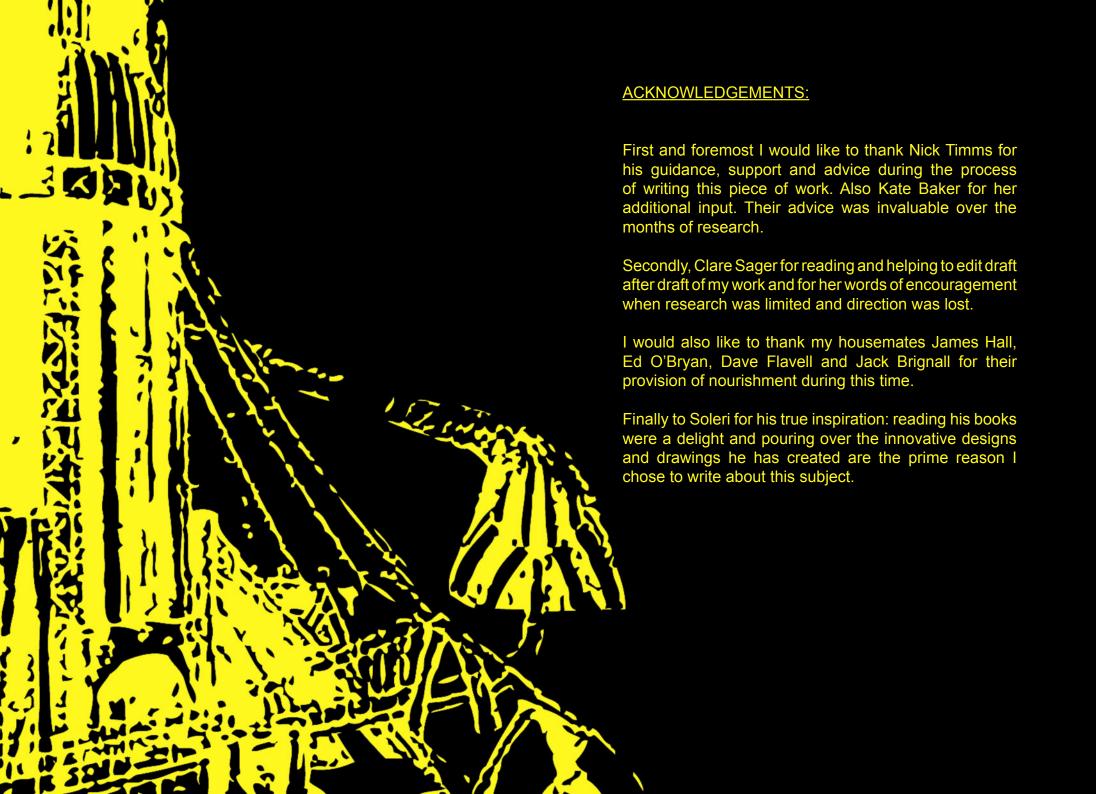


HYPER: a city in the image of man

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"If a street rises in height and detaches itself from the ground, it is because the street must overcome an obstacle. Rarely does it climb because it wants to reach a building or a space on the other side. And this changes everything. Normally streets and homes or buildings are two separate things. To understand today's city, one need only look at the blueprints for the buildings. That's not the case with Arcology...

...Since the surface of the earth is a two-dimensional configuration, the natural landscape is not the appropriate frame for the complex life of society. As a result, man must create a metropolitan landscape In his own image. It should not be a tenuous film of organic material, but an energetic lump that is physically compact, dense, and multilevel; it should be a solid of three compatible dimensions."

Paolo Soleri, 1996







INTRODUCTION

This quote by Paolo Soleri is an abstraction of a presentation made to the Hyper Building Research Committee in 1996; in this speech Soleri is attempting to explain some of his observations of the evolution of human society up until that point. He comments on the problems of designing in a two-dimensional fashion and notes that because this from of mono-planar design is so regular and recurring we need to justify rises in levels and elevations of elements of the city that are normally flat. Soleri also observes that the design itself is two-dimensional with little depth to the creation of structures and each evoking only a shallow emotion. He goes on to explain that the path forward in this evolution is a change in direction; to design in the image of man is the most logical and a more efficient way to cope with the problems we as a race must overcome. Soleri suggests that his concept of Arcology can provide the change in direction that architectural planning and construction should take; he presented his Hyper Building design as a solution to the problems caused my two-dimensional design and suburban sprawl. The design is the most recent development in Soleri's work on Arcology and it holds many answers to how the human race can make such a radical leap in a social, economic and structural existence and adapt to the changes that will come from it.

The term Arcology derives from the fusion - literally as well as grammatically - of Architecture and Ecology.¹ He believes that the only way to create for - and in the image of - humankind is primarily to discover a way to blend these two terms together. In his opinion, to understand both is the only true way a structure such as an Arcology will thrive. Soleri believes that the cities of today such as New York, London, Tokyo and even Dubai - a relatively new development - will not support the evolution of mankind in the future. The structures of these aities are haphazardly achieved while the individual facilities are the fruits of a rigid set of economic, technical, racial, religious, and status standards. Soleri states that:

"If one adds the incoherence of the logistical organization (communication, transportation, facilities) the picture is as gloomy or gloomier than the skies of our cities. There is no need here to demonstrate the necessity of bringing man into a far greater interplay with society than any of our cities can afford their stifled functionality"²

Soleri's philosophy of Arcology is one that has developed and evolved over decades, most likely starting when he parted company with Frank Lloyd Wright in 1949. It appears to have progressed whilst trying to comprehend the physicality of the schemes that he undertakes; he can then gain a greater understanding of how he should proceed. To identify with his ideas it will be necessary to look at some of his earlier works, to see each stage of progression. To better understand Soleri's schemes, this study will take a brief look at the projects that were designed pre-Hyper Building such as Mesa City, Hexahedron, Asteromo and also the work he has done to construct Arcosanti. Through analysis of the projects it is possible to understand the particular aesthetic that has evolved.

The design of each of these structures comes from a revised understanding of the contemporary city, the interactions we as human beings have with the city and also a much deeper evaluation of the evolution of man. Soleri states that

Stephen Sennott, *Encyclopealia of 20th Century Architecture* (Taylor & Francis, 2004),p.61.

Paolo Soleri, *A Bridge Between Matter and Spirit is Matter Becoming Spirit* (New York: Anchor Press/Doubleday, 1973), p.39.

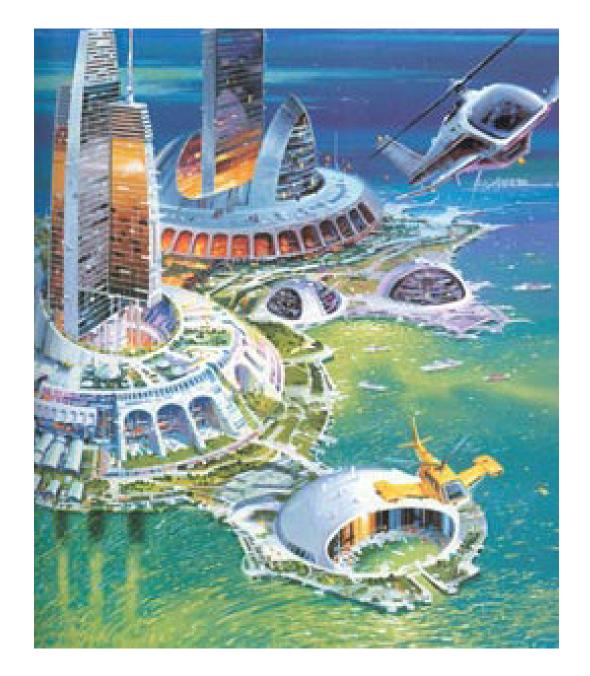






Figure 2 - Artists view of an Ocean Arcology

Left:

Top: Figure 3 - Model of Milennium Tower, Foster + Partners for Obayashi Corporation

Bottom: Figure 4 - Model of Ocean Island Two, Jean Philippe Zoppini



Figure 5 - Concept Drawing of City on the Sea, Eugene Tsui

it is only through re-assessing the evolution of man and discovering the path we have taken that we can make true progress in the future.³

The main body of this work is to understand Hyper Building itself. What made it Soleri's most promising project? Why was it designed the way it was? How was it to function on a grand scale, interacting with other cities or developing a new 'stand alone' city?

The philosophy - in Soleri's vision - is not a strict guideline that he must follow but a set of boundaries to be experimented with. The projects he undertakes are tests, attempts to develop and secure the theory of Arcology so that it can be used in the adapting climate of human evolution. Much like Ebenezer Howard's designs for 'Garden Cities' Arcology proposes an escape from overcrowding and poverty in industrial cities. Soleri perceives a solution to urban sprawl and the pollution of the atmosphere created by large and often over-expanded cities of the modern era.

Soleri's cities are designed with a greater sense of community in mind than that of the contemporary city, the life led by its inhabitants would be different from the interactions we have today. The cities are divided up into Sectors and within those would be groups such as Residential, Industrial, Commercial, and Leisure. Soleri admits this kind of architecture and inhabitation would ask for a new a sort of tolerance and perception by the residents. Each inhabitant of the city would need to support each other.⁴

People would have to work together to provide for each other. In theory this would provide for a perfect city, people would live amicably within their needs and no one would be impoverished.

Due to the sheer scale of the structures Soleri envisages, it would take a different approach to architecture to make them feasible; understanding the human psyche to make these structures desirable for human habitation is the prime goal of Arcology. Without this the schemes themselves could never function.

Although Soleri did not get a great deal of acknowledgement for the years of development in the field of Arcology his work did not go unnoticed. In 1996 Soleri was invited to take part in a competition held in Japan. This competition to create a structure that would be known as the Hyper Building was a chance for three architects to propose a city for the future; the city must be revolutionary in its function.⁵ Unlike the contemporary aties of today it would need to function as one unit, to be seen as a whole and work in the most efficient manner.

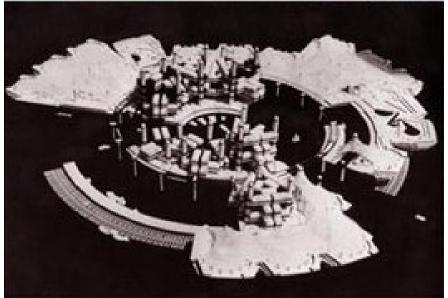
"The Hyper Building would be a project that could not exist in any form except as a culturally, historically and perhaps an evolutionarily important urban laboratory, otherwise the whole scheme would be open to debate and disillusionment. Furthermore, private ownership should not be a measure of its success, at least in the early stages of construction.⁶

3 3

- 3 Paolo Soleri, *The Omega Seed: An Eschatological Hypothesis* (New York: Anchor Press/Doubleday, 1981), p.15.
- 4 Paolo Soleri, Arcosanti: An Urban Laboratory? (Cosanti Press, 1983), p.80.
- 5 Paolo Soleri, Harry Rand & Ron Anastasia, What It? Collected Writings 1986-2000 (Berkeley Hills Books, 2002)p.234.
- 6 Paolo Soleri, *The Hyper Builaling Interim Synopsis* (Paper, June 1996.)







Left: Figure 6 - Concept Drawing of Aeropolis 2001, Obayashi Coporation

Top: Figure 7 - Model of Marine City, Kiyonori Kikutake

Bottom: Figure 8 - Hawaii Floating City



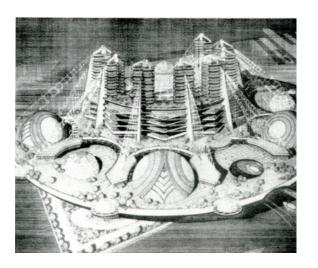


Top: Figure 9 - 3D Model of Technopols, Jean Philippe Zoppini Bottom: Figure 10 - Concept Drawing of X-Seed 4000, Shimizu Corporation

The same is true of Arcosanti, the development Soleri has been working on as an experiment and investigation into the true nature of Arcology and the principles behind all the other Arcologies that he has designed prior to Hyper Building.

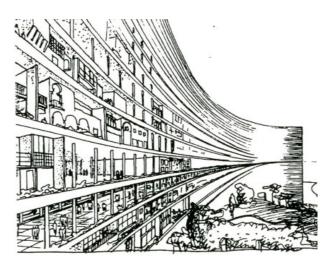
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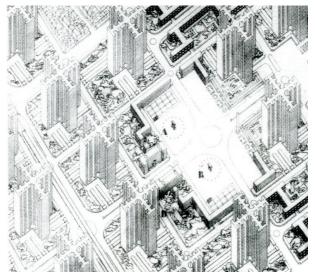






Top: Figure 11 - Residential Complex, Elis Island, New York, Frank Lloyd Wright Bottom: Figure 12 - Model of the plan for Algiers, Le Corbusier





Top: Figure 13 - Concept Drawing of the plan for Algiers, Le Corbusier Bottom: Figure 14 - Axonometric of the plan for Voisin, Le Corbusier



Contrary to the rudimentary understanding of the term Arcology – wherein it is percieved as a city within a megastructure – describing it as such would be doing the term a great injustice; the theory of Arcology runs much deeper than that. Soleri believes that discovering the harmony between architecture and ecology can bear the fruits of a type of structure that will truly connect with humankind. It is his belief that to gain a connection between man and building, we need to remove certain objects that we have become complacent with. We must look at areas of urban and city planning that have become mandatory and rethink them.¹

The Problems with the City

Firstly, vehicular transportation - although good when travelling over large distances such as city to city, within the city it causes separation and a broken sense of community. To think of a city in the third dimension brings with it the abolition of vehicular transportation that we have become so dependent on in the last century and brings back the traditional method of transportation: walking. No longer would people see traversing distances in miles and kilometres but in strides.

Secondly, Urban Sprawl - part of the western dream, a desire to own a piece of land is something that is considered a luxury and ultimately the dream of most people. However this only contributes to the consumption of land needed to help support the economies we as a race need so that we are able to sustain life. This is contrary to the ethos of Arcology. To spread flat across the land is wasteful and destructive because the process cannot evolve to protect land and stop the consumption of it. Soleri believes this process will only bring about an Eschatological state of human civilisation (the ultimate destiny of humanity). The three-dimensional city proposes a new way to resolve this issue and bring about a new solution to the growth of the human race.

Thirdly, the consumption of natural resources is the next area, a problem that is currently the largest concern facing the world. The theory of Arcology and the designs proposed by Soleri address this issue as a whole. It looks at the ways a city can produce its own sources of energy and reduce the need to consume the Earth's non-renewable resources by utilising the surrounding environment in the most efficient way possible. In practice this would involve harnessing the energy of the sun, wind, and water that is available and more importantly, recycling all forms of waste produced by the city.

A Deeper Insight

To look into Arcology as a concept more deeply we need to analyse this vision Soleri has. When we view architects like Soleri, Wright, Corbusier, and many others like them we see a consistency within their work. These architects each believe in a certain design philosophy, ideal or theory and by allowing flexibility within

7

Timothy W. Luke, *Ecoantique: Contesting the Politics of Nature, Economy, and Cultur*e (University of Minnesota Press, 1997)p.154

8 life is in the (qualified) thick of things.

ithe earth is a solid unapped by a semaitized shim. The semaitized shim is the aprend of variation and animal life covering its subject. In the sees such shim is truckened within the depth of the water's body.

I Them is the direct of appring of the seminative asim of the search. He is an hyper-semilified and vectorial bear of it. He, taked all remised on the vector which for autovirule the semination of the vector which for autovirule. If the vector is well as the production of the search is automorphism. The sendomical believes of the search is automorphism of the little as the search of the little as the litt

3. Both regatal and animal life we possible only within a condition of relative denseness. The degree of liveliness is perportional to the degree of compactiness of the organism. Turnity is inimised to life.

4 but the vegetal would the recessorily low natio of anaryay yield to veracioalled surface in the bouriest of greater compactiones and thus to the complexity of its life. The livetimess of the vegetal would in limited by the retension of its size and the dilution of its body.

n. In direct translation: The livelineas of morris would is himdered by the physical extension of his shelter and the spatial dilution of his institutions

s Compactness is the shucture of Afficiency Within compactness the energy flow is commensurate to the function that is being performed.

4. Richer is the life where greater is the complexity therefore, greater the mesal for smarry and thus greater the need for compactness (momediate relay).

7. Il man is not the invention of society, he is its liberator, form the prison of differentiation. With mars the social, experiment is mot soldly a downs to abide by (insects and other people human societies), but a creative force staking over greater individualisation. 3. The city is the container of manis social organism. It is the body of the social superorganism. It is where man makes history.

9. In the city post-determinism man constructs his highest approximation to plemitude, in a world totally unconceinable by the bee hive or the out hill

se li the city organism is to finerish, the centainer must be the most apt system to care for its life. It must allow for the quartest and freet flow of seneralise and things, for their south interaction, for the livelinese and thousands, such interactions poduce.

c. The city must then be predicated on compactness lack of compactness is lack of efficiency. I functionally weak explain is the wrat fundation for a complex society.

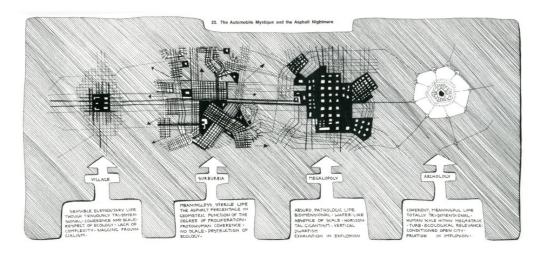
11. The compact city is a three-dimensional city. Its vertical dimension is congruous to its hausontal dimensions (cube aphene cylinder, tatrachedrom). The city must be a solid not a "aurales".

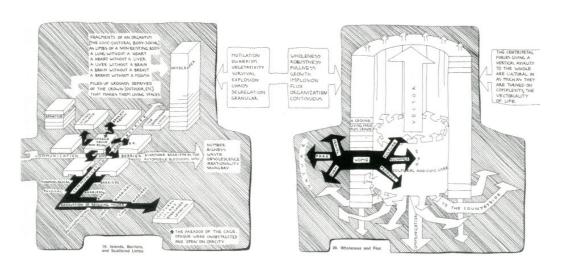
12. The three-dimensional city is neaperly of the surth's aemiclized skin it does not spread on increamic coust (megalopoby-ecomomopolissuburbia) over the vital green carpet of the earth. is the three dimensional city, because of its true efficiency (purpolity) is also respectful of the earth's kolorogical systems and its atmosphere. It does not pollute the earth.

ri. The three-dimensional city is respectful of man because it is the best instrument for a full private and social life. The three-dimensional city is an instrument of culture.

a lin the three-dimensional city, man defines a human scology. In it he is a 'country ducler and metropolitan man in one by it the inner and the outer one at "skin" distance. He has made the city in his our image.

archology: the city in the image of man.





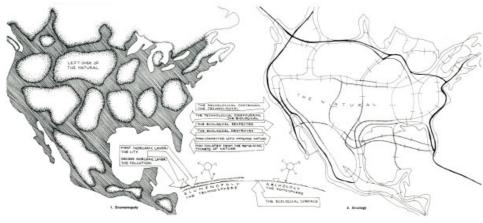
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Left: Figure 15 - Life is in the (qualified) thick of things

Top: Figure 16 - The Automobile Mystique and the Asphalt Nightmare, Architect: Paolo Soleri

Bottom: Figure 17 - Islands, Barriers and Scattered Limbs

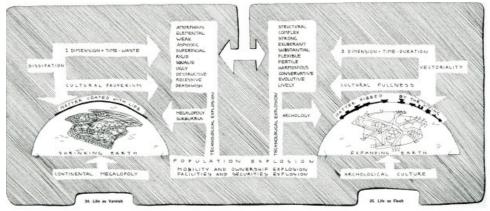
Figure 18 - Wholeness and Flux



those concepts they can strengthen and build upon the design principle. Soleri designs projects using a set of guidelines he feels best achieves the targets set for each individual project. Ideals and understanding of the original concept are not static, they change and evolve as the architect experiments and develops new ways to achieve their goals. Soleri's vision of what a city should be is one that has taken decades of experimentation and evaluation. It is also a journey that will have no end; with the development of new technology there are always new ways to achieve the goals that previously were unobtainable. Some of these developments would be necessary to achieve success in what he sees as the ultimate Arcology: a city completely self-sustainable and providing its own energy and resources from its immediate surroundings whilst recycling and reusing its waste.

Soleri's theories of new urban planning began shortly after completing an apprenticeship under Frank Lloyd Wright in 1949. Soleri moved to Vietri sul Mare on the Amalfi coast of Italy to learn the craft of ceramics. It was there that he was commissioned to design and build a large ceramics factory, 'Artistica Ceramica Solimene'.

However, in 1956 Soleri moved back to America and purchased land in Scottsdale, Arizona. This would later become the site of his most famous and lifelong project, Arcosanti. It could be said that this was the seed by which Arcology would grow; this was the pivotal point at which the design process spawned. Soleri's schemes up until this point had been small-scale environmental designs but from 1956 onwards Soleri's projects were predominantly in revolutionary urban planning.



Top: Figure 19 - Ecumenology-Arcology
Bottom: Figure 20 - Life as Varnish / Life as Flesh

Following Pages:

Figure 21 - Night View, Solimene Ceramics Factory, Vietri sul Mare Figure 22 - Street View, Solimene Ceramics Factory, Vietri sul Mare





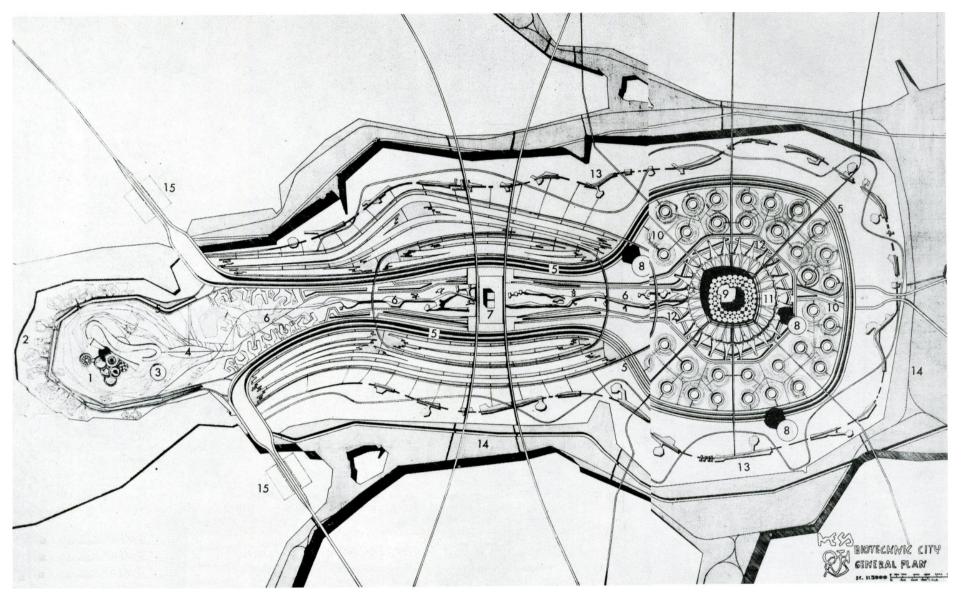
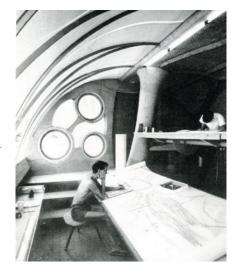


Figure 23 - Mesa City Plan

"Self-Sustainability is simply extravagant and devoid of sense. There is no way anything on Earth can be perfect because it is a small part of a much larger system."

Paolo Soleri, 1959

- 1. Theological and Philosophical Centre.
- 2. Village with living quaters for artists and artisans.
- 3. Umbrella structure for the outdoor events.
- 4. Parking lot.
- 5. Peripheral system of canals and motorways.
- 6. Axial Park, a man-made canyon running across the centre of Mesa City.
- 7. Administrative and Business Centre.
- 8. Service facilities at the Centre for Advanced Studies.
- 9. Centre for Advanced Studies.
- 10. Ring villages.
- 11. Pedestrian and cycling bridges.
- 12. House-laboratories.
- 13. Shops and used car lots.
- 14. Houses and workshops for artists and craftsmen.
- 15. Main gates.





Top: Figure 24 - Soleri designing Mesa City, Cosanti Studio Bottom: Figure 25 - Soleri surveying one of the Mesa City scrolls

The Mesa City Project

One of the first schemes that Soleri used as an expression of Arcology was also located in Arizona. The project was designed as part of the excavation of a quarry. The excavation would generate the city's structural and expressive axis: an expanse of approximately nine to twelve miles long of quarry/park/museum. During the process of excavation the void left would become transfigured. Soleri views the park as

"the final result of a process that goes through extraction, research, organisation and formation. The engineer, the geologist, the naturalist and the ecologist would all work together with the architect, the sculptor, the artist, the musician and the scholar to unite natural geology and manmade geology."²

Soleri gave the scheme its apt title 'Project Mesa: Quest for an environment in harmony with man'. Over a period of five years Soleri developed over a thousand feet of scrolls, each detailing various parts of the structures and landscape of this hypothetical city. The city was mapped out on an imaginary landscape approximately the size of Manhattan.

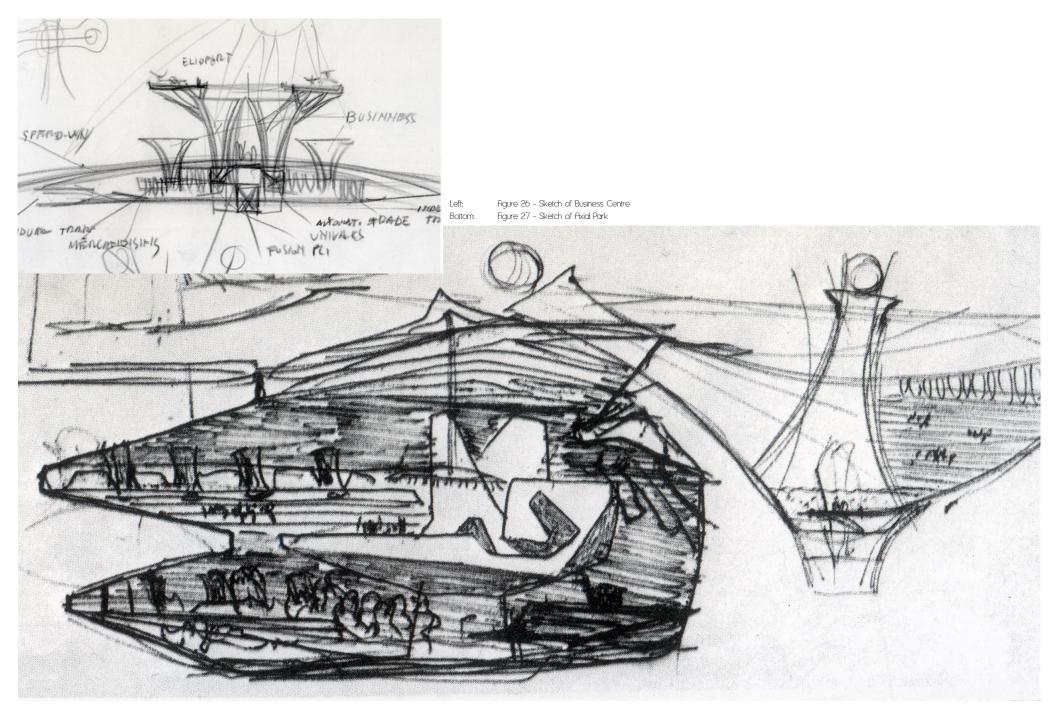
This settlement, which consists of two separate entities, is designed to be entirely dependent on the produce of traditional agricultural practices. In the Mesa City, food and radiant energy are produced within a south-facing greenhouse designed to support the city's population at a minimum level. Other products and services such as electricity from the main grid are imported from external resources to supplement those provided in this self-reliant base,³

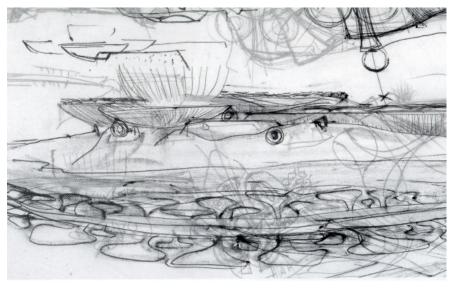
Mesa City aims for a degree of independence and sustainability rather than being wholly self-sufficient. Self-sustainable communities, which aim at total self-provision of food and energy and the complete recycling of wastes, are according to Soleri, extravagant and devoid of sense. There is no way anything on Earth can be perfect because it is a small part of a much larger system.⁴

In the North End of Mesa City the 'Theological Complex' is designed to foster a multi-religious dialogue; temples and monasteries to various religions are housed in six vast bowl-shaped structures that meet at a towering library/museum complex. At the edge of the mesa there is a series of market villages and on the opposite side of the complex the landscape descends into the canyon of the Axial Parks.

The second mass of structures is the 'High Learning Complex'. This is one of the most 'abstract' conceptions of the whole project. Many ideas used in other projects are incorporated here and are done so to the limit:

- The multiplication of grounds Soleri provided substantially larger areas of agricultural ground in
- 2 Paolo Soleri, *Visionary Cities* (New York: Praegar Publishers, 1971) p.47-48* double page spread
- K R Gupta, Prasenjit Maiti & Maria Anna Jankowska, *Glabal Environment: Arablems and Palaies* (Atlantic Publishers & Distributors, 2008) p.208
- 4 ibid







comparison to an equivalent urban metropolis.

- Addressing environmental issues of 'the city' addressing the problem areas in modern society and providing economical solutions for them. One such answer was the recycling of waste produced by a city of this population efficiently. A solution such as this can have a profound environmental impact.
- The study of 'the city' understanding the needs an urban development must fulfil by looking at previous examples and creating a structure of interaction that creates an efficiency and aesthetic quality that provides a desirable habitat.

In 2007 Manhattan was calculated to have a population of 1,620,867.⁵ This shows that with Mesa city Soleri was trying to achieve an environment of high-density habitation over 40 years ago that were advanced even by today's standards of green living. Mesa was the first step on Soleri's journey of experimentation and, as you will see in the following projects, of furthering his understanding of a new type of urban planning, constantly bring him closer to succeeding his vision of an idealistic Arcology.

The Mesa City was a result of a decade of study and experimentation on multiple interconnected concepts, including primarily the concerns of the Earth's ecology - the constant curiosity about human beings - and the idea that the city is the most aesthetic of all phenomena and can therefore only be generated through an act of creativity. Soleri accepted that the journey of discovery he was taking would have no end and allowed himself time to come up with both a concrete image and the best means to express it.

The innovative ideas at the centre of the design for Mesa City included the choice of the site — the arid highland — that would be crucial to the generation of a respect for the nature that the hard work needed to create the city would accomplish. This type of site would also dictate the autonomous nature of the city: near complete self-sustainability was paramount in this climate. The main source of energy would need to come from the environment — sun, wind, water and dams — but also the proper recycling of refuse and other waste products created. Other key factors of the Mesa City project included a ban on cars in the city and the surrounding towns and villages as well as automated services, thus enabling people to dedicate their free time to the arts. The city was conceived as a superior organism in which various organs would handle specific and complex functions: as a result it would have its own precise personality at the morphological and dimensional levels to fight the threat of atrophy and gigantism.

Top: Figure 28 - Sketch of Theological Centre Bottom: Figure 29 - Living quarters for artists and artisans

5 United States Census Bureau 2007



Left to Right: Figure 30 - Preparation of silt pile

Figure 32 - Plastic and grease-proof paper are added to obtain various textures

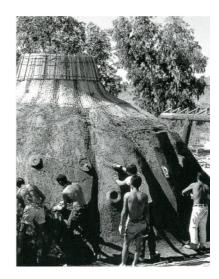


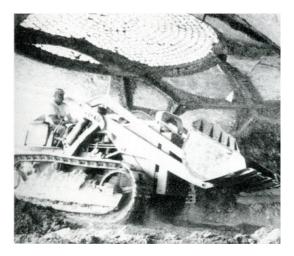
Figure 31 - Plastic accents made by incisions made in the silt pile





Left to Right: Figure 33 - Completed concrete casting Figure 34 - Removal of silt when concrete has set

Figure 35 - Interior view





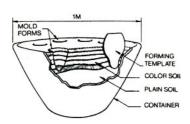






Figure 36 - Soleri working on the manufacture of the wind

Figure 37 - Ceramics manufacturing techniques

Figure 38 - Soleri removes the moulding case for the bells

Figure 39 - Soleri removes the moulding case for the bels

Cosanti and Arcosanti

In the spring of 1958 – around the same time as Mesa City was being designed – Soleri was also establishing the Cosanti Foundation; the word Cosanti supports Soleri's beliefs and attitude (Cosanti meaning anti-materialistic, originating from the Italian word 'cosa' meaning 'thing' with the suffix 'anti'), 'an operation that he still heads. He sought a way to claim autonomy whilst still expressing his inventive impulses. Using the large amounts of soil available on his land and concrete – materials that are both versatile and easily usable – he began to create. Soleri realised that learning by doing was something of a constant in his life as he investigated, tested, designed and built ceramic and bronze objects, including the wind bells that had earned him acknowledgement perhaps even before architecture had. It was on this exploratory basis that the Earth Houses that the Cosanti Foundation is now known for were developed.

Soleri refers to the transition from the small-scale (wind bells) to the larger scale (earth houses) as "simply a form of extrapolation, changing from fractions of square feet to many square feet and from liquid clay to concrete. That which had been a pot became a house."

These words and the understanding of creativity that Soleri is trying to achieve express an implementation of a concept also believed by William Morris who states that architecture draws from a conscious exploration of materials and a dialect with craft and that by working on something with mind and body you use the energies that will it into existence. Soleri's constant awareness of spatial design from the beginning of the project meant he often created the spaces with his own hands, step by step and in dialogue with nature itself. He created forms, cavities, grain, texture, colour, motor and tactile sensations for structural membranes. Like Gaudi, many of the structures created by Soleri can be represented in two-dimensional design that tackles expenses, suitability of the site and the relationship between the habitat and the earth used to create it.

The Earth Houses that he designed are not like underground homes but rather homes placed inside the ground, they still have light, air, atmosphere and sound. There is a synergy between nature and neo-nature. The few two-dimensional ideas that helped form the structures are only sketches in Soleri's sketchbooks, from there the designs were developed. The reasons for this are that it would be pointless to create a formal building plan as the spaces are carved from within and their foundations vary according to their function, making them works of architecture that depend not only on their materials but also on their form, shape and gesture. They combine expressionism and informalitu.

Soleri's techniques were free of any rationalist formula. For example, surfaces were treated coarsely and some items were left undefined, seemingly unfinished. He sees this as a way of showing that the earth has its own

⁶ Paolo Soleri, Scott M. Davis, *Paolo Soleri's Earth Casting: For Sculpture, Models, and Construction* (Peregrine Smith Books, 1984),p.107

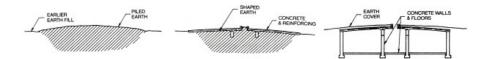
J. Cook, *Paolo Soleri* (Architectural Association Quarterly, 1969), p.20

Holbrook Jackson, William Morris: craftsman-socialist (A.C. Fifield, 1908),p.31



"It is a necessity to make the city package small enough so that both the man-made and the natural are at your disposal. There is a limit to the size of any organism, whether biological or para-biological. The city is no exception to this imperative."

Paolo Soleri, 1973





needs and must always be tamed from within, through actions that remain flexible and able to adapt to happy accidents.

Cosanti displays the kind of art that Soleri believes is the reason for the existence of the human race, as well as the starting point for man's transformation of the environment. This was clear in an essay he published in 1963, in which he discussed two related concepts: the need for prolonged and coherent thought in order to find ecological equilibrium for the environment and technology in the service of art. Machines could free man from his need and leave him time to focus on creative work.

This kind of work is made tangible in Cosanti's following architectural spaces:

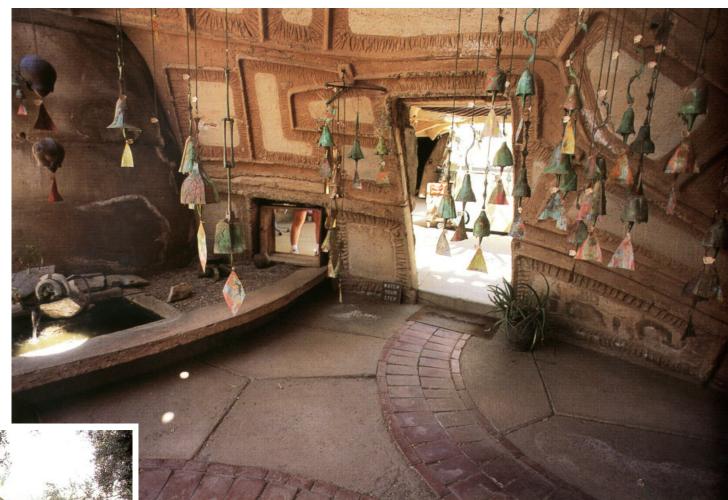
- Earth House spacially distributed around the plastic mass of a chimney, it receives natural light from the oblique cut of the skylight and by the glazed walls of the entryway divided by cartilage-like limbs that become movable shelves; an aesthetic quality that offers an adaptability in special comfort.
- Cat Cast a multileveled architectural promenade in the excavated space of the night area, a dormitory for Cosanti staff artisans. Open to the entire space, it subverts a sort of planning code based on the usual living plan for a house.
- North Studio An exhibition space for finished materials, excavated and cast by ossified structures that convey a sense of destabilisation (as in Gaudi's Colonia Güell). Here a skylight, broken up by ribs, brings daylight to the vibrant, plastic surfaces.
- North Apse this space gathers the walkways from the entrance and opens onto the Cosanti structure. Without breaking continuity, it passes from the enclosed spaces of the apse to the informal Ceramics Studio, covered by an unbalanced bonelike structure that connects to the office and branches out on the many-sided irregular South Courtyard Apse.

Facing Page: Figure 40 - Exterior view of Earth House, Arcosanti
Top: Figure 41 - Diagram of the construction of an earth house

Bottom: Figure 42 - Articulation of interior space within the Cat Cast, Arcosanti

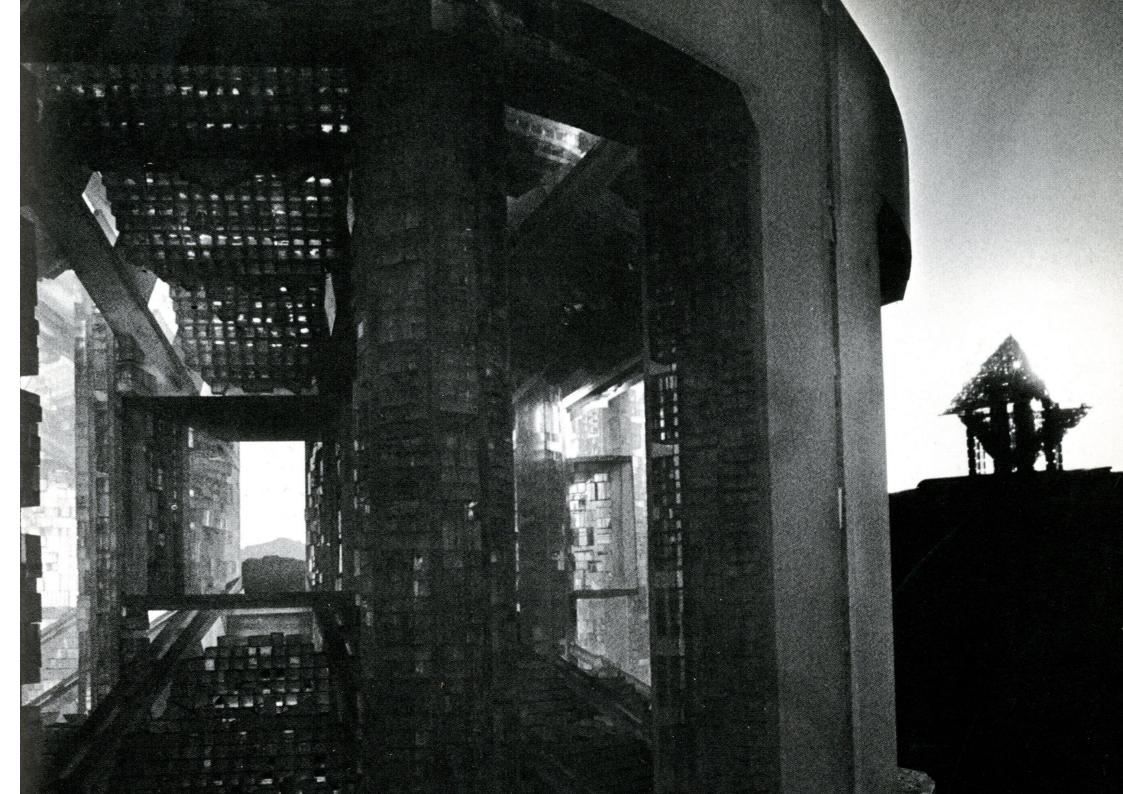
9 Paolo Soleri, How Things Look To Me (Paper Review, Spring, 1963), p.37

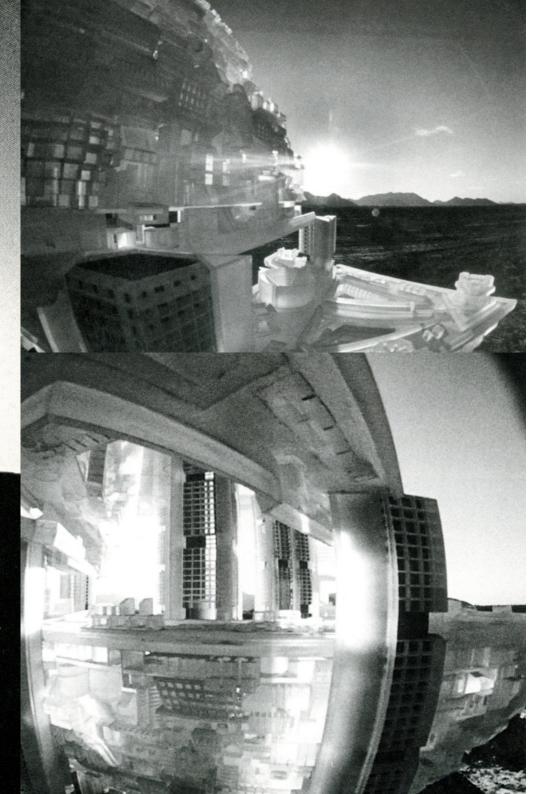




Facing Page: Figure 43 - Interior view of the North Studio, Arcosanti Top/Bottom: Figure 44-45 - Interior and exterior of the North Apse, Arcosanti







The Hexahedron City

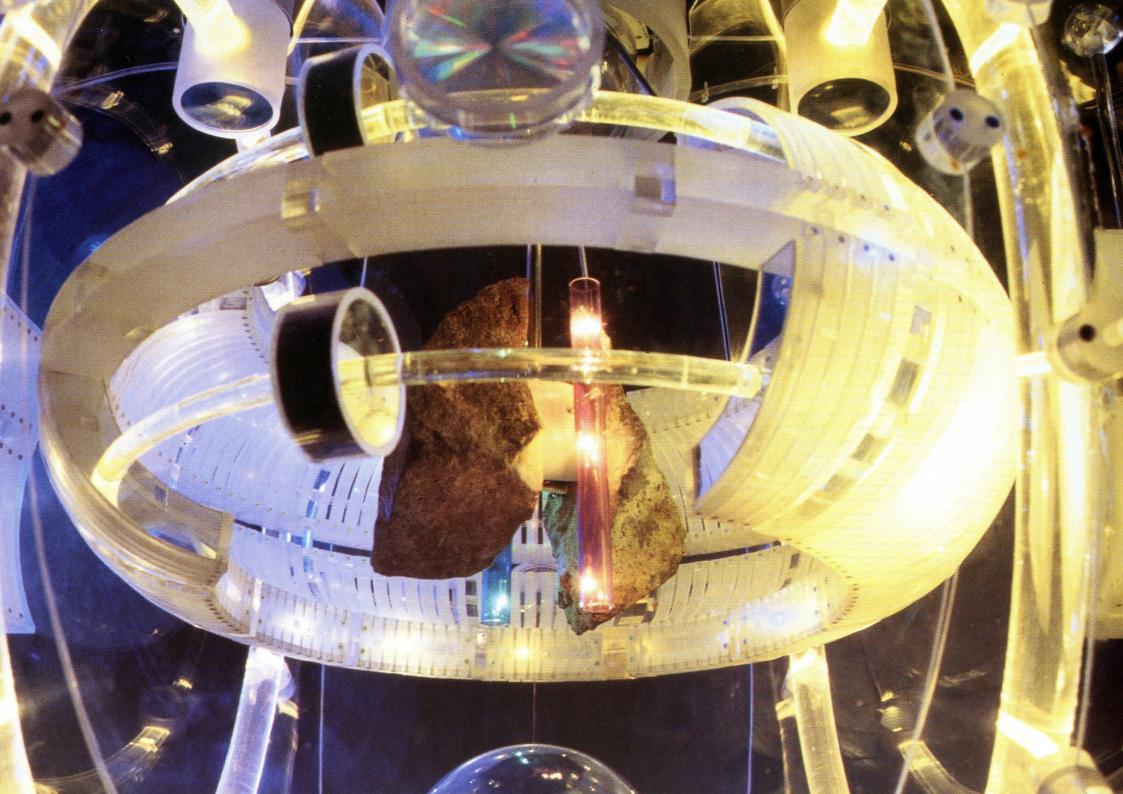
The next major city design Soleri created was during the mid-1960s and he called it the Hexahedron City. The Hexahedron City is one of the prime examples of Arcology. It is designed to hold 100,000 residents and standing at 3,000 feet this city becomes more of a mountain than a metropolis. The building is designed as two offset inverted pyramids. The pyramids, each being approximately one Empire State Building in height, would be encrusted with landscaping inside and out with allotments and within the skeletal structure would be buildings for various uses

This city provides something no mono-planar city ever could in terms of the cohesion of the city in its functionality.

As with the majority of Soleri's urban designs, accepting that no one city can be completely self-sustainable, he breaks down the elements for which a city can provide for itself. He looks at providing zones and habitats for agriculture and development. He also finds uses for the land that surrounds the structure. Hexahedron City has room to grow a large percentage of its own food on the building while the rest would be grown in fields surrounding the site; this space being the same space that would be taken up by buildings and residential estates — suburbia - in a contemporary mono-planar metropolis.¹⁰

Residents gaining access to the natural landscape surrounding the building is another issue confronted by Soleri and here each citizen is no more than a short walk and a vertical drop to the base.

Figure 46-48 - Photographs of the model of Hexahedron City



"On what can be defined as the threshold to the infinity of space, the human species is going to make momentous decisions. Some of them will be unconscious and irreversible, some will be conscious and crucial."

Paolo Soleri, 1973



Facing Page: Figure 49 - Model of Ovum 2, arcology in space

Above: Figure 50 - Plan of Asteromo

Asteromo and the Space Program

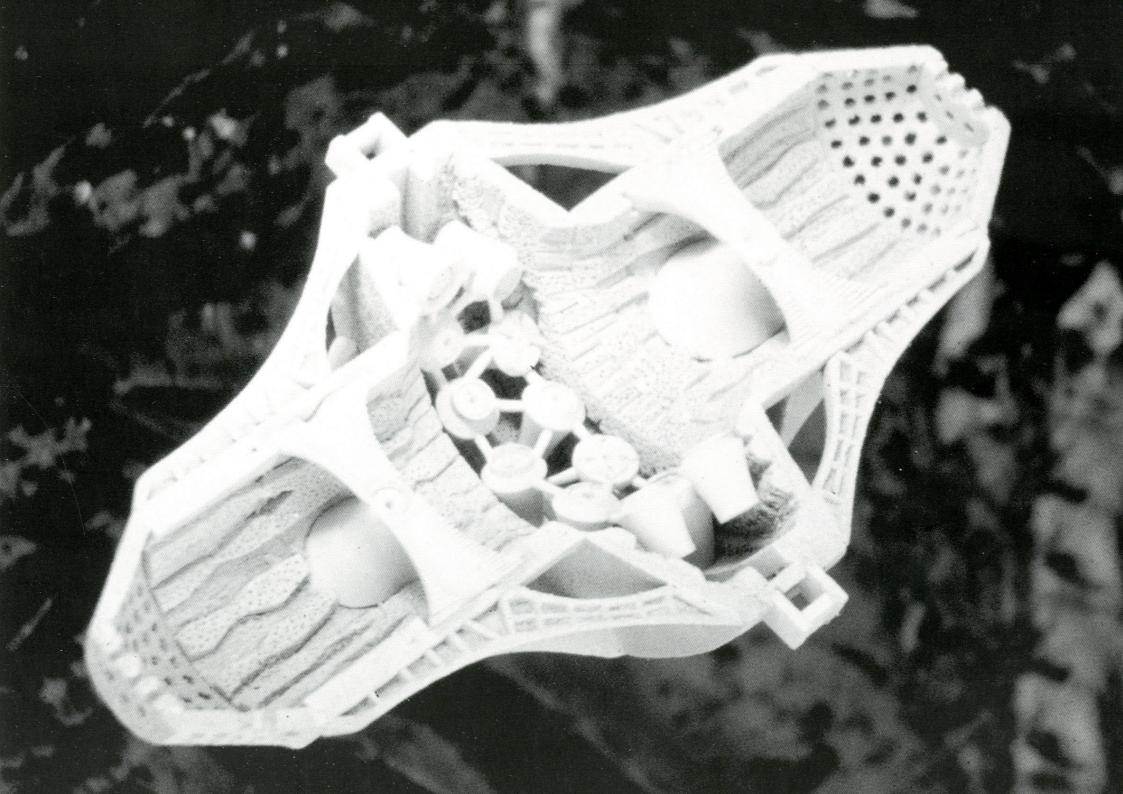
Venturing into space was a bold challenge Soleri had set himself, possibly the ultimate challenge he has faced. In 1966, NASA successfully made an unmanned soft landing on the Moon and following the hype many scientists began divulging into the possibility of space travel and people living in space. That same year Soleri began work on the Asteromo project. After deciding 8 years earlier that it would be extravagant and devoid of sense to create a self-sustaining community, he embarked on a project designed to sustain itself in space – a vacuum atmosphere incapable of sustaining life. He wanted to display the development and progression of the newest age of technology and the adaptations that he had implemented in his designs for an Arcology. The concept of Arcology is adaptable and as 'homo-carbonis' (man) develops the evolution of the 'homo-siliconis' (machine) more of the targets set by Soleri become achievable."

Asteromo was an adventurous experimental design that Soleri wanted to create as a test of his theories. A variation on his idea of Arcology, Soleri designed a structure that would have no external assistance; it would provide for itself and its inhabitants in every way. This unique design is an Asteroid for a population of about 70,000 people in an 'artificial ecology'. To briefly describe the design - it is a double-skinned cylinder kept inflated by pressurisation and rotation of the main axis. The weight of a person will vary from zero at the axis to a fraction of his earthly weight on the ground: he will be able to fly without the need of any power devices. There will be Dantesque promenades at different levels of physical prowess -- from weak (centre) to strong (periphery). Man, standing head toward the axis of rotation, will be enveloped in a solid ecology. Specifically designed as a research station that would remain in space, it would provide laboratories, residential living, recreational centres, etc.

Soleri was once again creating a city within one structure. This revolutionary design could only be described as the epitome of Arcology: a building that would be completely self-sustaining. 'Space Arcology', as Soleri describes it is, the design of a structure that can hold life in the voids of space.

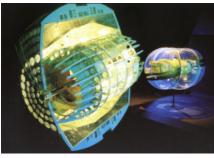
In 1994 Soleri was commissioned to produce a model of Asteromo for the Mei Center for the Arts in Japan.

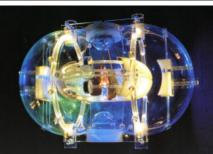
P. Soleri, H. Rand & R. Anastasia, op ait .p.104



"We will have to be tough in space, and probably we will have to generate new genetic variations of ourselves to be able to cope with it. But once we cope with it and transform ourselves, the Universe is open to us, and it's going to be quite an adventure!"

Paolo Soleri, 1993









Facing Page: Figure 51 - Model of Asteromo

Top: Figure 52 - Model of Urbis et orbis, arcology project

in spac

Middle: Figure 53 - Model of Ovum, arcology project in

snace

Bottom: Figure 54 - Model of Ovum, arcology project in

space

Above: Figure 55 - Space for peace, arcology project in

space

This was the first time that Asteromo had come to life in the form of a 3D-model showing once again that the schemes that seem so out of reach are still possible to create in some form.

It may seem in some instances that Soleri diverts from the progress that he makes in previous works, an example being the leap from Mesa City (a structure for 2,000,000 inhabitants) to Asteromo (an asteroid structure designed to orbit the earth from space). These are not leaps made from the failings of previous projects but a test of experimentation, with new advancements in the technological world fresh perspectives are gained. It is at these key points in the progression of mankind that Soleri tests and extends his theory of Arcology, attempting to perfect it and with each project try and accomplish something that the last project did not succeed in overcoming. He is consistently trying to discover the adaptability of his theory in correlation with current affairs.



THE JMCC PROJECT GG PROJECT

In 1996, four years before the new millennium, we - as a race - were reaching a pinnacle in the awareness of ecological and planetary problems, globalisation, large-scale events significantly affecting human life, increasing cultural diversity, an uncertain future for nature and democracy, reactionary and xenophobic tendencies, new horizons in scientific research, technological acceleration and evolution of the media. At the time the planet's population was close to six billion.¹

The Global Environment

In the 1960s and 70s words like overpopulation, pollution and depletion of resources were discussed at great length and whilst a greener way of living was demanded, very few solutions were provided:

- Recycling was sluggish and inefficient; the implementation was costly and so became undesirable.
- Solar power was also slow in developing; this was costly to the consumer again in the short term
 and was also an option, there was no governmental stipulations that stated that the population must
 provide a percentage of its own power via natural resources and so in-turn very few people chose to provide for themselves.
- Pollution reduction a large amount of information was gathered to help predict the current situation of the earth's environment and how we as a species could remedy some of the issues discovered.
- Finite resources new ways to generate power were put in place, with smog appearing over some of the larger cities in the western world the restrictions on coal burning were put in place.

However during the 1970s a scientist by the name of Charles Keeling used the most modern technologies available to produce concentration curves for atmospheric CO2 in Antarctica and Mauna Loa. These curves were to become one of the major icons of global warming. Using his technology he depicted a downward trend of global annual temperature from the 1940s to the 1970s. At around the same time, scientists analysing ocean sediment had shown that there had been no less than 32 cold/warm cycles in the last 2.5 million years, rather than previous beliefs that there had only been 4. With these results people believed that the earth's climate was beginning to cool and would continue doing so. The media and many scientists ignored scientific data of the 1950s and 1960s in favour of global cooling and so in architecture we began to see fewer radical designs for urban planning. In the 1970s economists such as Schumacher proposed ideas of sustainable development on top of our already existing settlements as the solution to the global problems rather than building new developments. In his book 'Small is Beautiful' he concludes that government effort must be concentrated on sustainable development, because relatively minor improvements, such as, technology transfer to Third World

Antonietta lolanda Lima, Saleri: Architecture as Human Ecology (New York: The Monacelli Press, 2003), p.353

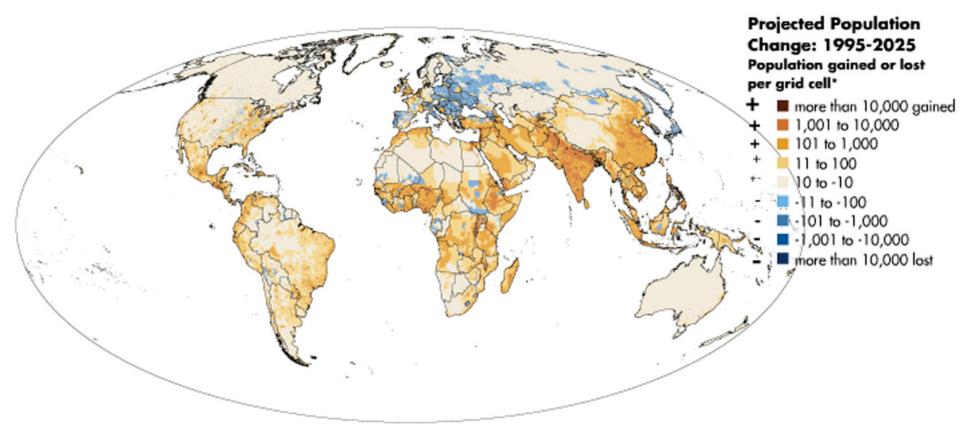


Figure 56 - World population predictions from 1995-2025, 2006

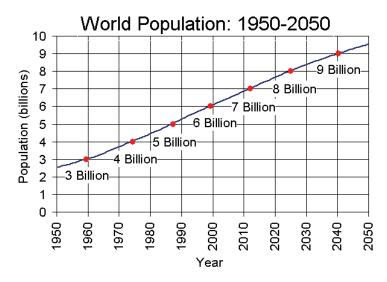


Figure 57 - Graph of the world population projection, 2007

countries, will not solve the underlying problem of an unsustainable economy.

It was only in the late 1980s that the global temperature trend began to change and the Earth moved into a warming cycle once again. By the 1990s the trend was rising so exponentially that the idea of global warming began to play a larger part in the environmental actions humankind should take. It was around this time that the greenhouse effect theory prompted the founding of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations Environmental Programme and the World Meteorological Organization.

The Global Population

The other larger problem – specifically to the human race – is one of overpopulation. At the rate our species is growing it is estimated that by 2050 the world population will reach approximately 9.1 billion people, 2.6 billion more than the current population. That is to say that with the current lifestyle that we – as humans – have the room for expansion will cease to exist, land for the growth of food will be taken for habitation and cities will expand to colossal sizes.

With the new revelations about climate change, depletion of finite resources and overpopulation, it is once again that the designs for a new urban existence have come back into favour. If we are to solve the problems stated above — problems that our over development has been partly responsible for — we must look at revolutionising the way we live as a collective. The only way to do so is to live in a more efficient manner, we should only take from the earth what we need for survival and utilise other methods to harness the power of the natural environment that is ground us

Taking Action

One of the first countries to put these ideas into motion was Japan, in 1996 Japan's government set a challenge to the world: planning the city of the new millennium. The Japanese Ministry of Construction and Culture (JMCC) sponsored a scheme for a revolutionary city, a project named Hyper Building. An invitation competition was launched in which they commissioned work from three architects, each known for their innovative designs, their unique outlook on architecture and urban planning in regards to future habitats. Those architects were Rem Koolhaas, Nobuaki Furuya & Paolo Soleri. Each of the three would work with the same parameters – a human scale infrastructure, 1 cubic kilometre volume of space that will house 100,000 inhabitants for 1,000 years. The design had to highlight the notable difference between American and European cultures to that of Japan – suburbia must be halted. A new urban plan had to succeed its former disorganised structure, one of high-density living on a colossal scale. The idea was to provide a sustainable environment for the people to live in that was

U.S. Bureau of the Census, Current Population Projections

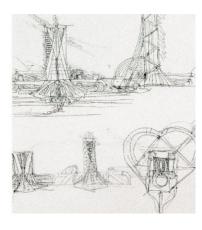








Left to Right: Figure 58 - T.R.Hamzah & Yeang, Tokyo Nara Tower Figure 59 - T.R.Hamzah & Yeang, Shanghai Armory Tower Figure 60 - J.M.Schivo, Eco Tower, Buenos Aires Figure 61 - F.L.Wright, Mile High Skysaraper, Chicago





Left: Figure 62-63 - Soleri's sketches of the Hyper Bullding project Bottom: Figure 64-65 - Nobudki Furuya's designs for Hyper Spiral,

Tokyo











to recreate the idea of 'the city'.

Clearly the design would have to meet complex and multifaceted goals: an extrapolation of the Eco-style buildings of the modern era. In the brief the only variable given was the location of each of the projects. Rem Koolhaas was asked to imagine a project for the outskirts of a city, while Furuya's building was to be built within the city of Tokyo, and Soleri's was not in an urban environment at all.³

As well as the revolutionary ideals of Hyper Building Project there would be two commissions and a team of more than thirty experts in various sectors, this group were known as the Hyper Building Research Committee. Within this there were five basic concepts:

- To seek agreement in order to obtain strong public support for the scheme;
- To structure the idea; to study feasibility for a national project; to review rules created to encourage production;
- To search for innovative super-technology.

The intentions of this commission were to build an image for the city of the future, to inform people's desire for such a city as well as to accustom them to the idea of living within it. Without public support and awareness, a project like the Hyper Building would not be worth constructing.

The Designs

The design proposal by Nobuaki Furuya was to be a functioning part of an already completed urban environment. He chose to place the scheme in Chuo-ku, Tokyo, Japan.

Its Japanese name — **Chūō** - literally means "Central Ward," and it is historically the main commercial centre of Tokyo. He gave his design the name 'Hyper Spiral', because of its unique design. The structure took the form of three interconnected rings that were designed to be the main connection routes through the city. The unique shape of this structure came from the idea that a city of this magnitude should not be one constructed in one process as one element but instead develop over a longer period of time so that the city can function almost immediately.

A. lolanda Lima, <u>op cit</u> p.353



NORMAL URBAN DEVELOPMENT: HORIZONTAL SPRAWL



HYPER DEVELOPMENT: VERTICAL CONCENTRATION + NATURE

Figure 66 - Sketches for Hyper Building, Bangkok



Left: Bottom:

Figure 67 - Model for Hyper Building, Bangkok Figure 68 - 3D Computer visual for

Huper Building, Bangkok



"Taking high complexities in Asian cities into consideration, we should propose an alternative 3-dimentional city instead of tower shape high-rise buildings. Flexibility and porousness of buildings are more important rather than height and bigness. The Hyper Spiral Project has a flexible self-organizing structure and infrastructure system. It is to be constructed not immediately but very slowly, century by century"

Nobuaki Furuya, 1996

The strength of Furuya's project was its alternative approach to the design of a monolithic structure. To construct the building over a longer time frame was a method that came from rational thinking and an understanding of the sheer scale of a project such as this.

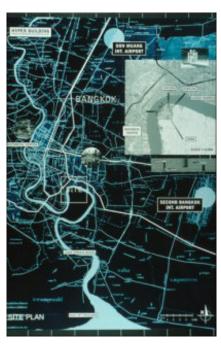
The scheme submitted by OMA (Office for Metropolitan Architecture) - the company that Rem Koolhaas is a head partner in - was located on the outskirts of Bangkok. It was on a green reserve called Phra Pradaeng on the west bank of the Chao Phraya River. They chose this site because it was close to the new business developments and could work in conjunction with Bangkok's import urban infrastructures. The hypothesis of the scheme was thus, the Hyper Building - if placed in the a well developed urban condition - may be less credible, for instance placing it on the outskirts of Tokyo or New York. If you were to look at the unique qualities the project could add, the contribution made would be of little significance. However, if you were to locate the scheme in a developing condition, the virtues of the Hyper Building - the provision of enormous controllable critical mass - could have an positive influence upon the economy of the surrounding urban mass.

Koolhaas comments that, if a hypothesis such as this is true, the scenario that would follow should be one that plays down the technical aspects of the Hyper Building. Although a scheme of this nature would — logically — be the next movement in the chain of our evolution, its technological development should not be its ultimate achievement. The goals of this structure should be defined around the scale of the project and its potential to craft future urban design rather than its more obvious advancements in technology.

To test the hypothesis, OMA analysed the city of Bangkok and noted that from a lack of control over its overall construction to its radical overpopulation, it is what they describe as "...a city of crisis. It is therefore by definition a city that would be ripe for this kind of socio-cultural experimentation".⁴

A scheme of this nature – although more viable in a completed upon fabric – would be better suited to an environment like that of Bangkok, a city of critical mass bordering the point of modernisation.

OMA Amo REM Koolhaas, El Croquis, Issue 131/132 (2006), p.62





Left to Right: Figure 69 - Site Plan for Hyper Bulding, Bangkok Figure 70 - Connective elements



The design for Koolhaas' Hyper Building scheme was one that would:

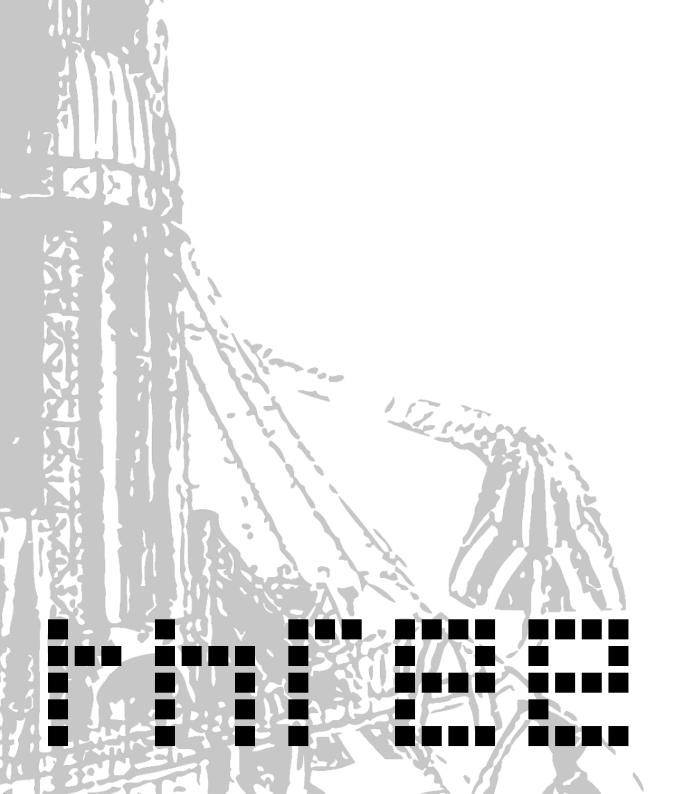
- Preserve the quality of the environment
- Plan to provide a necessary proximity between home and work space
- Provide for 200,000 people commuting every day.
- Become a self-contained city without being disconnected from the surrounding urban dynamic.

Using the existing build-up of a city as the base layout Koolhaas wanted to achieve an urban variety and complexity, he disassembled the building as a whole and used it as a metaphor for the contemporary city: the towers in his design constituted streets, horizontal elements were to be parks and open areas of public space, volumes became districts, and the diagonal became the boulevards.

The scheme was to have a multitude of transportation systems, each one designed for use in separate sections of the structure. The four boulevards reaching down to the city below would be mounted with cable cars, gondolas and train elevators, six streets would be equipped with high and low speed elevators to connect between the plateaus whilst a pedestrian promenade of 12km would stretch from ground level to the top of the structure. The structure is one designed as the implementation and integration of several smaller buildings into the larger whole. Each element supports its neighbouring elements in every sense: technically, the issues of stability, of access, circulation and servicing are organised collectively; as a whole, the entire building becomes an urban quarter of a new kind; architecturally, they form an integrated complex.

Unfortunately, following the completion of the designs and the presentation of the projects the Asian economic crisis in late 1997 that overwhelmed Japan forced the project to a halt. Of the ninety companies originally interested in taking on the Hyper Building Project only a handful are still left.

Figure 71 - Rendered model of the Hyper Building, Bangkok



ALTERNATIVE ENERGY



78,000 square meters of **SOLAR PANELS** with photovoltaic cells on top of exedrae produce 10 megawatts of low voltage electricity per hour primarily for low voltage lighting

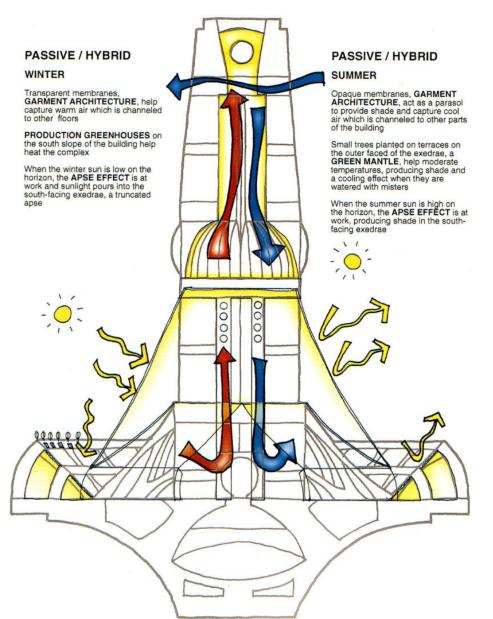


WINDMILLS at the top of exedrae produce 10 megawatts from strong desert winds



5.000 Genset hydrogen conversion units, SOLAR POWER GENERATORS, at the top of the parking garage produce 175 megawatts of electricity per hour, the bulk of household needs, from the many hours of desert sunlight

Figure 72 - Application of solar energy, Hyper Building



SOLERI'S HYPER BUILDING - FUTURE ECO-CITY?

Looking at Soleri's proposal for the Hyper Building in more detail it is clear why the project was a promising proposal for the future of urban planning.

It was situated in the Mojave Desert between Los Angeles and Las Vegas. Soleri chose his site largely for its resemblance to his ideals of Arcology; the necessity for sustainability and also the ability to manipulate the surrounding environment to provide natural sources of energy. His long cultivated knowledge of the desert helped him understand how to plan a city that could withstand the harsh, marginal and arid environment. The Mojave Desert draws many tourists due to its location between Los Angeles and Las Vegas, two urban communities that exemplify contemporary society's serious illnesses.

The Building has been designed on a predominantly vertical axis. This is to lessen the impact the building has on the natural landscape, and also, in doing so, makes the landscape more accessible to the inhabitants of the structure. This building would rein-in urban sprawl, be capable of generating and recycling its resources and reduce environmental damage.

Thinking Green

The Hyper Building also combats further environmental issues.

One of the key environmental design aspects would be the use of solar energy. The building and its surrounding environment absorb vast quantities of solar energy:

- Using 78,000 square meters of solar panels with photovoltaic cells will produce 10 megawatts of low voltage electricity per hour primarily for low voltage lighting;
- Windmills at the top of the structure produce 10 megawatts from strong desert winds;
- 5,000 Genset hydrogen conversion units, solar power generators, at the top of the parking garage produce 175 megawatts of electricity per hour from the many hours of desert sunlight providing for the bulk of household needs.

The whole building is virtually self-sustaining in terms of food, power and heating. In general, this building displays strong elements of Arcology within the whole design.

To judge the success of the building we must look at the origins of its design in more detail. Soleri examines the planning of evolutionary coherence (meaning that humankind takes responsibility for life's development as its fundamental motive and at the same time its ultimate goal); the convergence of the concern for the environment

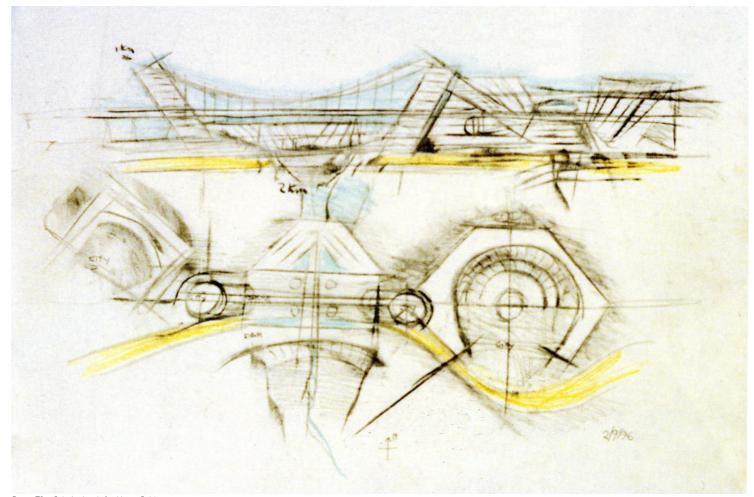
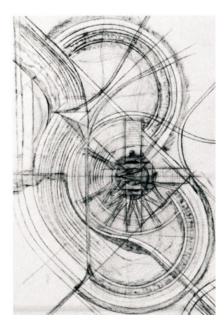
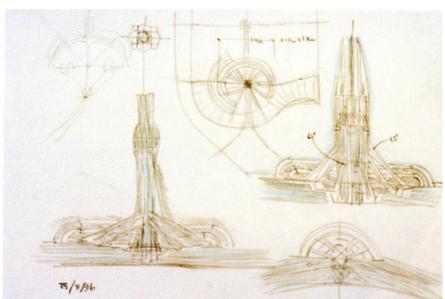


Figure 73 - Soleri's sketch for Hyper Building



Left: Bottom

Figure 74 - Soleri's sketch plan for Hyper Bulding Figure 75 - Soleri's sketch elevations for Hyper Bulding



and the use of high technology.

Evolving Through Design

Soleri manages to achieve a fertile blend of experience and innovation without abandoning modernity, rationally evaluating the new rather than simply turning his back on it. This can be seen in his essays on future cities and urban planning where he measures the risks and dangers in what has been done before and states that man, as a species, must proceed along the road to self-awareness because this is the only way a discovery can honestly be considered a form of progress. He acknowledges that such progress can be difficult and it cannot be successfully achieved in a short time (in terms of evolutionary scale.)¹

Furthermore, in his book, 'A Bridge Between Matter and Spirit' published in 1973, he explores anew the intrinsic potential of nature and geology and uses this to enhance his designs for the Hyper Building. Likewise, he absorbs and incorporates the best results of the computer age. Thus virtual reality, which is a dangerous field because it offers constant simulation, can instead become a tool for enrichment. He states that

"For the first time in history, man's thinking and tinkering is going on between the brain mind and a non-organic device, the computer. Internal; the mind, and external; the computer, is in discourse. A miniaturized-complex domain, the brain mind, interacting with a complicated miniaturized domain, the computer. The carbon cycle and silicon cycle, are coming together in a first encounter. We are on the line between organic (carbon-based) intelligence and mineral (silicon-based) intelligence. This is a position of extreme promise but also a dangerous one. The mineral intelligence can open the cosmos to the mind and to its transcendent faculties."

Soleri continues to prophesise about the future and suggests that perhaps the carbon cycle, which has performed remarkably over its 3.5-eon history, will be challenged by a silicon cycle. However, Soleri states

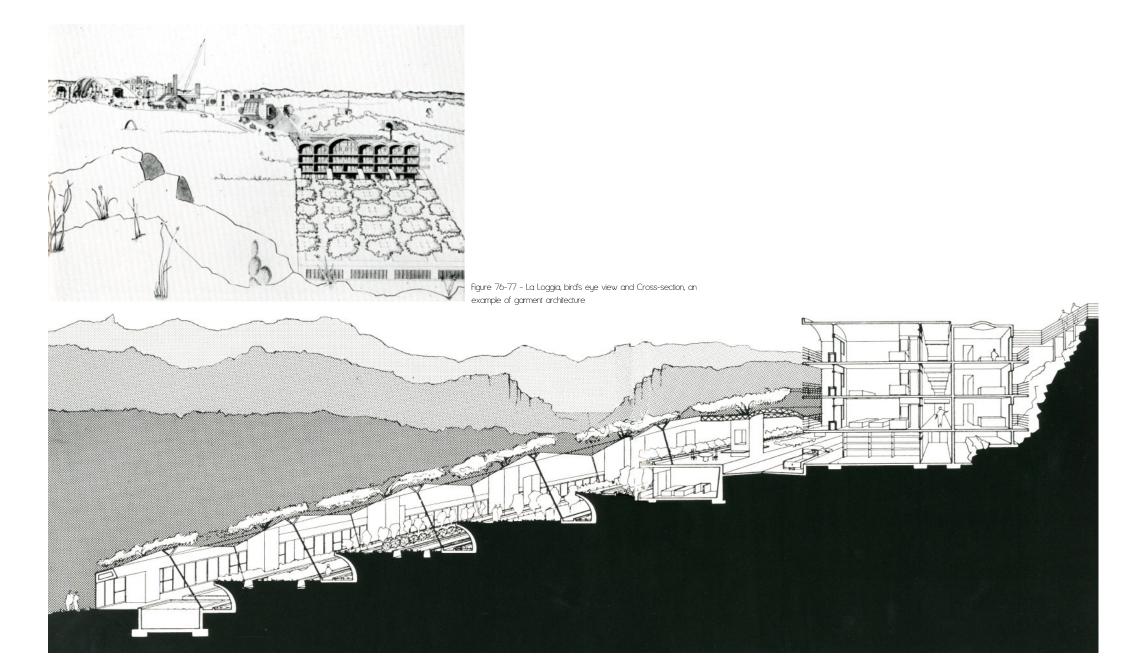
"for at least another millennium I believe that the former will play the main role in humanity's evolutionary development. Full biological reality (in free-oxygen environment) is inconceivable without light, without the infrared ultraviolet spectrum."³

Although water and light have always been the two elements of life, Soleri believes technological advances and future society to battle against this dependence.

¹ P. Soleri, A Bridge Between Matter and Spirit is Matter Becoming Spirit, op cit, p.56

² bid p.68

Paolo Soleri, *The Urban Ideal: conversations with Paolo Soleri* (California: Berkeley Hills Books, 2001), p.69



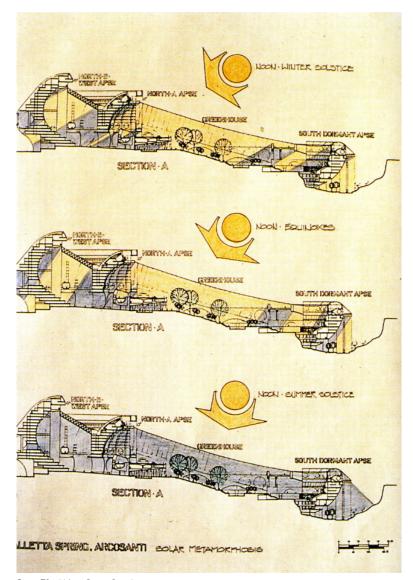


Figure 78 - Valletta Spring Complex section

"The death of light is rationalized by silicon because the entire biosphere that depends on it is made superfluous ...

...The youth of cyberspace are already running to the new superhighway. The dark underground prison of video games and computer laboratories rejects the luminosity of the planet as an unbearable intruder and the presence of moisture introduces jungle and fungus scenarios. So, when we are able to witness the birth of silicon conscience, we will simply be in an era that the subversion of much "data" [sic] will affirm itself as real ...

...The powerful presence of light with its unique and profound impact on Homo sapiens, both body and psyche, could lose all meaning. Light and silicon have no common synergy. Darkness goes well with the second; carbon-based intelligence and silicon-based intelligence will never be able to find common ground."

One may ask, is this premise relevant to discussion of the new city and its architecture? Soleri says it depends on the needs of those commissioning a project. The Hyper Building is to have a life span of one thousand years and so these questions are undeniably relevant. They provide a solution to the question of how to conceive of a structure over this long time period. It suggests and says no to the indiscriminate use of silicon and yes to light and carbon. This is the only possible hypothesis that would guarantee the health of a species that may have already seen, as he puts it "the best of its journey and finds itself in a kind of melancholy, inner conflict when looking to the very essence of its own progeny". He believes that "the Hyper Building would then be a mineral tool placed between the biosphere and Homo sapiens. It would be an active, participatory tool, appropriate and necessary, sensitive to light and the sun's trajectory".

The Hyper Building becomes a connective element between man and environment, a bridge enabling contact and organic exchange. It announces that it is outside of nature whilst also collaborating with nature at the same time.

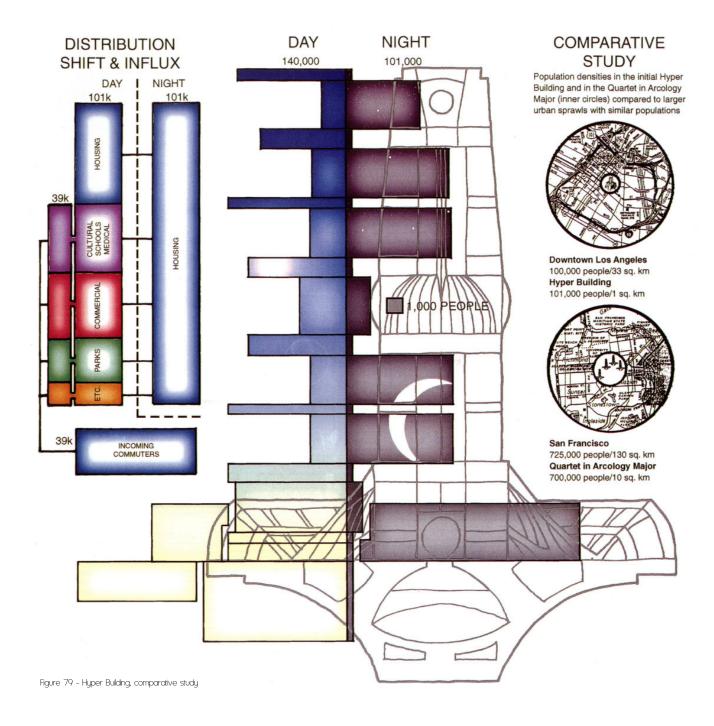
In addition to the idea of the carbon-silicon cycle, there are six more concepts that stand as an antidote to the suburban growth and provide for a new urban ideal:

- Urbanisation of marginal land (to be occupied by about one-third of the worlds population three to four billion people).
- Implosion of habitat (a three-dimensional, high density city).
- The desire to link habitat, ecology and energy so that the habitat is responsive to the sun, climate and landscape thus returning land to agricultural use and nature.

⁴ Paolo Soleri, *The Hyper Building Interim Synopsis* (Paper, June 1996.)

⁵ ibid

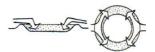
⁶ ibid



PHASE ONE

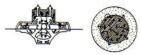


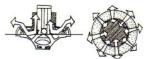






PHASE TWO





PHASE THREE



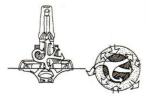
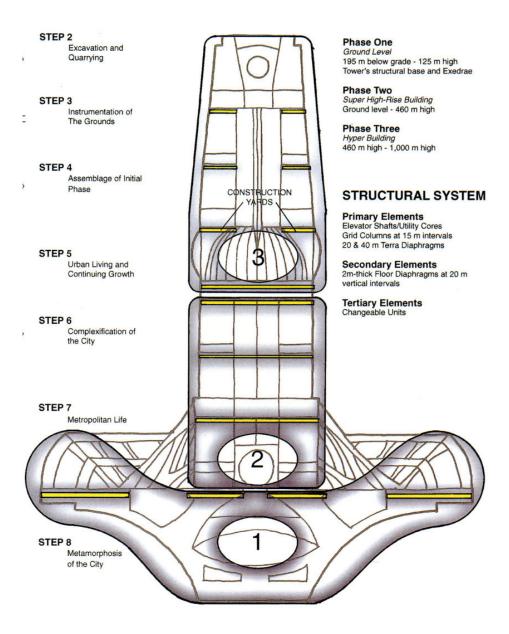


Figure 80 - Hyper Building, construction phases

CONSTRUCTION PHASES

STEP 1

Selection of Site



- Frugality-internalisation (uncompromising self-sustainability) as a life system, accompanied by energy and water conservation.
- The urban effect as a human-cultural imperative; when the two agents required for it to occur, complexity and miniaturisation, interact they generate the mnemonic capacity of all living systems that make such systems capable of building a life story (duration).
- Maglev (Magnetic Levitation) transportation the modern, faster, quieter mode of transportation for connection to and benefit of the biosphere.

In our current position, which is a situation that is extremely dangerous, only exponential growth in MCD (An acronym invented by Soleri meaning Miniturisation-Complexity-Duration) micro technology can cause a "new reality" to emerge. In this context, the Hyper Building is an indispensable proposal that is potentially valuable for the ontological dynamic of life. 7

"In the present metropolitan fabric, the absence of the implosion of miniaturisation makes the social organism ill-fitted for survival, let alone development. The environment of contemporary man is a statistical utopia taken in by the game of laissez-faire. Such as it tends to make man abstract."⁸

The Physical Aesthetic

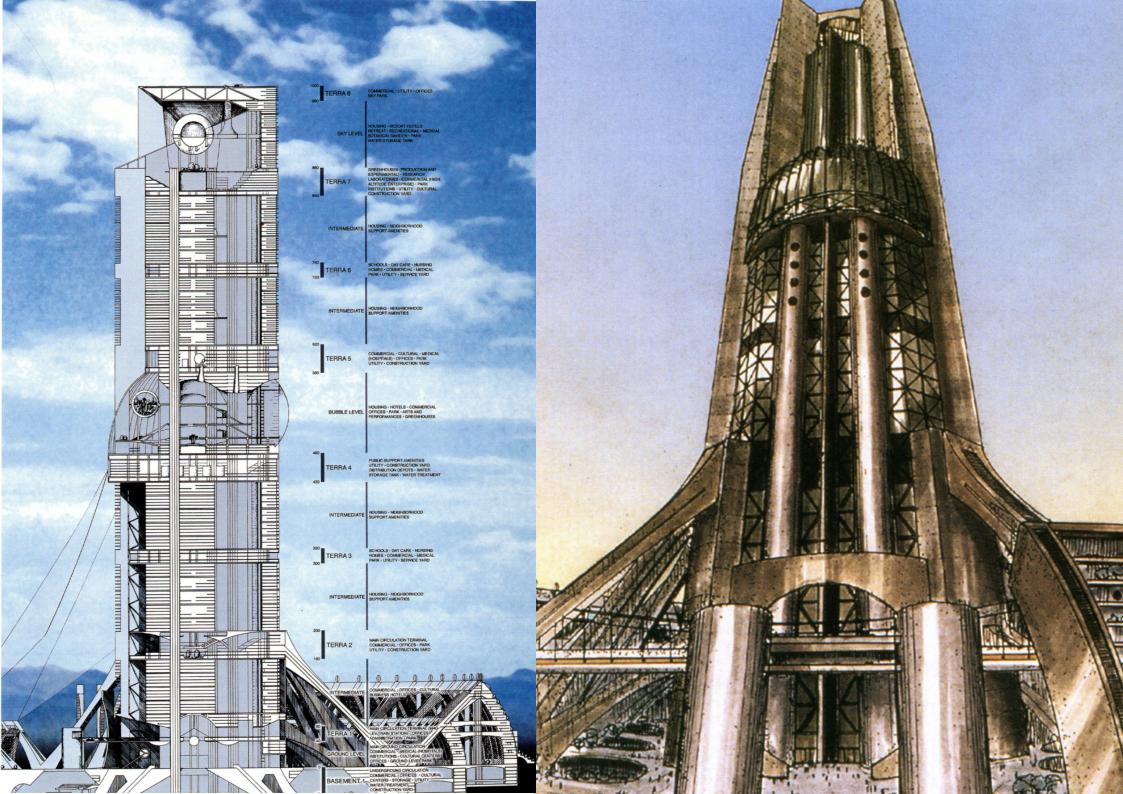
The physical structure is a system of steel cages and interconnected components. With a series of strategically placed focal points and 'terras' (artificial grounds and parkways) giving a human scale to the central tower that emerges from the 'exedras' (a semicircular recess, crowned with a half-dome) at its base to soar above the landscape reaching the full height of one kilometre. The base and the tower are two entities that are joined by a group of divided structures. Large public spaces appear on many levels with natural light penetration. They were designed to house cultural, arts and educational centres as well as large multilevel parks with their own microclimates that would provide alternative environments to that of the arid climate of the desert.

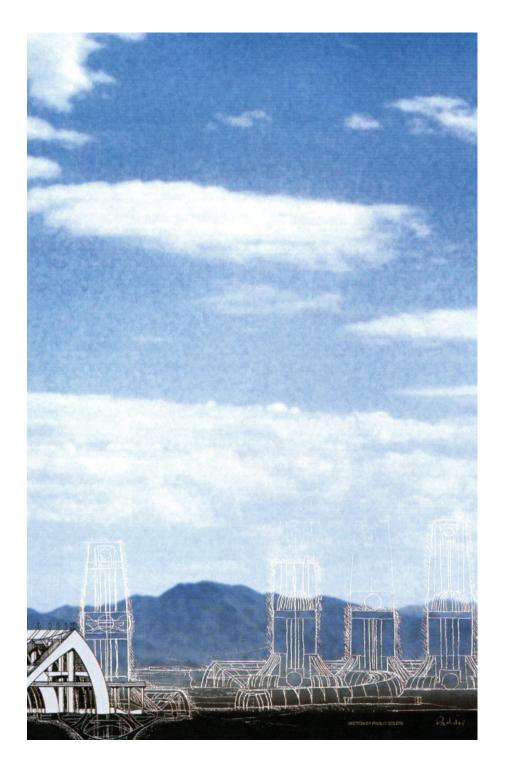
The building itself makes more use of the human scale. Soleri measures distances between places within the building in walks or minutes, vehicles become nonsensical.

Several means, including local elevators and high-speed connections, reach the various sectors of the city. With Soleri's ideas of miniaturisation the structure is free from any kind of schematic grid and thus strongly stimulates the Urban Effect, as would the intensity and quality of the atmosphere. At the base, bicycles and mini-taxis

⁷ P. Soleri, *The Hyper Building Interim Synapsis* (Paper, June 1996.)

⁸ P. Soleri, A Bridge Between Matter and Spirit is Matter Becoming Spirit, op cit, p.43.





connect to the many parks and urban spaces whilst at the top an airport and helipad would be used for travel or emergency evacuation. The complex plan of the design arrangement fulfils the many functional requirements whilst offering an ever-changing landscape where life in urban spaces, freed from the automobile, can thrive in a pioneering and experimental habitat.

In the lower portion of the building, centred around a geometric base above and below ground level, there is an area of controlled environment. Here temperature, wind, rain and light will all be modifiable. Taut membranes that are stretched between the exedras, which Soleri refers to as 'Garment Architecture' change from opaque to transparent at the spring and autumn equinox respectively, highlighting the seasonal changes. At the same time, on the outer facades of the exedras, tree-lined terraces with lawns help control temperature, thus providing shade and cooling from the external climate.

The plan for the Hyper Building, the two exedras facing each other and surrounding the large tower rising out of their core, could be considered geometrically symmetrical, but as always with the architecture of Soleri, the building was not generated by a predetermined idea. It came instead, from Soleri's attempt to develop a specific way to interpret reality. Using the concept of MCD, Soleri's Hyper Building strengthens the vitality and transcendence without which life and self-awareness cannot exist, this paradigm validates frugality and symmetry is the natural result.

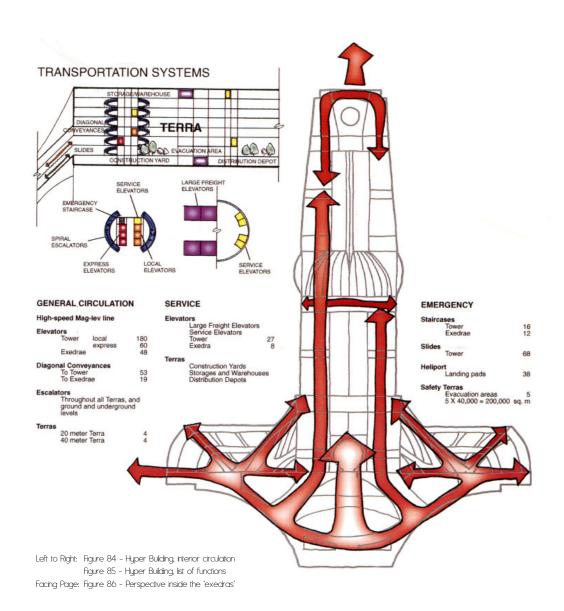
Though the Hyper Building is connected to the traditional energy grid, it relies only modestly on traditional energy sources. The dependence on this energy source is minimised through means of various other resources. Those resources are both passive and active alternative energy systems that work with the efficiency of the three-dimensional system, which decreases the consumption of non-renewable energy sources. By constructing photovoltaic solar cells on the outer skin of the exedras, windmills to capture the energy from the desert winds and solar generators with connections to hydrogen conversion equipment, the Hyper Building can guarantee a significant energy resource from its surrounding environment. The 'Garment Architecture', constructed of opaque and transparent membranes implemented on the interior of the building and pulled taut between the exedras to cover the space below the tower, would form greenhouses that can capture the warm air channelled during the winter whilst during the summer months provide shade from the intense sunlight. Interior ventilation systems control the airflow and control the temperature by using a 'Chimney Effect' (where by warm air rises and cold air sinks).⁹

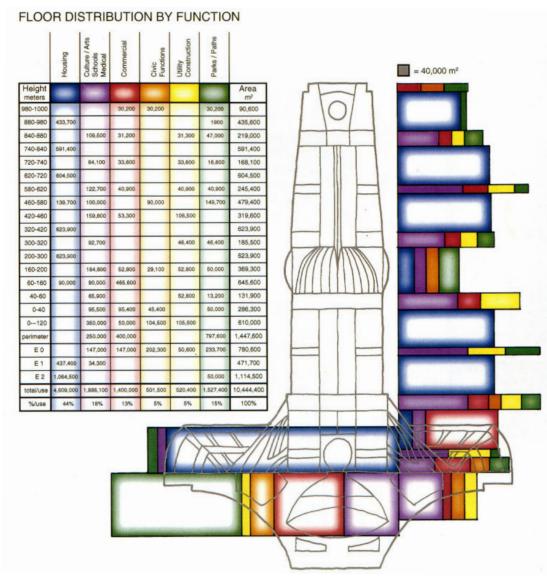
Facing Page: Figure 81 - Hyper Building, section

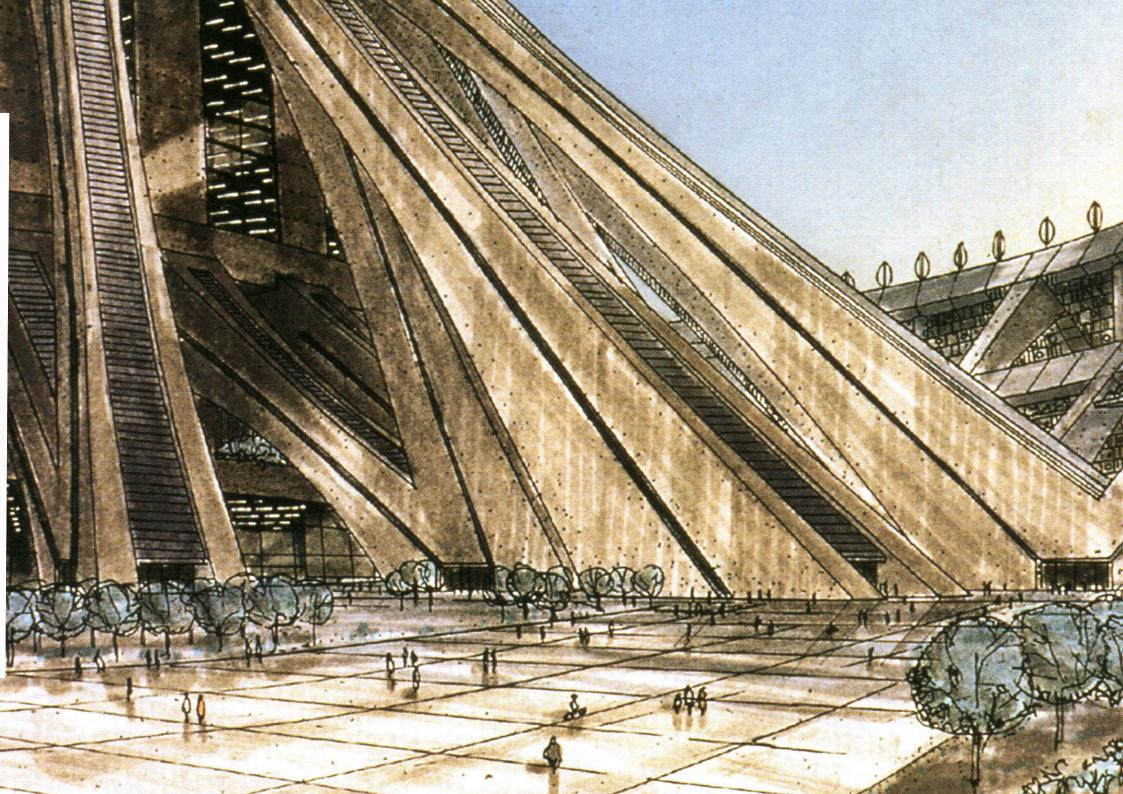
Figure 82 - Perspective of the Hyper Building from below

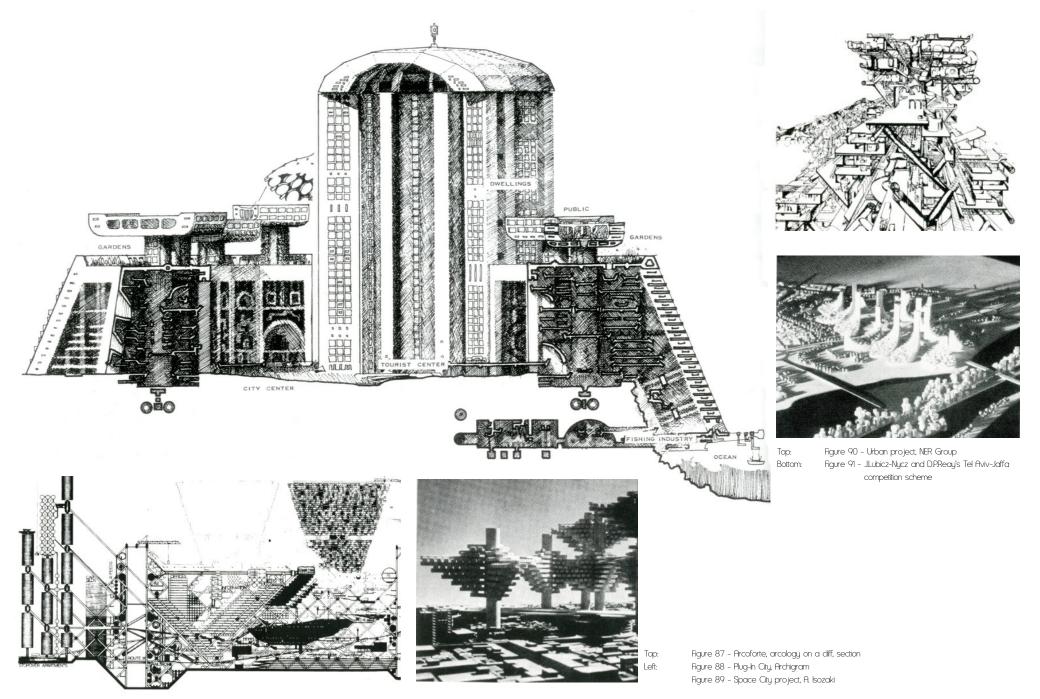
Left: Figure 83 - A series of Arcologies

P. Soleri, *The Hyper Bulding Interim Synopsis*, <u>op cit</u>







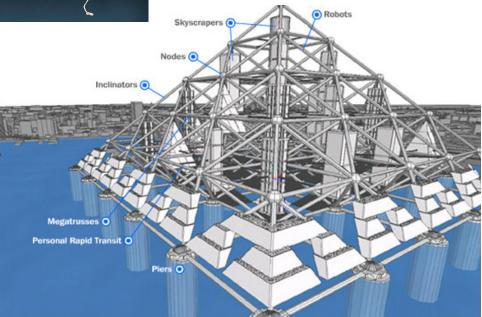


25 cm



Left: Figure 92 - Plastic mould of the interior of an anthill

Top: Figure 93 - Coastal coral reef
Bottom: Figure 94 - X-Seed 4000 Diagram



conclusion

Soleri's adaptability of his own theories is what makes his ideas strong. Constantly reassessing possibilities allowing current developments and discoveries in technology and science to enable him to more effectively realise his designs, there by expanding more of the ideals that Arcology provides. A recurring debate in the development of sustainable cities is whether existing cities can be modified or adapted to provide a greener style of living. During the 1960's and 1970's architects began designing new cities that would take an alternative direction like Archigram with their Walking-City and Plug-In City, Le Corbusier's plan for a utopia, Kisho Kurokawa's Helicoids and NER Group's Urban Project.

However, there is still a drive for a new urban form and arcology is the theory by which . In Japan, plans for a new Arcology are being developed in the form of the X-Seed 4000, this is a modern adaptation of Arcology that, whilst it may not entirely maintain Soleri's principles, has the desire to revolutionise the city plan.

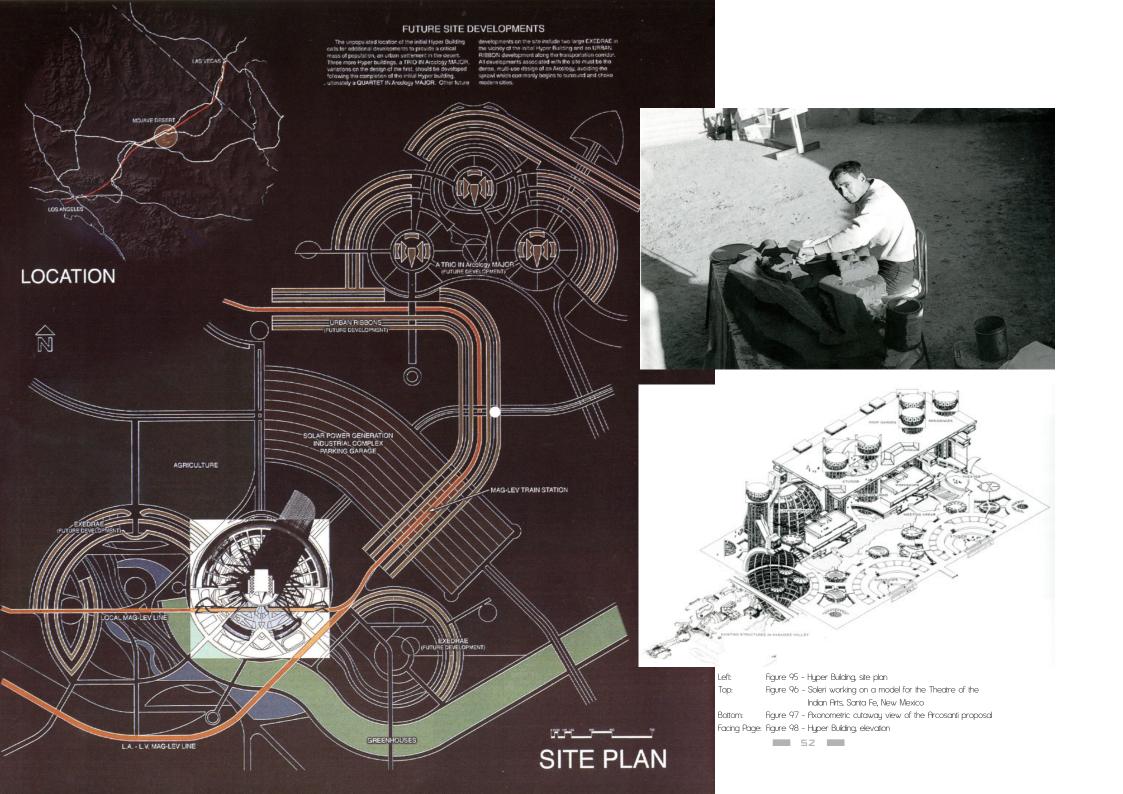
It is impractical to think that we as a race can keep spreading ourselves like a thin membrane across the surface of the earth consuming all available land. Where would we grow the things we depend on to survive? Soleri speaks strongly and at length about this problem.

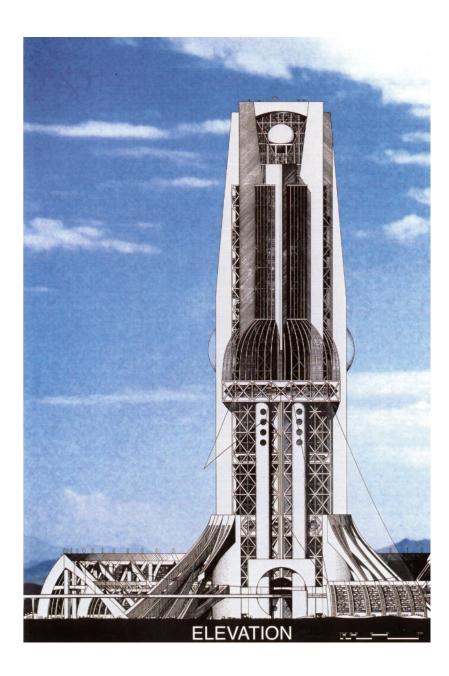
Our urban planning is not dissimilar to the growth of a coral reef: a spontaneous nodal expansion, spreading from its origin, consuming all that is below it. However, coral reefs do this as a function of a larger life cycle. Covering the surface of the earth in concrete and tarmac will not return anything to the land when we are finished. Soleri often talks about the direction we should take, that the life forms we should be mimicking are those such as the bee: where the construction of the hive is the epitome of ideal functionality and completeness; it is a structure that is efficient, a non-sporadic development that is copied time and time again.

Having an overwhelming population has never been the subject of dispute in other species on the Earth. The ant, the termite, the wasp all set an example of efficient and massively high-density communities through necessity. It is perhaps unrealistic to assume that our (human) problems of overpopulation will cause our downfall and, subsequently, the demise of the earth itself. As Soleri proposes, the human species needs to look at a different, more efficient, more cohesive method of living that is not so wasteful of the finite resources we take from nature.

So, what does the Hyper Building represent? What would it achieve in the context of man's accomplishments?

Taken as a whole, the Hyper Building's magnetic semantic autonomy makes it a unique and extraordinarily memorable monument. With its walkways, residential zones, terras, parkways, meeting places and work places it is a blank canvas for the display of human desires. In all of Soleri's Arcologies, especially those highlighted in this essay, city planning must becomes the structure. With the Hyper Building this expressed desire is heightened, ascending to levels beyond the others due to its strong symbolic value as a new city. Were the Hyper Building constructed, it would be a structure seeping into the collective imagination and gradually further into humanity's





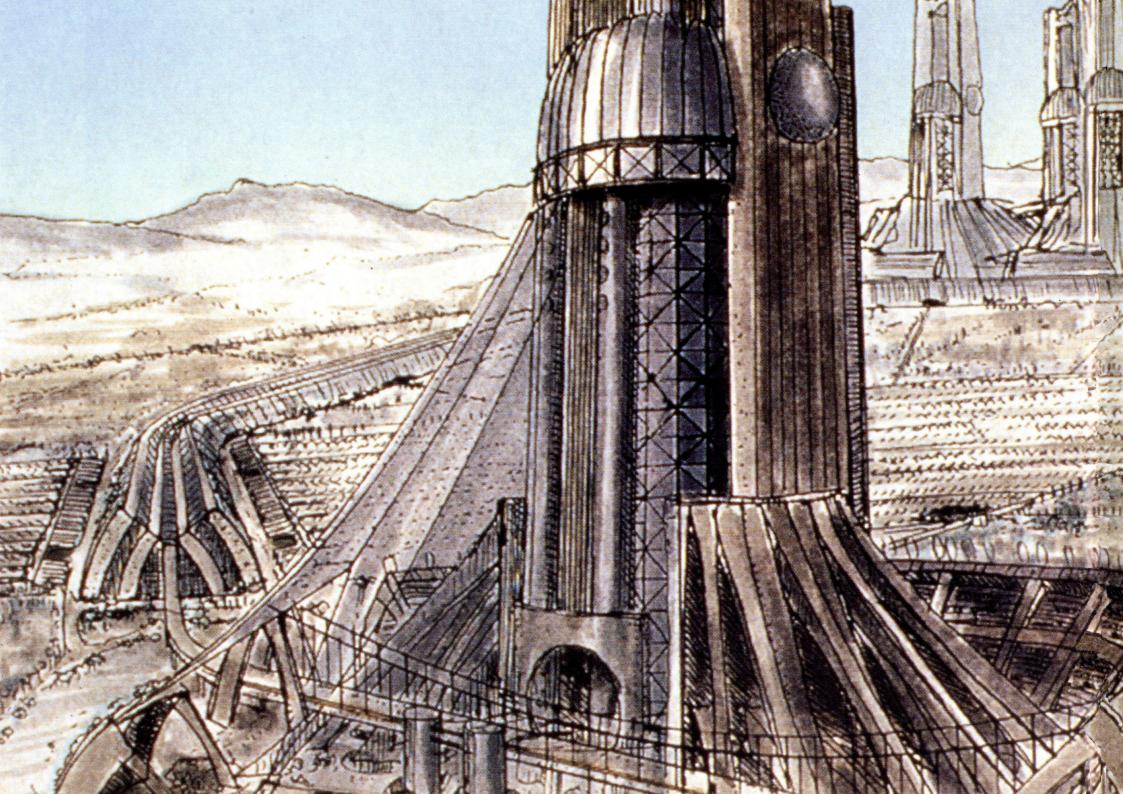
consciousness. Such absorption would ultimately be sourced from the inhabitants' feeling of belonging to their city, thus the city can live symbolically through those that live, work and view it. The spaces within the building would teem and thrive with the life of its residents offering it in return this symbolic life and energy. These residents would be the unpredictable forces imbuing its very tissue and provoking an emotional response that is both spiritual and sensory.

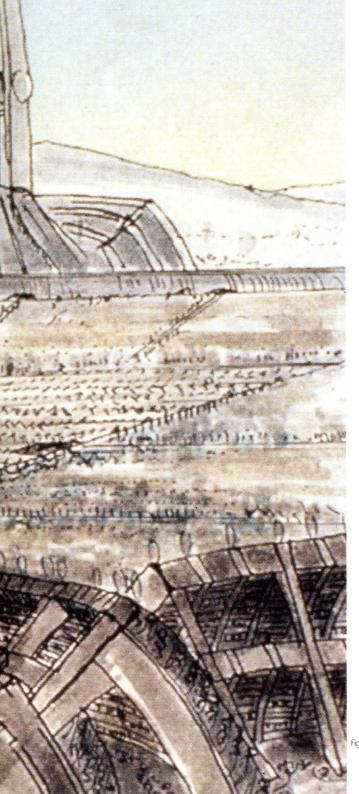
Soleri's design for the Hyper Building is his most recent development in Arcology. The architecture and ecology cooperate with each other as symbiotic elements that create a city based on a one structure system that is not secondary but central to the organisation of the urban habitat itself. The Arcology is a dense urban environment that provides interaction vertically while expressing the flow of humankind's life in a complex organism that can offer its residents open, uncontaminated land. The compactness of an Arcology, when looking back at a project such as Mesa City, is designed to provide a much larger amount of land for agricultural use, roughly 90% more in fact than that of a contemporary city.

Arcology is different to the structure of contemporary cities in other significant ways also. It deals with pollution in a collective manner because the structures are founded on the principles of increased efficiency and decreased waste. The fundamental principle of Arcology is to prevent urban sprawl (the suburbia development) and the effects that ensue. Therefore, should the Hyper Building be constructed and the territory surrounding it follow in the same direction, the developments must be founded on a similar basis of Arcological Complex.

With the developments Soleri has made to date through his ideal of an Arcology, one of the most fundamental aims that has remained is the fusion between building and environment. The structure's design acts as a conduit for power, harnessing the maximum amount of energy available using technology that our species has developed over its life cycle. The structure enters into a fertile dialogue with its environment and is a frugal structure sensitive to the sun and the climate it is situated in.

When Soleri designed the Hyper Building he deconstructed the contemporary city, established what was needed, removed the least efficient elements and created a city that would increase the longevity of the human race. Thinking of the future of society and the knowledge we have access to,





Soleri designed a model that can be progressive and evolutionarily parallel with technological and scientific advancements. It is reasonable for him to assume that Hyper Building would become an urban laboratory bearing the fruits of the potential for urban planning in the future. Soleri's ideas of what Hyper Building should represent run much deeper than one hyper structure. They provide an example of what can be achieved by the human race at our current level, that is not to say that new options will not be available, quite the contrary, Soleri wants governments, architects, planners and ecologists to begin looking in new directions for the solutions to problems that will progressively deteriorate if left unchecked. The JMCC saw this in his designs, from the paper Soleri wrote and the seminars he held with them. The legacy of Soleri's Hyper Building is the hope that the potential for a new, greener urban fabric is one that is not out of reach — a valuable inheritance as an ecologically sound way of living will almost certainly become essential in the future of our race.



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