

ARCH 384  
Competitions Elective  
**eVolo 07**  
**Skyscraper Ideas**  
**Competition**  
Winter 2007

Design Submission:

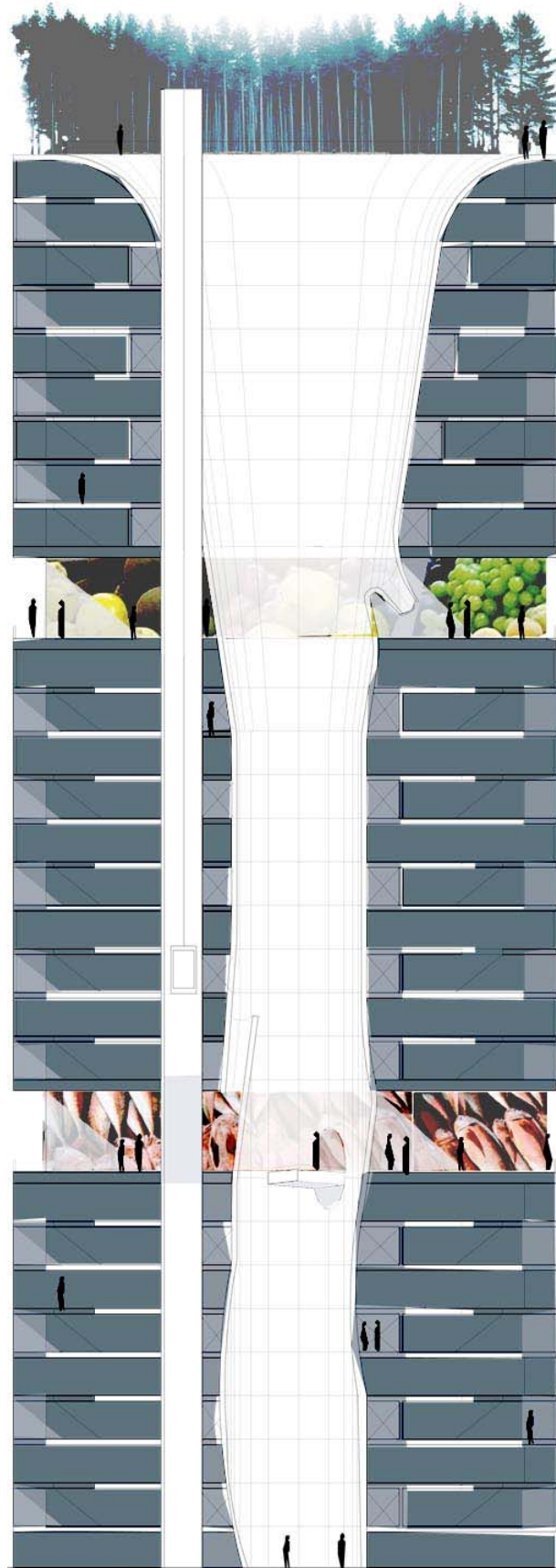
**January 15, 2007**

Design:

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Individual Research Essay:

**Ping Pai**



The purpose of our proposal for a skyscraper is to address the problems facing modern skyscrapers, acknowledge current trends and provide a design suitable for future development. Skyscrapers are the architecture of urban space. The urban realm is determined by issues of population density, money economy and cultural identity. These factors build up a web of complexity in the modern metropolis. The role of architecture is therefore to find order and harmony to the existing condition and accommodate future growth.

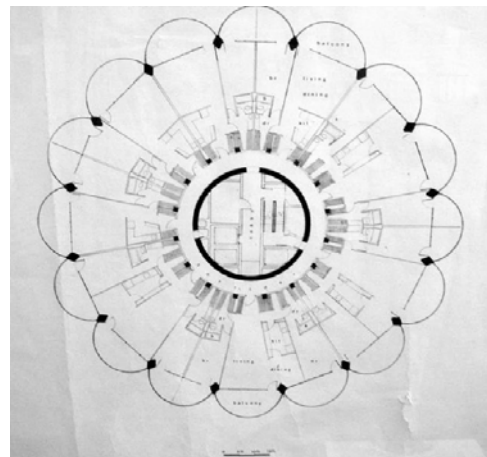
### **Challenges and Problems Facing Skyscrapers**

The development of the skyscrapers was a result of increasing urban density. Skyscrapers are the face of the modern metropolis like New York, Tokyo and Chicago. Land value increases because of prosperous economy and population boom focusing in one area instead of evenly throughout the continent. The increase in land value forces buildings to continuously grow higher. The high rises dispersed the population vertically thus minimizing the building footprint to make maximum use of the land. Within one building, not only a group of people is to be accommodated, but a community of people. These tall buildings are the site of which the capitalist corporations employ hundreds of employees to create an overwhelming efficiency of information production. This efficient production demands a higher order building environment to carry out its function.

Capitalism is obsessed with efficiency therefore speed and complexity shapes the modern metropolis. Infrastructure, communication, offices, residential areas, services,

commercial spaces and along with all other functions of life need to have easy accessibility to one another for maximum use of time and space. There is therefore a trend of skyscrapers resolving to combine a variety of functions to house all aspects of people's lives. The idea is to eliminate time wasted on non-productivity such as commuting great distances to work. All spaces need to be uses to the maximum usage of capital production. Bertrand Goldberg designed a series of "cities" in Chicago in recognition of this trend. His design for Marina City consists of two corn-cob-shaped 61-story residential towers, a saddle-shaped auditorium building, and a mid-rise office building all contained on a raised platform cantilevered over defunct railroad tracks adjacent to the river. Beneath the raised platform at river level is a small marina for pleasure craft. 115,000 square feet of retail and restaurant spaces are provided at the lower levels<sup>1</sup>. Occupants of the building complex can own a home, work and be entertained without needing to leave the city block. Mixed-use development dominates the city building since the 1950's. People rejected the Modernists' building mentality of monotonous buildings for Goldberg's contemporary ideas.

The problem with mixed-used buildings is regulation. There needs to be a regulated relation between the mixed-used buildings to neighboring buildings and the surrounding city. This would ensure the best use of each



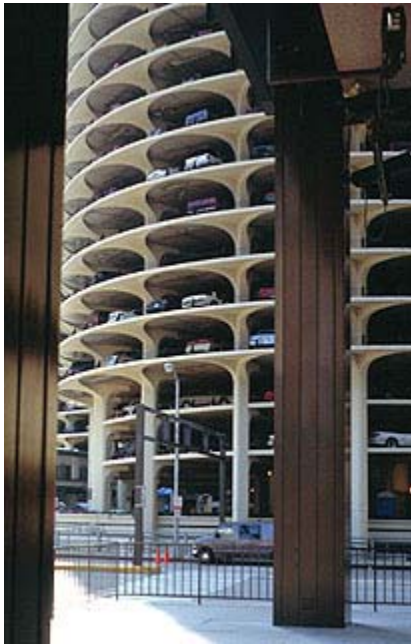
**Figure 1 Marina City Condominium Plan**

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<sup>1</sup> Wikipedia

building. The Marina City offered skyscraping towers which provided the extraordinary view of the Chicago River for the residents.

Goldberg's efforts to provide the view were obvious. He placed parking above grade below the condominium towers to raise the height of all residential units to a minimum of 17 floors above grade. His circular plan and generous balconies for every residential unit invites residents to enjoy the view. Unfortunately a taller Trump Tower will soon be built in front of the Marina City's view towards the river. Light and view interruption will hinder the value of Goldberg's residential units. This could have been avoided if there were set design regulations that took into account further future development.



**Figure 2 State Street**

Regulations would also deal with the problem of the relationship between the buildings and the site. Mixed-use building complex blocks develop characters distinct from the rest of the city. Creating an inner isolated realm could cause a disjunction in the greater city fabric. This is because the buildings are designed in accordance to the needs of interior activity compromising city context considerations. Buildings should be designed to recognize its role along the streetscape and to respect important spaces and artifacts in the surrounding. Marina city, for example, is situated at the corner of Chicago's landmark

State Street and the Chicago River. There is the clear reference to the river in the building design but not along State Street. State Street is known for its vibrant commercial activity but Goldberg places massive parking structures along the street for the benefit of the condominium, neglecting the potentials of its great location. This move dissipates the energy of State Street past the river which could have been prevented if there was a more integrated building guideline.

The word "skyscraper" implies a monumentality of the building form in describing its tremendous height standing out from the surrounding. However, when all buildings reach incredible heights, no specific building stand out from the rest, therefore the monumentality loses half its meaning. This problem exists in many modern metropolises such as Chicago and New York. Due to advanced technology, building forms are much more versatile. Exploration of new forms and new heights are reaching a point of being excessive and so much so that no new buildings are new. All buildings begin to look the same because all ideas have been done. Cities begin to have a sense of homogeneity and the image of pride and power that is associated with skyscrapers does not remain in the scale of one building anymore. It is only the city as a whole that is monumental. As a result, the term "skyscraper" seems to want to be used to describe a city as a whole, instead of merely a building.

In a city of skyscrapers no buildings is more visible than the others. In fact, standing out in the crowd and be visible has become an undesirable quality especially since the September 11<sup>th</sup> incident when the monuments of New York

City were taken down by terrorism. "To be visible is to be a target"<sup>2</sup>, says Kazys Varnelis, an architectural researcher of the Columbia University, "nobody wants to work in such tall structures for fears of safety." Though it may not simply be for safety concerns, rejection of uniqueness is evident in new developing cities. In Toronto, the current development of Concord CityPlace is not well received by Torontonians. The proposed 56 floors high apartment buildings encapsulate people in private towers and neglect the city context. Light, view and public spaces are given up for private ownership. These towers are obstructions to the harmony of Toronto. If buildings must be tall to accommodate growth they must be built evenly in order for none to be too visible.

### **Proposal for a new "Skyscraper"**

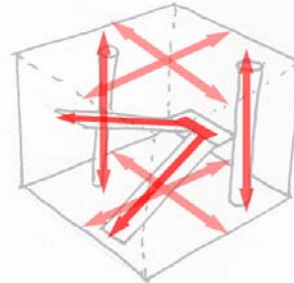
The new skyscraper must be one to accommodate the complexity and efficiency of a city with a set regulatory system to ensure sensible growth. The new skyscraper must also recognize the new monumental scale of high-rises in which no individual structure should dominate the surrounding. As a result, our design for a future "skyscraper" is an inversed "skyscraper city" meant to be built in a city-wide scale. The basic idea of our building is to create a massive solid block to cover the city and using voids and slits to give the block organization, identity and function.

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<sup>2</sup> Varnelis

For maximum efficiency, all programme of a city will be embodied under one roof. The huge building block consists of a three-dimensional circulation system to operate in the giant mass of city space. The system will connect all functions with maximum efficiency. The circulation system consists of three ramps connecting all levels of the building from roof top to the

bottom and from one side to another. Along the ramps are all commercial spaces. These are the main "streets" of the building. The ramps only meet at certain points in each floor. Lateral movement is accommodated at the

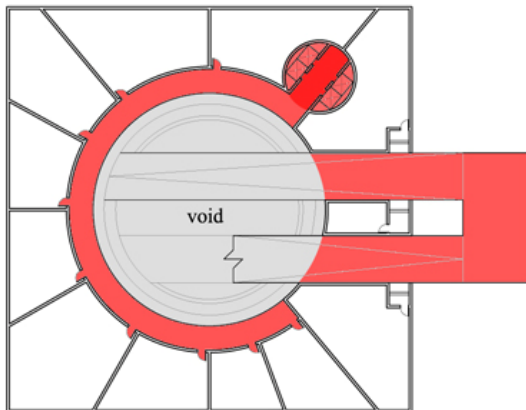


**Figure 3 - 3-D Circulation**

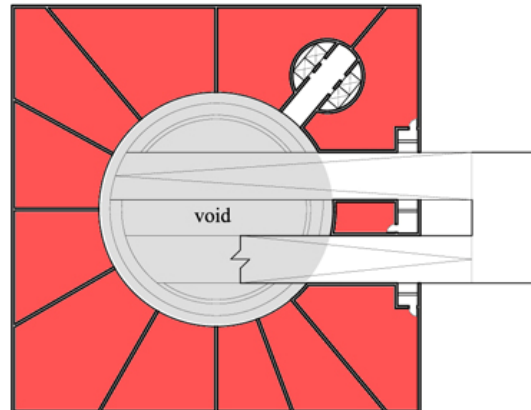
rooftop, two intermediate commercial floors, and the ground floor. Vertical movement is offered by residential elevators and commercial elevators. The combination of these three systems transports people and goods to any point in the building which means that all programme is connected.

The advantage of the super block is to establish a maximum height for building. Any further development of the block will only add onto the block laterally, not vertically. The block is divided by a grid of slits eight meters wide. These slits will ventilate and organize the building block into subdivisions. This breaks down the scale of the super block into 50 meter-wide building units, a more human scale. Further addition to the super block will be built in these modular building units in accordance with the grid pattern.

The act of inversion plays a key role to the super block. Circular voids measuring 40m wide to 20 m wide are punched through the block for light, circulation and identity. These voids are mandatory for every additional building unit that will be built in addition to the block if the city expands. These voids are the means of reserving equal day-lighting and for all living spaces. No conflict of interest will arise if this unity is maintained. The voids are giant light wells for the building units. Living units are organized around these voids for maximum exposure to the light. At every second floor, elevator stops and public corridors wrap around the voids for dispersion of the people into each living unit.



**Figure 4: Circulation Around Void**

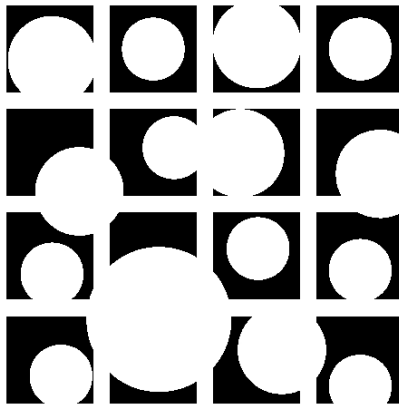


**Figure 5: Unit Organization Around Void**

There is one void for each building unit. Each residential unit occupies two floors, one floor accesses the corridor, the other is a big window for light. The voids are what give form to the building block. The idea of an inversion is that the solid mass gives form to a typical city whereas in our design, the negative spaces dominate. The building is anti-formal in that sense. There is not a clear façade



to this building nor is there a clear visual boundary of the forms. While the regulated grid of slits divide the super block into rectangular boxes, the irregular placement of circular punctures dissolves the visual boundaries. The edges are blurred and therefore no individual solid form stands out. This creates almost an invisible identity to the space. Occupants will locate their building units by identifying the void, not the mass.



**Figure 6 Void and Mass Composition in Plan**

The voids serve the function of structure for the entire city block. The cylindrical hollow shafts act as giant columns holding up the slabs. The slabs in return brace the columns. The slabs are post-tensioned concrete slabs so they can span further distances. This allows for clear span floor spaces and therefore flexibility of space arrangement. The steel structure of the voids is clad with a double skin of glass. The two layers of glass are 500mm apart and opened at top to allow stack effect circulation of air for ventilation of units. Post-tensioned concrete is chosen for the slab for its small depth. Minimizing floor to floor heights is crucial to maximizing the full usage of heights. The elevator cores are secondary lateral load resisting elements of the buildings.

This punctured skyscraper city will continue to accommodate the past issue of complexity and need for efficiency in the metropolis. The design principles are used as mandatory building guidelines for future city growth to ensure a harmonized city. The inversion of the role of mass and open spaces defines building in a different way to suggest a less visible architecture. Architectural invisibility is the direction of the future for skyscrapers. The proposal of our skyscraper is therefore a dive into the future springing from the past and through the present.

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