Cloud Colonies: Electronic Urbanism and Takes Zenetos' City of the Future in the 1960s

The view of the whole earth in the late 1960s may be held accountable for a collective feeling of anxiety in cultural imagination, and for several fictional escapist projects sprawling vertically away from the earth. These cloud colonies, which were portrayed as congenial places in unbreathable atmospheres, were mostly a reflexive reaction to increasing uncertainties about the continuation of life on earth. It remains a fact that by the middle of the 1960s, there was no unified vision of what the city was or what a city should be. Instead, the city was replaced by a collection of fantasies reinvented from scratch, and living experiments in the planet's leftover and/or outer space. What was even more compelling to witness, in retrospect, is that this reinvention of urban life was accompanied by a reinvention of human communication relationships, which were imagined to exist only virtually, in bodily isolation. In these new cities, or "no cities" as *Science* magazine called them, people could live in their individual electronically equipped containers, physically spread out in a vast non-cohesive space. This fictional and frightening prediction for the time in many respects evokes very real developments which have taken place over the past decades.

LYDIA KALLIPOLITI
Syracuse University

In February 1972, *Science* magazine featured in capital letters: "Why cannot people live wherever they wish and congregate electronically?"[1] The editorial entitled "Old Cities, New Cities, No Cities" commented on the wonders of automation that had infiltrated design thinking, especially in relevance to alleviating the chaotic and amorphous expansion of cities.[2] The early 1960s witnessed several research programs on the transference of control principles in electromechanical systems to urban growth, as well as the implications of newly invented hardware technologies for the evolution of urban structure and daily life. Jay W. Forrester's theory on the growth and decay of cities (Urban Dynamics), Richard Meier's Communications Theory of Urban Growth, and other studies, were all grounded on Claude Shannon's communication theory, pledging that information transmitters would advance a new course of metropolitan developments, minimizing distances and radically influencing the planning of urban tertiary nuclei.[3] Meier

even ideated future traffic to cluster around immaterial airflow electromagnetic channels instead of highways. The central question these publications raised was how electronic devices and hardware developments would physically affect the urban corporeal body.

Such questions were largely addressed by science fiction writers, especially by the nearly contemporaneous novels of Isaac Asimov. In Asimov's *The Naked Sun* of 1957, the earth became a deserted, rough and forbidden field, inappropriate for habitation. The inhabitants' worst fear was their exposure to the natural elements, namely, the naked sun.[4] While the structure of the city precluded direct contact between people, holographic projections enabled communication. Asimov's novels narrated, in many respects, society's function to physically manufacture an urbanity of isolation. Individuals, if equipped with media structures, could be disconnected away from each other as corporeal bodies, as long as they were electronically connected to a centralized control system.

In the trajectory of the megastructure project, between an attitude of enthusiasm and gloom, one may position "Electronic Urbanism and the City of the Future." It was a gargantuan project by the Greek architect and cybernetician Takes Zenetos (1926-1977) that was officially completed between 1952 and 1962, but in reality was carried on and altered until the year of his suicide in 1977.[5] The project is gargantuan in the sense that it delivered a highly composite total vision for an ecological future city that would be detached from the ground as a cloud colony. Electronic Urbanism proposed design solutions spanning from the distinct formation of satellite cities, in particular air zones above the oceans, to specially insulated uniforms with interactive pneumatics and earplugs that its inhabitants would wear in order to form their space (Figure 1).

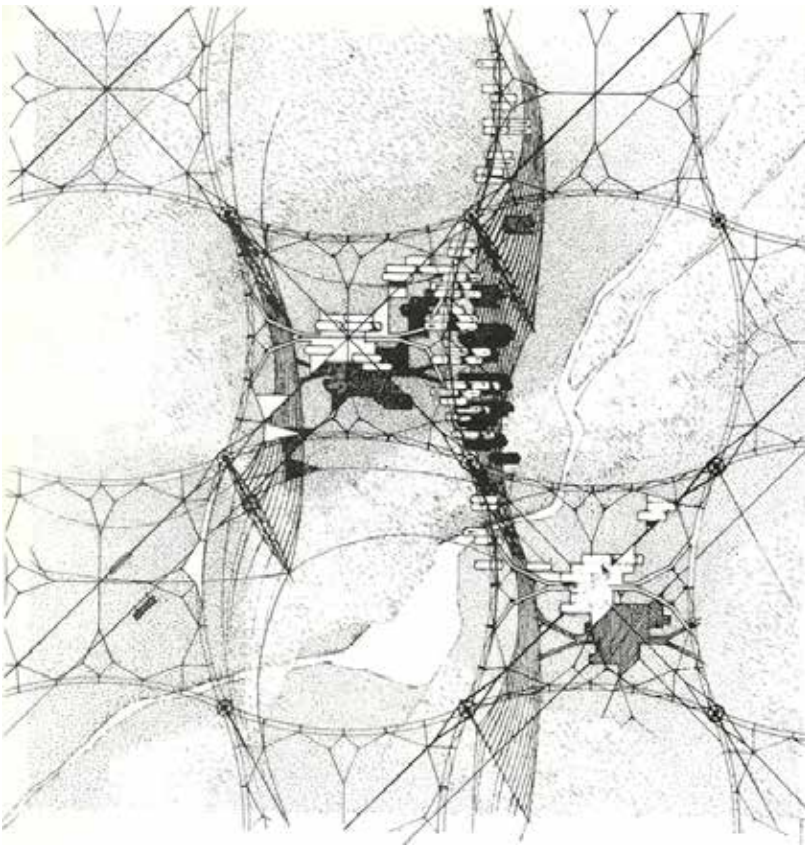


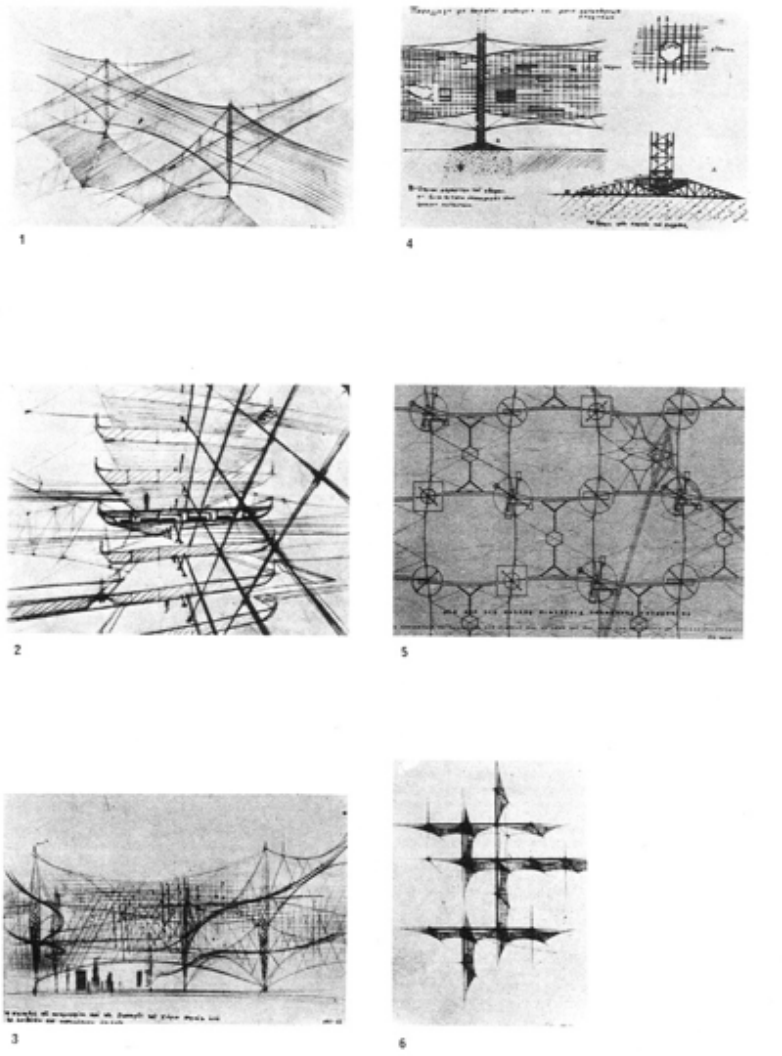
Figure 1: Zenetos' sketch-drawing for a wire web to expand over the planet. In Takes Ch. Zenetos, Urbanisme Electronique & Parallel Structures (Athens: Architecture in Greece (Special Edition, 1969).

1

Zenetos developed initial schemes for Electronic Urbanism as early as the 1950s, parallel to Joe Colombo's scheme for a multileveled "Nuclear City" removed from terrestrial life in 1952. At the start of the project, Zenetos claimed that new cities were by default doomed, because their planning is based on existing systems of tertiary production sprawling across the surface of the earth.[6] He repeatedly warned his readers that if humanity continued with the same rhythm the careless and relentless expansion congestion of cities, not only we would need to use up all the space left on the planet, but also fabricate our own oxygen. Electronic Urbanism proposed the "building of the atmosphere" in a future vertical city that would abolish the problem of land ownership.[7] Vertical sprawl and electronic communication devices were assumed to provide a route out of the impasse.

Zenetos' project is directly linked with the lineage of the suspended megastructure project: Yona Friedman's contemporaneous utopian project for a Parallel City above Paris, as well as Archigram's Plug-In City and Constant's New Babylon.[8] However, despite these typological associations, "Electronic Urbanism" deviates from the utopian project in many ways. If one considers Archigram's invocation of "fun" as a crucial endowment of their structures, McHale's demographical statistics on the politics of excretion or Friedman's systematic housing solutions that would efficiently allocate world resources, Zenetos' city ties up its inhabitants to floating chairs, where the body is immobilized in a state of inertia and the city exists in a state of oblivion to anything other than itself. "Electronic Urbanism" renders a much more convoluted and distressing vision in its dramatic search for a "home" that was nowhere to be found in the psychological turmoil of the atomic age and the space race. "Man desires, and has a right to acquire, a 'home' in a quiet environment close to nature and at proximity to his place for work and the various public services."[9] In such naïve statements, spoken in the shadow of NASA's high-tech accomplishments, one may glimpse a deep-seated sadness reflecting the architect's disappointment about a failed ecological future, which presaged Zenetos' own suicide. During Zenetos' work on the project during the next twenty-plus years, "Electronic Urbanism" attained additional features other than hovering above Athens and other global regions. It also became mentally detached, leaving the formation of space to the mind that would inform and remold space through its neural systems. In Zenetos' late writings on the ultimate future, communication devices would replace transportation, while the mind would control and direct signal transmissions.

Evidently, the project was not only foreseen as an artistic contribution to experimental architecture, but as a new social vision promising to unearth and re-synthesize the practices of everyday life, through the use of electronic communication systems and the processing and transmission of information. With message transmissions delegated exclusively to automatic equipment, Zenetos conjectured a "boneless" re-organization of urban form by removing all transportation infrastructures; people would accordingly reinvent their lifestyle and recover precious leisure time.[10] No roads, but an all-expansive, flexible, wire spider web in tension assumed responsibility for both suspending decentralized social clusters and channeling messages from one cluster to the other.[11] In this sense, the wire web was designed to be both structurally and electronically functional, establishing a direct transference of communication theory and message transmissions to the actual development of urban prototypes.[12, 13] Even the selection of wire as the building material for the city's structural armature is possibly extracted from telephone lines, while in parallel it visually materializes signal transmissions along the lines of Shannon's research at Bell Telephone Laboratories (Figure 2).



2

The spider web that Zenetos designed for "Electronic Urbanism" established a new foundational terrain as a protective device to ensure no contact with the existing urban condition. One cannot observe a single hint of a map or context in any of the architect's drawings. Leaving nature intact became an obsessive mark of "Electronic Urbanism" to the degree that it embodied almost the single habitation format of the earth's surface for the future. The only allusion of the City of the Future to the lower ground levels was geometric; it was related to the abstract shape of the globe, the sphere. Consequently, all structures were illustrated slightly curved in an effort to accommodate the figure of the sphere and adapt to its round geometry. Countless arrays of drawings from the scale of a construction detail to the scale of a satellite urban cluster evidently depict this unique roundness of Zenetos' floating future city. Many systems were, moreover, three-dimensionally curved in different axes: both in plan and in section, partially duplicating spherical features in distant earth layers.

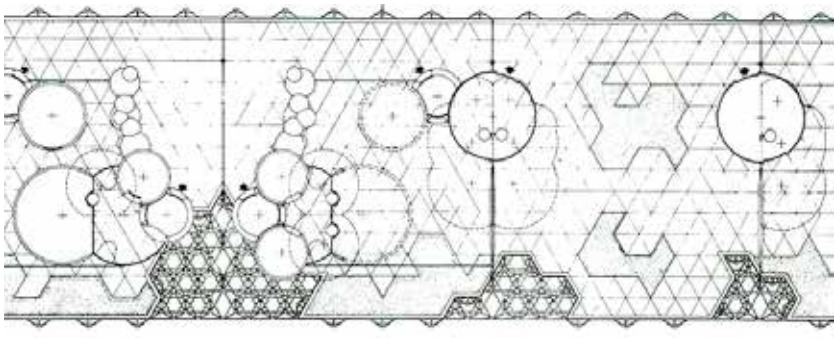
Figure 2: Sketches of Zenetos' wire web system.

In Takes Ch. Zenetos, Urbanisme Electronique & Parallel Structures (Athens: Architecture in Greece (Special Edition, 1969).

As a whole, the City of the Future was conceived as a round, indeterminate, spherified field. It was oblivious to its underlying layers, in view of the fact that the city did not come into contact with any reality other than itself and the

internal-to-the-system relationships between its parts. In this sense, the City of the Future was a closed system or a self-referential machine.

"Electronic Urbanism" was formed by individual living units, spread in an extensive infrastructural field (Figure 3). The whole system was equivalent to an artificial planet that instituted a new spatial and living order in the expanded marginal space of the earth: a system made of subsystems, etc. Zenetos argued that topological connections between parts of a system could not be sufficiently surmised in a two-dimensional network of points that depicts mono-dimensional connections. Instead, it was in cross-links, and, more precisely, in cross-scalar connections, that a theory of space could embark on the articulation of multi-dimensional complexity. In many ways, it can be argued that "Electronic Urbanism" visualizes systems theory. It becomes its mirror image, representing the nonfigurative operations of systemic thinking.



3

Moreover, because of its extensive duration, "Electronic Urbanism" grew in time parallel to the growth of cybernetic theories as they gradually reoriented from teleological conjectures in rockets' itineraries to approach the obscure density of the universe and living systems. The evolutionary trajectories of the two discourses were quite synchronized. With the passage of time, Zenetos inflated the City of the Future to an interplanetary organism that could capture the immensity of the cosmos and eventually dissolved it in electromagnetic information fields.

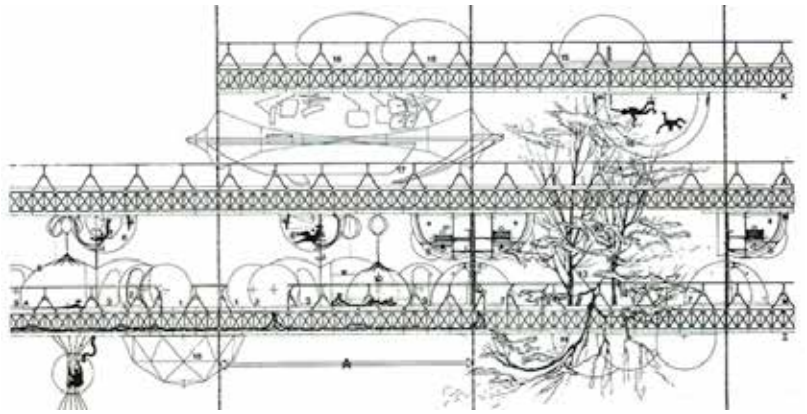
PODS, BUBBLES AND BODILY ATROPHY

Zenetos' City of the Future proposed individual domed pod containers, like bubbles distributed along the infrastructural web field. The closed nature of energy regeneration extended to the isolated lifestyle of the individual enclosed inside the living pod, which was environmentally secluded from its surroundings. As AD's technical editor, Robin Middleton, reported in John McHale's "Outer Space" issue in 1967, the oxygen-regenerative space capsule might become our image of the ideal living environment, with a constant flow of clean air. Research on the maintenance of oxygen supply, free from carbon dioxide and moisture, might impel us to combat more effectively the dangers of air pollution and contamination.[14] In this issue, McHale envisioned that bodily prosthetics would become prerequisite devices for future human survival; in consequence, the habitation pod, compared to the space vehicle, was the extension of a body prosthetic, a sequestering device to guarantee survival. The living pod was in fact not a type of collective space, but a personal space that channeled a primitive survival fear into the reproduction of a womb space, like the amniotic space of the belly. A similar condition of regression into "intrauterine environments" as a possible model for future architectures was invoked in the architectural discourses of the Surrealists in the 1930s, including the theories of Tristan Tzara.[15] For the individual's psychology, all these images signaled a biogenetic

Figure 3: Zenetos' plans for variable dwelling arrangements. In Takes Ch. Zenetos, "Town Planning and Electronics" in Architecture in Greece, Annual Review, No.8 (Athens: 1974).

rupture between the individual and its environment, recalled by all beings at moments of distress.

In support of the "intra-uterine" nature of the pods' environment, it is critical to observe that in Zenetos' City of the Future no man is walking erect (Figure 4). Although Zenetos' satellite cities aim to colonize the gravitational atmosphere, the mode of occupation illustrates exclusively zero-gravity conditions. Humans are depicted as floating figures, tied up to special body fasteners; all men are likewise encased in bubbles extended from floor and ceiling slabs. This premature state of the body, which is represented as hairless, enveloped by a slender membrane and incapable of carrying itself in space, is no accident. Instead, it exemplifies a deliberate decision to design a regressive corporeality in the City of the Future. In fact, Zenetos went as far as to excerpt and cite a detail from Jeronimus Bosch's "Pleasure Garden," depicting sensual body postures inside oversized wombs, and hanging people from Coney Island's "Parachute Jump," entitling their unfastened hovering as a new dimension for daily social life.[16]



4

Such soft, flaccid and passive bodies portray a new soma, which is designed as stripped off both plethoric physical functions – such as too much movement – as well as physical object-like extensions – such as clothing and other prosthetic accessories. To accomplish this inert and nude corporeality, Zenetos designed and manufactured in a 1/1 prototype, a special piece of furniture – the "posture chair" – which won him an honorable menti on in the "InterDesign 2000" international design competition, in October 1967. His one-sentence description for the project was: "A mobile spinal agent of the body for every use, equipped with a remote control for tele-activities and a control center for optical-acoustic contacts, which will aid in the execution of tele-activities (Figure 5)."[17]

The "posture chair" was intended to accommodate, as a duplicate body receptor, all human activities: sleep, repose, education, work, leisure, passive exercise and sexual intercourse.[18] As Zenetos describes, there was a dual set of operations for the chair. First, it provided additional levels of comfort for the body by adjusting to the slight movement of its members and limbs. The chair's adjustable mattress also contained massage vibrators, in order to provide comfort not only to the body's skeleton, but also to the muscular and nervous system in order to un-numb the body and "decrease the disadvantages of daily routine life of the men involved in tertiary production."[19] Second, the posture chair was equipped with a group of electromechanical devices for the control of temperature, sound and digital projections, all managed by a keyboard. Through this control processing system, the user would generate on the spot temporal immaterial

Figure 4: In Takes Ch. Zenetos, "Town Planning and Electronics" in Architecture in Greece, Annual Review, No.8 (Athens: 1974).

microenvironments in the form of desired microclimates, soundscapes and electronic digital displays. The posture chair was more than a mechanical second body. It expanded the repositioning of the skeleton to the repositioning of bodily matter and finally to immaterial senses. It was moreover designed to decentralize and distribute the body's surrounding environment to aggregate localized and variable microenvironments.

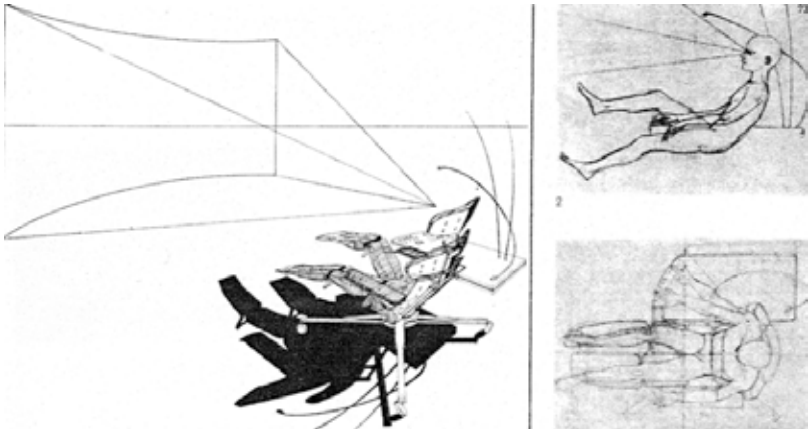


Figure 5: Zenetos' 1/1 drawings illustrating the electromechanical equipment attached to "posture chair" for digital projections and immaterial environements. In Takes Ch. Zenetos, "Furniture for Living and Working in the Year 2000" in Architecture in Greece, Annual Review, No.3 (Athens: 1969).

Although the "posture chair" operated along the lines of the body's extensive capabilities, it headed in a different direction. Zenetos was distinctly unsympathetic to the technological euphoria of prosthetic bodily devices and occasionally expressed his antipathy to robots. "Conventional robots, along with the intelligent machines of A. C. Clarke," Zenetos writes in his closing statement for Electronic Urbanism, "will be completely useless, because technological developments in the immaterial fields will proceed at a much faster pace and will be more effective than what we usually expect them to be."[20] It thus becomes clear that Zenetos' bodily device targets the extension of the mind and the senses, rather than the mechanical infrastructure of the corporeal body. As a matter of fact, the "posture chair" was designed to fasten and fix the body onto its moving platform and eventually immobilize it, even leading it to atrophy.

What mattered for Zenetos was the power of the brain to actively inform the environment and ultimately replace the keyboard. It was silently hoped, in this sense, that brainpower would become the ultimate computing device directly controlling the environment. The brain was conceptualized as an information processor and transmitter able to project, with the aid of hypersensitive receivers of electro-mental waves, instructions for spatial reform directly broadcast by the brain with no circuitry.[21] Therefore, the projective plan for the City of the Future was one of procedural dematerialization, where wave spectrums, magnetic fields and energy flows would replace wires and infrastructure. In hindsight, this forecast proves quite prophetic, considering today's ubiquity of wireless technologies in activities of daily life. Yet, more importantly, the whole vision of this city implodes the brain to a form of urban planning and literalizes its internal structure in material form. Mechanisms for the body on a small scale are parallel to large-scale infrastructural patterns and satellite cities. In this sense, "Electronic Urbanism" irrupts the micro-scale of the mind to the macro-scale of galaxies, constellations and the expanded space of the cosmos.

The City of the Future can partly be seen as an aspirational projection of a world based on potentiality and connectivity that was presumed possible with the

ENDNOTES

1. "Old Cities, New Cities, No Cities," editorial in Science, No.18 (February 1972).

2. As Richard Meier wrote in 1962: "The transfer of paperwork to the electronic instrumentation is called automation, and since 1955 when office automation was a curiosity discussed by the avant-garde, it has grown into a billion-dollar business that is still long in promises and a little shaky on performance but nevertheless expanding its capabilities at an extremely rapid rate." See Richard L. Meier, A Communications Theory of Urban Growth (Cambridge, Mass: M.I.T. Press, 1962): 139.3 For Shannon's Mathematical Theory of Communication, See The Mathematical Theory of Communication. Shannon, Claude E. "A Mathematical Theory of Communication." Bell System Technical Journal no. 27 (July & October, 1948): 379–423. See also Shannon, Claude, and Weaver Warren, The Mathematical Theory of Communication (Chicago: University of Illinois Press, 1971). For Urban Dynamics see Forrester, Jay W. Urban Dynamic, (Cambridge: MIT Press, 1969).

4. Isaac Asimov, The Naked Sun (Garden City, NY: Doubleday, 1957).

5. Takes Zenetos is one of the major representatives of modern architecture in postwar Greece. He was a gifted architect, whose legacy includes more than fifty buildings and numerous experimental research proposals. Zenetos was the president of the Architectural Organization of the Technical Chamber of Greece (1964-1967). He was also the recipient of the first prize in the international architectural competition for the Olympic city of Lebanon in collaboration with the team Migeon (1952), as well as an honorable mention in the international design competition "InterDesign 2000" for furniture of multiple uses.

   Zenetos was also a member of the International Cybernetic Association (Association International de Cybernetique). He was an avid reader of Norbert Wiener's writings and Science magazine, which he often cited in his Electronic Urbanism references. Additionally, his direct references to the space program and cybernetics are countless, including the latest developments of automation, ecological systems and transmission devices affecting urban growth. He attended many cybernetic conferences in Europe, such as the First International Congress of Cybernetics in London, 1969.

6. Takes Ch. Zenetos, Urbanisme Electronique & Parallel Structures (Athens: Architecture in Greece (Special Edition, 1969), 23.

7. Takes Ch. Zenetos, "Problems of Construction in Greece; The City of the Future" in Architecture in Greece, Annual Review, No.1 (Athens: 1967), 92.

8. The term "parallel city," which has been repeatedly used by Yona Friedman, was also used by Zenetos in an identical manner. In particular, his monograph publication that summarized Electronic Urbanism research was entitled Urbanisme Electronique & Parallel Structures. There are overt connections

between the two projects, emphasized by the fact that Zenetos lived and worked in Paris at the same time as Friedman. However, nowhere does Zenetos cite Yona Friedman or acknowledge connections to his work.

9. Takes Ch. Zenetos, "Town Planning and Electronics," in Architecture in Greece, Annual Review, No.7 (Athens: 1973), 113.

10. See Zenetos, "Town Planning and Electronics" in Architecture in Greece, 112. See also Meier, A Communications Theory of Urban Growth, 138, who characteristically notes: "The hugely increased volume of messages being transmitted requires that the simple tasks of sending and receiving be entrusted to automatic equipment and also that the key decisions, those which involve the possibility of disaster if a miscalculation were made, should be checked with a computer." See also Zenetos, "Telecommunications and Contemporary Means of Organization. The New Systemic Approach to the City, replacing old regulations. Flexible Planning," Proceedings of the Fifth PanHellenic Architectural Congress, 252.

11. The term "wire spider web" is Zenetos' own term, slightly paraphrased. He writes: "The proposed wired space-frame system, consisted out of cables in tension like the web of a spider, provides a solution for vertical development freeing earth space. It could contain vertical garden cities in combination with dense networks of advanced media of telecommunication and teleactivities." See Zenetos, "City and House of the Future," Economy Postman, 10.

12. The mathematical theory of the engineering aspects of communication was developed chiefly by Claude Shannon at the Bell Telephone Laboratories.

13. The beneficial structural capacities of the proposed wire system are outlined by Zenetos as follows: "The advantages of a cable system are the reduction of material and stresses to the absolute minimum, as well as the accession of great flexibility. Besides, the cable system allows for great spans and heights, in other words the construction of a three-dimensional suspended garden city above the oceans in satellite formations." See Zenetos, "Problems of Construction in Greece: The City of the Future," Architecture in Greece, 92.

14. See Robin Middleton, "Living," in Architectural Design (February 1967), 36.

15. Tristan Tzara introduced the term "intra-uterine architecture" to counter Le Corbusier's "machine for living" and Miesian rationalism. In Tristan Tzara, "D'un Certain Automatisme De Gout," Minotaure, No.9 (October 1936), 81–84. For an account of Tzara's intra-uterine architecture, see Anthony Vidler, "Homes for Cyborgs; Domestic Prosthesis from Salvador Dali to Diller and Scofidio," Ottagono, No.96 (1990), 37–55.

16. Zenetos, "Town Planning and Electronics," Architecture in Greece (1974), 128.

17. Zenetos, "City and House of the Future," Economy Postman, 12.

18. Ibid.

19. Ibid.

20. Zenetos, "Town Planning and Electronics," Architecture in Greece (1974), 125.

21. Zenetos, "City and House of the Future," Economy Postman (1972), 10.

emerging existence based increasingly on digital information. From this position we can begin to see flaws in the City of the Future comparable to the flaws of our own capitalist society; those delusions of efficiency, flexibility, ubiquitous access to information and totality. The City of the Future envisions a world entirely based on mediation; existences based entirely upon mediation between individuals and a mediated existence with nature. Forty years after, we can only claim that although communication technologies have radically unearthed our perception of distance and contact, the City of the Future, with its utter blunt belief in technological evolution as a tool for societal reform, would never become the city of the future that replaced and deleted the architecture of the past. But it did produce effects that have intrigued architects and designers ever since and a set of eerie images of our contemporary existence already seen and experienced like a déjà-vu.

The rise of ecological awareness in the 1960s and 1970s was manifest in big claims to change and salvage the world. The globe as the new stage set of design, as well as the manufactured environment – which evoked a measurable calculated ideology of performance – announced in many respects a new positivist ethos. What was somehow destabilizing, though, was the infinite and ungraspable space of the universe, which even though portrayed as a constitution of similar patterns found at a different cosmic scale, reflected our inability to mentally or physically cope with its vastness. This destabilization and the impossibility to conquer this vast space was deeply meaningful not only to the development of architectural discourse, but also to the development of human thought.