtuous and shocking that it can never be believed. For Huxtable, Soleri was part of a lineage of disregarded architectural visionaries, and a prophet to whom "we have not been listening" (Huxtable 1970, 118). Higbee, on the other hand, foregrounded the quasi-Christian eschatology which permeated Soleri's architectural philosophy by equating him to St. Augustine; suggesting, however subtly, that the architect was in the process of creating his own City of God.

In its conclusion, Higbee's review provided a revelation that offered a contextual—though perhaps inadvertent—link between Soleri and Augustine. If the eschatological worldview of Augustine's divine city was formulated in response to the sack of Rome in 410 CE (Dods 1871, x) Soleri's vision, Higbee suggested, was also created in response to an urban cataclysm. It reads:

<sup>3</sup> For instance, *New York Times* critic, Ada Louis Huxtable, noted that a common observer sees Soleri's drawings "as pictures of cities, not as abstract schematics, and has one of two reactions. He either bolts in horror or he falls in love with the vision" (Huxtable 1970, 118). *The Washington Post's* Wolf von Eckhardt, referred to Soleri as one of Noah's descendants who would "have us build Babels" (Eckhardt 1970).

Soleri and his students are now at work on a pilot project in Arizona [...] Arcosanti, as the project is called, will serve as a prototype of ecological architecture—an attempt to create an environment respectful both of unconscious nature and of self-conscious man. *According to recent information from Soleri, a reference block (center of the building) has been placed. 'Almost by accident, it happened to be Hiroshima day. The block is dated: 'Hiroshima, August 6'<sup>4</sup> (Higbee 1971, 22)*

Arcosanti, that destined project which Higbee wrote of, was Soleri's first and only attempt to build an arcology. Founded in 1970 on a 4000-acre piece of land 100 kilometers north of Phoenix, it has been in continuous construction for over five decades, and still stands at a far distance from the Babel-like structures envisioned by the architect. Yet however unfulfilled the built state of Soleri's prophecy may be, it does little to invalidate the context provided by Higbee. If we are to take this statement for the full gravity suggested, then all lines and measures leading to and from Soleri's desert city—better yet, to and from his proposition as such—are drawn from the nuclear crater in Hiroshima, and from the moment in which the Japanese city was destroyed.

### **An Enemy of Weapons**

That Higbee would choose to mention this detail in passing, could be interpreted as a mere anecdote. Yet what appears to be a cursory reference is, in fact, one of many instances in which Soleri, in writing, theory, and drawing, reacted to the threat of nuclear bombs. The first record of such a response, however, was not part of an architectural project. Almost a decade prior to the supposed placement of the Arcosanti reference block, Soleri and a group of colleagues composed a letter addressed to the US President, John F. Kennedy. Part of his archival collection labeled today 'Soleri and War,' the letter was written by Soleri and sixteen others in response to the 1962 Cuban Missile Crisis.

Laced with emphatic Cold War rhetoric, the letter expresses not only Soleri's opposition to nuclear weapons, but the connections the architect formulated between atomic bombs and a certain idea of American life. Criticizing "NATIONAL HEROES," "SELF-RIGHTEOUS PATRIOTS," and "BETTER DEAD THAN RED MAN' (OR CONGRESSMAN)," the authors wrote of a desire for an ethical life made impossible by "THE SCARLET SHADOW OF DISCRIMINATE (?) OR INDISCRIMANTE COLLECTIVE MURDER" (P. Soleri et al. 1963). Rejecting "THE PRIDE OF NOT BEING BUT

<sup>4</sup> My emphasis.

AMERICANS,” and situating themselves as “CITIZENS OF ONE WORLD,” the authors ended their letter with a critique of nuclear conflict and of the political values which might lead to such an end by noting that they “ARE AGAINST THE AMERICAN WAY OF LIFE WHENEVER THE AMERICAN WAY OF LIFE IS AGAINST THE HUMAN WAY” (1963).<sup>5</sup>

These concerns soon found their way into Soleri's architectural imagination in a discreet yet revelatory manner. In one of the drawing scrolls prepared between January 1965 and April 1966, Soleri assembled a collection of preparatory sketches: plans, sections, and elevations of what would appear several years later in Soleri's book as the *Babelnoah II* arcology, as well as two drawings dedicated to *Asteromo*, an arcology designed for outer space (Figure 1). Held in a dampened room in Arcosanti, the sprawling sheet contains, in its upper left corner, a small drawing of a sectional elevation with the title *Babel II B*. In its center, and within the project's underground space, a red circle is annotated with the word ‘power,’ suggesting, as in many of his other drawings, either a fusion or fission reactor that would provide the arcology's energy. On the top of the main structure, two domes are drawn in light and faded lines. The lower, labeled ARCOLOGICAL DOME, is connected to the top of the towers and appears to be an essential part of the arcology itself. Above it, the ghost of a ‘MICROCOSMOS DOME’ is drawn with an almost invisible blue trace. Adjacent to the thin line and mixed within the damaging stains of water, an annotation reads in capital letters: ‘H BOMB’ BLAST (Figure 2).

However minor, this annotation is revelatory in that it demonstrates the literality in which this absolute threat is confronted by the architect: a powerful yet barely depicted dome that would shield Soleri's imagined humanity from the detonation of a thermonuclear device, itself represented through mere words. Whether an afterthought or the result of painstaking contemplation, the annotation is indicative of Soleri's need to face the threat's existence and, simultaneously, the utter inability to represent it properly. The rich imagination, made visible in the drawings of arcologies themselves, is brought to its absolute limits in face of nuclear devastation, leaving the architect with no possibility of representation other than a thin faded line and a few scribbled words.

Several years later, Soleri would address the nuclear issue in his *Arcology* book, once again, somewhat ambiguously. The book itself, enormous and “perversely designed,” echoed in its size, the ambition of the arcological proposition and was divided into two sections (Pastier 1970). The first part was dedicated to elucidating the concept of arcology through short, repetitive and, at times, incoherent passages, as well as cryptic and mystical diagrams. The second part collected drawings of thirty arcologies

<sup>5</sup> The letter is cited in capital letters as it appeared originally.

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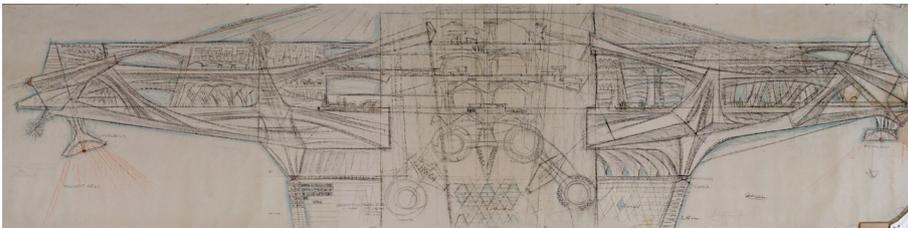
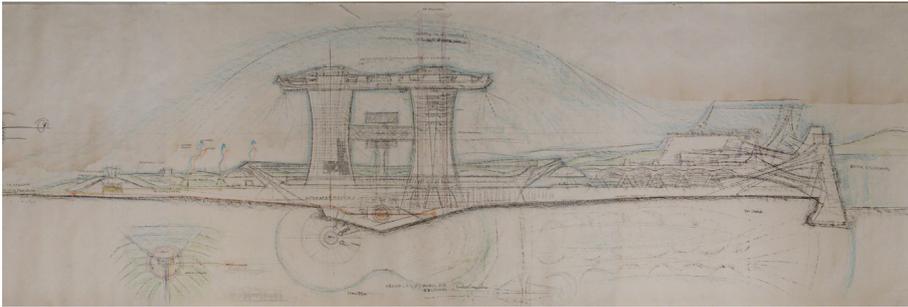
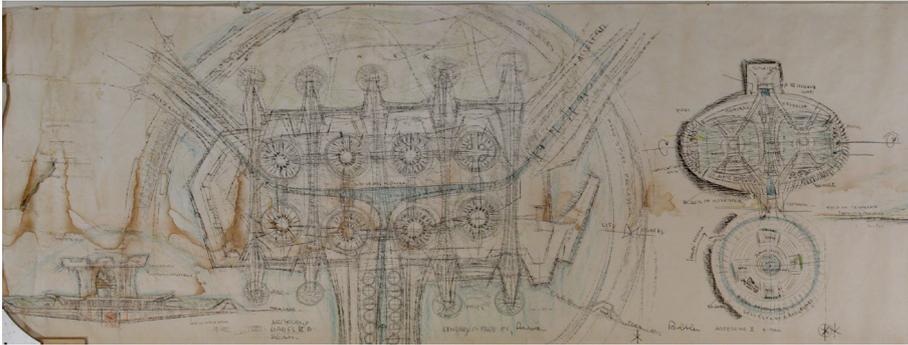


Figure 1. BABEL IIB — ASTEROMO, original scroll drawing by Paolo Soleri, January 1965; pencil, charcoal and pastel on paper; actual drawing 408" long x 48" wide, 1036 x 122 cm. Courtesy of the Cosanti Foundation.

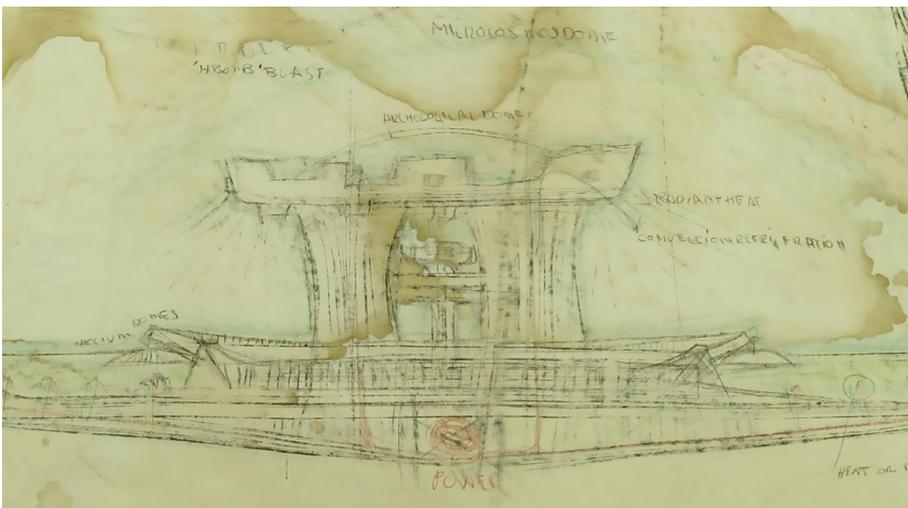


Figure 2. BABEL IIB — ASTEROMO, original scroll drawing by Paolo Soleri, January 1965; pencil, charcoal and pastel on paper; actual drawing 408" long x 48" wide, 1036 x 122 cm. Detail with notes of 'Microcosmos Dome' and 'H-Bomb Blast.' Courtesy of the Cosanti Foundation.

imagined in abstracted and universal locations. Each of these representations were accompanied by short texts explaining the specific context of each arcology and a set of quantities delineating their size, scale, and density (Figure 3).

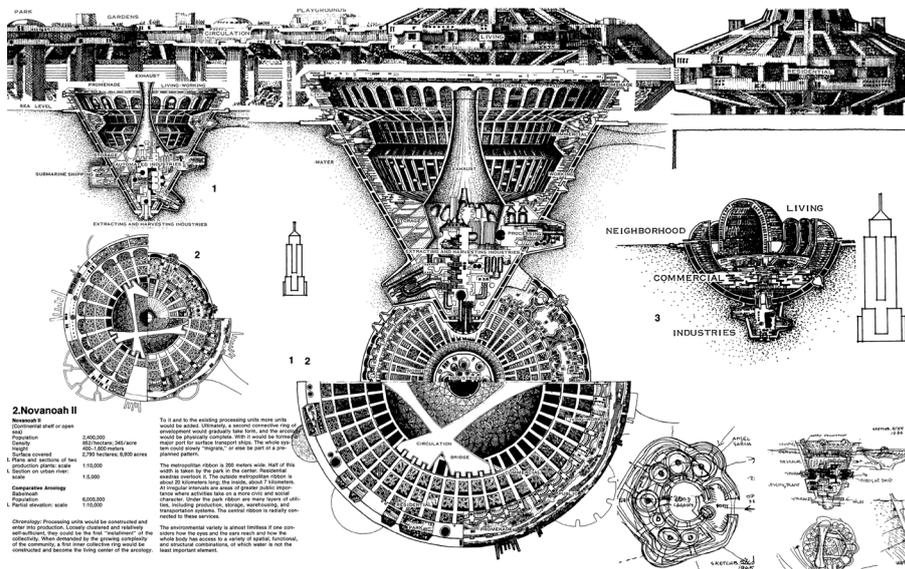


Figure 3. NOVANOAH II Arcology, Population 2,400,000. Page 39 in “Arcology: City in the Image of Man”, by Paolo Soleri, original publication 1969 by MIT Press. Courtesy of the Cosanti Foundation.

In the book’s theoretical section Soleri mentions the nuclear issue twice, albeit dismissively. Referencing Los Alamos, one of the main sites serving the Manhattan Project, Soleri pointed to the nuclear town as an example of the communal and “very specialized undertaking” from which an arcology could grow (P. Soleri 1969, 24). Later, in a short passage titled *Arcology and Survival*, Soleri noted the ability “to pinpoint an orbital warhead on a square mile or so” as an imminent risk (31). Arcologies, with their “vast underground structure for foundations, anchorages, and automated industries will be good emergency systems,” and will allow for an “almost instantaneous” evacuation (31). Still, since Arcology was predicated on a faith in mankind, Soleri noted, it should not be thought within a survivalist paradigm.

More than a decade later, the renewed rise of nuclear fears prompted Soleri’s renewed address. In 1983, the Reagan administration began to move forward with its ambitious Strategic Defense Initiative (SDI), extending the Cold War’s potential battlefield into outer space (Cosgrove 2001,

256). With his ear tuned to the news, Soleri followed suit and responded with a parallel projection towards outer space. This specific speculation, however, had its origins in Soleri's first extraterrestrial arcology, *Asteromo*, published in 1969 (Figure 4). Though graphically consistent, *Asteromo* stood out for its absolute lack of context and represented a culmination of the arcological proposition in visual, formal, and representational terms. Its radical lack of environmental reference, and a corresponding radical impossibility of life, afforded it as a kind of 'degree zero' arcology, cohesive from all views and directions, as it floats in the vast emptiness of space. Here too, Soleri rendered the interior of the proposed architecture to resemble a complex, highly compacted, and aesthetically-sound organic machine: perforated spaces drawn to resemble something not unlike the section of a spongy bone, or a kind of compacted architectural bomb organized within a shell that would further compress its energy.

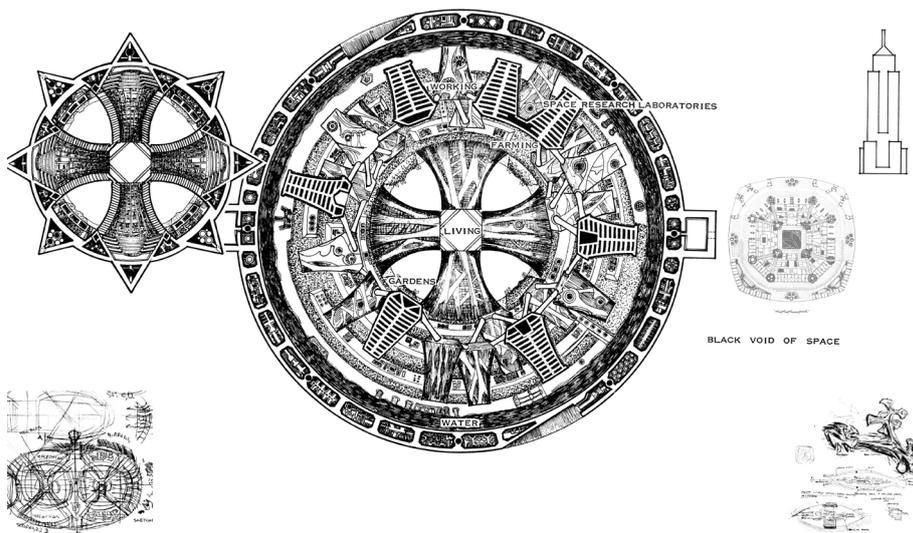


Figure 4. ASTEROMO: Space Arcology for a population of 70,000, 1. transverse section through housing, 2. transverse section through the city center; designed by Paolo Soleri. Page 118 in "Arcology: City in the Image of Man", by Paolo Soleri, original publication 1969 by MIT Press. Courtesy of the Cosanti Foundation.

The outer-space manifestation of arcological concept would be revisited in a short volume that Soleri later confessed to be "a reaction to Reagan's Star Wars" (P. Soleri 2003). The booklet, *A Space for Peace* (P. Soleri 1984), began with an epigraph citing an essay by the physicist Freeman Dyson titled 'Weapons and Hope.' In his text, Dyson's sought to situate "the problem of nuclear weapons, from a human rather than a technical point

of view,” to explore “the historical and cultural context in which nuclear weapons grew,” and to offer ways to deal with “the problem of nuclear weapons in the future” (Dyson 1984, 52).

Drawing from Dyson’s analysis, Soleri offered a kind of simulation characteristic of the Cold War: a grim outlook influenced by the contemporary “violent and dread-oriented” thinking of space (P. Soleri 1984, 1). He depicted several apocalyptic projections, including “the thermonuclear nemesis of the ‘God and Country First’ aberration,” or in the form of “a planet in the grips of a catastrophic climate change” (2). These scenarios served as the theoretical and historical background against which Soleri’s *Space for Peace* was conceived: extraterrestrial habitations, or “fourth generation arcologies” that were meant to push the arcological logic to its absolute limits (20). Titled *Ecominutiae*, they were representationally different from the drawings of the earthbound arcologies, or even *Asteromo*. Abstracted, scaleless, and always in-formation, these artificial asteroids appeared as biological, cosmological, and technological hybrids, drawn further from whatever concept of human habitation one might be familiar with (Figure 5).

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Figure 5. EUCLIDIAN: Space Arcology, Space for Peace Series. Original drawing by Paolo Soleri, 1987, pastel and crayon on black cardboard, size 32 x 40 inches, 81 x 101 cm. Courtesy of the Cosanti Foundation.

Presented by Soleri during a visit to the Hiroshima Memorial Museum in 1989 (Figure 6), the *Ecominutiae* were neither space stations nor settlements that mimic life on earth. Rather, they sought to represent a spiritual and ethical approximation towards a desired end through architectural form; an accelerating architectural meteor that would project both the creation and extinction of life. Whether in their physical organization or through their conception of “order-disorder,” these life-bearing nuclei were conceived, according to their creator, as the direct inversion of smashed and split atom, and “at the opposite end of the Hiro-Naga destruction axis” (P. Soleri 2002, 75). Not unlike big bangs, split atoms, or speeding asteroids, they offered “the reordering of matter pushed at extremes of purpose and contour.” (75). Yet these planet-like architectures do so inwardly, pulling Soleri’s miniaturized humanity away from world-ending explosions, and drawing it a step closer towards its implosive end.



Figure 6. Paolo Soleri’s visit to the Hiroshima Memorial Museum in 1989. Photo by Tomiaki Tamura, former director of the Arcosanti Archives. Courtesy of the Cosanti Foundation.

### **An Evil, Antilife Proposition**

Soleri’s ultimate move to the stars was not in search of other life forms, the deployment of satellites or weapons systems, or as part of an endless human expansion. Rather, his eschatological mission for architecture necessitated an environment so unforgiving that it would provide the spatial context in which humanity would have no option but to concentrate itself into a common purpose, and, in his own words, “miniaturize or die”

(P. Soleri 1969, 2). Through the radical miniaturization and complexification, outer space would not only accelerate his eschatology, but rather change the very essence of human condition itself.

Yet if the apocalyptic trajectory of Soleri's proposition ends in space, it certainly didn't begin there. Responding to Soleri's 1970 exhibition, the architectural historian Dana F. White noted as much by foregrounding what he observed to be Soleri's "Apocalyptic Vision" (White 1971). White, however, did not recognize the proposition itself to be apocalyptic, but rather used the term to describe the reality which Soleri was battling against. If humanity is to survive its "suicidal warfare" against the planet, White noted, it must "pull back to create a new order of human living, one based upon the principles of ecology and architecture" (White 1971, 79).

The first pages of *Arcology*, in which Soleri presented a manipulated version of Constantinos Doxiadis' world-city scheme, Ecumenopolis, demonstrate this approach. Despite the similarities in their shared understanding of the global urban problem, Soleri's saw Doxiadis' projection as a fundamentally "evil, antilife proposition," and redrew a variation of it that he labeled *The Map of Despair* (P. Soleri 1969, 2) (Figure 7). Placed alongside it was his own vision of the future; one that replaced sprawl with a network of condensed arcologies connected through minimal infrastructure, and vast swaths of untouched nature in between. Indeed, the cataclysm which Soleri sought to avert was one created through the continuation of a business-as-usual mentality. Despite the symbolic cornerstone of Arcosanti, his declared concern was not the annihilation of cities by atomic blasts, but rather their entropic decay through unrestrained suburban sprawl.

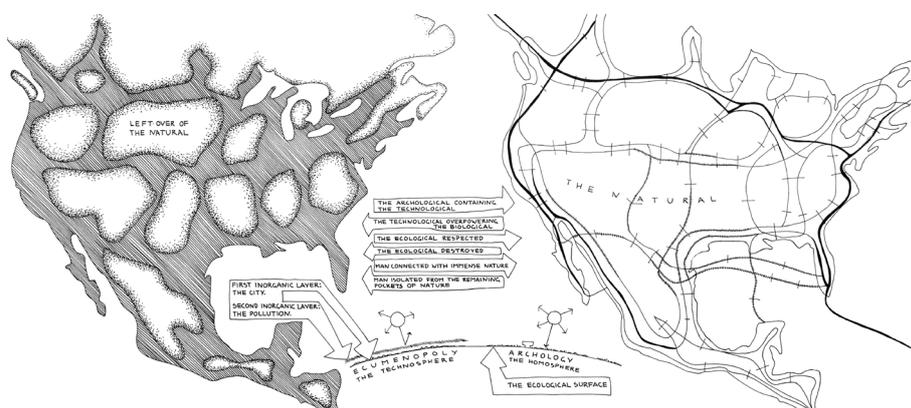


Figure 7. The Map of Despair created in response to Constantine Doxiadis' 'Ecumenopolis.' Page 2 in "Arcology: City in the Image of Man", by Paolo Soleri, original publication 1969 by MIT Press. Courtesy of the Cosanti Foundation.

And yet Soleri's proposition, perhaps overshadowed by its sublime scale, demanded an apocalypse; an end, which was regurgitated throughout his writings, and most comprehensively expressed in his 1981 book, *The Omega Seed* (P. Soleri 1981). In it, Soleri proposed to replace the traditional Judeo-Christian model in which the "father" or "Alpha" God precedes humanity, with a continuously created, evolving, and accumulated notion of a Son-God; not a God creating humans, but an ultimate seed created *by* and *through* humanity over time.

This eschatology was rooted in what Soleri called the "Urban Effect;" a principle that not only directed nature towards complexity and miniaturization but was expressed most visibly in the evolution of cities (P. Soleri 1981, 162–168). According to Soleri, the move from villages to towns to cities corresponded to a natural reality in which the more condensed an organism is, the more activity exists within its area. Within this paradigm, suburban expansion stood in contradiction to natural evolution. In Soleri's miniaturizing progression, cities were destined not to spread but to condense indefinitely until a final moment in which all of matter would turn into spirit.

Inseparable from this view of an evolutionary and implosive urbanism was the connection made by Soleri between suburban expansion, nuclear weapons, and his own proposition. If Los Alamos was "the quest for the ultimate explosive," he wrote in later years, "Arcosanti is the quest for the indispensable implosive" (P. Soleri 2008). Indeed, for Soleri it was the same "American way of life," criticized in the letter to JFK, which produced both the sprawling suburb and the explosive bomb; a logic which is indeed inseparable from the ideological foundations of American expansionism and the thrust of Manifest Destiny (Griffiths 2011).

Here then, Soleri's proposition becomes historically and discursively entangled with the nuclear referent. This was a moment in which high urban density—notably much lower than the one proposed by any of Soleri's arcologies—was equated with target attractiveness in Soviet eyes. Within an urban discourse in which the American city was perceived as a "primary Cold War target," (Martin 2003, 7) there would be no better target than an unprecedentedly dense city, three times the height of the Empire State Building, and housing millions of human beings.

This entanglement is reinforced by the implosive character of Soleri's urban proposition. For instance, a diagram demonstrating his concept of miniaturization presented a diagonal hatch seeking to indicate the entirety of the planet's living and non-living materials; an unrepresentable array of what Soleri calls 'the possible.' (Figure 8) The planetary stuff is then 'miniaturized' through what will be revealed as the arcological process. This,

however, is not a smooth or fluid transition but one achieved through 'evolutionary pulses' and radical leaps. At the center of this process, and after all matter has been condensed, Soleri places a "final miniaturization": an "interiorized" universe that has turned into "pure form" (P. Soleri 1969, 4).

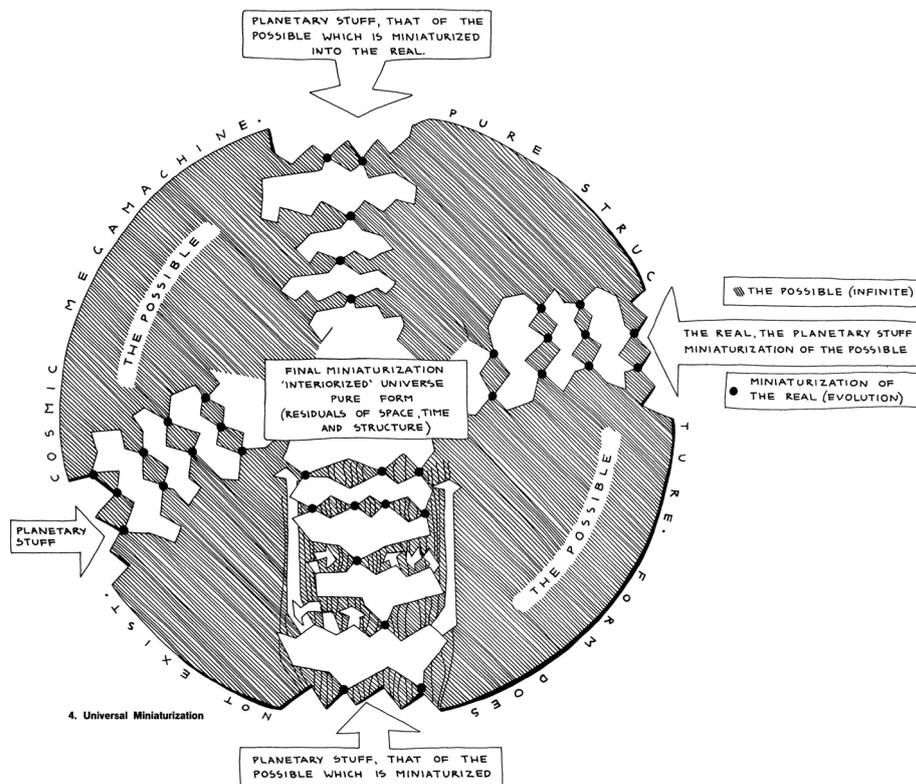


Figure 8. Diagram for Universal Miniaturization, Page 4 in "Arcology: City in the Image of Man", by Paolo Soleri, original publication 1969 by MIT Press. Courtesy of the Cosanti Foundation.

Implosion, however, is not simply the creative process suggested by Soleri but an equally destructive one; an inward collapse, a sudden failure, a violent interior burst that leads to self-destruction, and is, in fact, not that different from the mechanism used in the Nagasaki bomb.<sup>6</sup> Indeed, despite the supposedly progressive rhetoric that accompanied his proposition, at its root lies the realization that for one world or worldview to be created, a previous one must be destroyed. While the spiritual and physical mechanics of the universal processes he visualized were conceived against the logic of atomic fission, the result could be said to be fairly similar: a concentration of vast amounts of energy within a fortified structure, accumulated until its release would clear out space for the ushering of a new world.

<sup>6</sup> While the Hiroshima bomb, codenamed 'Little Boy,' was built with a standard mechanism that would push two pieces of uranium against another to create a nuclear chain reaction, 'Fat Man,' the device detonated over Nagasaki, used an implosive mechanism: The plutonium charge at its center was surrounded by conventional explosives that upon detonation would compress the radioactive material inward until nuclear fission would occur.

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The eschatological hypothesis underlying Soleri's proposition leaned heavily on the writings of the French Jesuit priest, philosopher, and paleontologist, Pierre Teilhard de Chardin. Indeed, the conceptual affinity between the two has been recognized not only by Soleri's contemporaries, but also in a recent reevaluation of Soleri's ideas. In his study of the interaction facilitated by design practices between humans and the environment in 1970s, architectural historian Larry Busbea argued against the common perception of the architect's work as mystic and noted that Soleri drew various postwar models of science and aesthetics, with Teilhard de Chardin's theories being a significant source. (Busbea 2013, 781). And yet, despite the important role that he assigns to Teilhard's philosophy in relation to Soleri's formulation of his own thinking, Busbea does not elaborate on the eschatological aspect of the priest's thought; an aspect which was conceived, in part, in relation to technological progress and the appearance of nuclear bombs, and is most apparent in a 1946 text in which Teilhard contemplated the invention of humanity's most destructive weapon.<sup>7</sup>

The essay, titled “Some Reflections on the Spiritual Repercussions of the Atom Bomb,” begins with a factual mistake. In its very first line Teilhard replaced the location of the Trinity Test in New Mexico with the “‘bad lands’ of Arizona” (Chardin 2004, 133). Asking not to “discuss or defend the essential morality of this act of releasing atomic energy,” Teilhard noted the breaking of the atom to be as important as the discovery of fire, the Neolithic agricultural revolution, or the invention of the steam engine (135). Pointing to the difference between the traditional use of natural materials and release of energy through nuclear fission, he emphasized humanity's newly acquired capacity to tap into “the sources commanding the very origins of matter;” a power so great that man “must think twice before committing some act which might destroy the earth” (135). Despite this inherent danger, the acquisition of the universe's intrinsic and potentially world-ending power was framed as natural and destined. Situating the invention of nuclear weapons as a scientific, and thus spiritual endeavor, Teilhard speculated that “what gripped the throats of those bold experimenters in Arizona,” was not the thought of an ultimate, destructive power, but “the very worth of science itself” (136).

Though not discarding the possibility of the world's nuclear end, Teilhard framed this unique moment as one of many in the successive process of human collectivization and the planetization of the earth. Anticipating the language that Soleri would adopt when he would write of the city as “an organism of a thousand minds,” Teilhard (P. Soleri 1969, 12) noted

<sup>7</sup> Teilhard's sentiments regarding atomic bombs are reflective of his larger view of the role that technology plays in human spiritual evolution (Lutzer 2001, 133).

the invention of atomic weapons to be a triumph “in which the largest number of brains were enabled to join together in a single organism.” This was a “first bite at the fruit of the great discovery”; a proof that when humanity collectivizes it produces great inventions and through those advances the genesis of its desired end (Chardin 2004, 137–139). Indeed, Teilhard expressed little if any critique of what a future nuclear war might look like. Echoing the future posture of many military strategists, he foresaw the premise of Cold War deterrence and remarked that “thanks to the atom bomb it is war, not mankind, that is destined to be eliminated” (140). More important than potential destruction was “the vast field for conquest which science has disclosed”; one that would make a nuclear war not unwinnable, but rather obsolete.

Teilhard’s inaccurate phrasing regarding the location of the first nuclear detonation ironically placed him in closer proximity to Soleri’s chosen geography. His mistake notwithstanding, it is indicative of the history and perception of the American Southwest as a vast testing ground for both artistic and scientific experimentation throughout the twentieth century, with Soleri’s case being just one, however distinct, example (Ponte 2003; Ponte and Trubiano 1996, 27–30). For Soleri, the desert was an ambiguous geography: a space in which the cultural values that he was battling against were made visible in architecture and urban development, and a paradigmatically harsh site that was both symbolic *of* and demanded *by* his arcological method. Indeed, the self-sustaining character of arcologies was in fact contingent on their existence within a context that would necessitate the complexification and miniaturization of human habitats.

The choice of this geographical location was not accidental, neither for Soleri nor the Americans who settled in sunbelt cities. The abundance of land and the postwar need for housing have made the American desert frontier into the perfect ground for expanding not only the American metropolis, but also its ideals (Duany 2000). Within this expansive and developed geography, Phoenix, the closest urban center to Soleri’s urban laboratory in Arcosanti, was both a unique and paradigmatic case. After developing in the late nineteenth century as a touristic destination for health seekers, it transformed into a multi-centered urban metropolis representing the future of American urbanism (Luckingham 1989, 9).

Faithful to the biblical and evolutionary premise of his project, Soleri’s desert was indeed a site of providential character, to which Americans withdrew from their decaying cities and seeking to fulfill the American dream. The result of this sacrificial urban exodus, as he referred to it, however, would be not the dream’s achievement but its end.<sup>8</sup> The “catastrophic” nature of the American dream, consolidated and expressed in

<sup>8</sup> Soleri mentions this term in an undated text titled “The American Withdrawal from America,” which I have located in his archive in Arcosanti.

the suburban home, was especially visible in its spread across dry geographies (P. Soleri 1973).

With the Earth's potential destruction on the one hand, and humanity's planetary departure on the other, Soleri's locus and the proposition which stems from it become inherently intertwined: a past frontier to which the US had already expanded, and the edge from which it exerted its power through the deployment of its nuclear threat into the desert and beyond; a landscape in which the continuous rehearsal of the world's nuclear end transformed the abstractness of the Cold War and the arms race into reality (Solnit 2014, 14–15). The entropic desert, evoking the promise of an extraterrestrial environment, suggested the end of terrestrial ones by offering a space in which humanity, through architecture, could accelerate itself towards a designed end-time.

### Hubris and Isolation

In various cultural imaginaries and myths, the desert serves as a place of divination and foresight. Indeed, if there is a pervasive thread in Soleri's writings, theories, rhetoric, and drawings—in fact, throughout his entire proposition—it is that of prophecy. Here was a man who claimed to have found the answer to humanity's ailments and the key to the door behind which such answers are located (P. Soleri 1985, 54); who positioned himself within a geography culturally associated with prophetic utterance; and who had built a seemingly shining city on a hill with the sweat and conviction of others who heard within his words the ring of truth.

Such revelations, however, do not simply disclose a future of redemption. Rather, they are often shaped by egregious abuses of power, with Soleri's case being an example of a symptomatic condition rather than an exception to the rule. Promoted by those around him and furthered by the architect himself, his posture as a desert prophet is inseparable from a personal history marked with abuse. These transgressions were revealed by the victim of this violence; his daughter, Daniela Soleri, who shared her personal account in a raw and painful essay published online in 2017, several years after her father's death and as the #MeToo movement was gaining recognition and momentum around the world (D. Soleri 2017).

In painstaking detail, Daniela Soleri chronicles the sexual, verbal, and mental abuse she endured since the age of seventeen. In her essay she highlights the ways in which her father's work and grandeur were mobilized against her and used by him and his followers as an instrument for concealment and justification of his continued crimes. This cultivated

myth of greatness is founded, she observes, on the still-prevalent idea that to produce great work, one is not only entitled to sin and violence but is in fact expected, if not strictly destined, to perform such crimes; and that it is the individuals around those figures that must bear the cost of their horrific acts if we as a society are to enjoy the stained fruits of genius.<sup>9</sup>

Pointing to the connection between her own experience and the prophetic position her father assumed, Daniela Soleri notes that the “hubris and isolation that contributed to my abuse” were the same ones that made Soleri and his followers “incapable of sustained engagement with the intellectual and artistic worlds they felt neglected by” (D. Soleri 2017). While silence and complicity around Soleri might have contributed to his formation as a misunderstood visionary, for Daniela Soleri it was primarily his personality which was behind the atrocities he performed, and which relegated him to the role of a mystic looking at society’s ailments from outside. Soleri’s detachment from the conditions of reality, which he had cultivated for himself so carefully, thus afforded the privilege with which he could prophesize a universal cure for an abstracted and faceless humanity while simultaneously discarding, abusing, and violating the very real individuals who were closest to him and to the work.

Despite her own revelation, Daniela Soleri acknowledges the existence of a work in separation from its creator. Her father’s proposition, she emphasizes, is not to be fundamentally discarded; most of it seems to her not “compromised by his worst behaviors” (D. Soleri 2017). Yet once the work is free from the admiration that sustained it—the very thing that justified it and made it into prophecy—its flaws, “ignorance, arrogance [and] narcissism” become ever clearer (D. Soleri 2017). Indeed, a prophecy can only be deemed one if there is a group of loyalists, however small, to hear the words and see the images; and it is the very nature of visions that offer seemingly egalitarian and redemptive futures, to ignore the cost necessitated by the ushering of a new world. Once the veil of revelation is lifted, and the social function of prophecy has failed, the work continues to exist and can face the question of valuation, this time on strictly different terms.

Soleri’s then, is a particular case: a prophecy of the world’s desired end, the very content of which is intertwined and stems from the privileged, supposedly cast-off, and isolated position he assumed, at times through violence. His willful withdrawal from society was reinforced by the choice of a mythical geography in which humanity would be forced into miniaturization and where visions of the future are supposedly disclosed; but it is also a place of concealment. In the case of Soleri, this vision is entangled not only with his own personal violence but with the sins of the past and

<sup>9</sup> Daniela Soleri criticizes an essay by Charles McGrath, titled “Good Art, Bad People” in which McGrath notes that “the cruel thing about art — of great art, anyway—is that it requires its practitioners to be wrapped up in themselves in a way that’s a little inhuman” (McGrath 2012).

present as well: a space in which the systemic exploitation of the environment is itself intertwined with material extraction, the dispossession of indigenous land and, most recently, the history of nuclear weapons testing and ecological collapse (Ramirez 1992; Johnson 2018).<sup>10</sup>

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## **The Scale of Apocalypse**

As already noted, Soleri's fascination with the nuclear desert was not singular. In 1972, the American land artist Michael Heizer, for instance, purchased land adjacent to the Nevada Test Site, in which he would later produce *City*, a land art project conceived as a monument to outlast humanity (Goodyear 2016). In an interview about his art, Heizer noted it to be informed by the sensation "that we were coming close to the end of the world" (Brown 1984, 12–13). In the same conversation, Heizer emphasized the growing physical size of his projects, and recalled the revelation provided by his monumental work *Double Negative*: "I realized I had built something as big as a building, something greater in length than the height of the Empire State Building" (12). When asked about the architectural scale of his work, Heizer responded with a correction, stating that it is size rather than scale with which he is concerned: "Size is real, scale is imagined size. Scale could be said to be an aesthetic measurement whereas size is an actual measurement" (13).

If size is real and scale is imagined, what can be said of Soleri's representations of his architectural eschatology? While the size of Heizer's projects is translated into material, economic and physical quantities, the nature of Soleri's proposition is its existence as a post-projective imagination, making it unrepresentable without a scale against which it can be referenced, measured, or even understood. Namely, it is not only the enormous physical size of the arcological proposition but rather its existence within the unscalable timeline of the world coming to an end. While each arcology is accompanied by an enumeration of its objective metrics, supposedly making them legible to our imagination, each is equally fraught with an unmeasurable and unrepresentable scale of its existence and execution over time. If so, and if by Soleri's own repeated admissions, the drawings are not representations of arcologies as architecture to be realized in any faithful manner, then what is it that they actually represent?

A close examination of the drawings in Soleri's *Arcology* book may provide some insights. *Arcosanti*, the last of the thirty arcologies collected, is the only one which Soleri and his disciples have attempted to build. What is curious about its drawings is not the enormous distance between the

<sup>10</sup> The vast majority of nuclear tests were conducted in the Nevada Test Site, which is located on unceded indigenous land of the Western Shoshone.

representations and their built reality, but rather the effects of it being drawn with its building in mind. In fact, it is the only arcology that offers in addition to the elevations, sections, and plans, an axonometric section, as well as the only one which throughout uses the scaled figures of human beings; a supposedly unremarkable observation if one considers that while all other arcologies are drawn in a scale shifting from 1:2000 to 1:10,000, Arcosanti is drawn in a meager 1:1000.

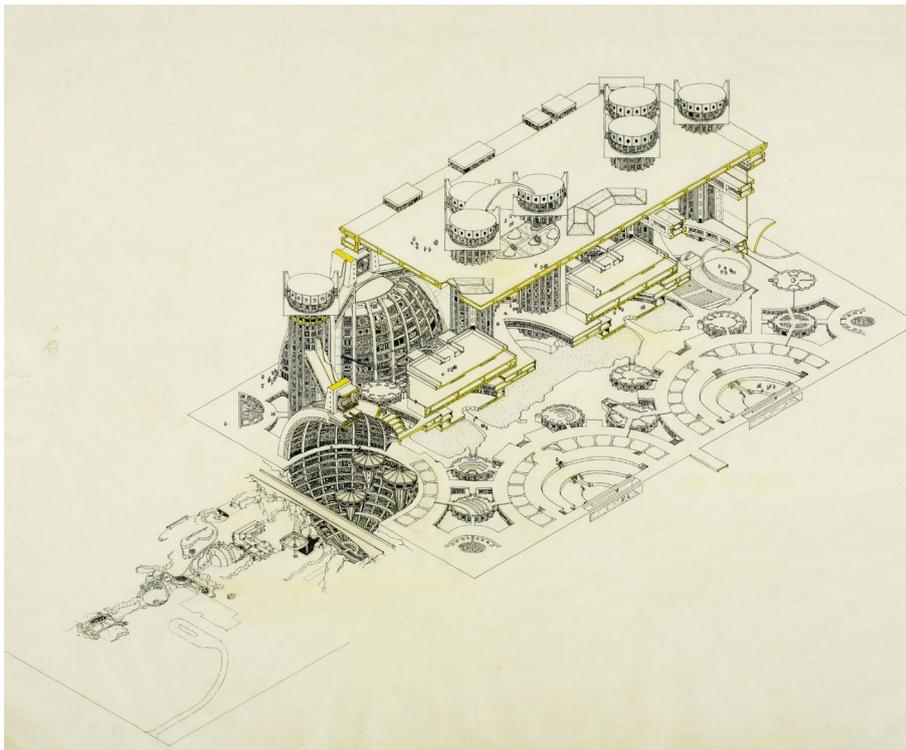


Figure 9. ARCOSANTI — isometric view, original drawing in black ink with some yellow outline, size 38 × 32 inches, 95 × 80 cm, by Paolo Soleri, 1968. Courtesy of the Cosanti Foundation.

The proposition's enormity notwithstanding, the populated axonometric situates itself as a first step towards the end (Figure 9); a parallel and supposedly objective view it represents the 'real' measures of things, without the subjectivity and symbolism associated with a traditional perspectival view, which Soleri never used. And yet to view these numbers as mere technical afflictions, would miss the mark of Heizer's semantic nuance and Soleri's representational challenge. Rather, it is here that the conceptual gap between drawing and building is exploited for its full capacity. The drawings, neither blueprints nor construction documents, are in fact approximations, false prophecies, a throwing-forward of something that is beyond Soleri's ability to faithfully represent. Not illustrations of Soleri's expansive imagination, they are testimonies of its limits, and the limits of

architectural imagination as such. What is disclosed then is not the future offered by Soleri but rather the immeasurable distance between humanity's ability to create instruments that could bring about the world's ending—whether through atomic bombs or architectural machines—and the inherent impossibility to imagine that very same end. What we are left with is a series of images purporting to depict the city in the image of 'Man,' without a single man or woman in sight. Not unlike the scenes of devastated cities after an imagined cataclysm, these destined equilibriums of a complex and thriving species, are drawn as desolate and emptied-out palaces, with humanity unaccounted for.

As it seeks to come closer to its conceptual ideal through drawn representation, the proposition's reality—or lack thereof—falls painfully short. When Soleri needs, for instance, to offer details of what this evolution-inducing environment might look like, the audience is left with mere textures, lines that do little to imply the possibility of habitation and annotations that bear all too familiar definitions such as 'housing' or 'commercial,' as if within these super condensed organisms such ordinary programs could still have place. Indeed, it is only in the later *Ecominutiae* drawings that these simplistic categories are absent, as Soleri attempts take a step beyond the conventions of architectural representation. No longer familiar or habitable, these arcologies withdraw from architecture and assume the appearance of something out of which life might be conceived or created: a final and last seed caught in the process of eliminating itself. Humanity or humans, as it stands, are still drawn out.

### Against a Giant

Almost two decades after the placement of Arcosanti's reference block was noted for its nuclear connotation by Edward Higbee and while Soleri was declaring the projection of his architectural apocalypse into outer space, Reyner Banham, the architectural critic and empathic advocate of Los Angeles's sprawling urbanism, wrote an indictment of Soleri's divine city that by now should come with little surprise. Analogizing the desert arcologist to a nuclear scientist, Banham wondered whether Soleri was simply "another nut acting out his fantasy in the deep desert where the world cannot observe nor censor" (Banham 1989, 86). Questioning the promises and premises of Soleri's societal and urban reforms, he went on to compare Soleri's arcologies to the most destructive weapons humanity has devised. For Banham, Soleri's desert was not a site of prophecy but rather a "proving ground" in which the only visions made are

those of “an architectural tyranny (25,000 souls in one building!) as potentially harmful to human-kind as the atom bombs that were also tested in secret seclusion” and in the very same space (86).

However haphazard, the comparison is instructive, and the architectural truth supposedly exposed through Soleri's desert project, as Banham suggested, is strange indeed. Yet it is not simply the creative power of Soleri's will “exercised on a defenseless landscape,” as Banham noted, which the arcological proposition reveals (Banham 1989, 86). Rather, it is precisely the impossibility of representing such an eschatological project, and the unwillingness of a critic such as Banham to accept this unrepresentability, that comes through the work; revealing it not as a city-organism, but as a constellation of fragments, histories, imaginations, and projections from which the end will inevitably be composed.

What if the settings for Soleri's arcologies were not the abstracted universal landscapes which he chose to portray them as, but rather the built environment which he sought to replace? Not the nameless desert, ocean, iceberg, or cliff but rather the skyline of America's greatest city, whose destruction was rehearsed and imagined during those very same years. Useful here is Soleri's placement of a scaled figure of a mute Empire State Building next to each of his drawings; a choice echoing Heizer's scalar comparison and one noted to make the soaring skyscraper appear as “a dwarf against a giant” when pegged against arcology (Skolimowski 1971, 35).<sup>11</sup>

Consider this juxtaposition then, in relation to the history of apocalyptic fictions visualizing and projecting the destruction of the Empire State Building (Page 2007); specifically, the very first depiction of a fictional nuclear detonation against a cityscape, published in the pictorial record of the nuclear tests conducted on Bikini Atoll by the US military in 1946 (Task Force One 1947) (Figure 10). Here, architecture no longer appears a symbol of progress or human ingenuity. Rather, it is the very thing which gives scale to the unscalable. Providing a space for reason to fall back onto in face of two forms of what historian of science, David Nye dubbed as the American technological sublime (Nye 1994, 96, 225), architecture becomes a measure of apocalypse.

A simple overlay exposes the interrelatedness of two contemporaneous ends: on the one hand, the world's nuclear ending, on the other, Soleri's implosive one (Figure 11). Considered together and under the shadow of nuclear fears, Soleri's desire to replace the world of sprawling suburbs, capitalist skyscrapers, technocratic institutions, and nuclear weapons with an implosive architecture becomes abundantly clear. Not unlike the comparison with the unimaginable scale of an atomic weapon,

<sup>11</sup> In addition to Skolimowski, a 1970 NY Times review by S.D. Kohn noted Soleri's cities to be “scaled higher than two Empire State Buildings” (Kohn 1970, 29), while Jeffrey Cook wrote that for Soleri, “three-dimensional design is a thickness many times the height of the Empire State Building whose outline appears everywhere as a scale” (Cook 1972, 74).



UPPER. Dr. G. K. Green, of the Army Ground Group, studies a telemetered chart made by an Esterline Angus recorder on AG 76 AVERY ISLAND. LOWER. Composite photograph roughly comparing the Test B cauliflower cloud with New York skyscrapers. An exact comparison would be even more extreme. The cauliflower cloud, nearly two miles in diameter, would overshadow a considerable portion of Manhattan. It requires little study to appreciate catastrophic destruction.



Plate 32

Figure 10. Nuclear detonation over Manhattan. Plate 32 from United States Joint Task Force One. *Bombs at Bikini; the Official Report of Operation Crossroads*. 1947. Published by W.H. Wise.

the only thing that could provide a frame of reference to the magnitude of Soleri's proposition is the very thing which it seeks to erase.

None of this is to say that Soleri's arcologies were conceived as the architectural analog of nuclear weapons. Instead, when examined under the threat to future architecture—or better yet, to the future of architecture—it is the futility of his and any other proposition, be it suburb,



Plate 32

Figure 11. Collage prepared by the author combining Soleri's drawing for Novanoah II with the image of the nuclear detonation over New York as seen in Figure 10.

skyscraper or arcology, that is revealed. What Paolo Soleri's apocalyptic vision offers as *revelation* is neither a future filled with mushroom-cloud-like architectures, nor a prospect for a condensed humanity in space; our inability to construct such habitats notwithstanding. Rather, seen through the nuclear cloud under which his visions grew, his architectural end-visions reveal the intertwinements of history itself: that the violence exercised against the desert landscape—whether in the form of atomic bombs or their strange relative suburban sprawl—is the direct extension of the subjugation of both land and people under the guise of Manifest Destiny; that the logic which once birthed world-ending weapons and enabled American expansion, is the same one that underpins the architectural manifestations of the American dream, whether in the consolidated Empire State Building or the entropic landscape of sunbelt cities; and finally, that apocalypse is neither to be averted by architecture, nor countered, but rather a horizon that architecture inevitably advances and participates in, without acknowledging the cost. Against the seemingly ungraspable, unrepresentable, and unimaginable scale of ultimate beginnings and absolute ends, Soleri's architectural representations are the continuous inscription, and pulling towards oneself, of that end; the drawing of apocalypse.

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