

THE END OF THE SKYSCRAPERS

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Abstract

In the 80's I enthusiastically participate in important architecture and design competitions organized in Japan. I focus all my indignation against the directions of contemporary architecture – which I consider to be wrong – on designs that seem utopian: aquatic and sub-aquatic towns, colonies grouped around geothermal and solar energy sources and partially or totally underground honeycomb structures.

Architecture's development in the past 30 years has confirmed my former views and has made me realize that present-day architecture is soon to be facing collapse.

Probably, the first buildings to be abandoned in 5 to 10 years, at the most, will be the skyscrapers, despite the fact that newspapers all over the world present us the ridiculous competition for building the highest structure in the world.

Key words: *skyscrapers, history, competition, the end.*

Brief history of the skyscrapers

Skyscrapers are regularly 30-storied buildings exceeding 152 metres or 500 feet.

The term "skyscraper" is a compound noun made up of the words "sky" and "to scrape". At the end of the 19th century, the newcomers to New York, amazed by those impressive buildings, call them "skyscrapers". The first skyscrapers take shape after the 1871 disastrous fire in Chicago, when the first iron frame office buildings are designed.

The development of new construction technologies (the iron frame) and of the technical and urban endowments (running water, sewerage system, electrical power, elevators) enable, for the first time in Chicago, the 10 or more storied structures.

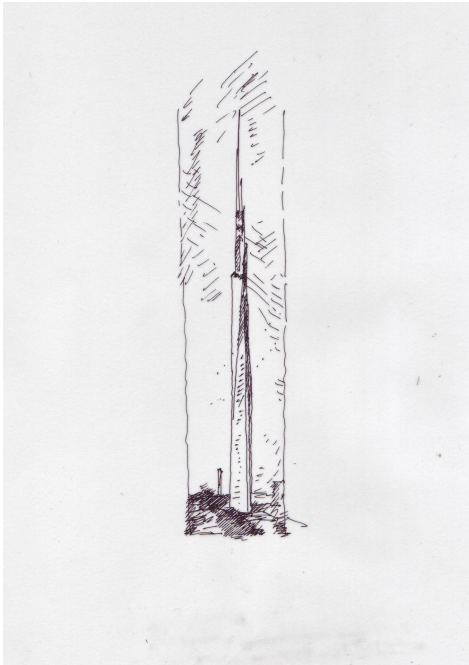
The first iron frame structure with protecting brickwork coating is "Home Insurance Building", built in 1883. It is designed by William le Baron Jenney (1832 – 1907), a former student of the Vocational School in Paris between 1854 and 1856 and a military engineer during the Secession War.

Between 1889 and 1891, architects Daniel Hudson Burnham and John Root design Monadnock Building. Although classically built, the structure has 16 stories.

In 1902, the same Daniel Hudson Burnham designs the 20-storied "Fuller Building" in New York, also known as the "Flatiron Building".

The Chicago School joins the works of architects: William le Baron Jenney, Henry Hobson Richardson and Jenney's students: Marton Roche, William Holabird, Daniel Hudson Burnham and Louis Sullivan.

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*Image 1: Frank Lloyd Wright's
Mile High Tower*

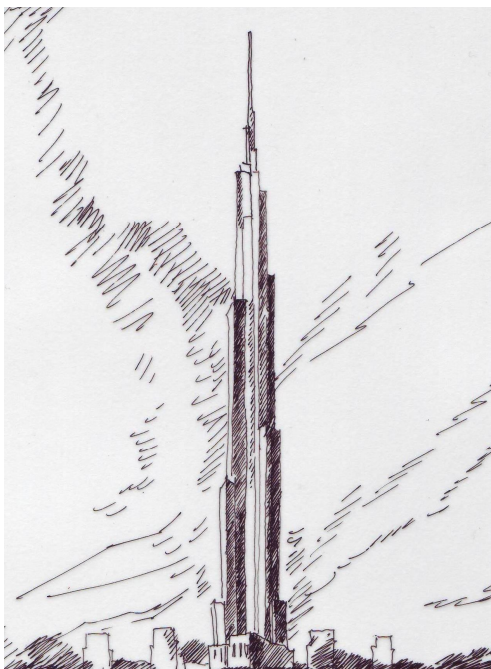


Image 2: Burj Dubai

Established in times of full economic and technological progress, the institution is also called the "American Rationalist School" or the "American Practicism".

In architecture, the Chicago School imposes the iron frame structure and the horizontal "Chicago type" window.

Initially, the high buildings meet the requirements covered in the office buildings programme, but subsequently they are included in the multipurpose building programmes, with banks, shops and restaurants at the lower levels and offices, dwellings and hotels at the upper levels.

The history of skyscrapers reveals the studies of Mies van der Rohe for a concrete and steel office building in 1922 and Corbursier's 1925 "Plan Voisin" project for the reconstruction of a central area in Paris.

In this project, Corbursier suggests the design of 18 – 20 cross-shaped "Cartesian" skyscrapers, instead of a well-known unique built fund. The "Cartesian" skyscraper is the result of two parameters: the minimal ground coverage - mostly intended for pedestrians - and the height of the buildings, in order to reach an optimum density.

The Empire State Building in New York, a 102-storied and 381 m high building is the most famous skyscraper in the world for about 50 years (1931-1972).

In 1972 it is surpassed by one of the World Trade Center Twins.

After World War II, the skyscrapers expand worldwide, becoming a symbol of present-day civilization along with the automobile.

Improved execution technologies and innovations of all kind (among which, the double pane glass) offer the technical support for the accomplishment of architects' ever daring dreams: superstructures exceeding by far the Empire State Building.

Competition for the highest skyscrapers

In 1956 Frank Lloyd Wright imagines the "One Mile High Tower" (image 1) project in Chicago, a structure intended to shelter 130 000 people. According to the latest statistics, the main competitors for building the highest skyscraper are the USA, Hong Kong and Singapore. In terms of the highest building, TAIPEI 101 in Taiwan is ranked first, with 509 m, followed by Petronas Towers in Kuala Lumpur, Malaysia (452 m), Sears Tower Chicago, USA (442

m), Jin Mao Tower, Shanghai, China (421 m), Two International Finance Centre, Hong Kong, China (415 m), Citic Plaza Guangzhou, China (391 m) and Shun Hing Square, Shenzhen, China (384 m).

Lately, the frenzy of the competition for building the highest structure in the world covers the Middle East states, especially Dubai.

Burj Dubai (image 2) – to be finished at the end of 2008 – will be approximately 680 – 700 m. high. Another highest building candidate will be Palm Tower from Palm Jumeirah artificial island in Dubai. It takes after the bamboo pattern and is estimated to be between 800 and 1000 m. high. However, an accurate figure has not been made public yet, for competition reasons.

Still, the world's highest structure will be Nakheel Harbour & Tower (image 3); with an estimated height of over 1000 metres, it will become "the heart of the new Dubai".

Sultan Ahmed Bin Sulayem presents the project in the autumn of 2008. He states that the structure will be a habitable centre for more than 55,000 people and it will offer employment for 40,000 people. The project inspires from the Islamic design and geometry and includes elements of the great ancient Islamic towns: the Alhambra Gardens, the Lighthouse of Alexandria and the Isfahan Bridges (Iran).

The Tower, the highest concrete structure will have a 250,000 sqm surface intended for hotels and restaurants and a 100,000 sqm area for stores and green areas.

Vainglorious, sultan Ahmed Bin Sulayem concludes his presentation: "I was inspired by Sheikh Mohammed's vision on tomorrow's buildings. This project conveys the world another message: "Dubai has an unique vision".

Nowadays, craving for commercial success, architects do not settle for designing the highest skyscrapers, they want to impress by conceiving more and more eccentric shapes that seem to defy all construction laws.

"Dubai Towers" design – the central part of "The Lagoons" area (image 4) – includes four towers of 54 to 97 stories. TVS Company – the design's author – inspires from a candlelight's movements, yet creating a pretty unpleasant sensation – the snakes dancing to the fakir's song.

The famous Zaha Hadid's design, "The Dancing Towers" (image 10) for The Business Bay Development in Dubai, depicts three apparently moving towers, creating an overall unsteadiness sensation.

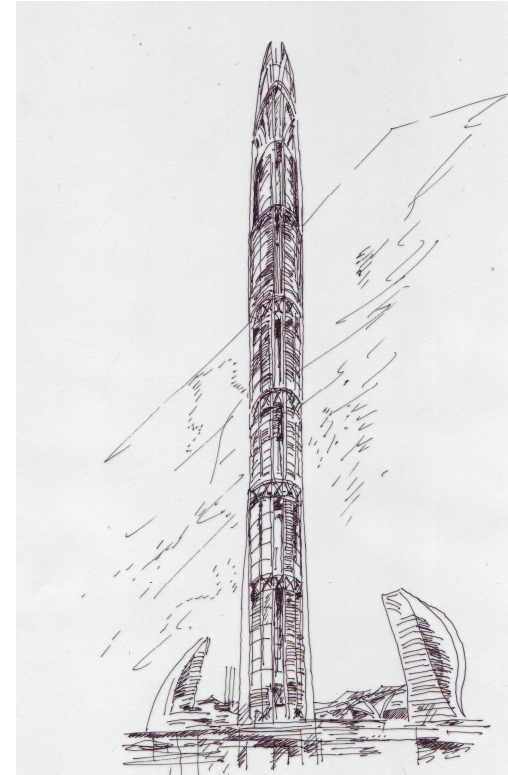


Image 3: Nakheel Harbour & Tower



Image 4: The Lagoons. Development "Dubai Towers" designed by TVS

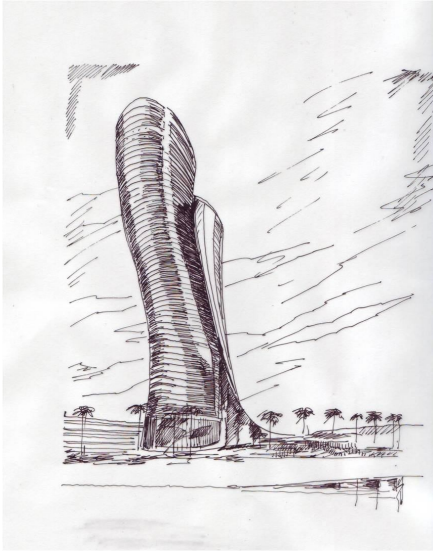
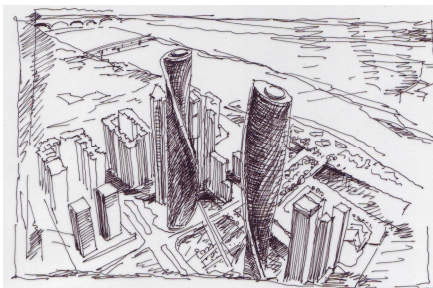


Image 5: Abu Dhabi Convention Centre



*Image 6: Canton Twin Towers.
Architect Hervé Tordjman*

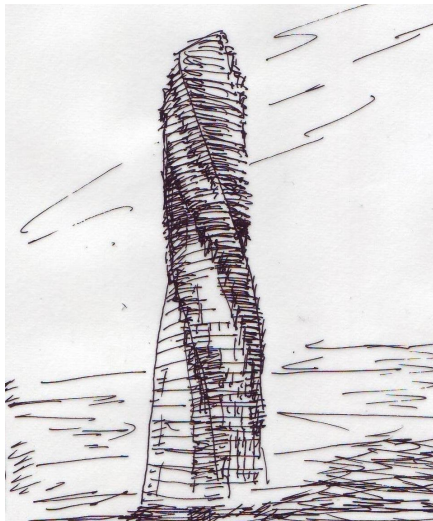


Image 7: Dynamic Da Vinci tower

The design for the new Abu Dhabi Convention Center (image 5) by RMJM Architects depicts a peculiar volumetry seeming to collapse at any moment.

Andrew Bromberg's famous design "The Legs" (image 8) for the United Arab Emirates seems to ignore the gravitation laws and it resembles a quite unpleasant bone structure.

Skyscraper designs for other parts of the world seem bizarre and extravagant too.

The Twin Towers (image 6) from Canton town (China) designed by architect Hervé Tordjman, to reach 514,8 m, take after the DNA structure pattern.

Another skyscraper design, named "Marilyn Monroe" (image 9) – a work of MAD architects studio – which should have been built in Mississauga (Canada), follows the famous artist's graceful bodyline.

Wishing to create a tremendous impact, David Fisher designs the 250 m. "Da Vinci Rotating Towers" (image 7), to be firstly built in Dubai and Moscow. These towers are also called "the dynamic towers" for, according to the author, they are the first skyscrapers rotating 360° on a vertical axis; each story is moving individually and a full cycle is completed in approximately one hour.

The end of skyscrapers

Nowadays, the skyscrapers face many challenges. In some cases, the people themselves are mainly responsible for the current situation through their reckless, self-destructive behaviour; on the other hand, such challenges are generated in the processes of the living system – the Earth – and in its relation with the Universe.



Image 8: "The Legs" Tower



Image 9: "Marilyn Monroe" Tower

Sometimes skyscraper designers mention the huge amounts of energy and materials invested in such structures.

Empire State Building requires over 10 millions of bricks, 1,886 km of elevator cables and 6,400 windows. Sears Tower in Chicago requires 76,000 steel tones, 66,000 mc of concrete, 17,500 tones of mechanical equipments, 40,233.600 km of sanitary installation pipes and 3,218.000 km of cables.

Nakheel Harbour & Tower will require almost 600,000 steel tones and over 100,000.000 km of cables and sanitary installation pipes.

The existing skyscrapers have an impressive number of elevators. Therefore, Taipei 101 has 61 elevators, Petronas Towers – 76 elevators, Sears Tower – 104 elevators, TWO International Finance Center in Hong Kong – 62 elevators and the Empire State Building – 73 elevators.

In point of energy and material consumption, skyscrapers are the perfect picture of present-day wasting civilization. In fact, our consumption society deceives the people, instead of stimulating their dreams!

World Energy Council – WEC representing the interests of 94 states warns on the cheap energy reserves exhaustion in the next 20 years. The oil reserves, including those requiring increased energy to be extracted will come to an end if we keep the present day consumption rate. The steel production will decrease following the metal resources decrease: manganese, chrome, nickel, vanadium, titanium, wolfram, molybdenum; such metals are used to get special steels and alloys; yet, sulphur concentration will increase, as a result of the world resources decrease.

There is a circle: the needs of the civilization increase, but the energy resources decrease....

According to some official reports, in the early 21st century, the energy demand increases by 15%, to rise by 60% until 2030.

In 2005 the world's population yields in 6,5 billions of people, to probably reach 8 billions in 2025; this will entail increased demand of energy, food and drinking water, at global level.

More and more negative people claim that globalization will deepen the foreseen crises (economic, financial, energy and food-related), instead of solving them.

It is implied that mankind will not be able to make considerable energy and material investments for building skyscrapers anymore!

However, skyscrapers are harmful. Their maintenance requires huge energy amounts for the proper operation of the elevators, the ventilation, water and sewerage systems or of the power system and of the calamity shock absorbing sophisticated equipments.

Cleaning and fixing the facades as well as indoor maintenance will cause serious, hardly solvable problems.

The recent history of the USA or of Canada reveals a few blackout cases. On 15 August 2003, New York and Southern Canada face the most serious blackout ever, lasting 24 hours. This is not an isolated case in the US recent history. Less important blackouts are recorded on 9 November 1965, 13 July 1977, 3 July 1996, and 18 January 2001. Nevertheless, in August 2003, two years after the 11

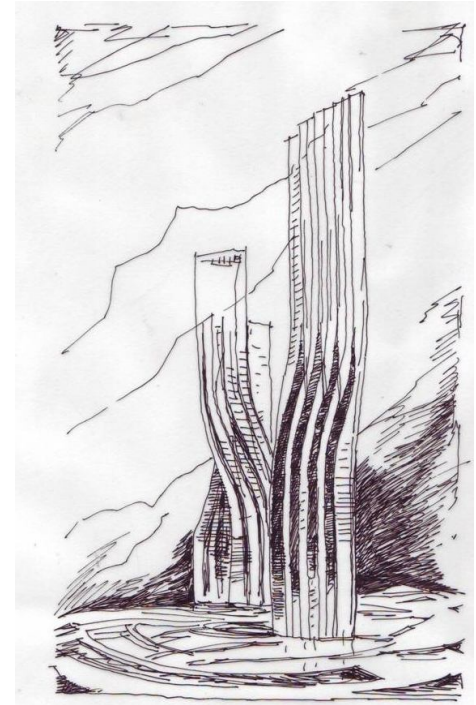


Image 10: "Dancing Towers",
Business Bay Development. Zaha Hadid

September 2001 terrorist attack, tremendous panic is generated. Anyone can imagine the chaos created within the skyscrapers in case of increased blackouts entailing ample repair works. A few days after the August 2003 blackout, Bill Richardson, former Secretary of the US Department for Energy states: "No one builds power transmitters to meet the current demands", while David Cock, the counsellor of a power assessment organization in the USA, warns: "The question is when and where, not if a major blackout occurs".

Even pulling down the existing skyscrapers will generate serious problems for a civilization concerned with stringent survival issues.

It takes more than 6 months (from September 2001 until April 2002) to remove the rubble from the World Trade Centre Twins area, entailing huge power consumption in the USA – the greatest economic power – on a non-recession background.

Skyscrapers are definitely the most exposed structures in case of natural disasters. Recent statistics indicate that the number of such disasters worldwide has quadrupled in the last two decades. If in 1980, 120 cases are recorded, Oxfam organization from Great Britain surveys an incidence of over 500 cases, in 2007. The floods and storms incidence increases from 60 cases in 1980, to 240 in 2007.

In August and September 2005, Katrina and Rita hurricanes devastate New Orleans, Louisiana and the Texas Coast. About 16 hurricanes with peak gusts exceeding 200 km/h are estimated. Specialist studies provide more and more relevant data on hardly foreseeable whirlwinds impacting the skyscrapers.

For over forty years, researchers all over the world have been warning on the effect of carbon dioxide emissions in the atmosphere, through fossil fuel burning in order to produce energy. The immediate effects (more and more visible) are the greenhouse effect, leading to global warming; climate change and increase in the sea and ocean level; increased storms and hurricanes.

Among the most terrible natural disasters, earthquakes are ranked first. According to the National Earthquake Information Centre in the USA, our planet is annually struck by a major earthquake with a magnitude from 8 up on Richter scale, 18 very strong earthquakes measuring between 7,0 and 7,9 on Richter scale, 120 severe earthquakes measuring between 6,0 and 6,9 on Richter scale and about 800 moderate earthquakes measuring between 5,0 and 5,9 on Richter scale.

In the last two years, the seismologists have found out that the number of earthquakes measuring 6 or more on Richter scale exceeds the one indicated in the above-mentioned statistics.

Few architects are familiar with the theory of the famous volcanist, geographer and cineaste Haroun Tazieff, formulated during the 80's, according to which the huge weight of some superstructures concentrated on relatively small areas generate earthquakes in other parts of the world, following great pressures on the ever-changing magma.

If the Empire State Building weights 331,000 tones, Sears Tower, almost 400,000 tones, while Nakheel Harbour & Tower, almost 1,200.000 tones, let's imagine the cumulated weight of the buildings existing in Dubai – where over 60-storied skyscrapers exceeding 200 metres are common - or in New York (over 5,000 skyscrapers), Hong Kong (over 6,000 skyscrapers) and Singapore (over 3,400 skyscrapers).

In 1985, above the southern hemisphere between Argentina and Antarctica, at 20,000 to 50,000 m. high, a huge hole in the o-zone layer (which absorbs 90 % of the ultraviolet rays) is discovered. Its area equals Brazil's total area (8,110.000 ksqm) and it is getting larger. According to the scientists, the deterioration of the o-zone protective layer is a consequence of human actions: people use great amounts of chlorfluorocarbide (CFC), the halogenated substances contained in the freon, eliminated in the atmosphere; these substances rapidly attack the o-zone molecules destroying them. A CFC molecule destroys 10,000 o-zone molecules. Those results in cataract or skin cancer and the Earth will become a

desert. A documentary made in 2006 in Southern Argentina, near the "Land of fire" (Patagonia) highlights the effects of the o-zone layer destruction: blind or black-glassed sheeps grazing a yellow, almost unreal grass and the remaining inhabitants spending most of their time indoors, wearing special protective glasses outdoors.

This image resembles a science fiction movie. I was thinking how could the people living in skyscrapers protect themselves, being highly exposed to ultraviolet rays.

In front of such dramatic realities, present-day philosophers give the verdict: "The sad truth is that we form the ruthless species ever. A profit making-centred technique, beyond control, poisons our air, destroys our soil and forests and taints our water resources. We have destroyed the cycle of life, transforming its various stages in linear, artificial phenomena. We have broken the ecosphere cycles, torn up the ecological web that supports life on Earth. We have found the enemy... in ourselves!"

A great number of people living in skyscrapers also involves psychological issues, besides the wide range of technical issues which must be solved. No psychologist has studied enough the effects of a large community of people living and working hundreds of metres high from the ground.

I remember my conversation with the famous architect and philosopher Constantin Joja in his house, during the 80's. We are discussing a theory formulated by Constantin Noica, Joja's friend and colleague in primary school, according to which, the height of the houses should not exceed the trees'.

Apart from all the risks the skyscrapers are facing in case of natural disasters (I repeat, some of such disasters are generated by present-day civilization), on 11 September 2001, mankind becomes aware of how vulnerable these buildings are when direct attacks, planned by sick minds, occur. Then, along with the World Trade Centre Twins collapse, "a world of certainties treasuring the current values dies. Ever since, most people have been haunted by fear and distrust". The immediate effect: the upper floors of most skyscrapers remain unoccupied...

Furthermore, we must address some hardly foreseeable phenomena, depending on the processes inside the living system – the Earth – such as the magnetic pole movement and shift as well as the Schumann resonance. The latter is discovered by the German physicist, W.O. Schumann, between 1952 and 1957, starting from the idea that the huge electromagnetic circuit and a genuine pulse of the Earth (currently yielding in 12 cycles/second, compared to 7,83 cycles/second in the past) exist. The implications of such a change in the living system would be another perception of the quality of time and of the space/time ratio.

In point of this seemingly apocalyptic picture, parapsychologists warn on the excessive production and consumption of useless items.

Stephen Hawking, the brilliant astrophysicist, has recently made some dark forecasts, stating that mankind is hanging by a thread.

The architect must become a civilization creator

The new civilization marks the end of skyscrapers. Their role in the History of architecture has ended. The existing skyscrapers creating that visual chaos harshly criticized by Lewis Mumford, will be some ruins of a past age. The architect shall be fully aware of the fact that, in spite of what he imagines, he cannot equal the perfection and beauty of the natural treasures, for the mountains will always be higher than skyscrapers, the sea wider than his construction plans and the space could never be compared to the space within the walls of his creations.

But what is the architect's role today, when he must reconsider the values he has believed in for centuries, set other priorities and understand that his profession must take new directions and challenges

to get through? First, he should probably consider Le Corbusier's words: "The architect is the one who deals with human things" and undergo introspection.

A fragment of Corbusier's "Entretien avec les etudiants des Ecoles d'Architecture" (1943) reads: These innocent young people must learn "by the book", but also through "introspection", through the analysis of their conscience: The conscience – this fraternal care for their fellows.

Architecture is a synthesis profession and the architect must be capable to synthesize the data from various fields. Architects from the great ages of Architecture understand that their profession is a synthesis one and strive to become civilization creators. Some of them have succeeded! The architect's role has gradually diminished; nowadays, he carries little weight in the human civilization development process, or he's a mere viewer.

The architect must overcome this lethargy he's been sinking in and focus on vital issues.

In this special age we live, he has the chance to regain his role as a creator of the future civilization in full harmony with the living system – the Earth, paying attention to the legacy for the posterity.

In an era in which mankind seems to have left the stringent survival problems aside to focus on unimportant, frivolous issues, the architect must determine the authorities to take action. In his book "Urbanisme" (1925), Corbusier calls out: "The people are not informed. It is up to us, specialists, to inform them. The authority is absent. Our plans shall determine the authorities to take action". When Corbusier makes that call, the then challenges are less serious than the current ones. "Plan Voisin" demonstrates that neither Corbusier has got over the skyscrapers illusion...

The skyscrapers built in a certain stage of the architecture development process seem to be the perfect solution for hosting large human communities; such structures meet various functional requirements with minimal ground coverage. We find today that this solution has caused many hardly solvable issues.

The architect must find a viable alternative to present-day skyscrapers.

Architecture must be reintegrated into the ecosystem. Hence, Architecture must be considered along with Ecology and with the use of other forms of energy: geothermal, solar, marine and wind energy.

Studying the lifestyle of some communities living beyond the actual civilization, in full harmony with the natural environment and fully using their limited resources must be architects' main concern and a source of inspiration and reflection.

Unless the architect understands his present mission, the only thing left for him to do is to witness the disappearance of the area of his concerns – Architecture – and to return to primitivism.

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