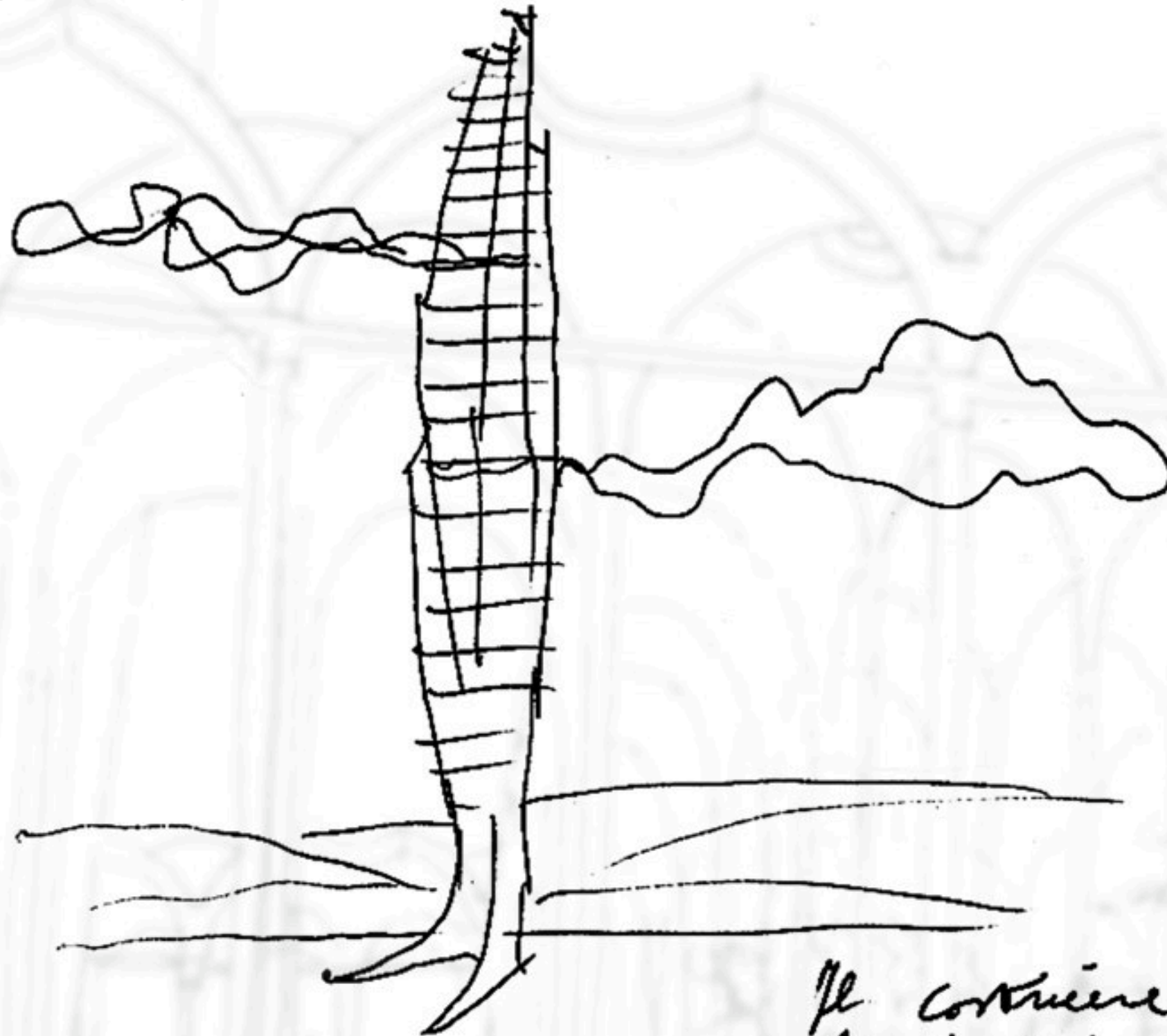


DA.MA. TOWER Plan



*Il costruire
alto sopra
sui piedi.*

Tall buildings stand on their feet



General
Concept

"DA.MA tower", project 3.

The Da.Ma tower is the result of the project undertaken by a team of Italian planners, whose work focuses on resolving problems connected to respecting environmental impact (architecture and shape design), energy saving (Engineering and natural local energy) and the new social demands of everyday life (Philosophy of the quality of life and health).

"The form of the planet we live on is our body created by God and consequently each individual has the duty to respect it, its natural energy is the food that allows us to maintain our body, and to make sure that this can continue to be, we need the skill of wisdom."

The Da.Ma tower is characterised by three precise architectural elements that respect the environment by integrating their visual impact, such as:

1. The Tower, designed as a regular parallelepiped vertically crossed by a light well in the centre of the building, clad on the outside by semi-transparent trapezoid elements that together take on the shape of an irregular diamond.
2. The Loggia, on the ground floor surrounding the tower, has been designed to feature a tall colonnade topped by large vaults with glazings at the top, which will cover the extensive shaded and luxuriant gardens, the office spaces and the shopping centre designed with modular regular shapes with a step-like arrangement, which will contain hanging gardens that create a link with the ground floor garden.
3. The Cultural Centre, an architectural element clad in a structure decorated by a tessie of pearls purposely detached from the tower and set on a pedestal to underline the cultural and religious function it has been designed for.

The DA.MA Tower uses three natural resources for climatising the spaces:

1. Air, by exploiting the wind and forcing it to move with the opening of the central light well that acts as a chimney connecting all the internal galleries, the space between the perimeter wall and the cladding, the special shape of the garden vaults that create slight vortices and the open lattice cladding designed as a fabric of pearls that allows the air to filter from all its component parts.
2. Water, which runs around the vaulted roof of the Loggia and atop the Cultural Centre's roof, to cool the spaces.
3. Flora, set on the tower's hanging terraces and in the garden to improve the quality of the air and to filter the external temperature towards the interior.

Lastly, the DA.MA Tower unites three fundamental concepts of the quality of life, namely:

1. Harmony, the pleasure of living family life in a wholesome space, clad in marble, stone and Italian tiles, decorated with trompe l'oeil frescoes painted by artists from all over the world and surrounded by native species of plants and flowers.
2. Culture, having access to a place in which to pray, read and attend cultural events, a place dedicated to studying and congresses, a place offering the chance to meditate.
3. Simplicity, to tackle the routine needs of everyday life, with access to the shopping centre, going to work in the office areas, using the sports facilities and wandering in a protected garden, chatting with friends.



Architectural Concept

Architectural concept.

*"Designing a tall building it's like to be forced to look at the sky.
You need a uniformity of signs that even Babel was unable to achieve.
Is it possible to conquer the sky without offending God?"*

*Yes.
But only if we design things that rise up by looking at the ground.
The foot is the fundamental.
A man stands on his feet."*

The DA.MA Tower project originated from a consideration on the meaning of building vertically. The drawing we begin our presentation with is an ironic sketch, a cartoon almost. "Tall buildings stand on their feet", it says. Man has always felt the duty to accomplish daring feats. And building skyscrapers is surely one of these.

Modern construction technologies let us build in such a way: buildings functionally perfect, with outstanding living standards. We imagined a series of places almost like it was a tale. And the project, just like every tale, has a leitmotif that links the various scenes that take place: this leitmotif that connects all the environments is surely an imaginary place. The aim of the project is to create a space where the imagination of visitors and residents is active and allows them to achieve their own identity. It is our intention that by living or working in or even just passing through the DA.MA Tower, each person takes away a little piece of memory, characterised by its being a balanced place of wellness, able to give strong emotions and controlled feelings of comfort alike. There is no elevation without a base.

It's impossible to build upwards without a solid base. That's why the DA.MA Tower's plan focused at first on defining the basic architectural elements (the porticoed base with ribbed vaults) as compositional elements on which the monumental elements (the diamond tower and the cultural centre) take shape and their raison d'être. Focusing on the definition of the spaces on the ground floor is therefore the first stage of the composition articulation process in vertical space.

The entire system is fundamentally broken down into three elements:

The loggia
The diamond tower
The cultural centre

The loggia_The connection between urban pathways and the lot is the portico-area all around the tower. The ground floor has therefore been designed as a series of domed vaults that are glazed at the keystone.

The grid pattern respects the proportion of a square and is rotated through 45° so that the perspective is not fixed like in a basilica-building, but it changes constantly as one passes through the interior.

The pillars bearing the vaults have been designed to convey a light shape. For this reason the 6x6 m square the vault is set on, has a height of about 14 metres, so that the verticality of the space pre-announces the greater verticality of the diamond tower in the centre of the system. The loggia will contain:

*The garden*_an exotic garden will unfold through the pillars. This creates a place protected from the sun lending greater environmental comfort.

The garden unfolds through the pillars and the trees stand beneath the vaults. This space has been designed as a tribute to the tradition of gardens and vault-topped places that have always reached their highest expression in the Middle East.

*The terraced offices*_as a visual continuity of the gardens, three storeys of offices or shops can be organised on terraced levels.

This arrangement allows a direct relationship with the public space below, so that during working hours will be achieved a great comfort.

Actually, the large vaulted garden is a mere canopy, that in botanical speaking means the uppermost part of a tropical forest, that includes 80% of all leaves and where 95% of sunlight is absorbed.

Exactly like this natural example, the DAMA Tower will be a structure rising up 14 metres above ground level, covering the garden and shopping centre area, that also will let a little sunlight filter through the holes in the keystone and provide support to night time lighting.

The primary function of the vaulted grid is to create a union between the shopping area and the garden..

The tower_ The tower develops at the centre of the loggia.

Externally, it is defined by faces of structural glass having the form of a series of irregular polygons (faces) so that the topology of the external shape appears as a crystal that has just been unearthed and has not yet been cut. The tower structure is formed by a central, almost blind vertical core in reinforced cement and a metal structural system forming a vertical polygonal grid.

The connection between the former and the latter is constituted by ribbed floors that join the two main structures, allowing them to interact to provide general support. The central core is characterised by a deep light well that crosses the tower from the base to the tip to create a true chimney effect.

The apartment service areas, that develop vertically along it, therefore allow the fresh air and natural ventilation generated inside the large central light well to exchange with the air generated by the windows and climatic mitigation environments on the façade. The light well is covered with marble and the overall appearance evokes a marble quarry.

Two or three floors "doors" leading to the exterior facade are placed at regular intervals along the vertical axis.

These doors work as a vent and restore the light well's natural ventilation, as well as enhancing its appearance, renewing the source of light and extending the common-spaces with public lounges.

The cultural centre_On the opposite side of the tower, arranged symmetrically to the diamond tower, lies the cultural centre building.

Made up of three main rooms, it is raised off the ground to suggest the elevation from the ground to access the place of worship and cultural events.

The structure's flexible design makes it equally suitable for use as an exhibition or meeting venue or even as a conference centre.

Its geometrical shape is fundamentally composed of a parallelepiped with an inset base in reinforced cement, to be used for all the building's accessory functions (public conveniences, installations, plant rooms and material deposits. The façades are composed of filters (at least two). The main design of the façade is a mesh of pearls.

This symbolic element is associated to the central idea of the cultural centre. The pearl design, which is repeated and rotated through 45°, will become the façade's main feature and allow the light to filter inside. We chose to give this place a simple geometry, a separate living form with its own identity, like a dress on the dimension of the place that opens up new viewpoints over the vaulted gardens.



The first step towards the development of an architectural project is to study local conditions. Qatar's desert climate, with torrid summers and relatively warm winters suggested that the buildings should provide good protection from the sun's rays and optimal exploitation of natural internal ventilation to limit energy consumption. Another concern was to provide good protection from the great humidity of the external climate, which is regulated by constant ventilation of the spaces.

The wish to create buildings with a "NATURAL" environmental impact, suggested the use of simple forms: a tower (diamond), a garden (oasis) and a Cultural Centre (pearls). The Arab tradition offers many examples of how towers can be used to obtain efficient natural ventilation of interior environments, such as Iran or Iraq's wind towers or the Qa'a in Egypt. The Tower, which has a high lobby, works as a "chimney" for the base of the building: the Garden, with the shopping areas, is therefore ventilated by the natural aspiration action of the tower's lobby.

The Loggia

Natural ventilation: the gallery that connects the Garden and the tower to the Religious Centre also acts as the main air access in the building. The staggered terrace layout of the retail storeys allows natural air changeover: it is sucked from inside the retail areas towards the edge of the terraces and then towards the Tower lobby, that works as a chimney.

Roof: all year round the roof is exposed to the build up of heat caused by the sun's rays.

A system of pipes with circulating water will be installed within the roof vaults; the water will remove the heat in excess and during winter nights will release the energy back into the space through a system of underfloor pipes.

The Tower

Thermal insulation of the building's envelope. Towers must be planned to minimise heat transfer through the building envelope.

So that, we designed a "double layer" (double façade) cladding: two skins, an external skin that defines the tower's form and an internal skin that bounds the offices, create an intermediate space with a variable depth of 1.5 to 3 metres. This space, that can be used as an hanging garden, a place to talk and relax, creates a thermal-buffer that reduces the heat's flow towards the interior. The depth of this intermediate space between the external and internal climates, depends on how the facades are oriented: to the south, where the sun's rays have the strongest effect, the double façade will be deeper (2 – 3 metres), and to the north it will be shallower (from 1.5 – two metres); to the east and west that space will have intermediate depths.

Glazing: to avoid problems connected to the overheating of the internal spaces, it's better to reduce the effects of excess direct sunrays, with adequate screening, guaranteed by photovoltaic glazing. With built-in photovoltaic cells, this energy-generating glazing performs a dual role as it captures the sun's energy and provides good screening on the interior.

The entire façade will be well protected from the winds that are particularly strong in the springtime.

Natural lighting. The natural lighting system has been developed in an organic way: daylight follows a rational pathway inside the tower.

To allow optimal exploitation of daylight inside, a tetrahedron, clad in light-catching prisms, will be built at the top of the tower. The prism-shaped glazing is able to filter light rays, excluding infrared radiation (which would cause a spaces' overheat), but allowing the wavelength of visible light to enter. The filtered rays are then directed towards a series of electronically controlled heliostat mirrors, inside the lobby. The lobby walls, covered with a system of mirrored surfaces, are able to reflect the light to the various storeys of the tower.

Terracing. The tower will be provided with terraces overlooking the different sides of the building; so that each storey will have garden on at least one side.

These terrace elements will allow further natural light access through the lobby and improved natural ventilation.

The cultural centre

The roof: a one-metre-deep water basin, set on the roof, will mitigate the effect of the sun's rays.

The liquid will accumulate heat and transfer it through a system of pipes. The water heated on the roof will be partly used for the public conveniences on the retail storeys of the garden and, during the winter, will be used for the underfloor heating of the religious centre.

The water, which is trapped between an upper layer of glass that prevents evaporation and a lower layer, will filter sunrays, to create interesting lighting effects inside the religious centre.

The walls of the building have been designed to guarantee actual protection from the heat:

a double cladding has therefore been designed to create an intermediate space (thermal – buffer) able to reduce heat access.

The two longer sides of the building contain service areas with a depth of about 3 metres with emergency stairs, public conveniences and deposits.

The shorter sides contain two garden areas that also contribute to reduce heat access from the outside.

The cladding of the religious centre has been designed as a system that dissipates heat rather than accumulating it.

Microventilation. The envelope's external surface will be a "pearl-shaped tissue" allowing microventilation through a series of small cavities, thus further reducing the negative effects of the sun's rays.

When used carefully, in line with local conditions, technology allows us to combine the more traditional aspects of social relationships with contemporary lifestyles, including the presence, at the same time, in the same place, of retail space, offices, homes, leisure areas and religious places.

Program

1. Multifunctional Base

Garden	mq 2250
Schopping center area	mq 4000
Parking	mq 4000
Terraced offices	mq 4000

Total level	Garden	1
	Schopping center area	3
	Parking	4
	Terraced offices	3

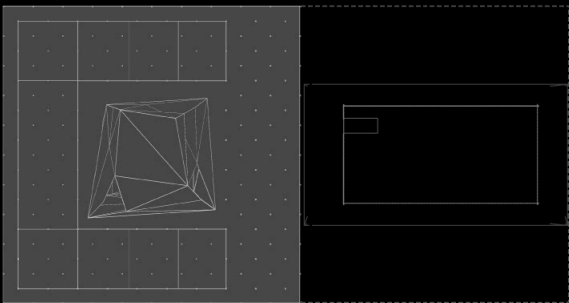
2. Tower

Floor size	mq 1000
Total level	50

3. Cultural centre

Floor size	mq 1500
Total level	3 + 1 services

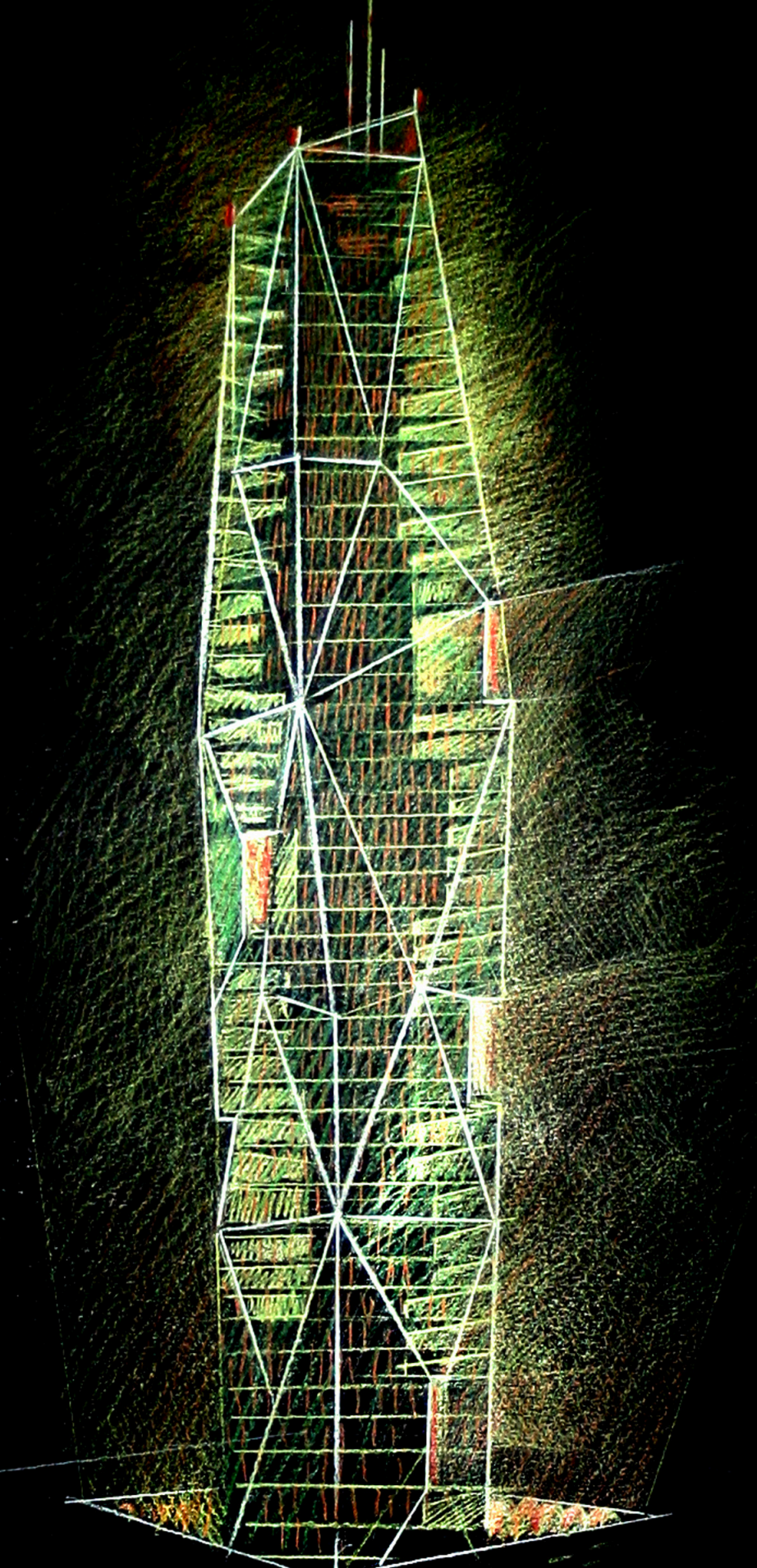
4. Total Area Size



A

B

A	mq 8000
B	mq 3000



DA MA TOWER plan

Designing a tall building it's like to be forced to look at the sky.

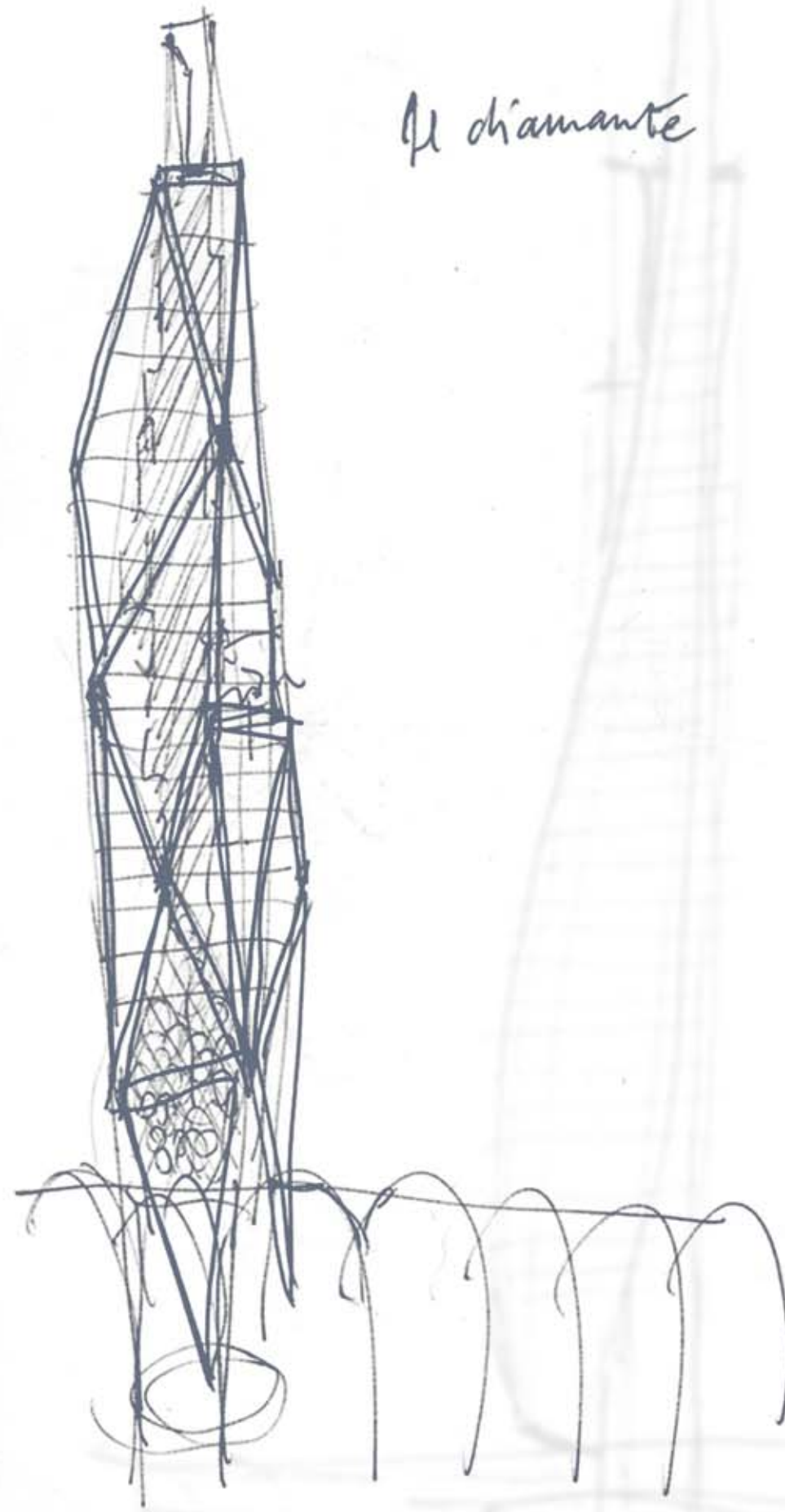
You need a uniformity of signs that even Babel was unable to achieve.

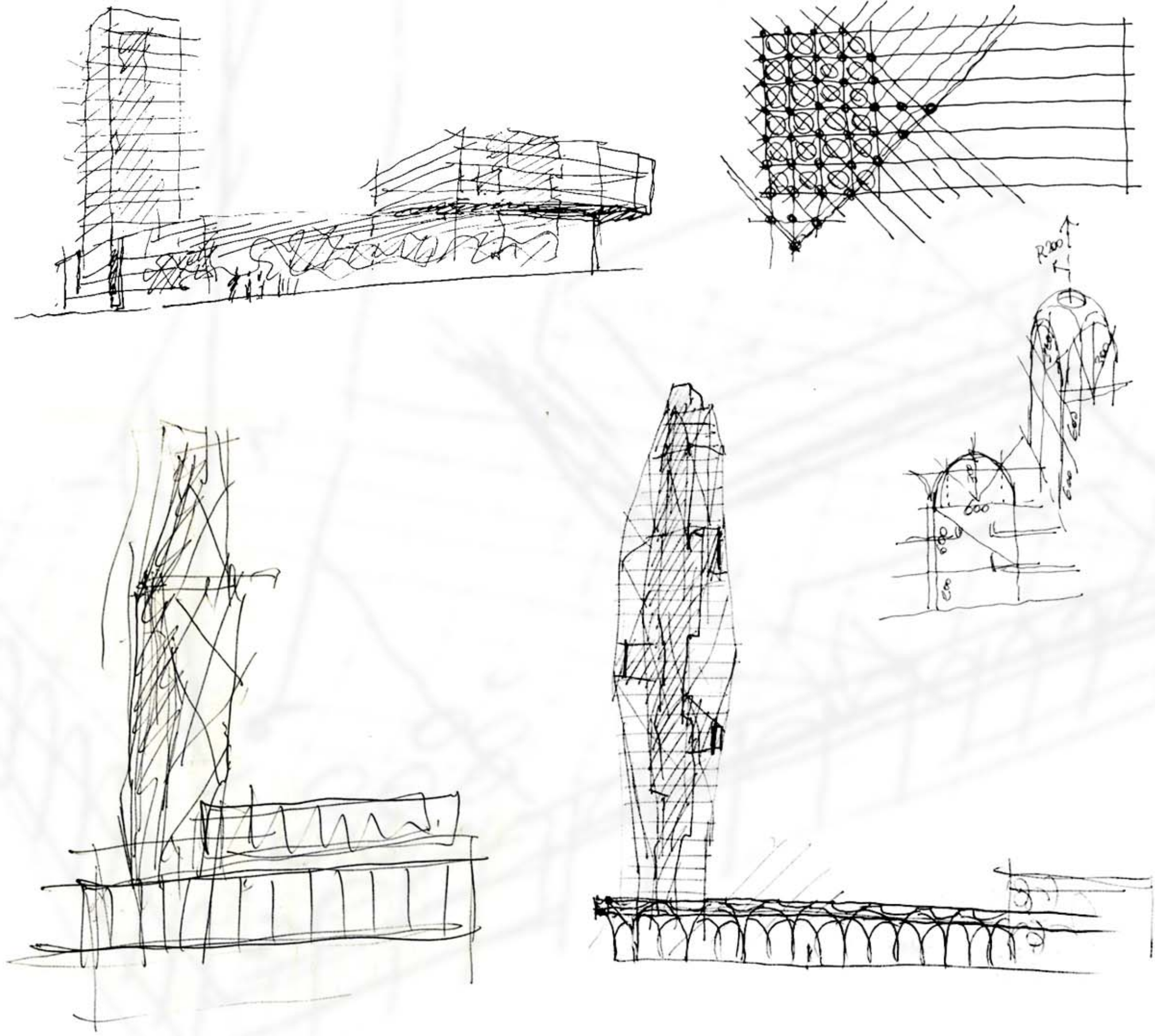
Is it possible to conquer the sky without offending God?

Yes.

But only if we design things that rise up by looking at the ground.

The foot is the fundamental.





DA MA TOWER plan

Concept

Sketches

The entire system is fundamentally broken down
three elements:

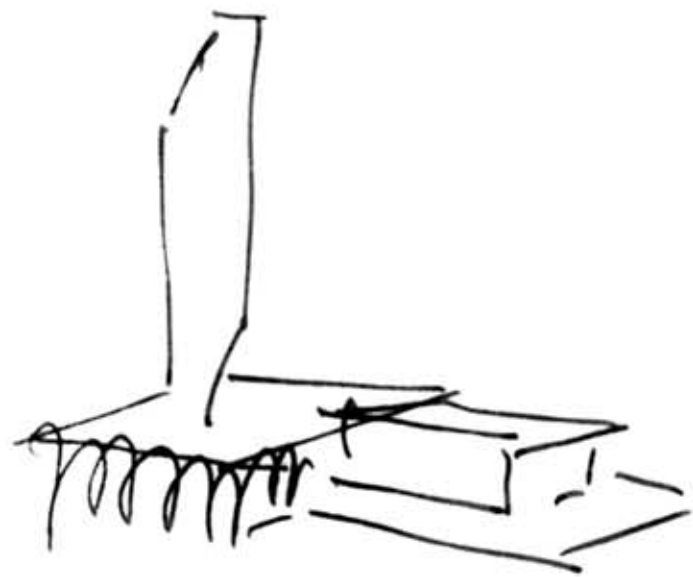
_The diamond tower

1 _



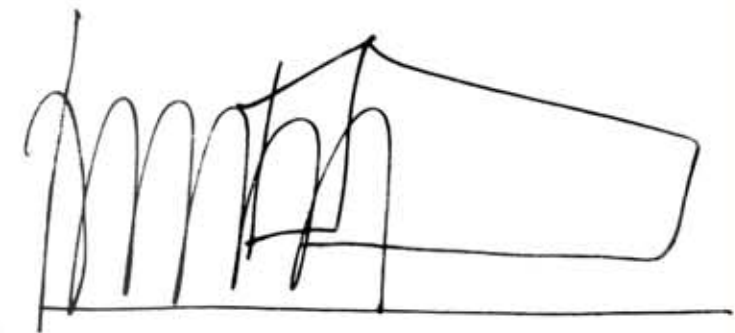
_The loggia

2 _



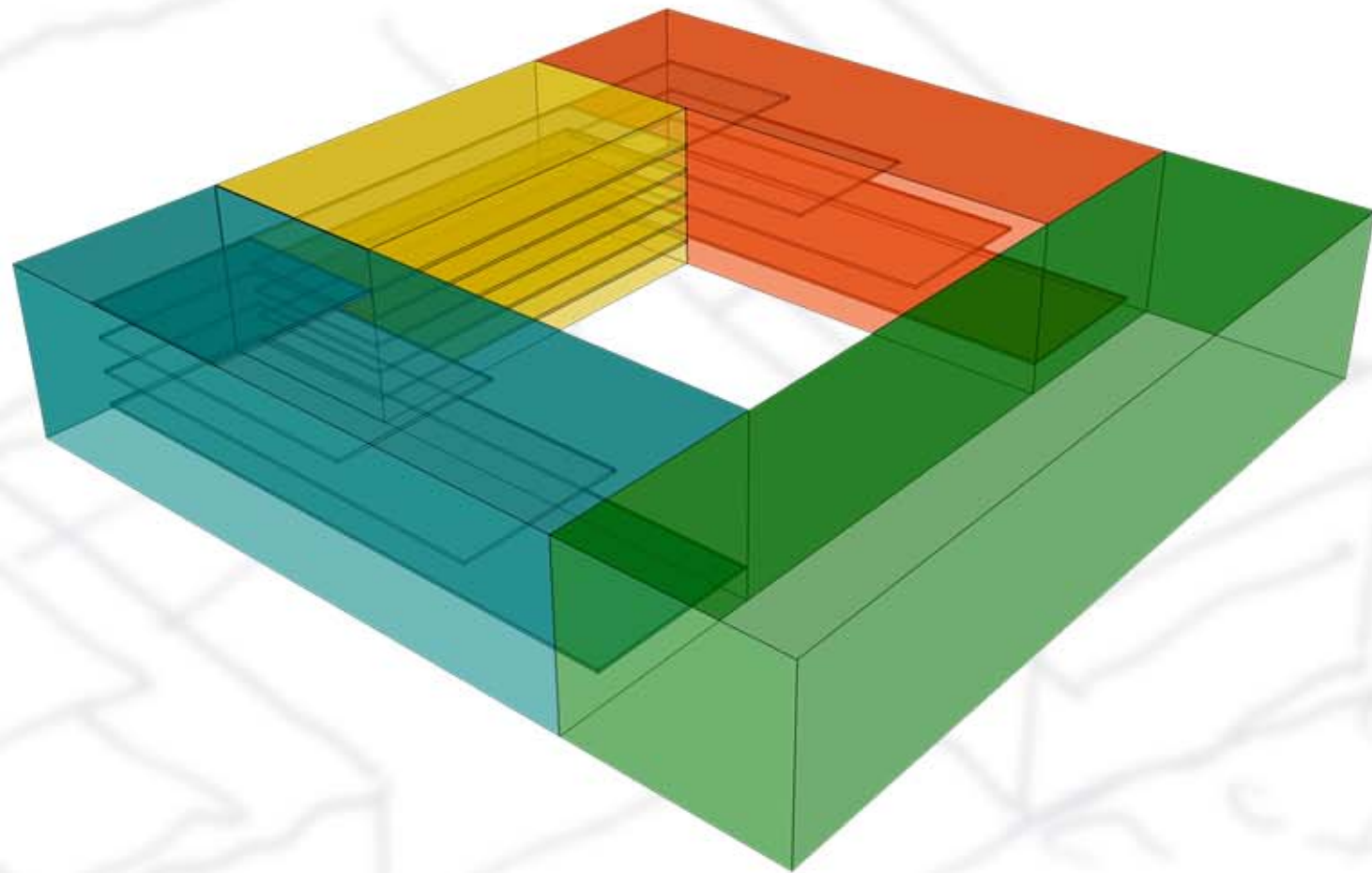
The cultural centre_

3 _

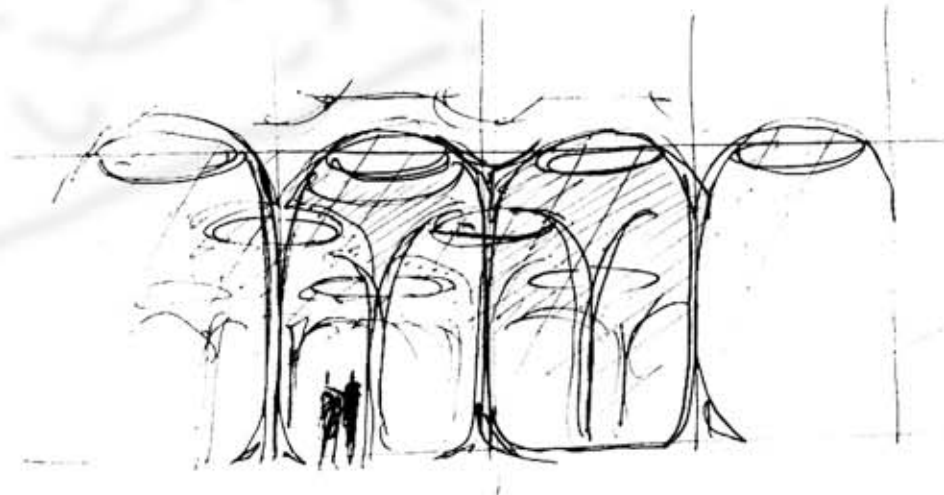
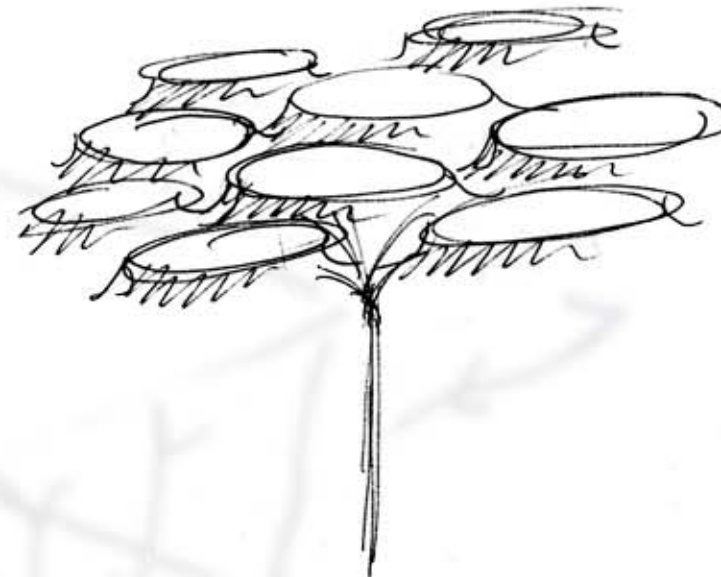


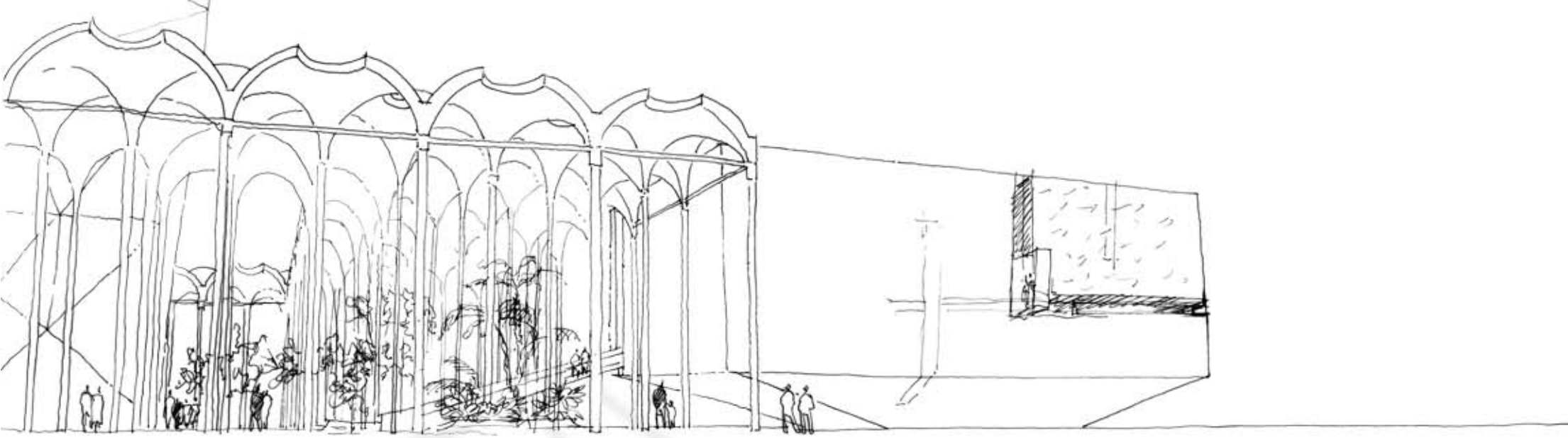
M u l t i f u n c t i o n a l b a s e

There is no elevation without a base.
It's impossible to build upwards without a solid base.
That's why the DA.MA Tower's plan focused at first on defining the basic architectural elements (the porticoed base with ribbed vaults) as compositional elements on which the monumental elements (the diamond tower and the cultural centre) take shape and their raison d'être.

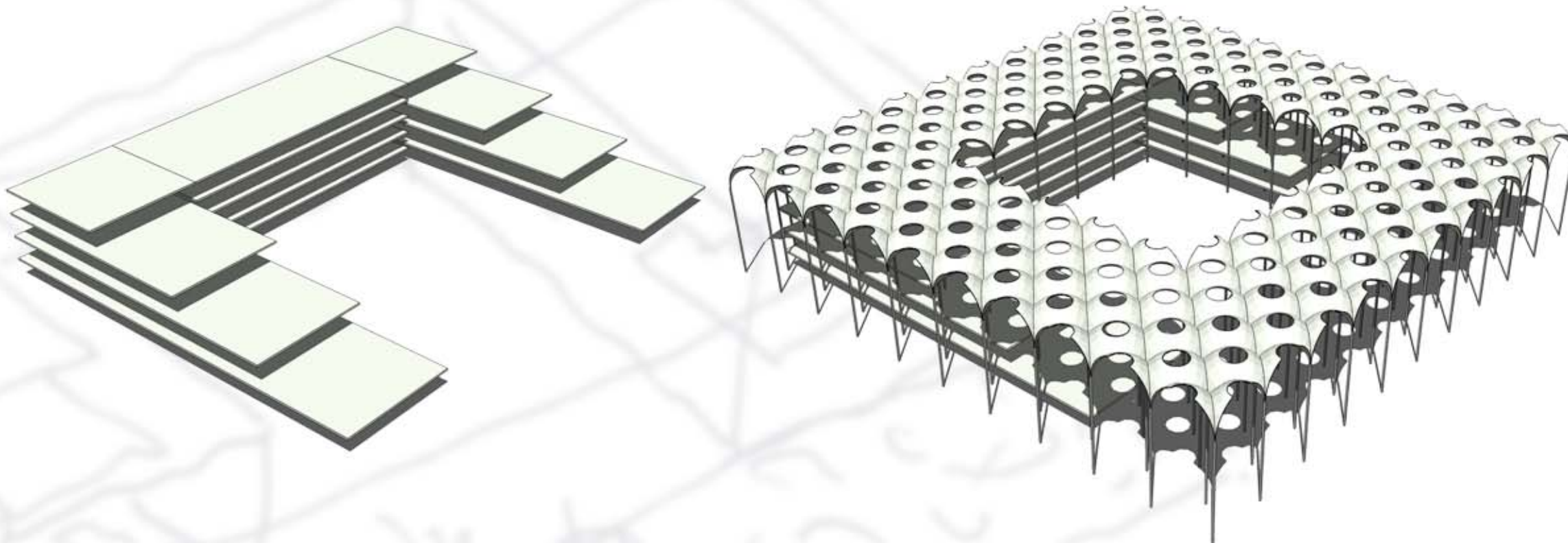


- Garden
- Shopping centre area/Parking
- Parking/Shopping centre area
- Terraced offices





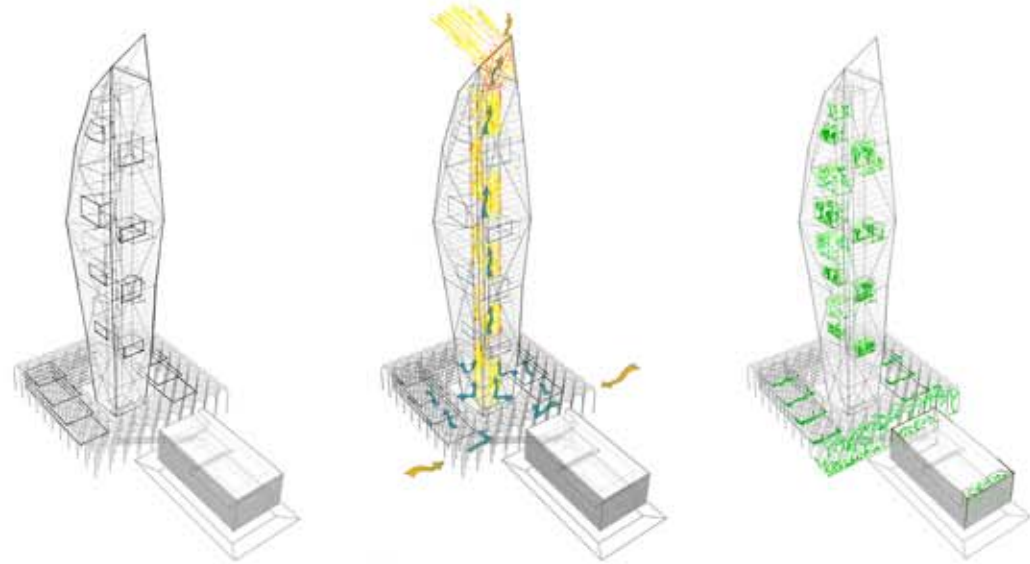
Three storeys of offices or shops can be organised on terraced levels. This arrangement allows a direct relationship with the public space below, so that during working hours will be achieved a great comfort.



Between urban pathways and the lot is the portico-area all around the tower.

The ground floor has therefore been designed as a series of

Energy efficiency principles



The first step towards the development of an architectural project is to study local conditions. Qatar's desert climate, with torrid summers and relatively warm winters suggested that the buildings should provide good protection from the sun's rays and optimal exploitation of natural internal ventilation to limit energy consumption.

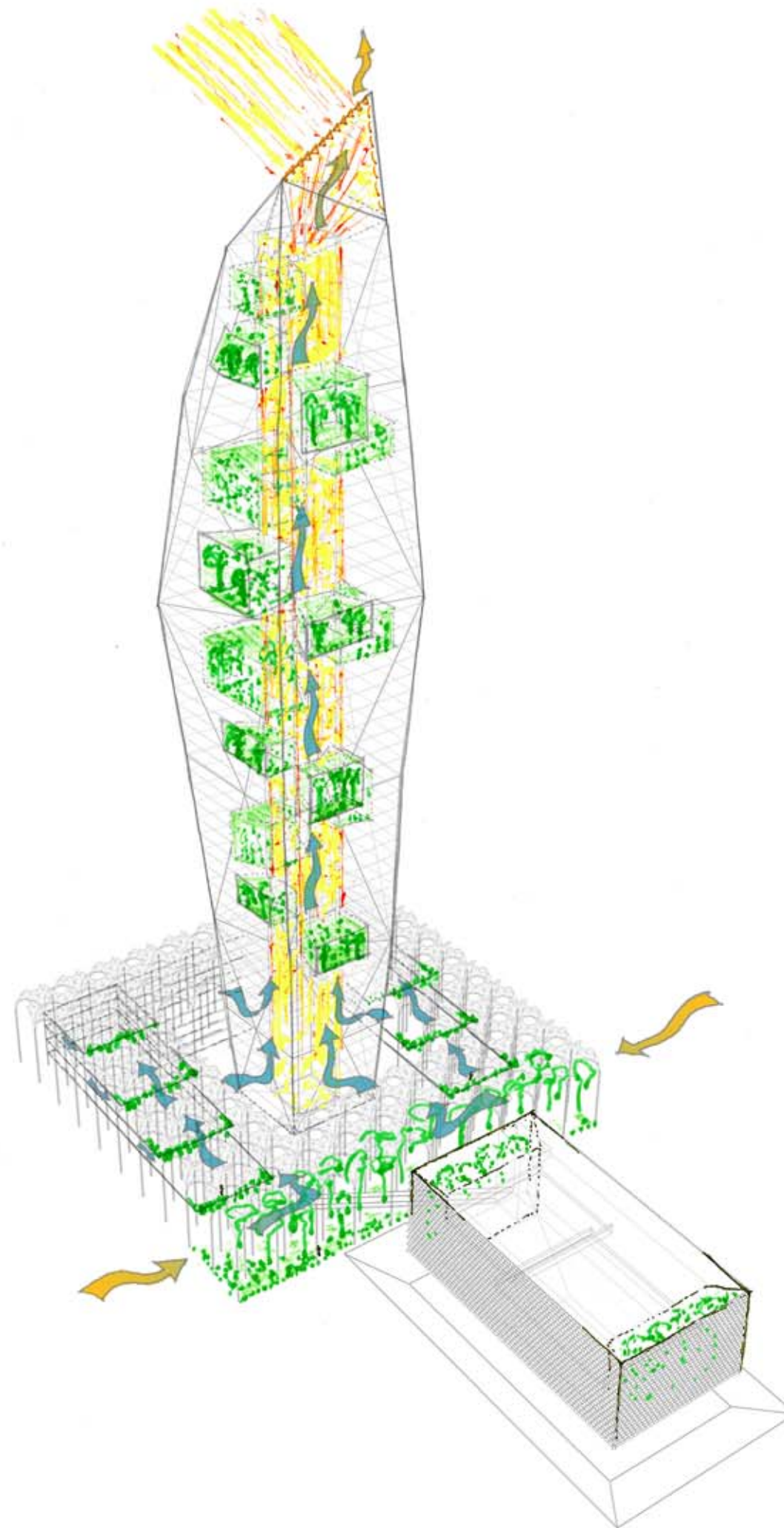
Glazing: to avoid problems connected to the overheating of the internal spaces, it's better to reduce the effects of excess direct sunrays, with adequate screening, guaranteed by photovoltaic glazing. With built-in photovoltaic cells, this energy-generating glazing performs a dual role as it captures the sun's energy and provides good screening on the interior.

The entire façade will be well protected from the winds that are particularly strong in the springtime.

Terracing: The tower will be provided with terraces overlooking the different sides of the building; so that each storey will have garden on at least one side. These terrace elements will allow further natural light access through the lobby and improved natural ventilation.

The natural lighting system has been developed in an organic way: daylight follows a rational pathway inside the tower. So that the tower is enlightened from the inside, avoid the overheating of the external sun-rays.

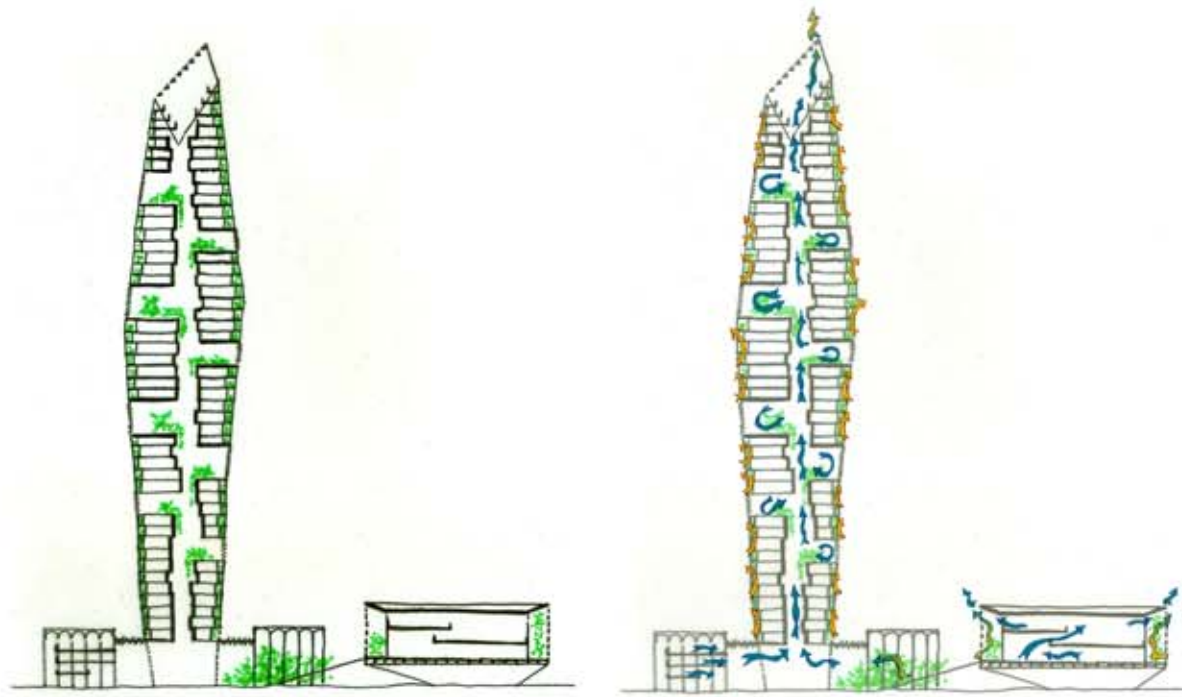
The Arab tradition offers many examples of how towers can be used to obtain efficient natural ventilation of interior environments, such as Iran or Iraq's wind towers or the Qa'a in Egypt. The Tower, which has a high lobby, works as a "chimney" for the base of the building: the Garden, with the shopping areas, is therefore ventilated by the natural aspiration action of the tower's lobby.



DA MA TOWER plan

7

Concept
General layout

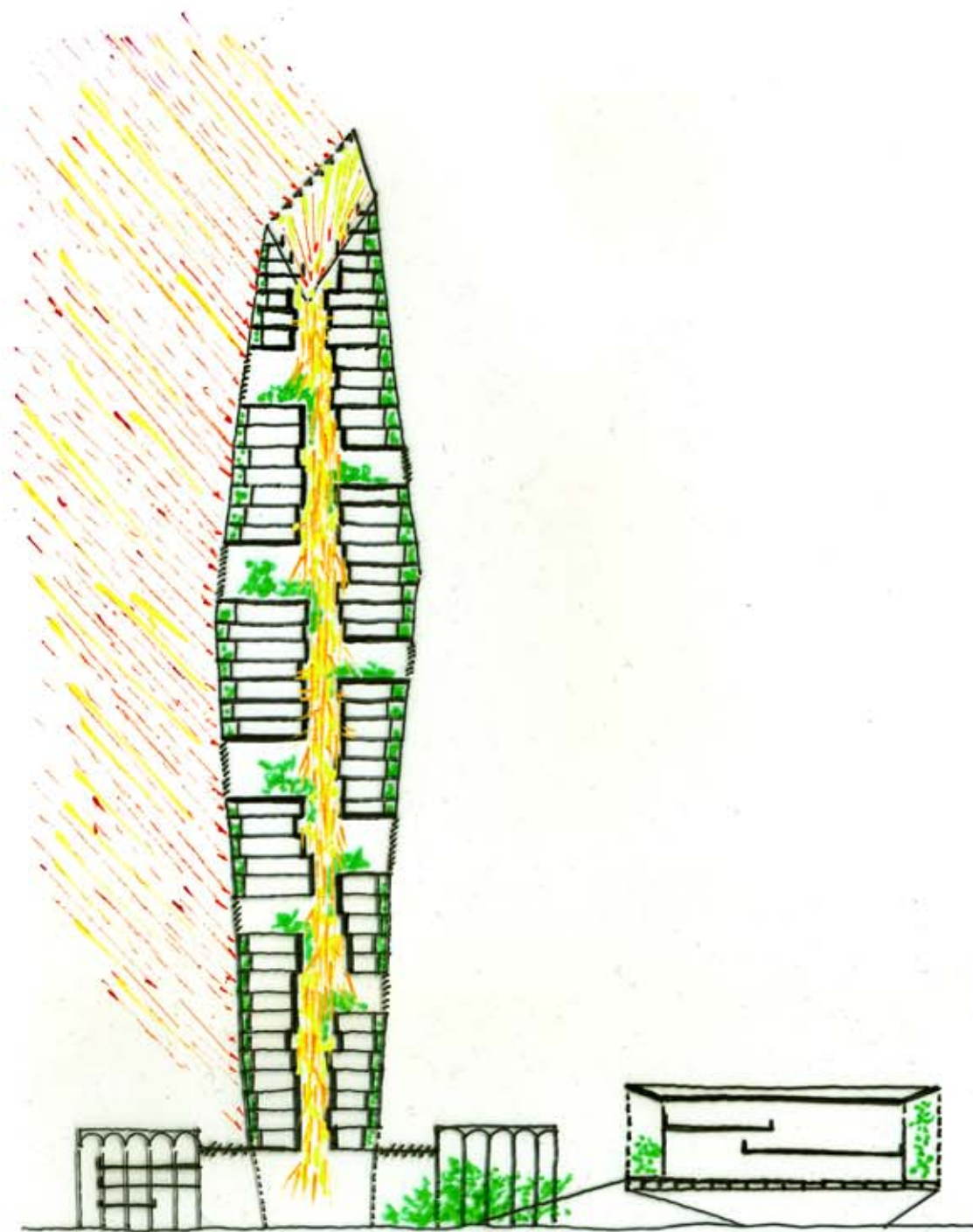


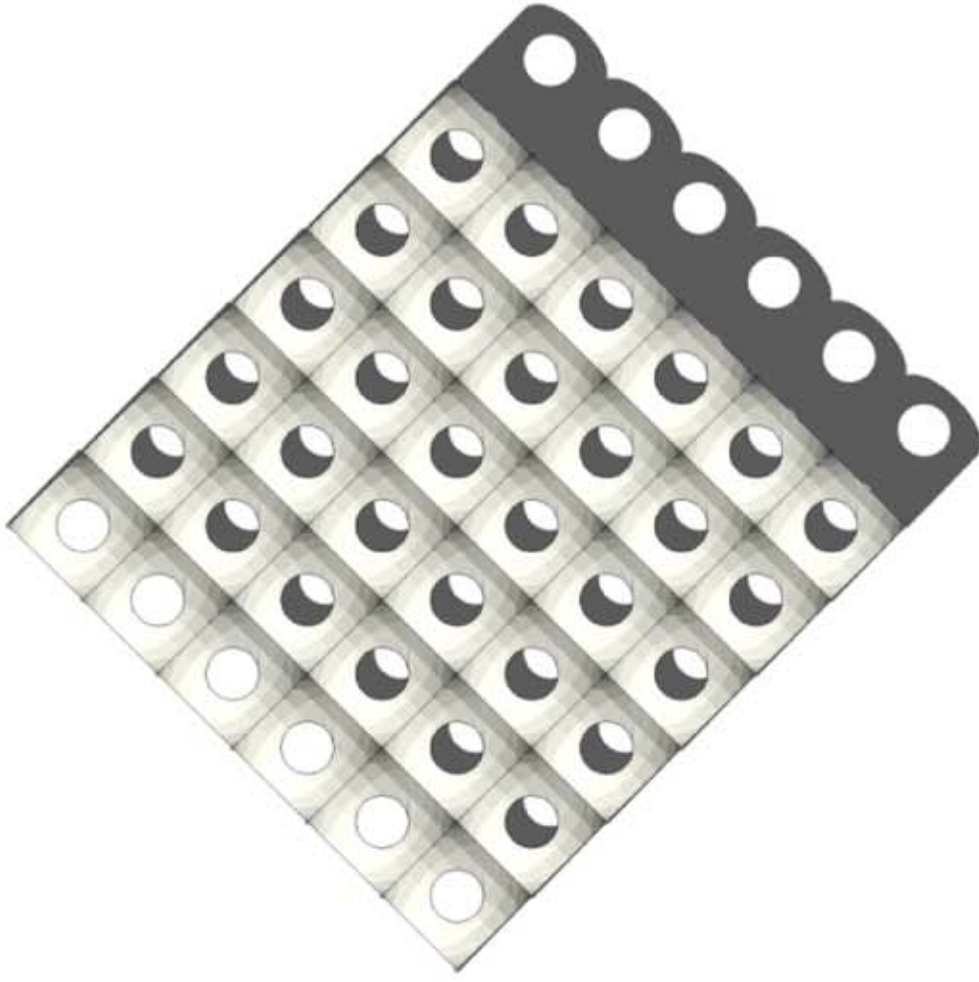
Towers must be planned to minimise heat transfer through the building envelope. So that, we designed a “double layer” (double façade) cladding: two skins, an external skin that defines the tower’s form and an internal skin that bounds the offices, create an intermediate space with a variable depth of 1.5 to 3 metres. This space, which can be used as an hanging garden, a place to talk and relax, creates a thermal-buffer that reduces the heat’s flow towards the interior.

The depth of this intermediate space between the external and internal climates, depends on how the facades are oriented: to the south, where the sun’s rays have the strongest effect, the double façade will be deeper (2 – 3 metres), and to the north it will be shallower (from 1.5 – two metres); to the east and west that space will have intermediate depths.

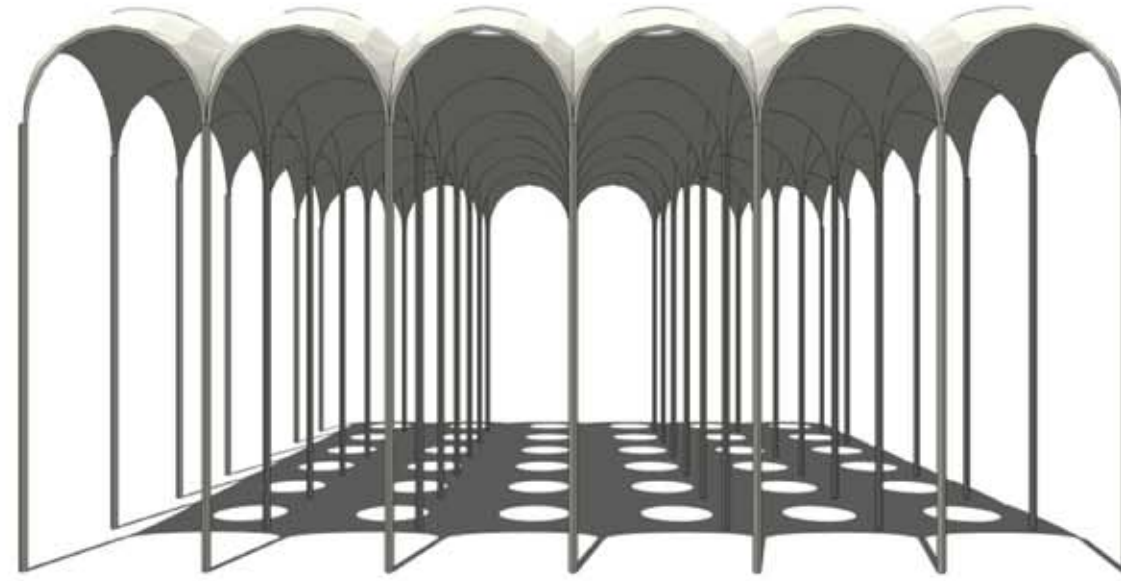
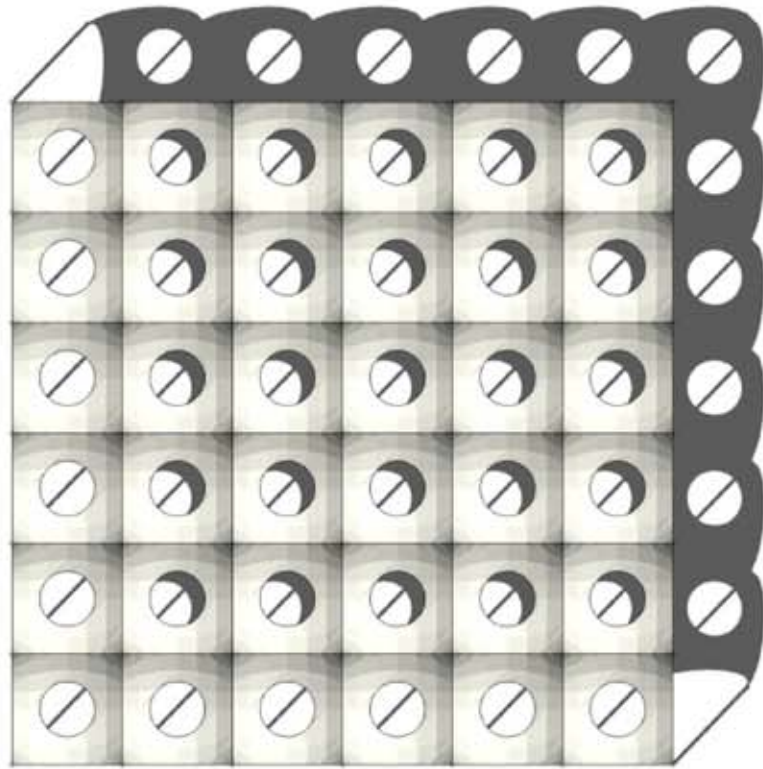
Thanks to this kind of shape (double-layer skin and high lobby), the Tower exploits the colder core to enlighten the spaces from the inside.

This shape also works really well for the natural ventilation: the lobby acts like a huge chimney both for the Loggia (The garden) and for the interior spaces of the Tower.





The grid pattern respects the proportion of a square and is rotated through 45° so that the perspective is not fixed like in a basilica-building, but it changes constantly as one passes through the interior.



DA MA TOWER plan

Plan's themes
Multifunction base

Plan's themes

Multifunction base

DA MA TOWER plan

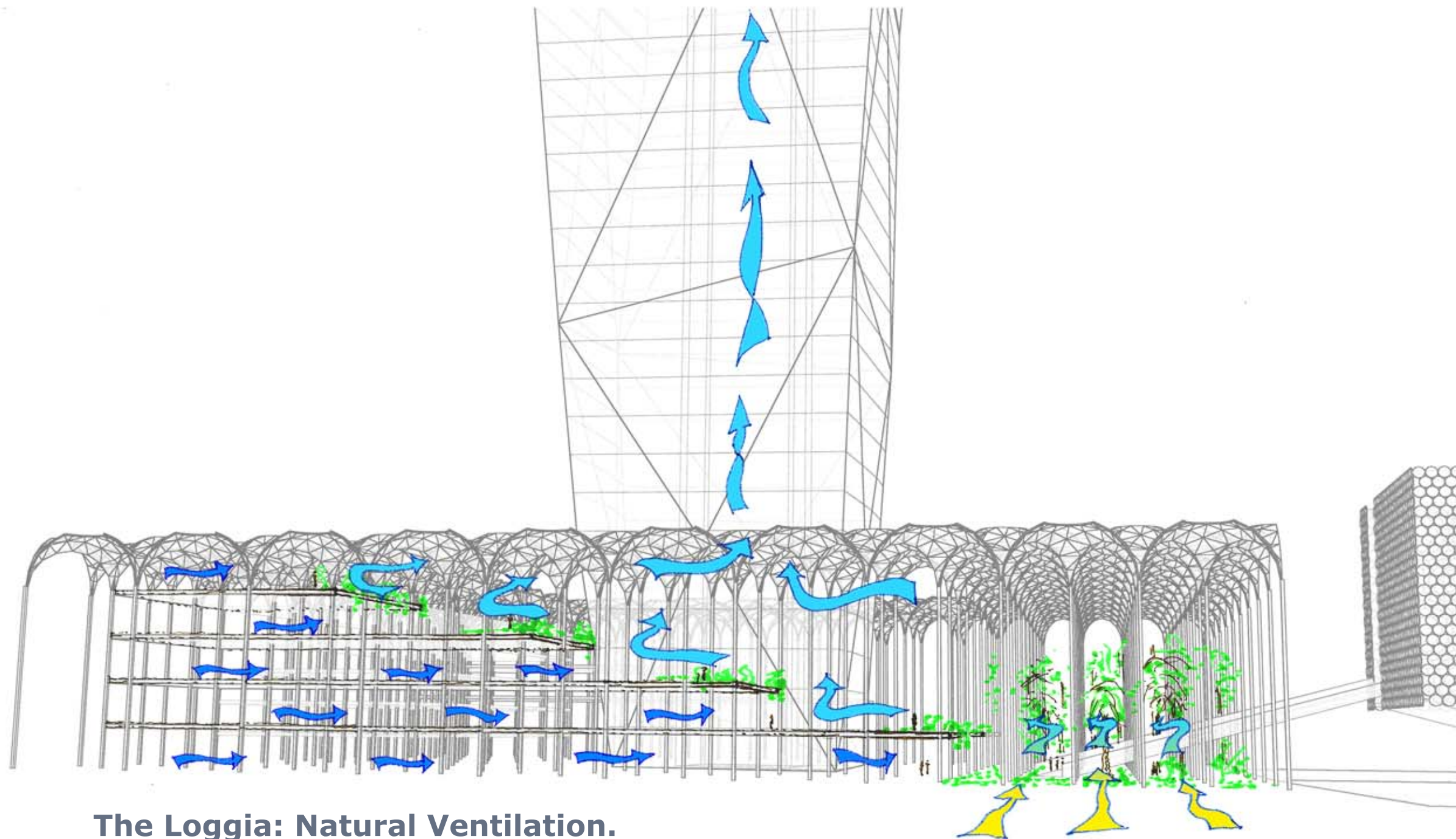


*Il giardino
dei cento volti*



*L'ingresso ai
Grandi Magazzini*

An exotic garden will unfold through the pillars
The garden unfolds through the pillars and the trees stand beneath the vaults.
Actually, the large vaulted garden is a mere canopy up 14 metres above ground level, covering the garden and shopping centre area, that also will let a little sunlight filter through the holes in the keystone and provide support to night time lighting.



The Loggia: Natural Ventilation.

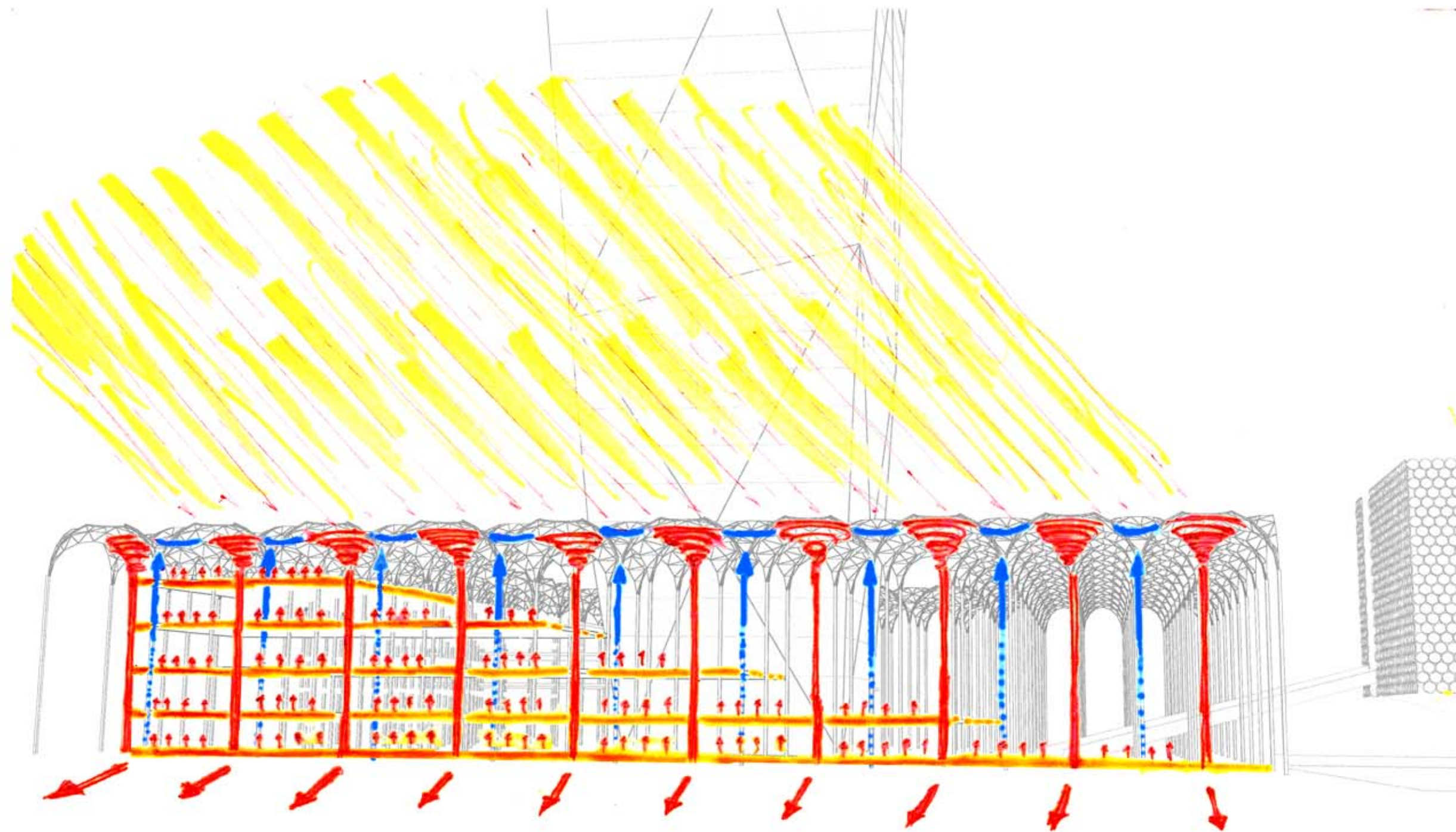
A natural ventilation system let spare a lot of energy.
There will be no need to waste energy to cool and ventilate the spaces.

The gallery, that connects the Religious Centre to the Loggia and the Tower, will be endowed with luxuriant trees, like it was an oasis.

This space, that also acts as the main air access for the building, thanks to the trees will be like a huge filter for the incoming air, that will be naturally refreshed by the Photosynthesis-effect.

The staggered terrace layout of the retail storeys allows natural air changeover: it is sucked from inside the retail areas towards the tip of the terraces.

From here the air will be naturally sucked towards the Tower lobby, that works as a chimney.



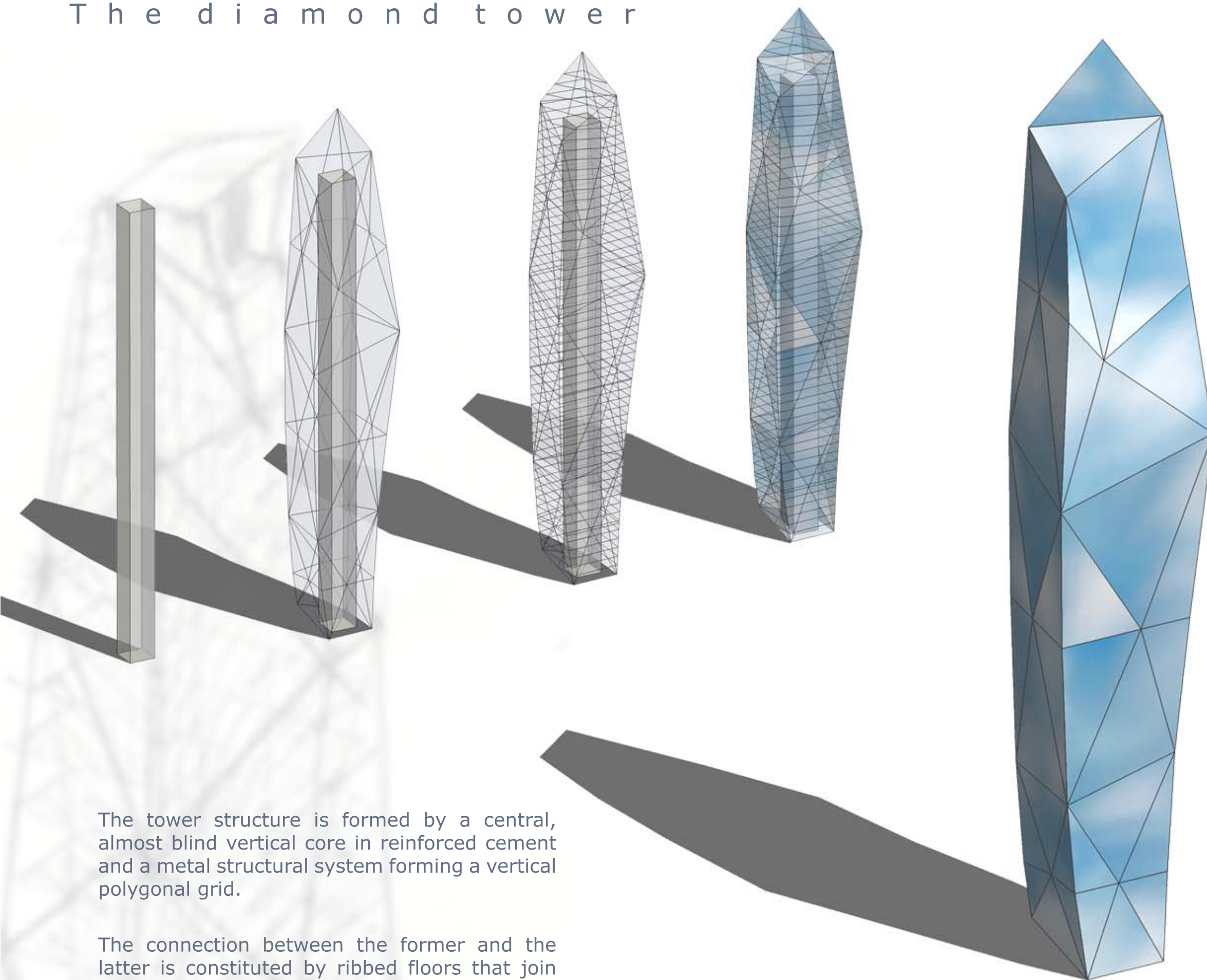
The Loggia: Roof-cooling Sistem

All year round the roof is exposed to the build up of heat caused by the sun's rays.

A system of pipes with circulating water will be installed within the roof vaults; The fresh water will be supplied by a system of pipes built in the columns.

The water will remove the heat in excess and will fall down into the pipes built-in the columns.

During winter nights this system will release the energy back into the retail-spaces through a system of underfloor pipes.



The tower structure is formed by a central, almost blind vertical core in reinforced cement and a metal structural system forming a vertical polygonal grid.

The connection between the former and the latter is constituted by ribbed floors that join the two main structures, allowing them to interact to provide general support.

DA MA TOWER plan

Plan's themes

The diamond tower

The diamond's top: a light-catching tetrahedron

To allow optimal exploitation of daylight inside, a tetrahedron, clad in light-catching prisms, will be built at the top of the tower.

The prism-shaped glazing is able to filter light rays, excluding infrared radiation (which would cause a spaces' overheat), but allowing the wavelength of visible light to enter. The filtered rays are then directed towards a series of electronically controlled heliostat mirrors, inside the lobby

_ A light-catching Tetrahedron atop



DA MA TOWER plan

Plan's themes

The diamond tower

Plan's themes

The diamond tower

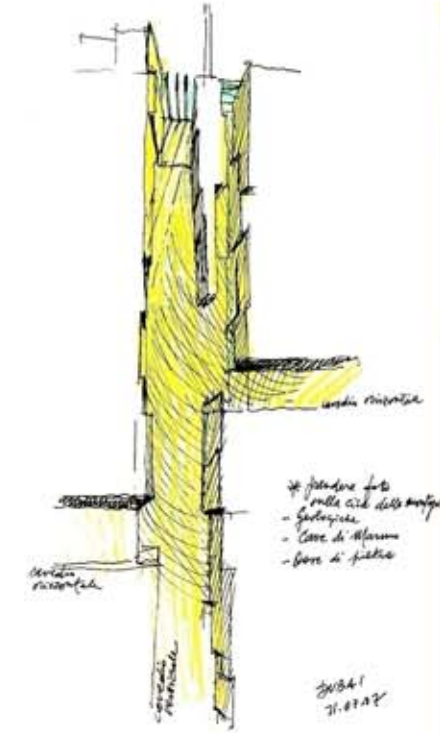
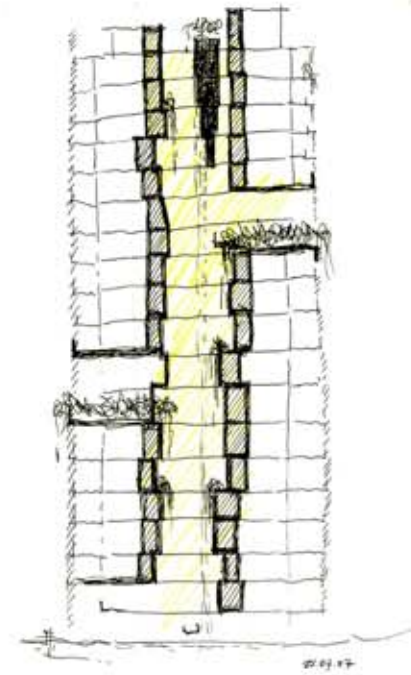
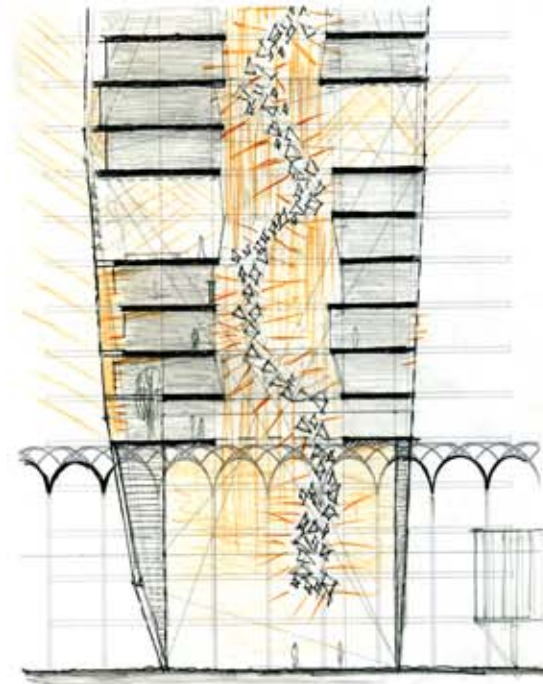
DA MA TOWER plan



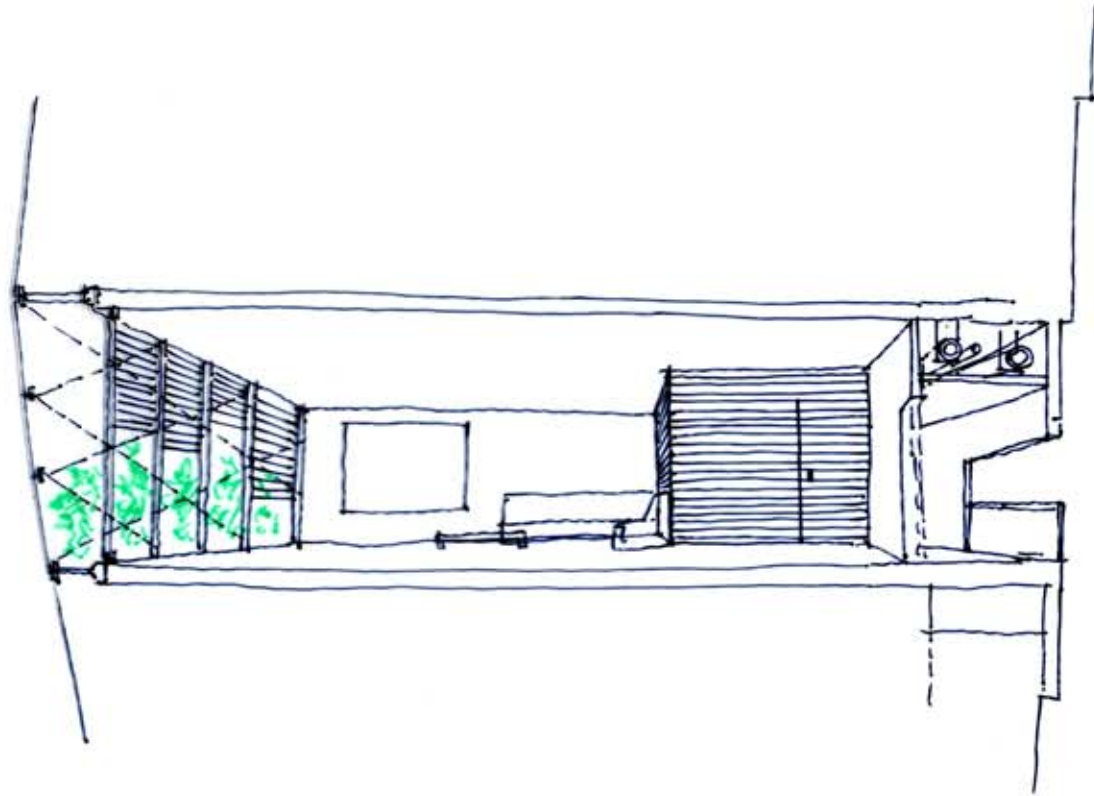
The central core is characterised by a deep light well that crosses the tower from the base to the tip to create a true chimney effect.

The "light-fall": The lobby's walls, covered with a system of mirrored surfaces, are able to reflect the light to the various storeys of the tower.

Thanks to the light-well, covered with mirrored surfaces, the light could reach even the base of the tower.



Natural Ventilation: the office-spaces into the Tower



The middle-space between the external skin and the internal one, has an important role.

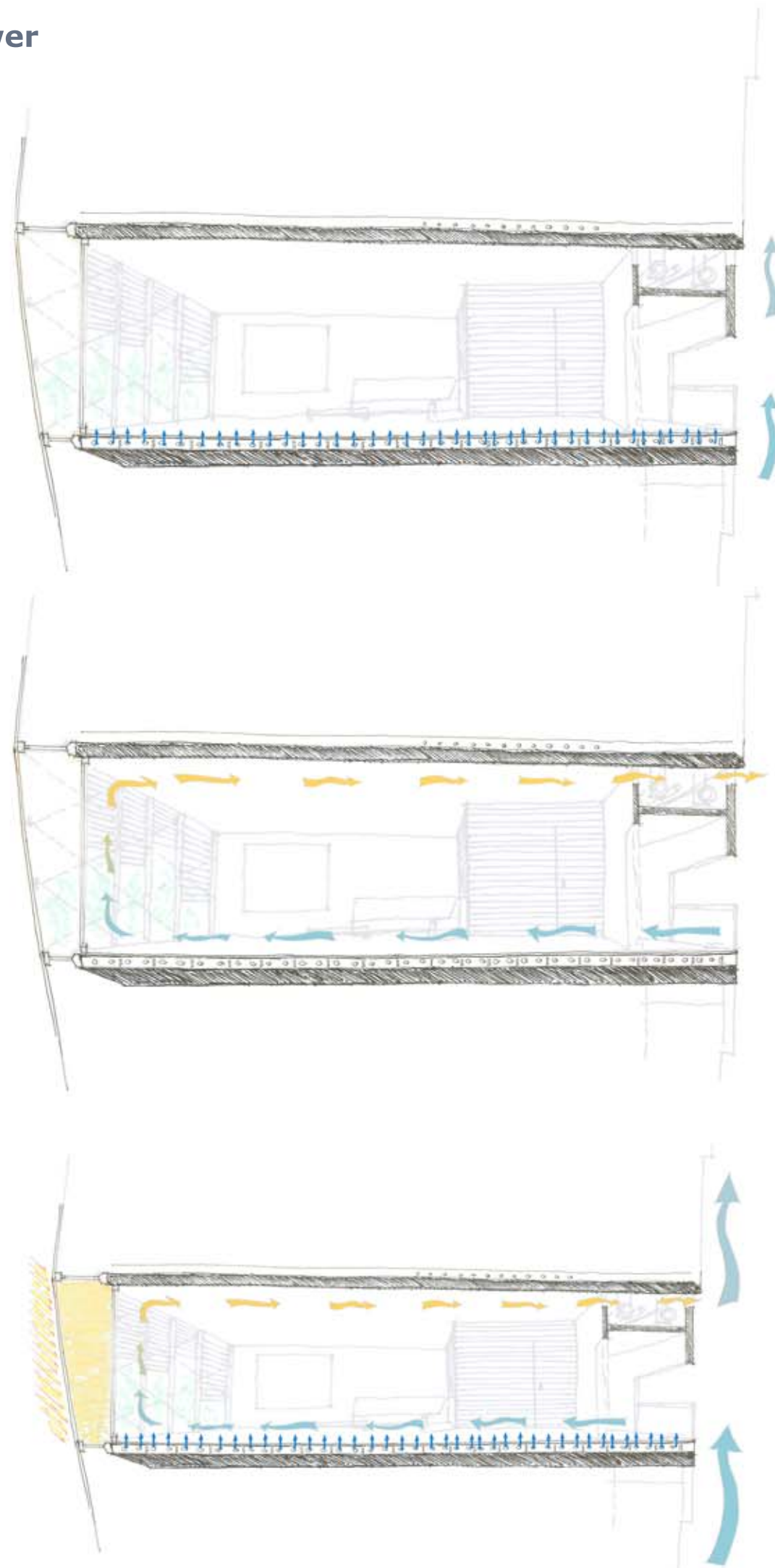
This space, that can be used as an hanging garden, a place to talk and relax, creates a thermal-buffer that reduces the heat's flow towards the interior.

The depth of this intermediate space between the external and internal climates, depends on how the facades are oriented: to the south, where the sun's rays have the strongest effect, the double façade will be deeper (2 – 3 metres), and to the north it will be shallower (from 1.5 – two metres); to the east and west that space will have intermediate depths.

A system of under-floor pipes with cool circulating water, will keep the incoming air close to the floor.

When near to the glazing, the air, gaining heat from the "thermal buffer", will get warmer and raise-up to the ceiling.

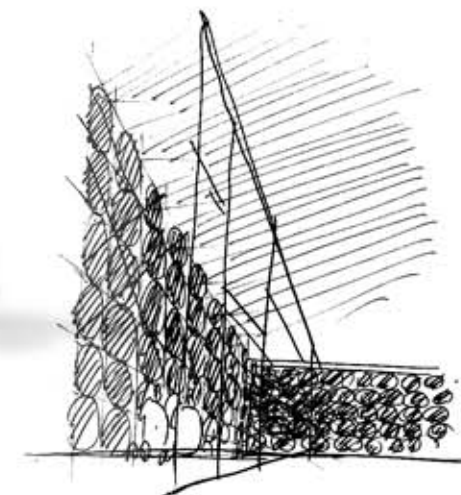
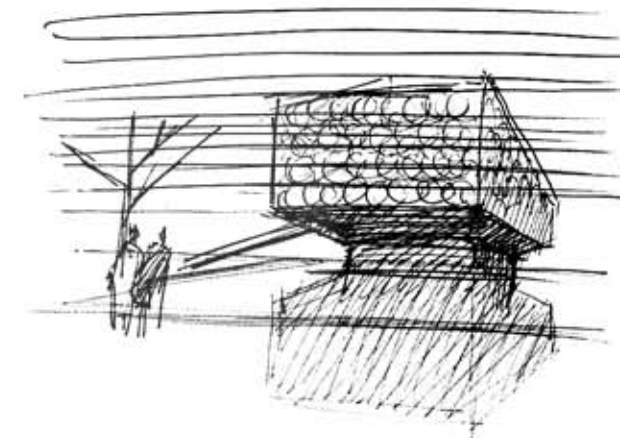
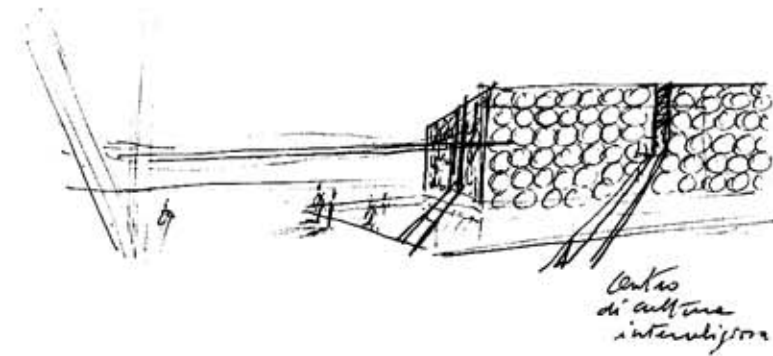
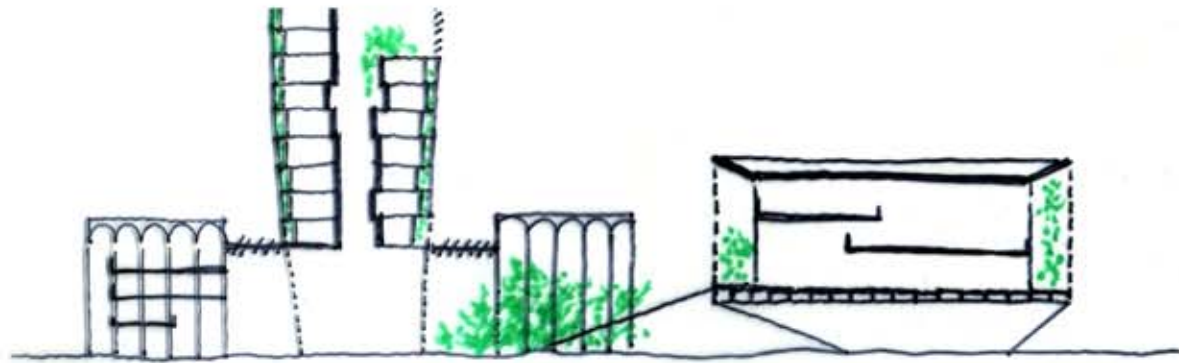
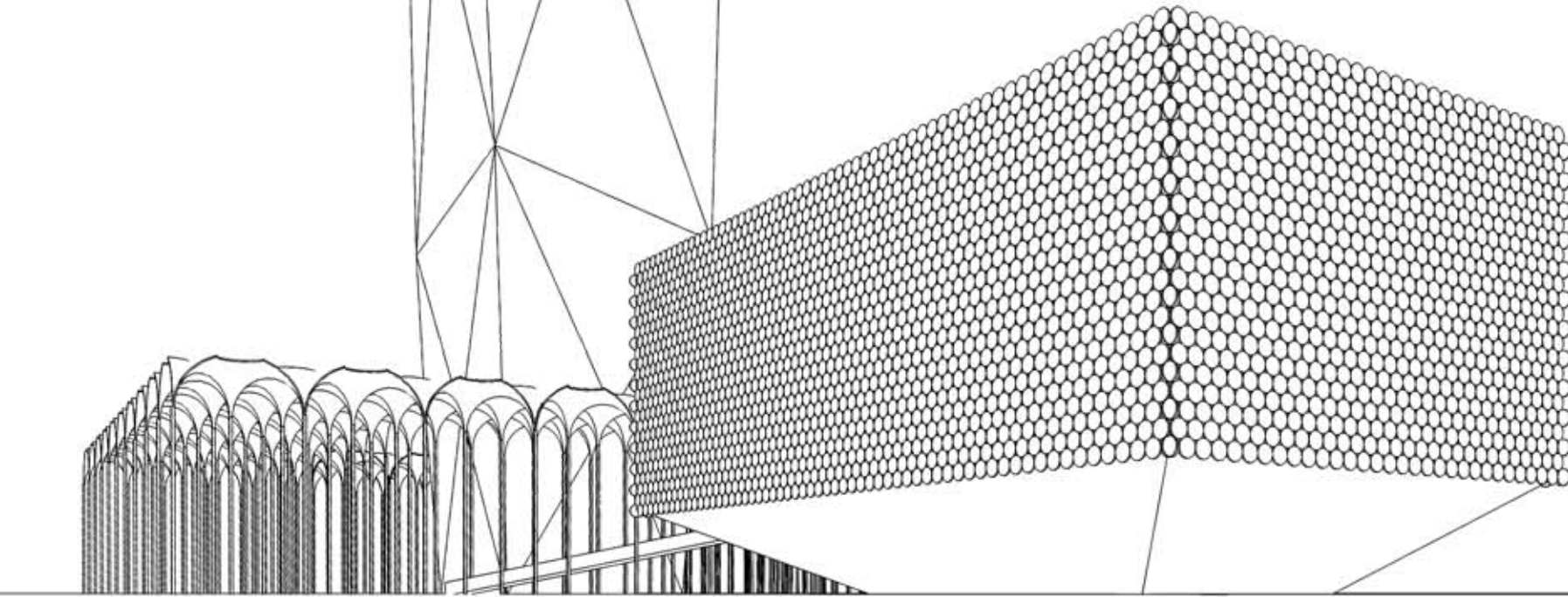
From here the air will flow, naturally, towards the lobby once again.



DA MA TOWER plan

16

Concept
General layout



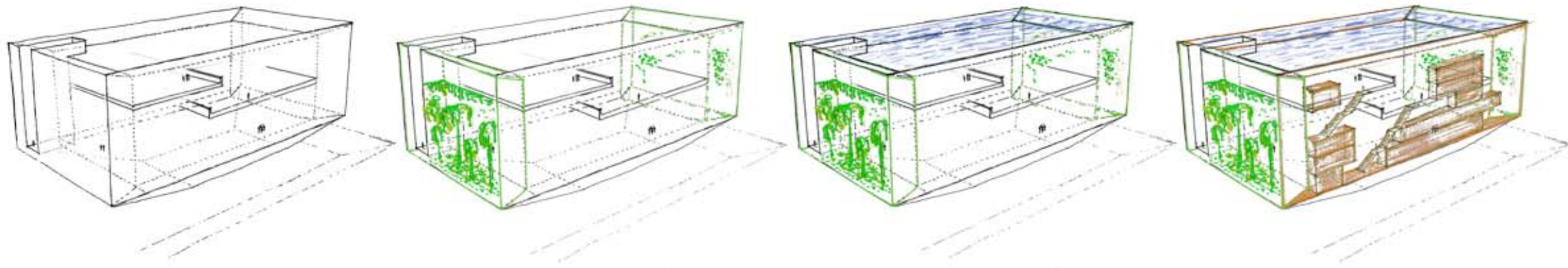
Made up of three main rooms, the cultural centre is raised off the ground to suggest the elevation from the ground to access the place of worship and cultural events.

We chose to give this place a simple geometry, a separate living form with its own identity, like a dress on the dimension of the place that opens up new viewpoints over the vaulted gardens.

The main design of the façade is a mesh of pearls. This symbolic element is associated to the central idea of the cultural centre.

The pearl design, which is repeated and rotated through 45°, will become the façade's main feature and allow the light to filter inside.

The Cultural Centre: a double-layer skin



The walls of the building have been designed to guarantee actual protection from the heat: a double cladding has therefore been designed to create an intermediate space (thermal – buffer) able to reduce heat access.

The two longer sides of the building contain service areas with a depth of about 3 metres with emergency stairs, public conveniences and deposits.

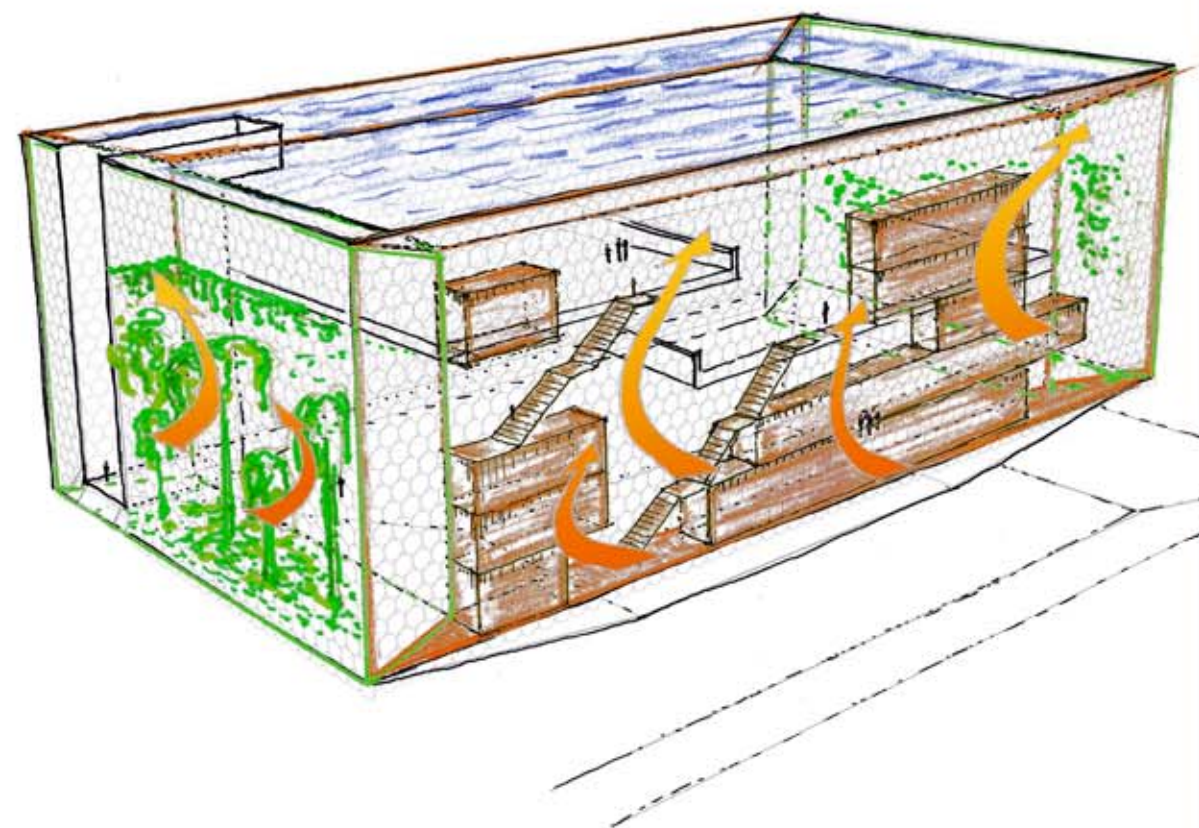
The shorter sides contain two garden areas that also contribute to reduce heat access from the outside.

The roof: a one-metre-deep water basin, set on the roof, will mitigate the effect of the sun's rays. The liquid will accumulate heat and transfer it through a system of pipes. The water heated on the roof will be partly used for the public conveniences on the retail storeys of the garden and, during the winter, will be used for the underfloor heating of the religious centre.

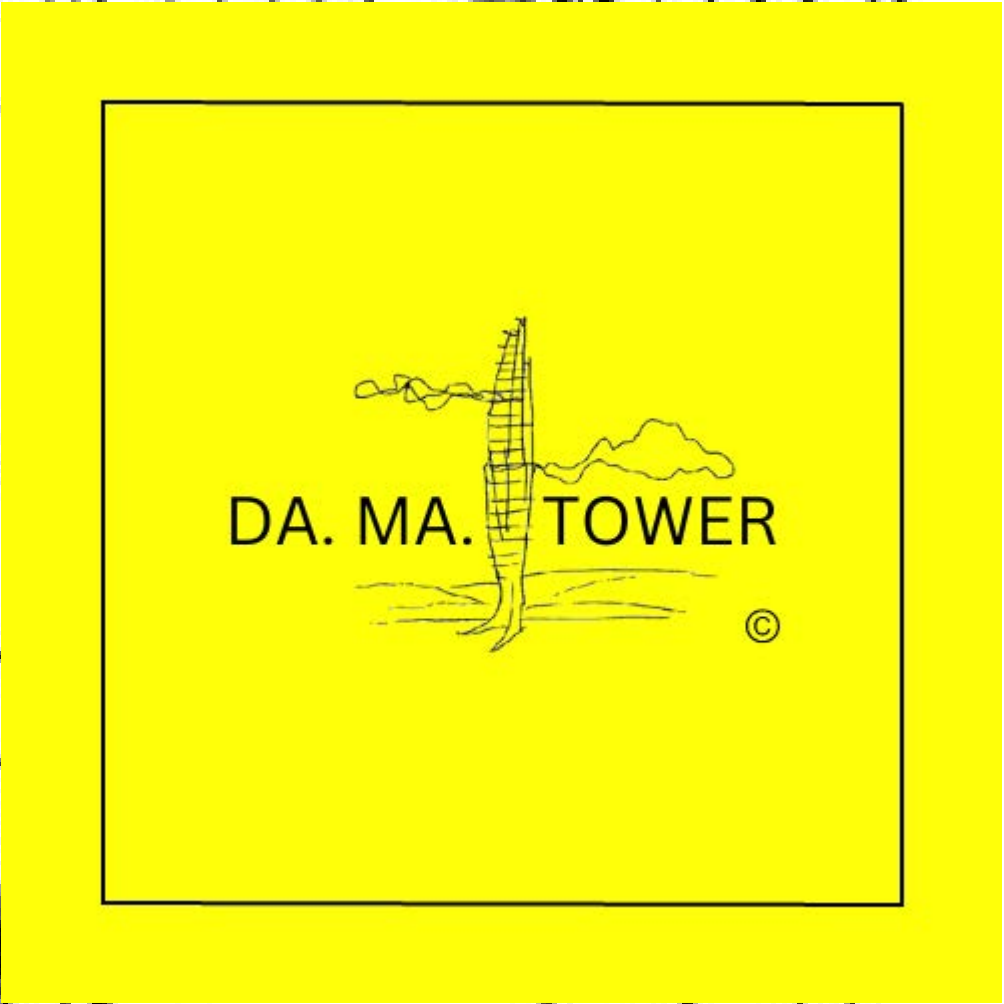
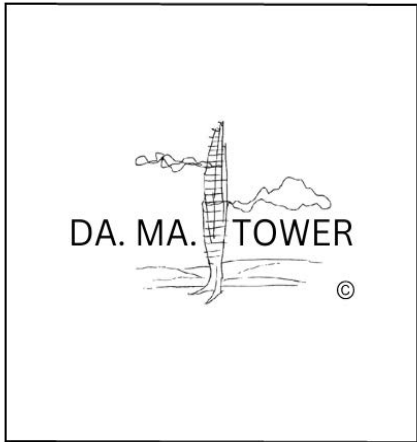
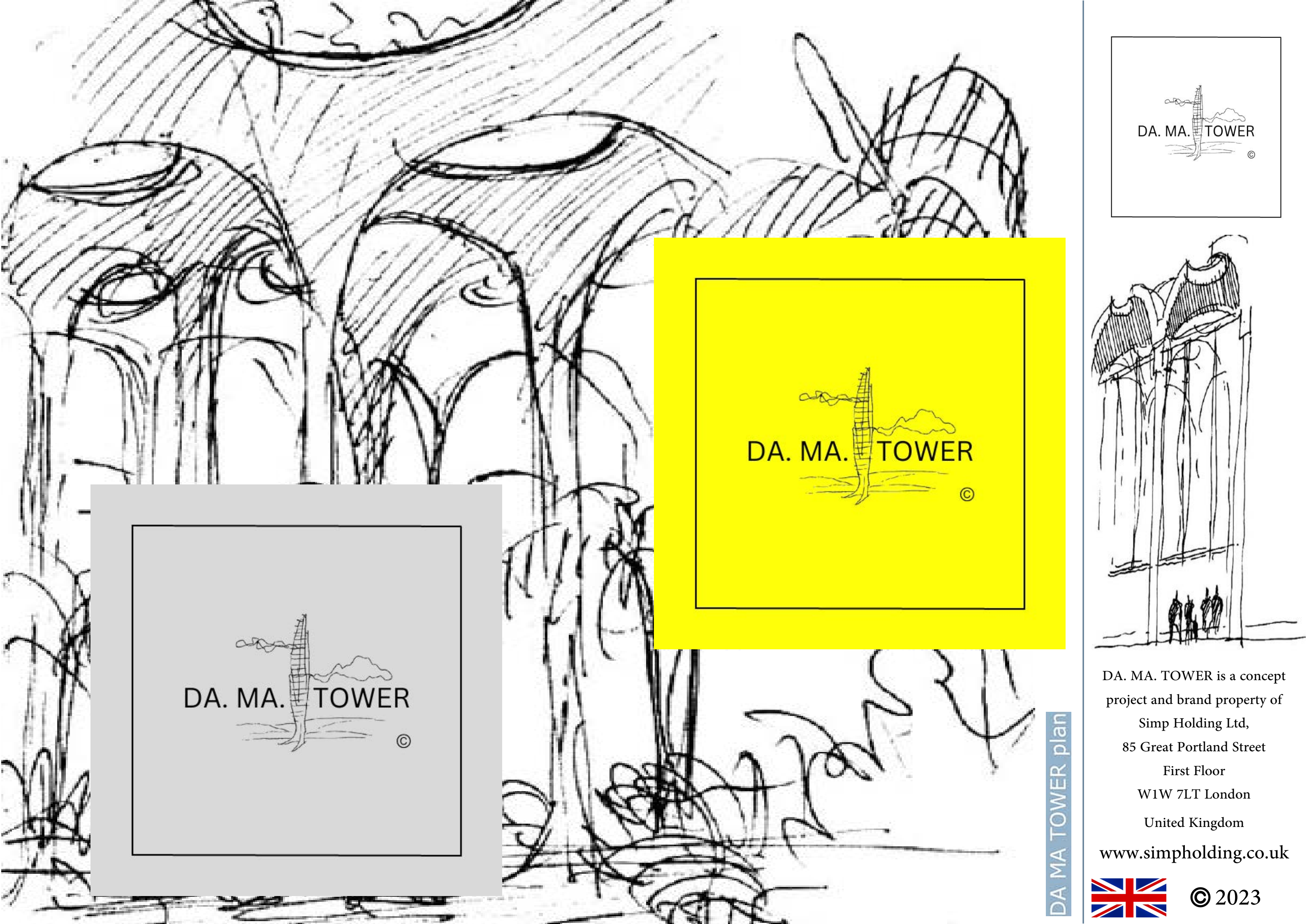
The water, which is trapped between an upper layer of glass that prevents evaporation and a lower layer, will filter sunrays, to create interesting lighting effects inside the religious centre.

The cladding of the religious centre has been designed as a system that dissipates heat rather than accumulating it.

Microventilation. The envelope's external surface will be a "pearl-shaped tissue" allowing microventilation through a series of small cavities, thus further reducing the negative effects of the sun's rays.



DA MA TOWER plan



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