

Menara Mesiniaga

Ken Yeang



The Menara Mesiniaga is the headquarters for IBM in Subang Jaya near Kuala Lumpur. It was first conceived of in 1989 and finally completed in 1992. IBM asked the office of T.R. Hamzah & Yeang for a building which was a high-tech corporate showcase for their highly visible site and high-technology industry. Also, Ken Yeang designed this building as an example of his bioclimatic skyscraper practices and principles.

The building is an environmental filter, an analogy for synthesis and analysis. The Menara Mesiniaga is a built work that utilizes a basis of traditional Malaysian building models and their transition or evolution into modern principles. It is Yeang's vision of the tropical garden city and it uncovers "the relationship of buildings, landscape and climate . . ." transforming the impact of high-rise development in the ecosystem of a city.

Function and Use

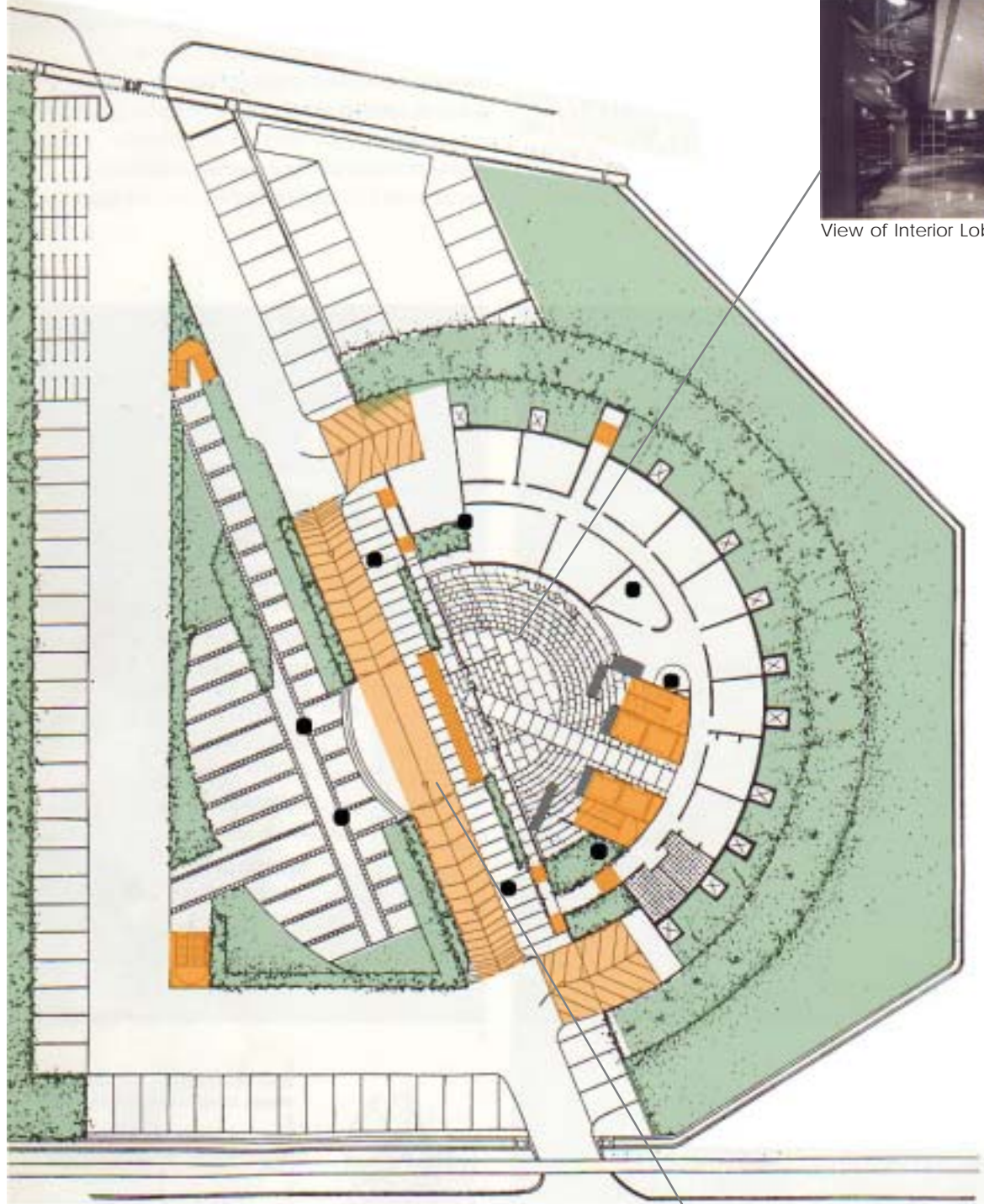
The building is equipped with 6-classrooms, a demo center, a 130-seat auditorium, lounge, cafeteria, and prayer rooms. The building boasts an excellent audiovisual system, complete lighting equipment, administrative and catering services and a large entry foyer for product display and demonstration. It is wired for communications within itself and with its technology partners.

They boast a "commitment to creating a facility that would be sensitive to and in harmony with the local environment, as well as one that reflected the company's aspirations to be an industry leader.

Technical Data

Height - 63 meters
 Floors (over ground) - 14
 Floors (under ground) - 1
 Year started - 1989
 Year completed - 1992
 Gross Floor Area - 6503 m sq

Site and Climate



View of Interior Lobby

Subang Jaya is near Kuala Lumpur in Malaysia. The climate is considered tropical. The year round temperature, heat and humidity are fairly similar throughout the year. The day and night temperature vary little.

Artificial landscape was created to shelter and insulate the lowest three levels from the morning sun. Parking is located below the building and berm.

Menara Mesiniaga is located on a major highway from the airport to Kuala Lumpur. It is in a highly visible location with few buildings within the surrounding context.

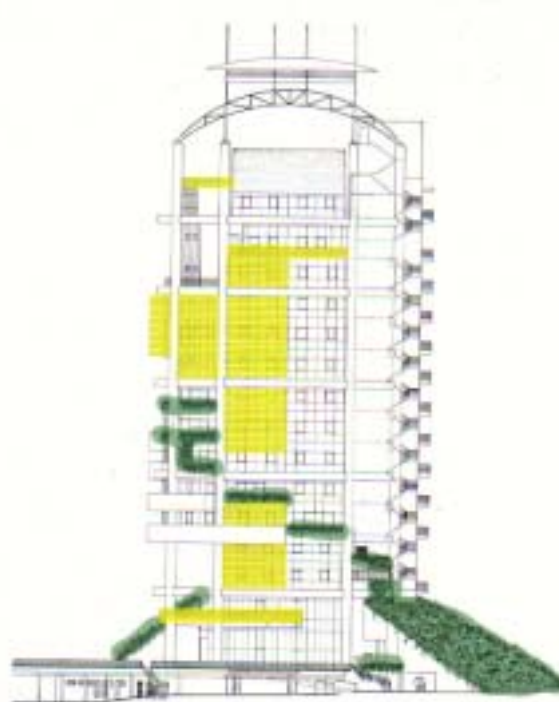


View of Entry (from ground level)

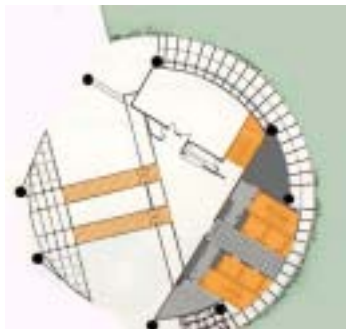
Main Ideas and Concepts for the Menara Mesiniaga:

- Sky gardens that serve as villages
- Spiraling vertical landscape
- Recessed and shaded windows on the East and West
- Curtain wall glazing on the North and South
- Single core service on hot side - East
- Naturally ventilated and sunlit toilets, stair ways and lift lobbies
- Spiral balconies on the exterior walls with full height sliding doors to interior offices

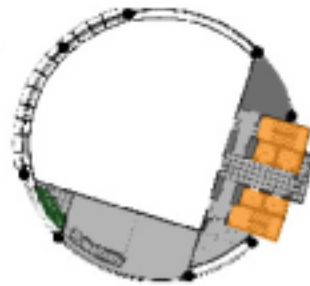
The building is 15 stories tall and circular in plan. Yeang designed this building to include three items: 1- a sloping landscape base to connect the land with the verticality of the building; 2- a circular spiraling body with landscaped sky courts that allow visual relief for office workers as well as providing continuity of spaces connecting the land through the building; and 3- the upper floor provides a swimming pool and gym.



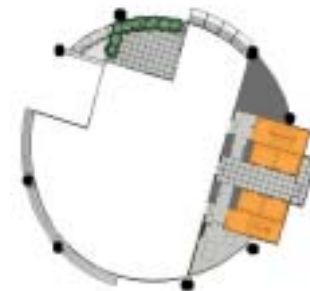
Sun Shaders (yellow) / Garden Spaces (green)



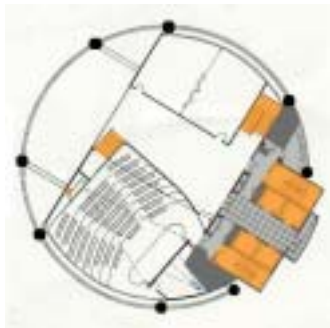
mezzanine level



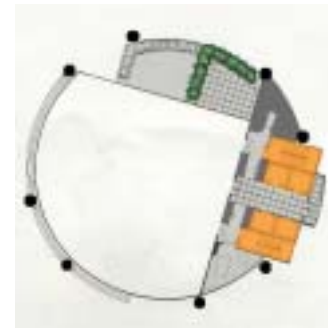
fourth floor



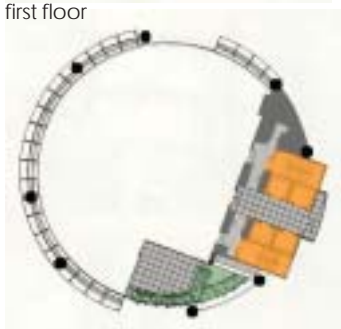
eighth floor



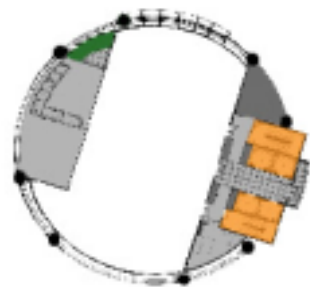
first floor



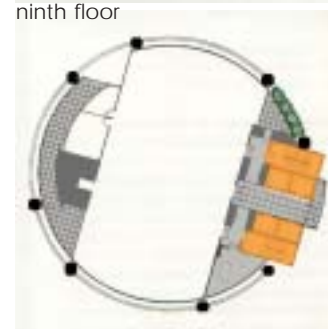
ninth floor



second floor

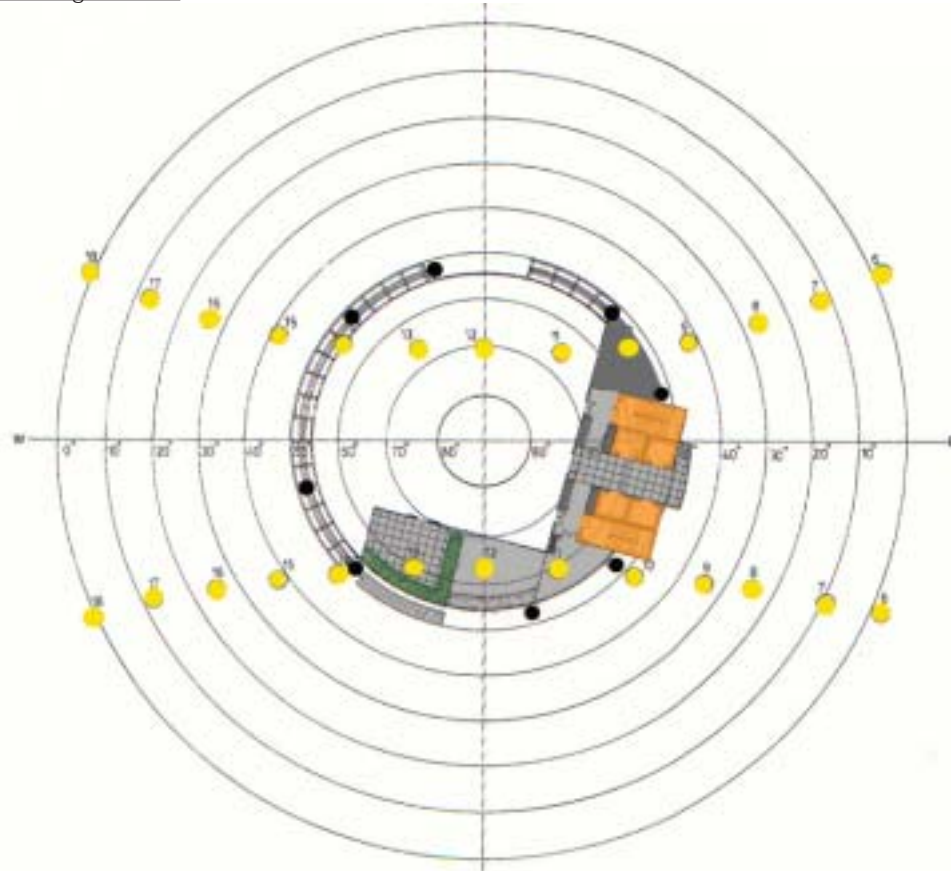


seventh floor



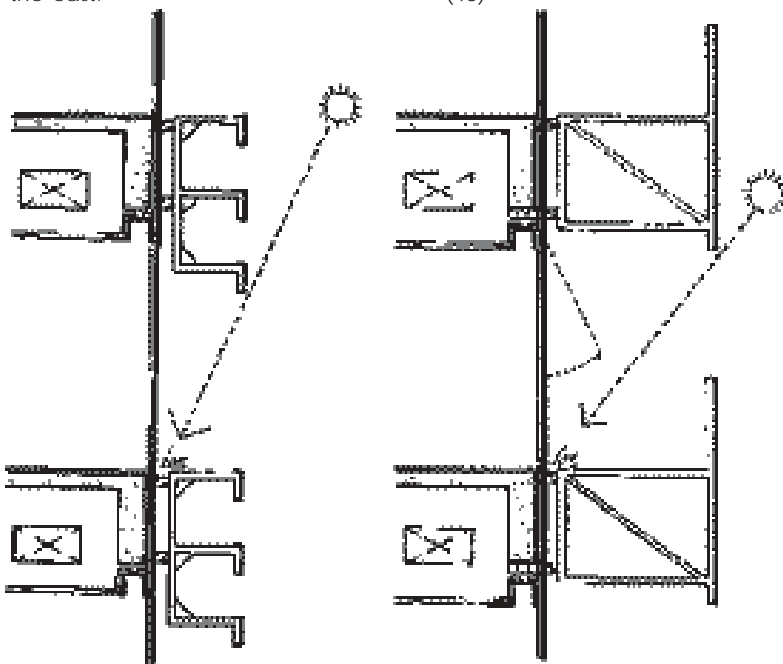
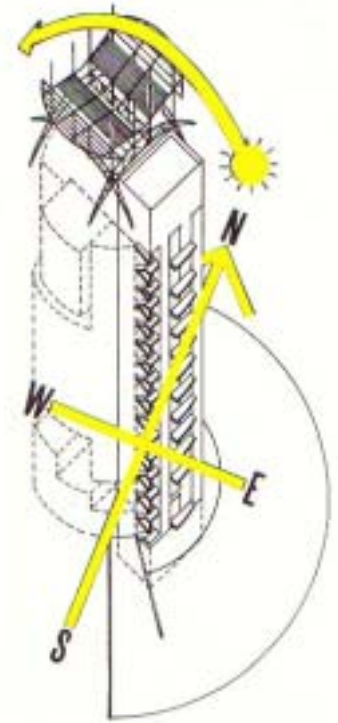
tenth floor

Shading Devices



The facade is a "sieve-like" filter (instead of a "sealed skin"). The louvers and shades relate to the orientation of the building. The deep garden insets allow full height curtain walls on the north and south sides- as a response to the tropical overhead sun path. The core functions are located on the "hot" side, the east.

In *Rethinking the Skyscraper*, by Robert Powell, critic Charles Jencks discusses "a new synthesis for contemporary architecture that is responsive to the climate of a particular place and finds inspiration for a new architecture language from forces that are ultimately cosmic." (48)



Sun Shades

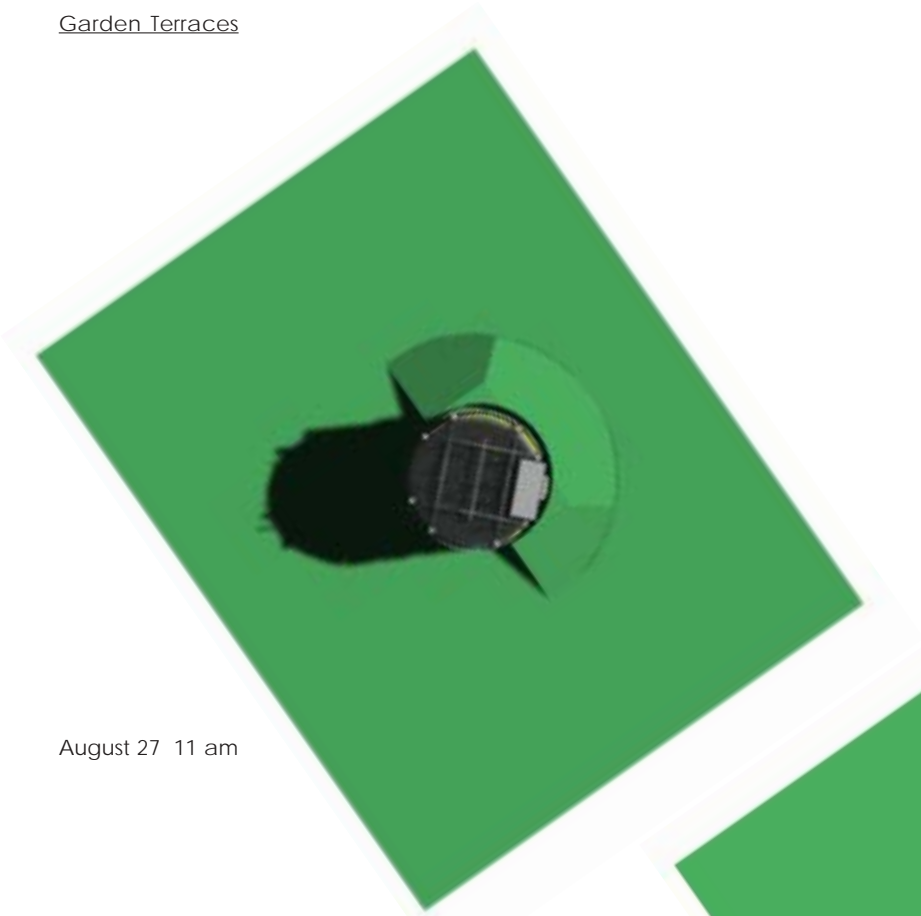
Garden Insets



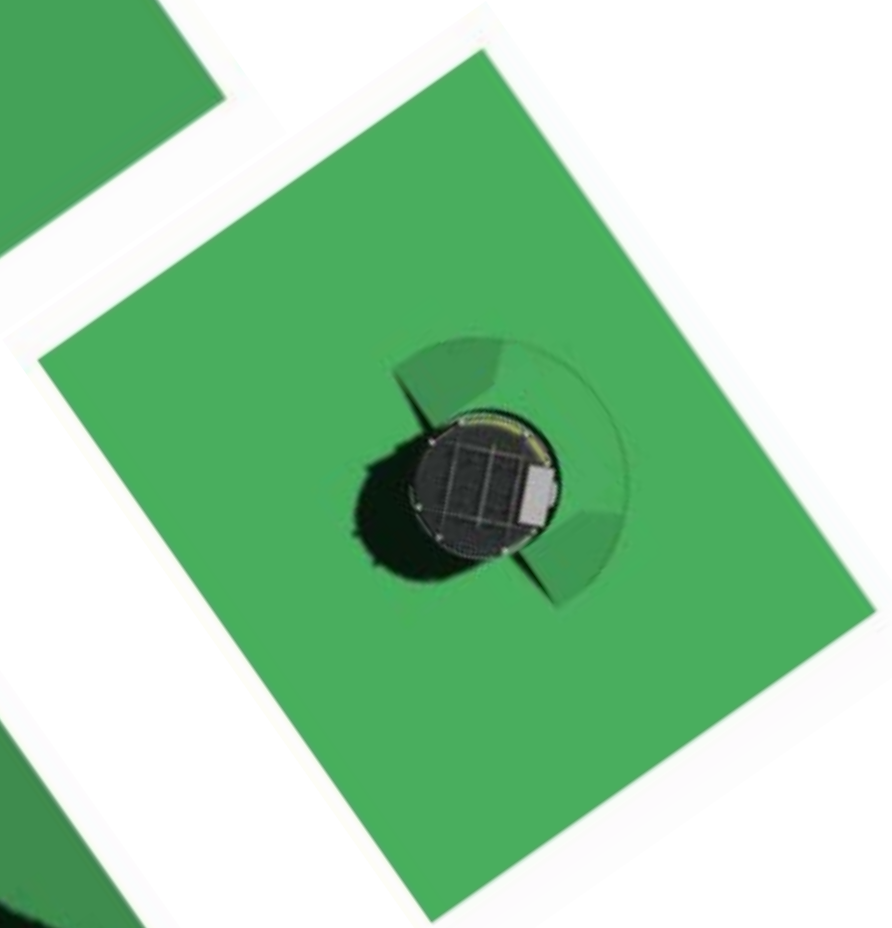
Garden Terraces

Near Kuala Lumpur, Malaysia

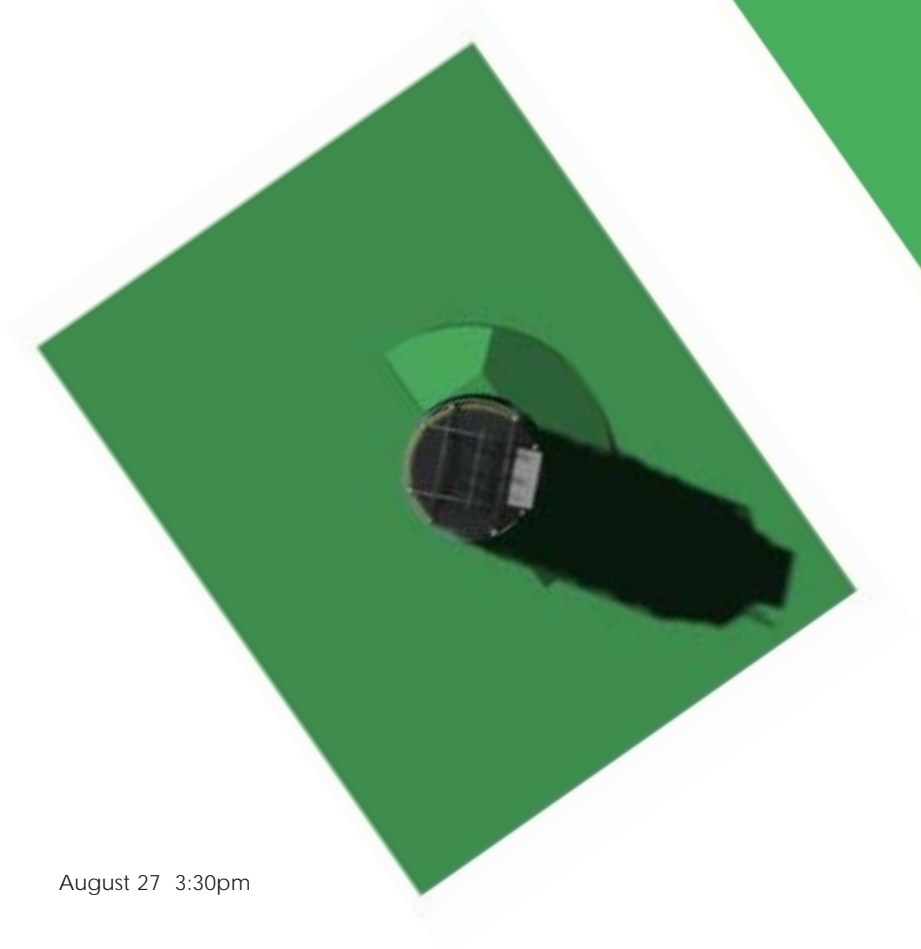
Latitude 3 10 N
Longitude 101 42 E



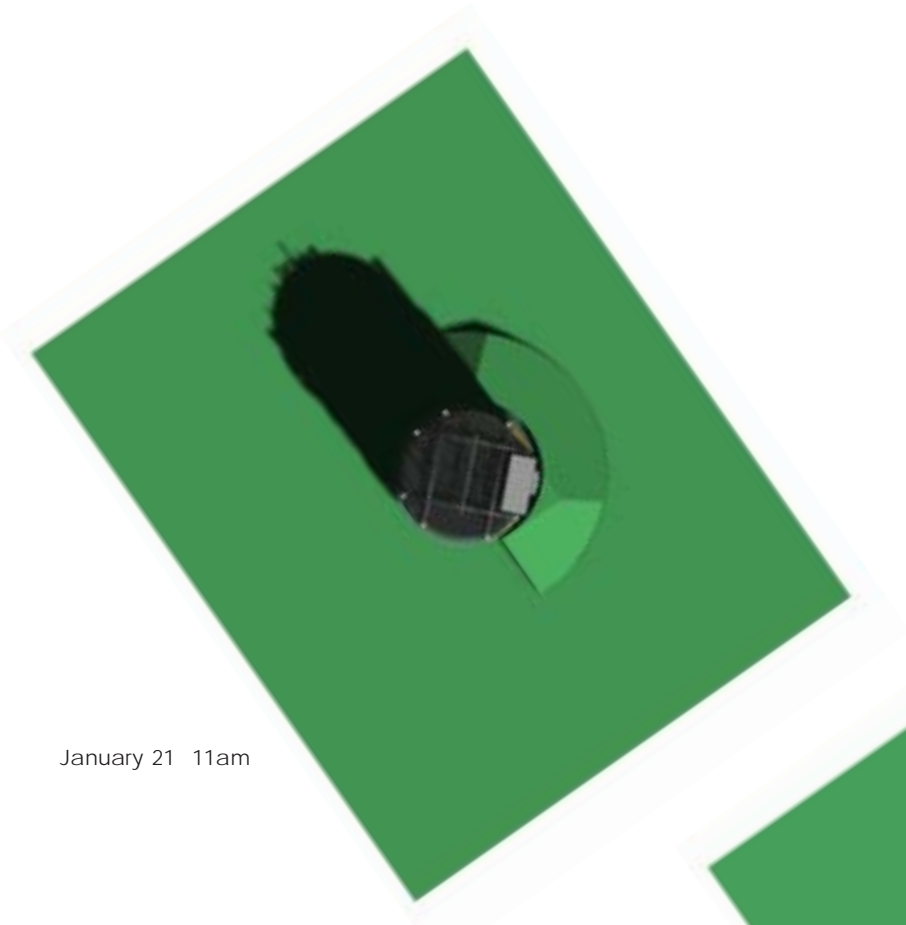
August 27 11 am



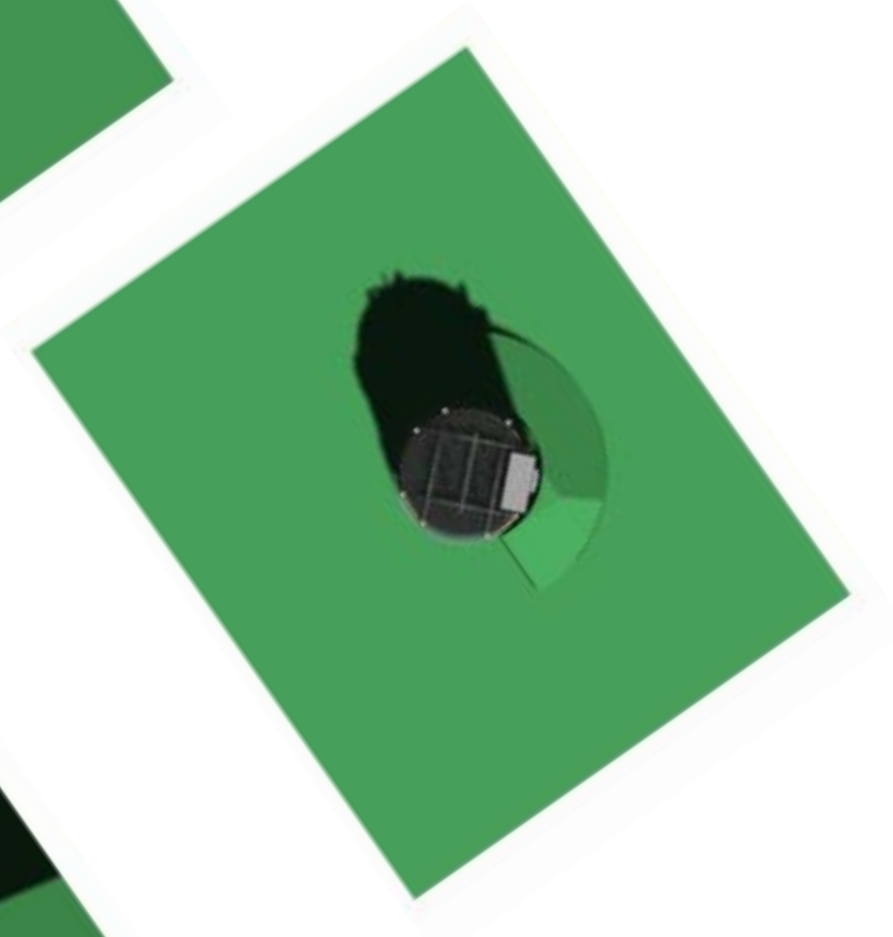
August 27 Noon



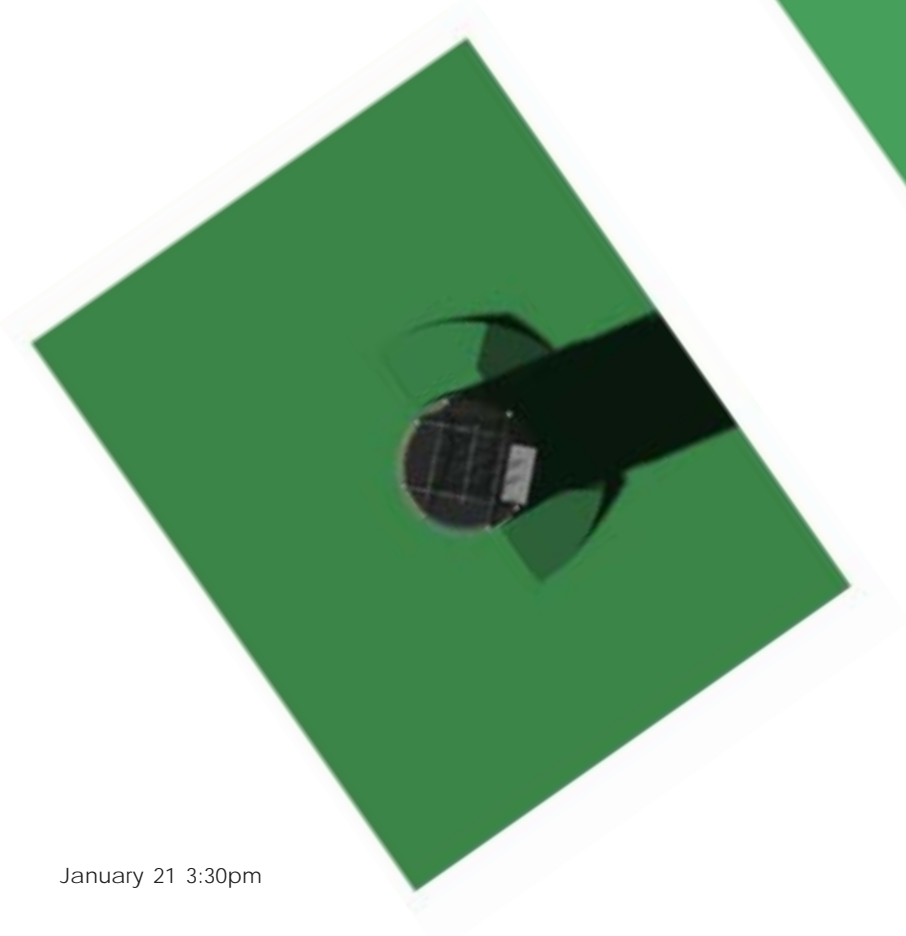
August 27 3:30pm



January 21 11am

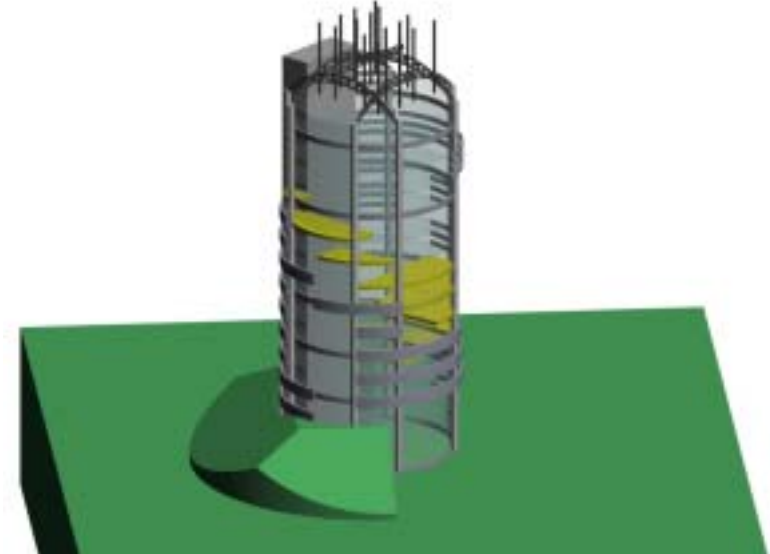
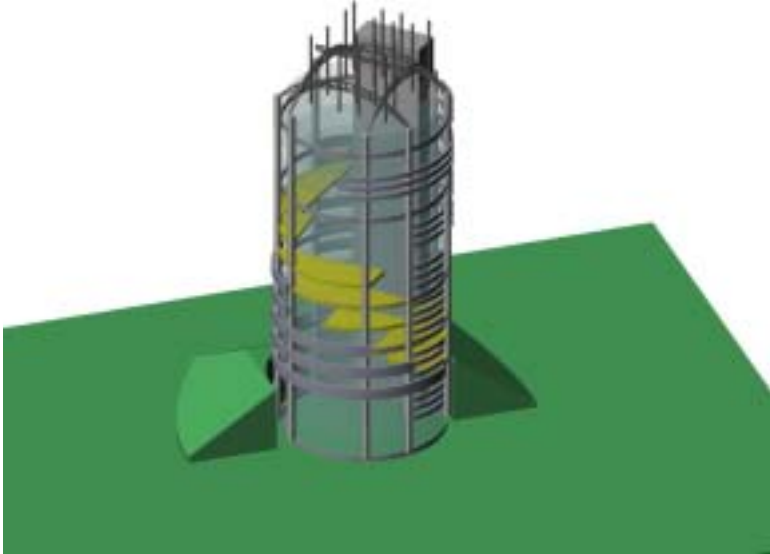
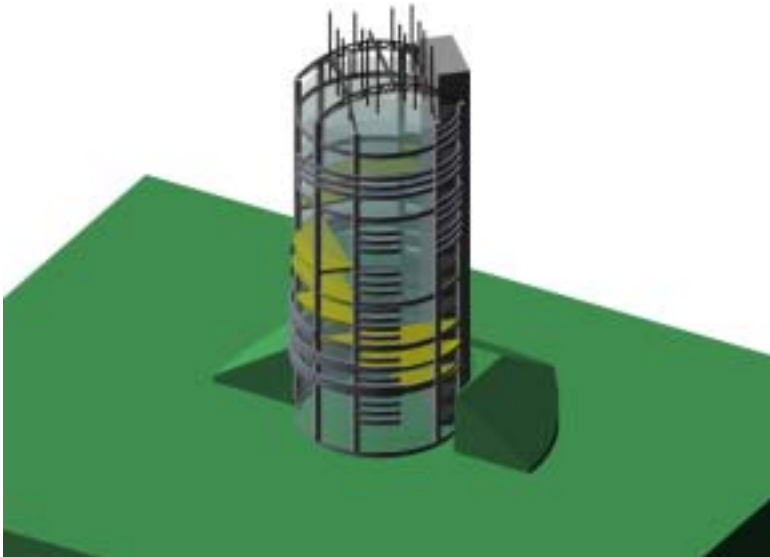


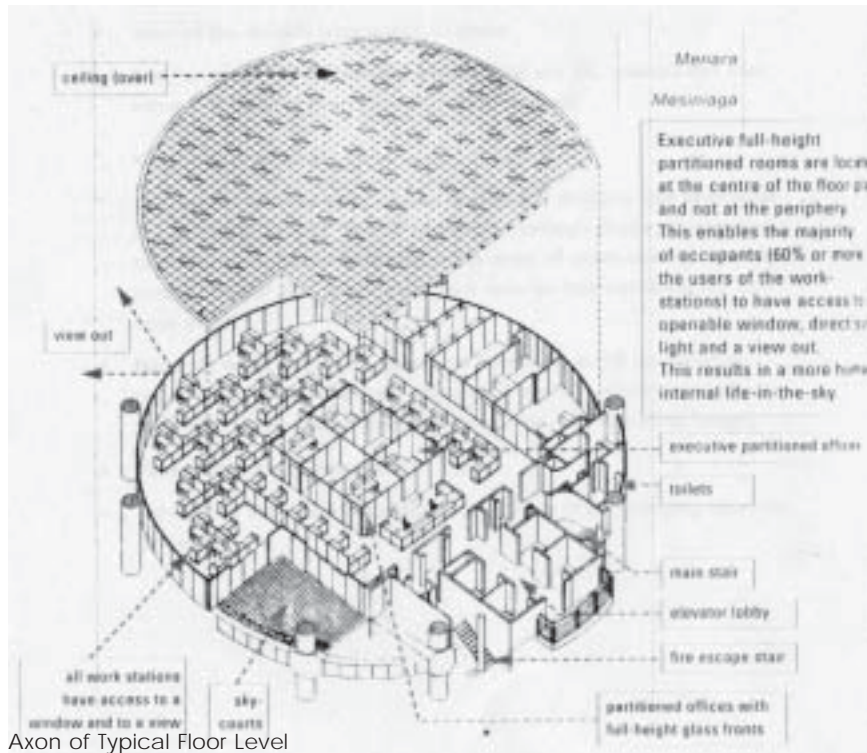
January 21 Noon



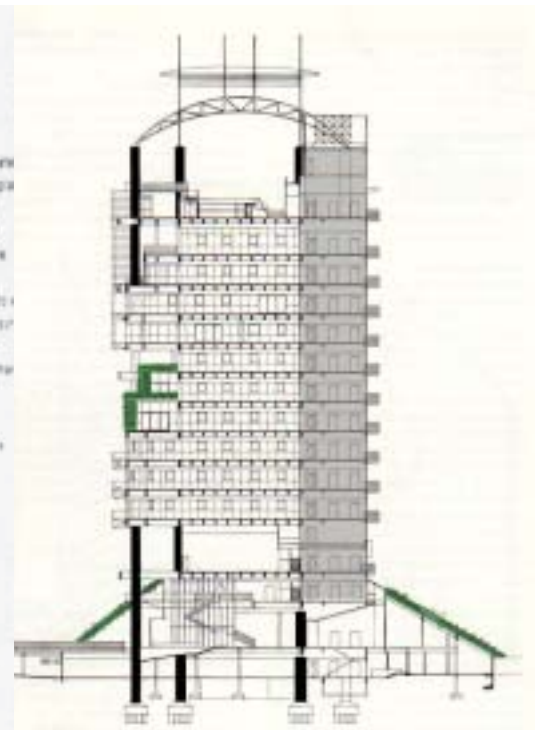
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Garden Spiral
Sun Shaders
Sun Screens





Axon of Typical Floor Level

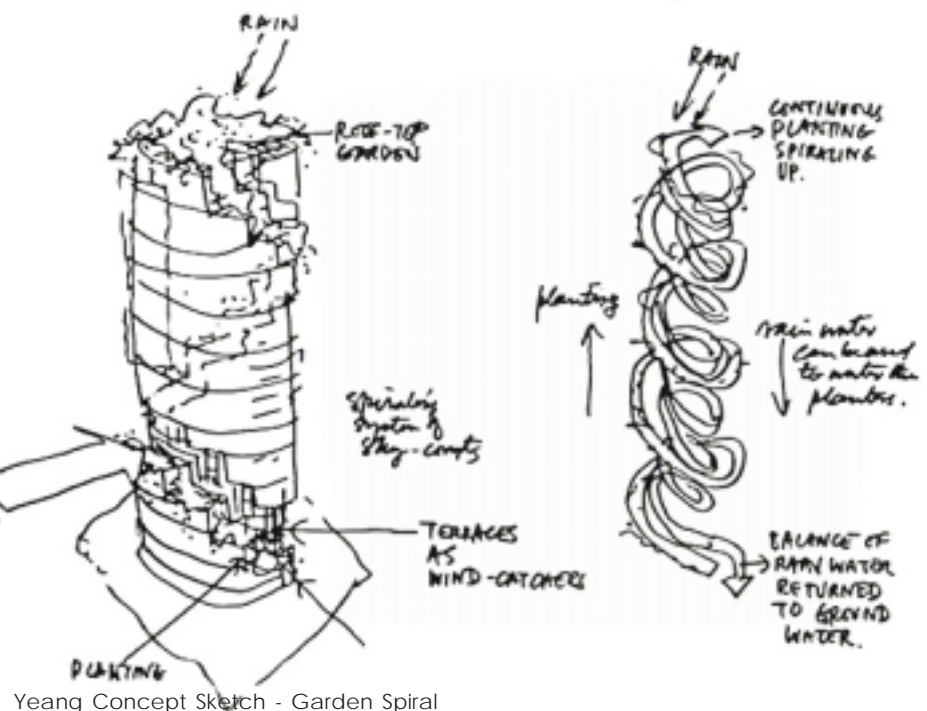


Section Showing Core and Sloped Landscape



Yeang: An ecological building should not be a weapon in a retreating battle. On the contrary, it can contribute positively to the environment. A green area is a productive area. So the building can generate energy instead of consume it.

Tall buildings are exposed to the full extent of the heat, weather and temperatures. The overall building orientation has an important bearing on energy conservation. In the tropics, North and South facing openings reduce the need for insulation. Deep recesses may provide shade on the building's hot sides. Large multistory transitional spaces serve as in-between zones and allow air flow. External walls should be permeable with adjustable openings, "filter-like." Walls can provide solar and weather protection, as well as provide for cross ventilation. Yeang explains that the plan should reflect the patterns of life in a culture of the place. Plantings should travel vertically to generate oxygen and help cool the building. Passive solar shading is generally located on the east and west sides in the tropics. Cross ventilation should let fresh air into the buildings even in air conditioned spaces.



Yeang Concept Sketch - Garden Spiral

Construction / Details



"The most powerful effects on the form of the building are from the sky-courts and the sun-shaded roof and its facilities, together with the separated cores that in their edge condition both shield the tower and are naturally ventilated." (30)

The main structure of Menara Mesiniaga is exposed steel tubes. The floor plates are concrete over steel trusses. The core functions are located on the "hot" or east side. The elevator lobbies and lavatories which are not air conditioned and are on the east side to buffer the climate-controlled offices from the sun. The main office spaces are naturally ventilated and air conditioned. The building is equipped with a Building Automated System which controls energy features including air conditioning and is utilized to reduce energy consumption in equipment. Other passive low energy features include: all windows on the east and west have aluminium louvers to reduce solar gain; and the north and south windows have the deep insets acting as a thermal buffer. The shaft is alternately indented by garden terraces and fitted with brise-soleil on the east and west - that saves \$13590 in air conditioning per year.



The roof is inhabitable. As part of Yeang's fundamental idea of connecting the building back to land - the roof holds a pool and a gym. The roof acts as the capping social space of the building as well as an additional buffer between interior and exterior spaces.

The sun screen structure is made of steel and holds aluminium panels. The structure is capable of holding solar panels (if ever installed). The screen shades the pool as well as the roof of the building. The rain water collection system is also on the roof.

The roof is not problem free. Because of the high-humidity, the insulation has deteriorated and there has been some leakage. Elsewhere in the building some rusting has occurred. Yeang has since stressed an importance on material life-cycle costing.



Yeang's Architectural Theory

Yeang was born in Malaysia and educated in England. He received his PhDs in Psychology and Biology. His thesis research centered on environmental biology and ecology as well as their interaction with built forms. Additionally, his work centered on energy use and performance within the tropical climate. His goal was to achieve the sustainable standard of human well-being/comfort which echoes the native Malaysian tradition of building. In his 1985 essay, "The Tropical City - Ideas and Visions," ideas of bioclimatic design of the city and its systems emerged.

Ideas include:

- An urban environment integrated with and by its landscape
- An aesthetic model - the image of luxuriant tropical urban garden
- An open way of life - community - all made possible by the tropical climate

Yeang wanted to overcome the typical high-rise heat-island effect by creating positive design responses to wind and shade as well as introducing vertical landscaping, the use of heat-sink cladding and the reduction of air conditioning use. Yeang considers passive low-energy efficiency, an improved social environment, and the use of abundant ambient energy essential to design.

Yeang's design principles involve "holistic consideration, of the sustainable use of energy and materials over the life-cycle of a building "system", from source of materials to their inevitable disposal and/or subsequent recycling." (*Rethinking 72*)

Additionally, Yeang incorporates transitional spaces from exteriors to interiors, the principles of identity and regionalism (building in context of its place-reflecting the cultural and climatic influences) and extensions of the land and garden.

Yeang's principles of design include:

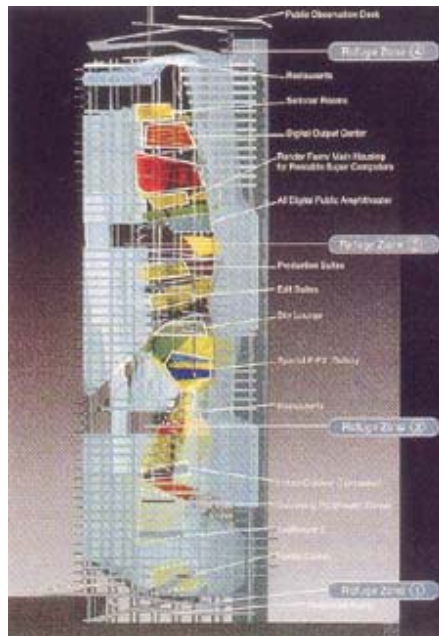
- Responding in plan and form to the climate
- Responding to the landscaping by introducing planting upwards and diagonally across the face of the built forms
- Breaking surfaces from the straight plane to planes in context for the site
- Linkages to the ground and surrounding base
- Responding to the Modern Movement



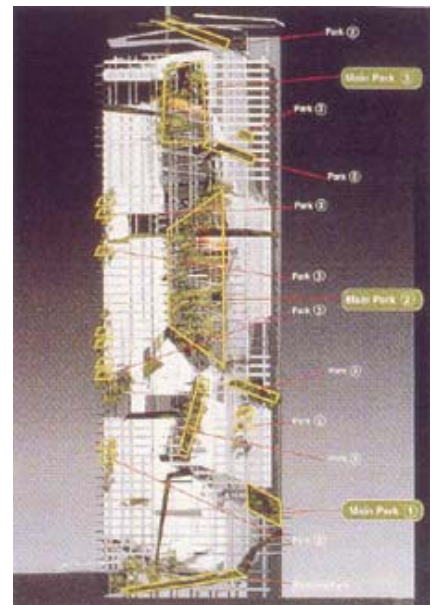
New Taichung Civic Center (1995) continuous public landscape, the buildings are raised above the ground, allowing circulation beneath them, designed for the sun, wind and light in Taiwan.



IBM Plaza - Kuala Lumpur, escalating planter-boxes, diagonally across the face of the building, traverse across the floor in the mid-level and then ascend the other face to the uppermost floor.



Signature Tower, Business and Advanced Technology Centre (1998), vertical building program (above) hierarchy of parking (right).



Sunscreens/Shading device fit like 'loose-clothing' on the structure of the tower.



'The emergent regionalist architecture', he writes, 'seeks its architectural significance through relating its built configuration, aesthetics, organization and technical assembly and materials to a certain place and time.' This is a vital connection that links technology with culture. Indeed, there are several connections:

Firstly, a *direct connection* which involves the creative adaptation for contemporary uses of an existing range of built forms; secondly, an *indirect (abstract) connection*, through the interpretation into form, by design, of the general principle derived from an analysis of architectural heritage and cultural traditions; thirdly, an *inclusive contemporary connection* in design through the selective use of current technology, forms and ideas; fourthly, a *landscape connection* that integrates the building with the physical context and natural history, and, fifthly, a *forward connection* in which design considerations include an anticipation of the likely consequences of the building (*Rethinking 35*).

Works Cited

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- www.archnet.org