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Along Utopian Lines

American Architecture in the Age of Apollo

Mark Foster Gage

During the 1960s American architects showed a remarkable interest in continent-wide urban and infrastructural design. A new sense of scale seemed to have inspired them. Mark Foster Gage sees connections with space travel during that same decade, thus introducing a wide-angle lens view on country, continent and world.

Josh Lyman: Hang on. Listen. Listen. [goes to the boom box and slowly turns up the volume. A high voice in the choir sings and Josh is moved] There, right there, it's ... miraculous. [beat] Schubert was crazy, you know.

C.J. Cregg: Yes.

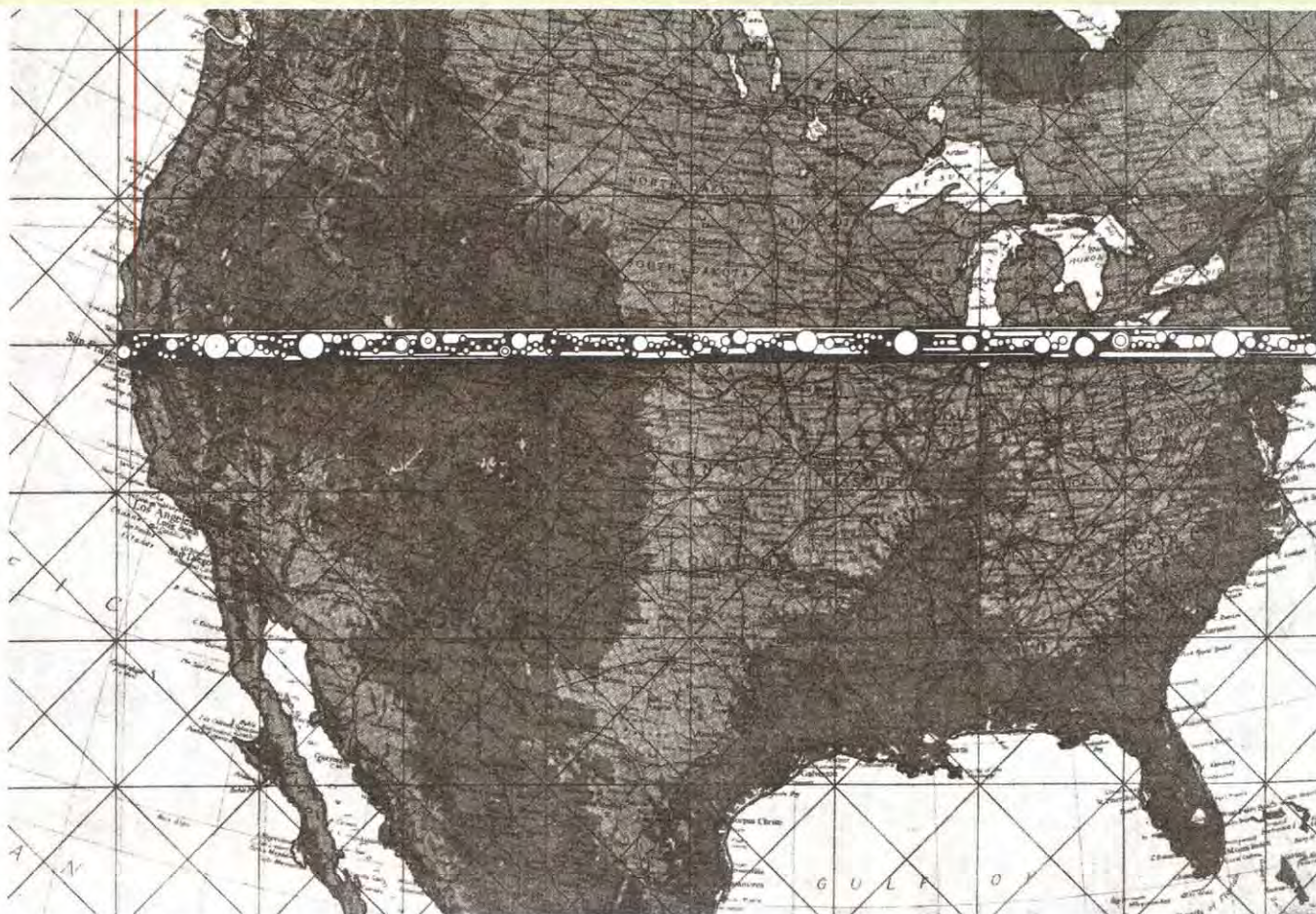
Josh Lyman: Do you think you have to be crazy to create something powerful?
— Aaron Sorkin, dialogue from 'The West Wing'

On May 25, 1961, while addressing a special joint session of Congress, then US President John F. Kennedy, in an attempt to best the Soviet accomplishment of launching the first human into space only forty-three days prior, confidently claimed that the United States would land an American on the Moon before the end of the decade. This assurance was based on pure speculation and a stunning absence of the required technologies, materials or the funding that would make such a mission even remotely possible. Such total belief in the promise of future technologies was the cornerstone of this endeavor, and this mentality subsequently came to infiltrate much of the design output of this era, in particular, those years paralleling the period of the NASA Apollo program, 1961–1975, which was developed specifically to accomplish Kennedy's task. Noting the architectural manifestation of this mentality, Robert A.M. Stern writes in the same year of the Moon landing, 1969, that 'Some architects, excited by the great new technological developments at our disposal, seem to seek solutions that are sweeping in scope and bold in gesture. They have been tempted to imagine new cities at vast scale to replace what we now have, offering instead ideal solutions that rely on systems and technology still in the experimental stages.' For Kennedy, such conviction in future technologies yielded tangible results, as only eight years later the Apollo 11 mission ushered Neil Armstrong to the Moon's surface on July 20, 1969 – only five months before Kennedy's original self-imposed deadline. Architecture's payoff in this era was less obvious, offering no single defining accomplishment. Yet on closer inspection, it becomes clear

that it was no less dramatic or influential; as perhaps more than any other post-war decade of the twentieth century, it was this period that produced some of the most wildly imaginative architectural proposals in generations.

Much architectural inspiration during this period emerged from a similar reliance on non-existent technologies as did the Apollo program at the moment of its public announcement. A related tactic within the architectural profession was to adopt spin-off technologies that had been actually realized for the lunar missions themselves. Such links can be seen in projects including Archigram's Live in Pod (1966) and Seaside Bubbles (1966), or Coop Himmelblau's Villa Rosa (1967), all of which share a common exo-skeletal scaffolding structure married to various forms of enclosed habitation units – all strikingly similar to the designs for the Lunar Excursion Module (LEM), which had been in speculative development as early as 1958. Only slightly less recognizable are architectural proposals derived from the possibilities of what these new technologies suggest, such as Archigram's Walking City (1964) or Günther Domenig and Eilfried Huth's Überbauung Ragnitz (1965–96). These projects recast technologies developed for actual megastructures: the Apollo launch stack, crawler transporters and umbilical tower – all mobile, reconfigurable, and massively scaled apparatuses designed to physically move Saturn 5 rockets into their required launch positions.

Given that the Apollo program was a specifically American response to the developing space-race and escalating Cold War, it was perhaps ironically, almost exclusively European architects that mirrored the mentality



Continuous City for 1,000,000 human beings. Alan Boutwell and Michael Mitchell, plan, 1969.

and technologies of the American space program for the production of radical architectural proposals during this period. That is not to say that the circumstances surrounding these missions did not have an effect on their American counterparts, only that such effect, for a variety of reasons, manifested itself along differing lines of inquiry. The link between the artifacts created for the Apollo missions and their European architectural counterparts are more clearly articulated within architectural history than the more subtle influences that the program had on American architectural culture during this same era. Specifically, I would suggest that while the physical products of the space race were absorbed into a number of proposals by European Architects, the Americans developed a more conceptual spatial ambition that emerged from a massively revised concept of distance as prompted by the scale of the Apollo program. This conceptual revolution in the understanding of vastness and distance, combined with the pragmatic desire to overcome the planar emptiness of the American landscape (via the automobile) produced a unique Petri dish of circumstances – thereby setting the stage for a uniquely American contribution to the utopian political project – a new form of linear utopia.

From a Distance

It cannot be challenged that architecture is a discipline significantly predicated on the concept of distance relative to both the human body and the technologies with which such bodies travel. Architecture and its accumulated urbanisms are wholly determined by various

forms of mechanical transportation ranging from escalators and elevators to the integration with higher-speed forms of travel including subways and automobiles. As such, it seems unusual that more attention has not been given to the significant reconfiguration of the concept of distance ushered in by the Apollo program. A brief comparison of distances reveals that the historically superlative length of the Great Wall of China, if all branches were included and connected, would reach a distance of approximately 5,500 miles (8,850 km). By comparison, the physical distance covered by the Apollo 11 astronauts is a distance nearly 50 times greater.

Largely coincident with the period of the Apollo missions, and certainly related as a governmental response to the master-narrative of conquering vast distances, the American transportation infrastructure ballooned to cover vast distances during the 1960s. The Interstate system, begun the previous decade through President Eisenhower's National Interstate and Defense Highways Act of 1956, was well underway and a large percentage of the proposed 40,000 miles (64,300 km) of newly accessible roads were available for automobile use (although by comparison the final distance covered by the full interstate system, even today, still represents only 16% of the distance to the Moon). The number of cars in the United States, during this same decade eventually reached over 100 million – thereby creating a country with over half as many cars as there were citizens.

While horizontal vastness had been addressed in architecture before, for example, in Ludwig Karl Hilberseimer's *High Rise City* (1924), it had never been

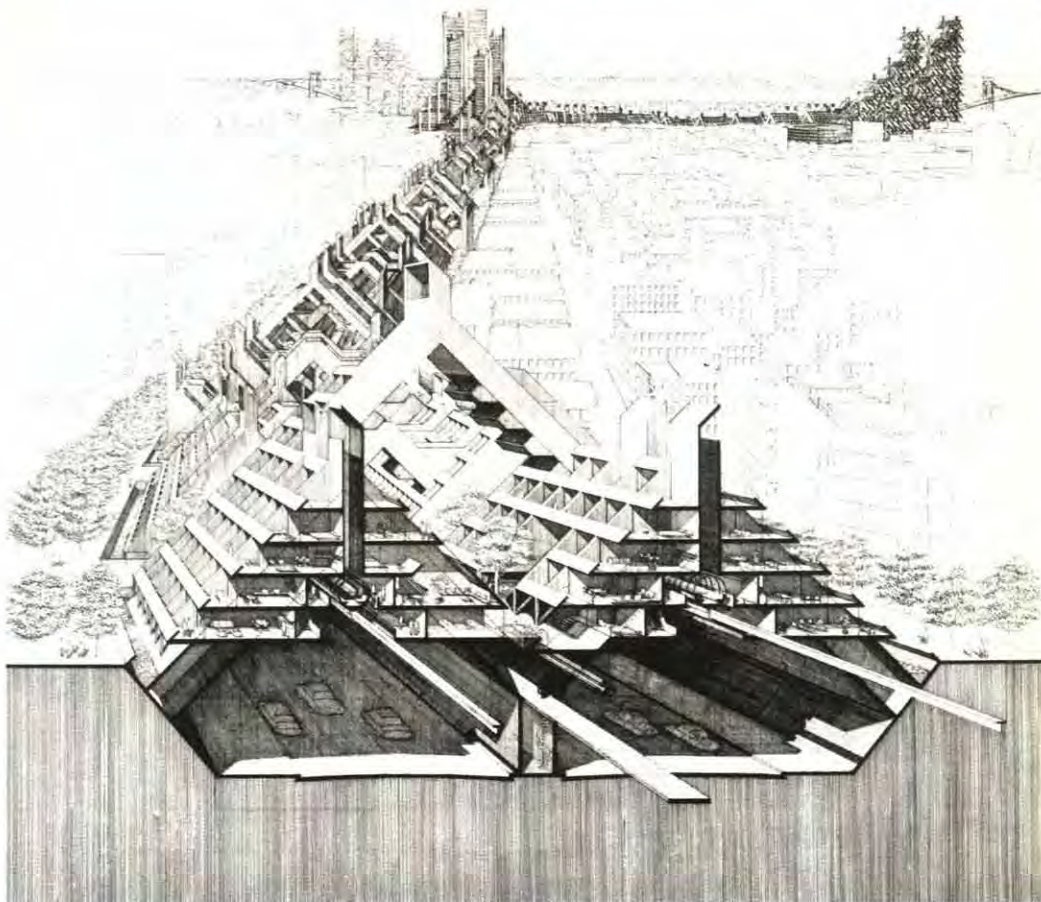


Image: Paul Rudolph Archive, Library of Congress

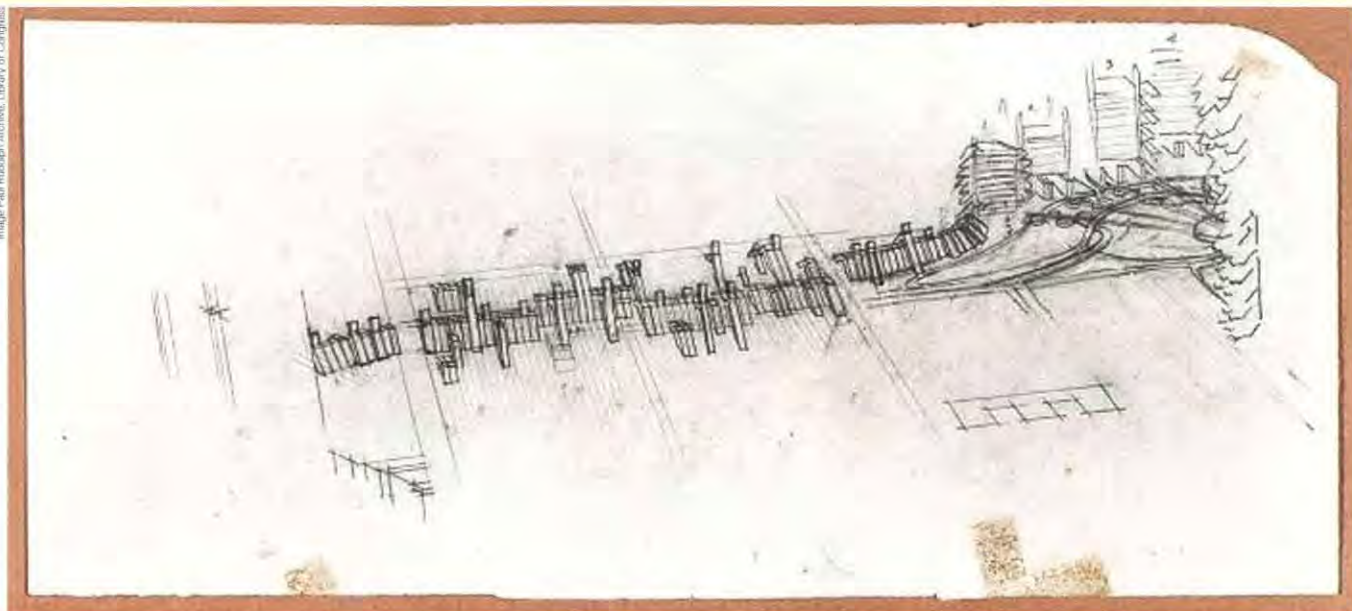
Lower Manhattan Expressway Proposal, Paul Rudolph, sectional perspective, 1967.

done in such a focused and linear degree that it would be expressed in experimental work of American architects when confronted with these new concepts of distance ignited by the promise of Kennedy, and fueled by the development of the automobile and its associated infrastructural needs. Architecture, in this moment of dramatic scalar reconfiguration, was pulled and stretched to increasingly infinite degrees of distance in order to completely absorb not only vast amounts of program, but the transportation infrastructure of America itself.

Of these projects engaging both the conceptual and territorial horizons of spatial practice in America, perhaps none is quite as straightforward as the Continuous City for one million human beings, as proposed by Alan Boutwell and Michael Mitchell in 1969 – the same year of the lunar landing. This proposal occupies the full width of the United States, linking New York City with San Francisco through a continuous intertwining of architectural space, infrastructure and program. This proposal elevates the city sectionally from the ground and extrudes profiles for the programmatic accommodation of everything from airplanes, monorails and automotive transport to storage, pedestrian circulation and automobile parking. Taking to new heights the established theme common to the American experiments of this period is a totalizing dedication to infrastructure – and in particular the integration of the horizontal elongations of highway systems with the more pragmatic concerns of shelter and pedestrian life. As if identifying the revolutionary upheaval in both politics and the new vastness of scale that the era required, Boutwell and Mitchell

write of their project that '... the first essential is planning on a national scale. Leaving parochially minded regional administrators to envisage the future is disastrous'.²

Similar in its desire to accommodate a dramatically revised concept of architectural distance, if not quite as ambitious in the literal scope of its actual reach, is the Lower Manhattan Expressway proposal by Paul Rudolph, completed in 1967. In this project Rudolph proposes the full integration of the developing highway transportation system with a linear, but pragmatic system of residential, commercial and other more common programs. Rudolph's specific problem, as outlined by the Ford Foundation, the sponsor of the speculative project, was to reconcile existing urban environments with those produced by such new infrastructural routes, and in particular, a section of Lower Manhattan. Rudolph's solution was to sectionally encapsulate the linear infrastructure in a dense but tectonically rational aggregation of prefabricated concrete units that stack and hang to varying heights. The density of this repeatable linear system was modulated by adjusting the relative heights of the programmed areas – and thereby allowing for the integration of the necessities of human living across vast distances, yet still providing a mechanism by which the system could address the physical contexts of surrounding urban environments through which the programmed line might pass. Rudolph's early sketches and final inked perspectives of the project suggest the system's ability to reconcile a new vastness of distance with carefully tailored domestic scale of occupation. The living areas that Rudolph proposes, while radical, are above all, believable – illustrating the



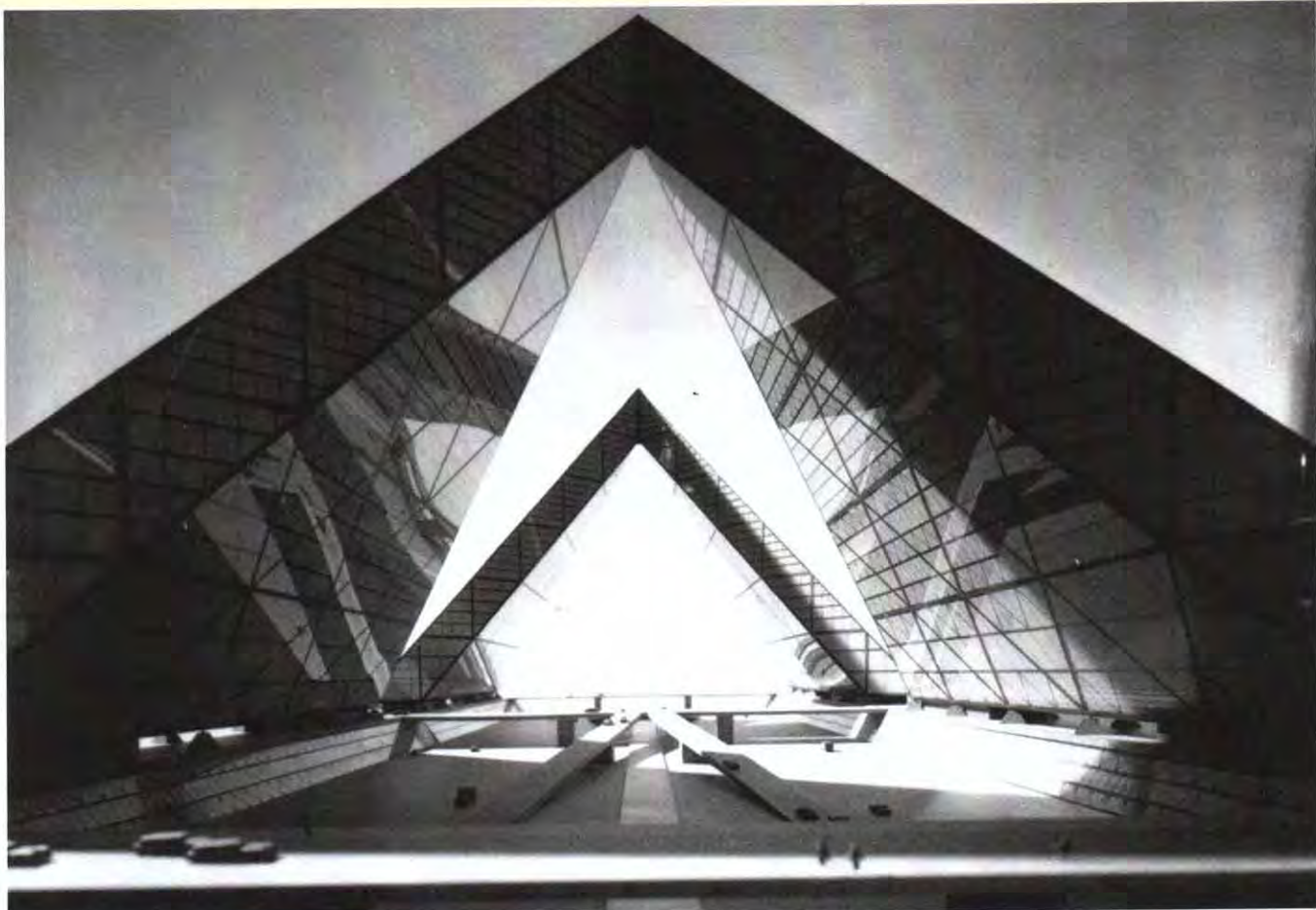
Lower Manhattan Expressway Proposal, Paul Rudolph, hand sketch, 1967.

more pragmatic vein of thought which comes to define many of the linear proposals by American architects. While never built, the Lower Manhattan Expressway Proposal, as described by Tony Monk, 'exerted considerable influence on the design ideas both at the time and subsequently'.³

One example of such influence, or at least a significant dialogue, is a nearly simultaneous project developed by Stanley Tigerman. Through receiving both his Bachelor's and Master's degree's under the Deanship of Paul Rudolph at the Yale School of Architecture, and simultaneously working in Rudolph's New Haven office as a draftsman from 1959–1961, it is clear that the two architects were operating with similar sensibilities. Perhaps the purest reflection of the adoption of a new conceptual model for a linear American experimental architecture is Tigerman's Instant City project (1965–66), which, while even formally similar to Rudolph's project through a repetitive pyramidal massing, operates on a significantly greater scale both locally and globally. Tigerman's project, in fact, actually proposes a limitlessness of distance which, when writing regarding this project he describes as an 'infinite series of semi-pyramidal structures'. Tigerman's Instant City project proposes an endlessly connected series of these partial pyramids covering a linear transportation infrastructure. Unlike Rudolph's, the Tigerman proposal offers independent segments in the scheme allowing for superscalar openings that relieve the automobile from the extruded tunneling found in Rudolph's proposal. In doing so Tigerman suggests a system that accommodates human habitation,

but not at the expense of providing the automobile with a spatial experience of its own. As the model photographs suggest, Tigerman was as concerned with providing not only the ability to cover vast distances, but the mechanism by which vastness could be experienced as an interior automobile environment. The pyramids are sized to allow for standard living, retail and parking floorplates on escalating levels, and was structured in collaboration with Fazlur Kahn, who's signature diagonal signature is evident on the tilted and tapering facades. Tigerman followed this proposal with related projects that even further exploit the concept of the sitelessness and limitlessness, as is case of the Urban Matrix in Chicago (1967–68). The Matrix project breaks the confines of even the requirements for land and floats off the shoreline of urban Chicago. The last of Tigerman's mega-structural projects was the proposal for the Kingdom of Atlantis in the Bahamas from 1970. The structure, entirely separated from land, becomes a floating, autonomous architectural mass – mobile and untethered from the limitations of ground completely. When describing this period of architecture, only as it existed in America, Tigerman says simply, 'All these huge things that were going on in the late sixties, in America alone, were wild'.⁴

Developed during the same year as Stanley Tigerman's Instant City project, John Johansen, also a professor at Yale from 1955–1960 during the reign of Rudolph and appearance of Tigerman, in his Leapfrog City project proposed a similarly limitless building system. Yet another related scheme, by Hardy Holzman Pfeiffer Associates shortly thereafter in 1968, was



Instant City, Perspective, Stanley Tigerman, 1965-66.

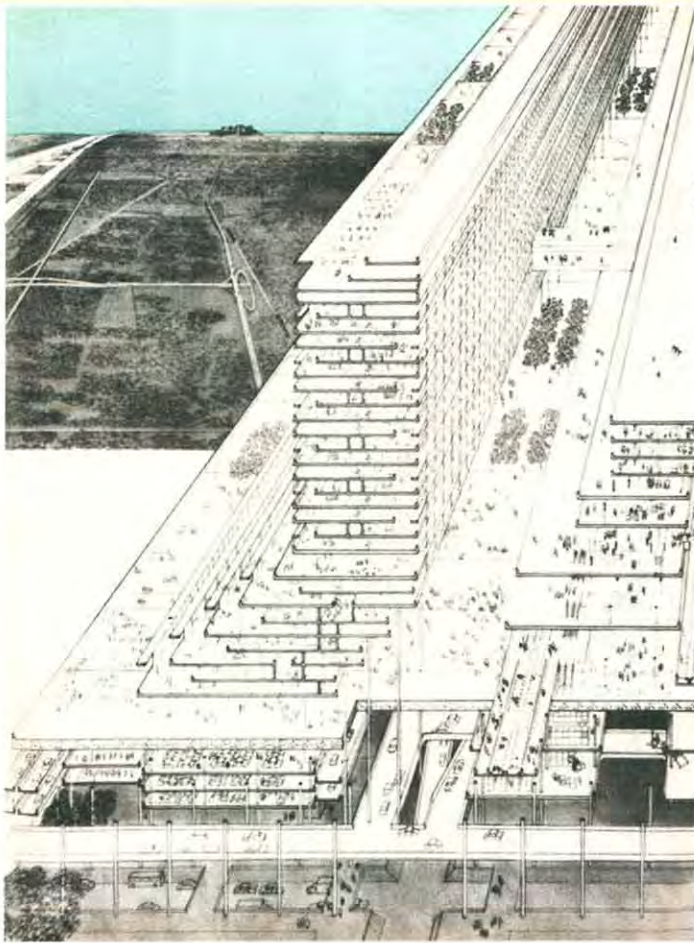
likewise proposed in their Community Center as a Straddle Structure in Brooklyn. Both projects combined the space-age technical ambitions of the European megastructural proposals with the spatial vastness of the American psyche by proposing massively elevated, mechanically articulated interlocking platforms. Echoing the stilted stability of Archigram's Walking Cities, these projects offer a similar infinite possibility of development, not through physical motion, but through a context-sensitive ability to levitate above, wrap around, dodge and weave around existing conditions in a complex urban dance with the spatial constructs of the existing historic city. Johansen, in describing this Leapfrog City using the pragmatic American attitude credits a previous proposal by Yona Friedman, and writes 'I harbour the conceit that Leapfrog City goes further as a realistic study in structures and building processes (than Yona Friedman)'. He continues that 'This building system was envisaged to extend itself, even leap across rivers...'¹⁵

Another significant experiment from this year, 1966, was for the *Life* Magazine article 'The U.S. City: It's Greatness is at Stake', submitted by then unknown Princeton professors Peter Eisenman and Michael Graves. Simultaneously reflecting the infinite linear sentiments of Tigerman, and anticipating the more developed Manhattan project proposed by Rudolph the following year, the Eisenman and Graves Jersey Corridor Project was a twenty mile long structure of two parallel bars connected by bridges: one for industry and the other, reflecting, again, Tigerman's ambitions of an infinite architecture, in what Graves and Eisenman describe

as 'a nearly endless "downtown" of homes, shops, services'.¹⁶ The Graves and Eisenman proposal represents the full transformation of what would previously have been called urbanism into a continuous, limitless architecture that manages vast distances through a marriage of infrastructure, transportation and program. Unlike any other such proposal, their scheme is not segmented into repeatable structures, but is instead a single, undifferentiated architectural extrusion, and offers a full conceptual overturning of architecture as a single building in favor of a new concept of limitless linear urbanism.

While the concept of extended urbanism had existed prior to the years in question, in projects ranging from those of Arturo Soria y Mata's Madrid Tramline project (1882), to Le Corbusier ambitions for Algiers (1930), never before had such projects suggested the possibility of an architectural infinite, or conceptualized an extruded linear vastness in such a provocative and totalizing manner. In an era defined by distance, American architectural experimentation wholly absorbed the ambitions previously held by urbanism and infrastructural design. In doing so, architecture rewrote its historic position as the end-points of a system connected by infrastructure, and became the connecting apparatus itself.


It was a unique moment in American architecture that saw the American Interstate system and the burgeoning reliance on the automobile collide with new conceptual measures of the space race. These congealed in a very short period of time to produce among the most dramatic architectural proposals of the twentieth century – from which we still have much to learn. For



Jersey Corridor Project, Peter Eisenman and Michael Graves, 1966.

too long has our own architecture been subject to the economic efficiencies of being defined merely by the program it contains, or judged by the smallness of its footprint, carbon or otherwise, and so, perhaps now is exactly another such time in our history when circumstances allow for, and even prompt, a radical rethinking of not only what architecture is and can be, but how it can address concerns larger than building, more inspiring than base urbanism, and can begin to once again revel in the Dionysian territories of unbridled disciplinary ambition, propositions of the epic, and the emergence of a new era of technologically speculative architectural ingenuity.

- 1 Robert A. M. Stern, *New Directions in American Architecture* (New York: G. Braziller 1977), p. 107.
- 2 Boutwell Alan, and Mitchell Michael, 'Planning on a National Scale', *Domus* 1, Jan. 1969, pp. 2–5.
- 3 Tony Monk, *The Art and Architecture of Paul Rudolph* (Chichester, West Sussex: Wiley-Academy 1999), p. 72.
- 4 Betty Blum, 'Interview with Stanley Tigerman', (Interview by Betty Blum) August 10–14, 1998, Stanley Tigerman's office, Chicago, Illinois.
- 5 John Johansen, *John M. Johansen: A Life in the Continuum of Modern Architecture* (Bergamo: L'Arca Edizioni 1995), p. 93.
- 6 Karrie Jacobs, 'Linear City', *Dwell* 10 June 2010, p. 112.



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