

NEST

01. Presentation booklet

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Department of Architecture

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NEST

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PREFACE

Formal information.

This report documents the result of an architectural design master thesis developed at Architecture & design, Aalborg University.

It offsets from a competition brief from Arquitectum regarding a hostel and museum design in the Citadel of Tikal. The design proposal promotes the discussion of ideas related to the development of projects in cultural heritage sites, enhancing the visitors experience and introduces a new and different way of what is to spend a night and wake up in presence of the Maya ruins in Tikal.

The project consists of two booklets, one presentation folder and one appendix folder. The presentation folder consists of four parts: The assignment, understanding, investigating and presentation. While the appendix folder presents detailed material, knowledge and process produced through the project period.

The design proposal can be understood by only reading the presentation folder but we recommend looking into the appendix folder when referenced. It will explain a more thorough understanding of the design process.

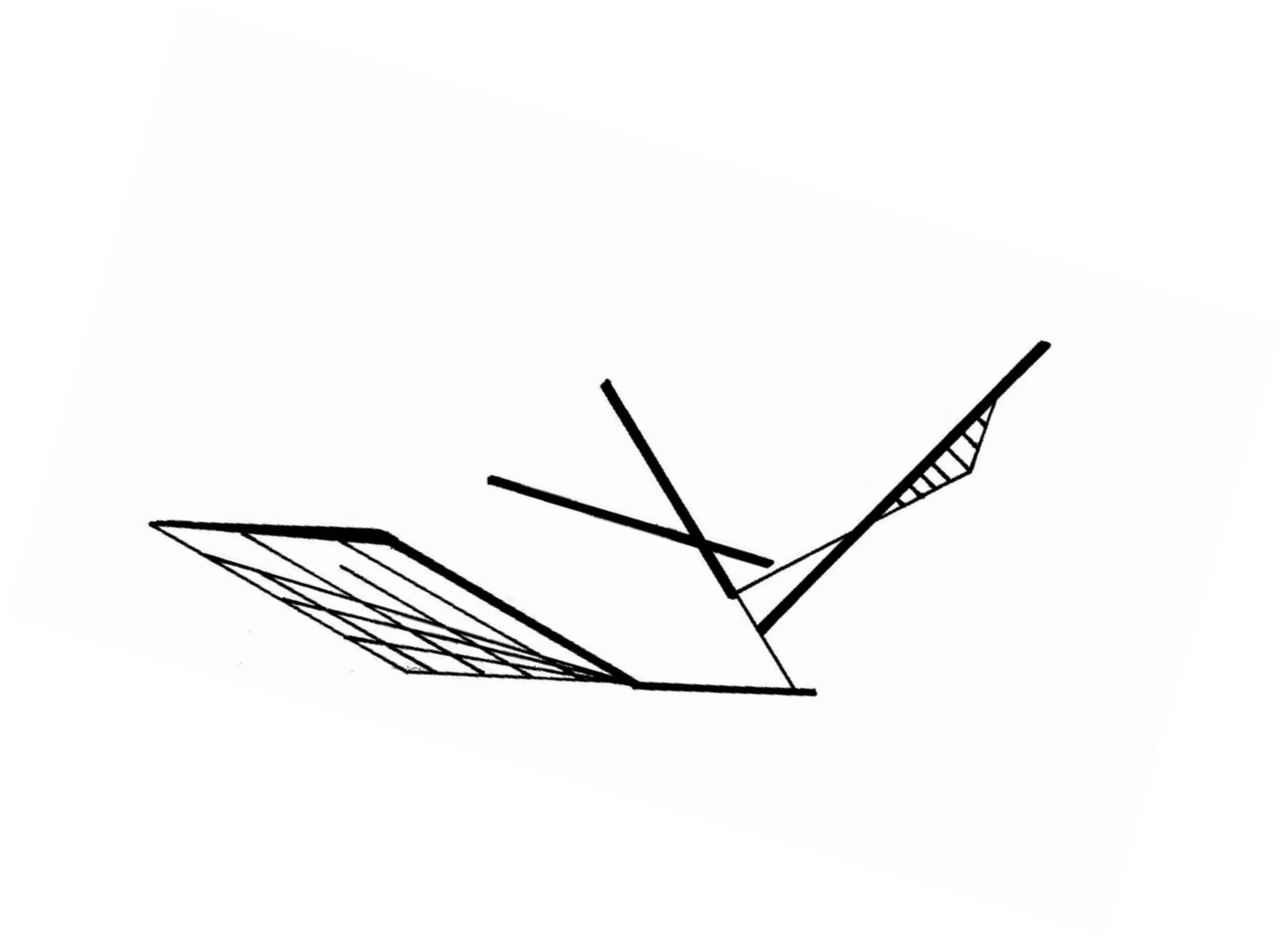


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INTRODUCTION

A hybrid between contemporary elements and an ancient context.

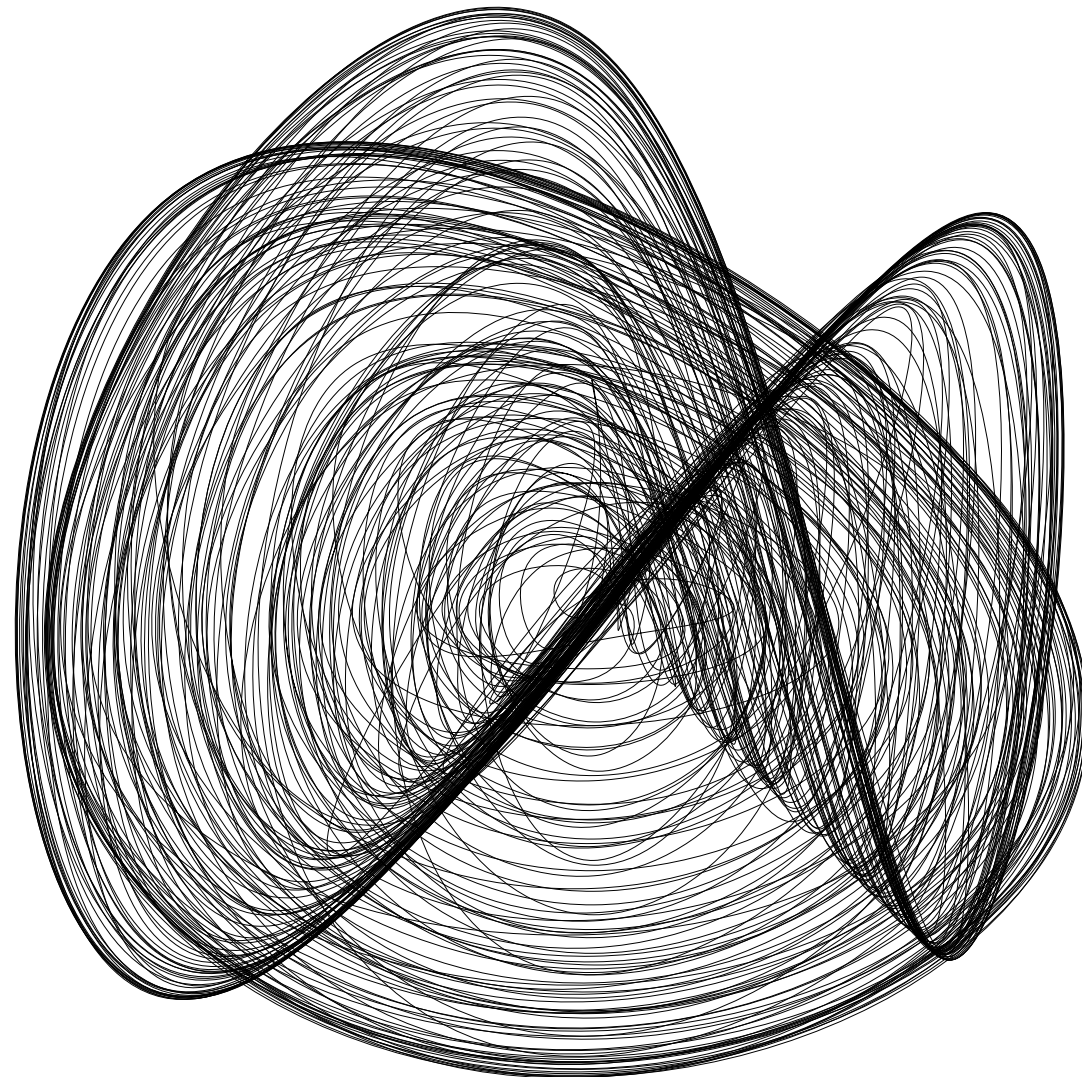
As an architect, how does one approach a site with such profound historical significance as the Citadel of Tikal? We question whether it is morally justifiable, to change a setting and make an impact of ancient structures, and to what extent? How do you alter an almost untouched historical site deep within a tropical rainforest? At first glance we consider the logical step; to pay a fair amount of respect to the Maya ruins and spaces in between them.

Is it possible to design an architectural element without compromising ours or others current perception of the site and its qualities? Would it be possible to maintain the spatial qualities of the site and implement new ones? One could argue that the spatial clearness isn't present, that the impact of the vegetation is too dominant. Can we change this and make the area more perceptually defined?

For visitors spending a night at the hostel, we aim to promote the enjoyment of Tikal and the perception of Mayan culture. The archaeological excavations or the mere consciousness of one's presence at

the location should be part of the experience. To a certain degree, one is retracted from the public zones, but not entirely. Can it affect the way we reflect on things that our place for retrieval is in physical or visual contact with the objects that we are supposed to perceive and learn about?

We wish for our design to interact with the site, change and develop its properties in a controlled manner. As equally physically present, as much carefully integrated. As a structure that correlates and amplifies an experience from the particular place, in every aspect, trying to match or emphasize materiality, form and expression of both ancient- and contemporary structures.

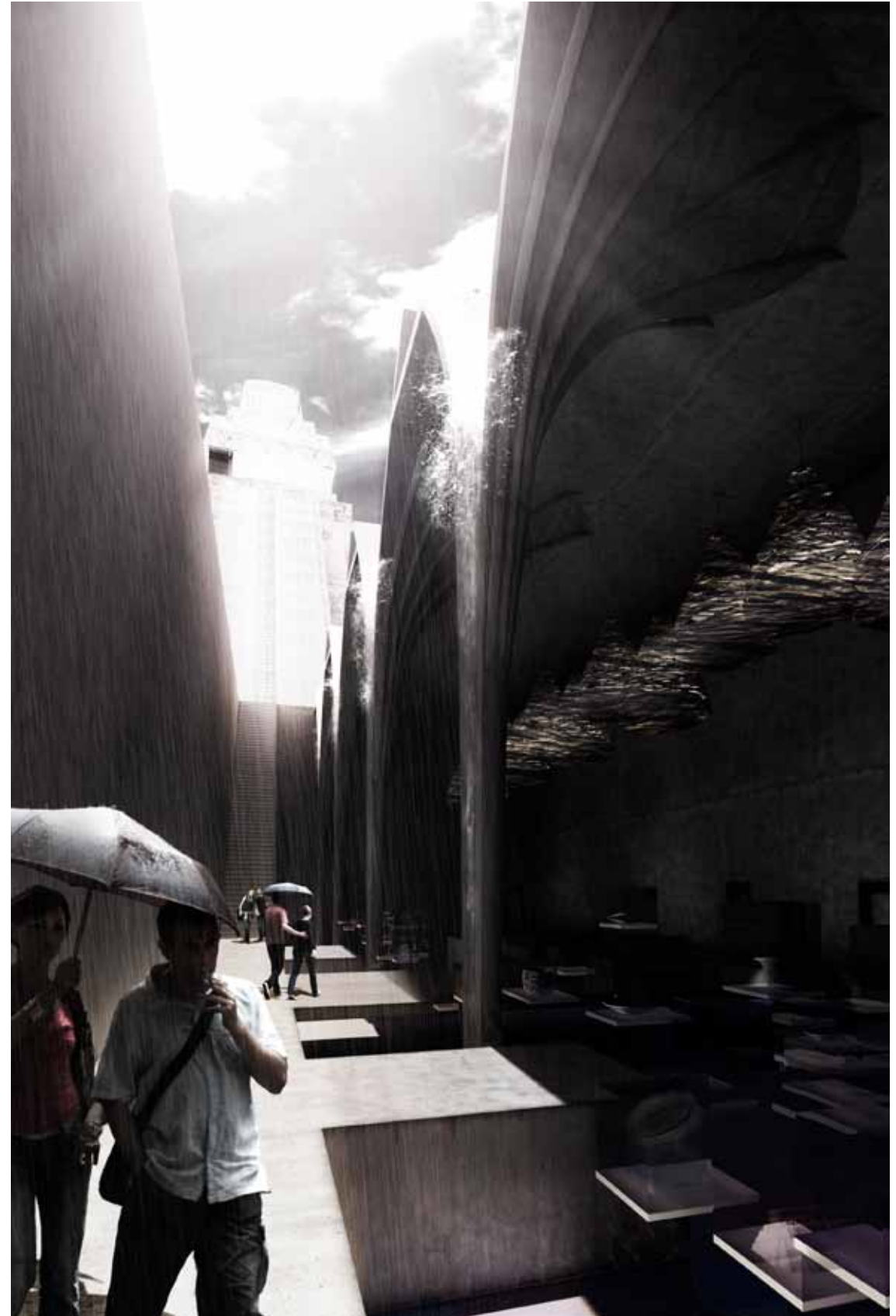


ill. 02 // Fluent complexity.

SNEAK PEAK

Small teaser of the final design proposal - an interior and exterior view.

ill. 03 // The building affects the visitor when moving underground, discovering a new poetic story - told through a fine balance between materials, proportions and spatial experiences.





ill. 04 // Landscape and element in a picturesque environment.

METHODOLOGY

"A loop generates more than a sculpture"

Design process / How we work.

The methodical approach deals with an integrated design process that generates an interaction between research, experimentation and investigation developed through the project.

The project aims for a proposal that activates the area aesthetically, functionally and technically. Furthermore it's important for the design philosophy that the architectural visions and parameters are the main drivers in the process, but the implementation of structural and climate principles are introduced from the early form exploration and implemented throughout the design process.

To achieve a *synthesis* between the architectural aesthetics and the technical demands, a methodology is introduced, which is based on a dialectic knowledge theory.

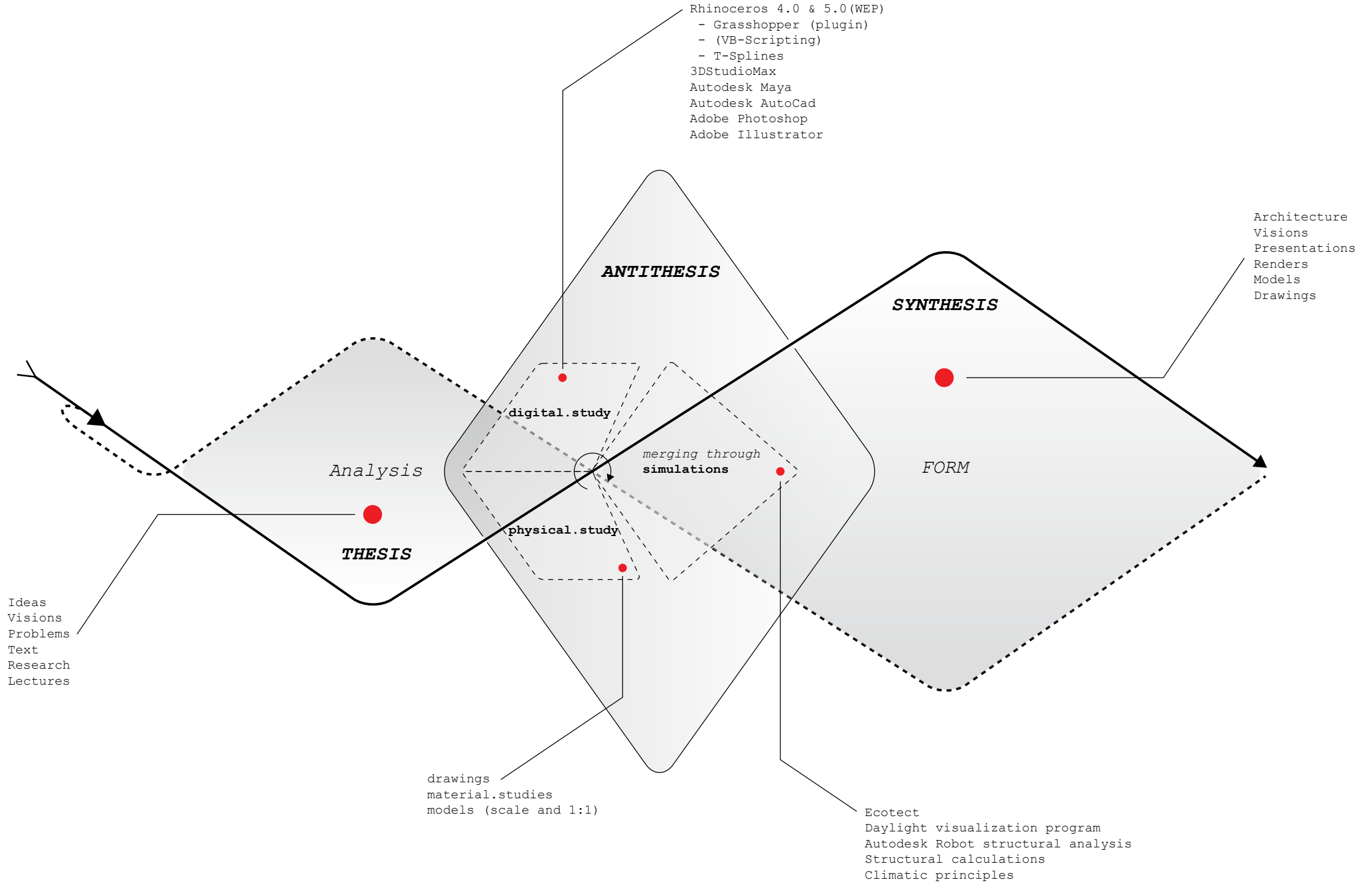
The methodology is a non-linear process, which is divided into three main topics; *Thesis*, *Antithesis* and *Synthesis*. The method takes its offset in a thesis, which is an idea, problem or vision (Delanda 2002).

The thesis is a single subject and is evaluated through physical

models, 3D modeling and/or computer simulation tools. Through this evaluation new knowledge and complexity emerges, which generates an evolved understanding of an idea, problem or vision and a *synthesis* is subtracted - an organized complexity.

The organized complexity (a *synthesis*) leads back to a new thesis and thereby form are explored through a non-linear looping process.

A loop generates coherence between the phases and merges the "new gained" knowledge in a collected *synthesis* that is able to generate form, which is developed through several processes - "an integrated design process".



ill. 05 // Methodological diagram of the work process.

"to promote the discussion of ideas related to the development of projects in cultural heritage, historic parks or ecological sanctuary settings", Arquitectum.

PROJECT BRIEF

A summary of possibilities.

Project brief /

The thesis-project takes its offset from a competition brief published by *Arquitectum* regarding a new ecological hostel- and museum building in *Tikal national park* in Guatemala. To shape an architectural element that respects the archaeological discoveries and preservations from small objects to larger ruins. A new proposal that utilizes and adapts to the climatic conditions and location, but simultaneously dictates an innovative and new-interpretation of the hospitality traditions, the way we live and experience the archaeological site in the Citadel of Tikal, Guatemala.

The project brief proposes an opportunity to *"promote the discussion of ideas related to the development of projects in cultural heritage, historic parks or ecological sanctuary settings"* (Arquitectum 2011).

We are eager to access this discussion by combining selected rules and demands from the project brief and merge it with our creativity, interests and motivation.

We embrace the beauty and mystery of the site and want to create a setting that carefully intervene with the site, but simultaneously discover the architectural poetics without interfering with the natural landscape setting.

Through this discussion, the ecological hostel is more a place to be, rather than a place to be in. (Arquitectum 2011) Due to heavy

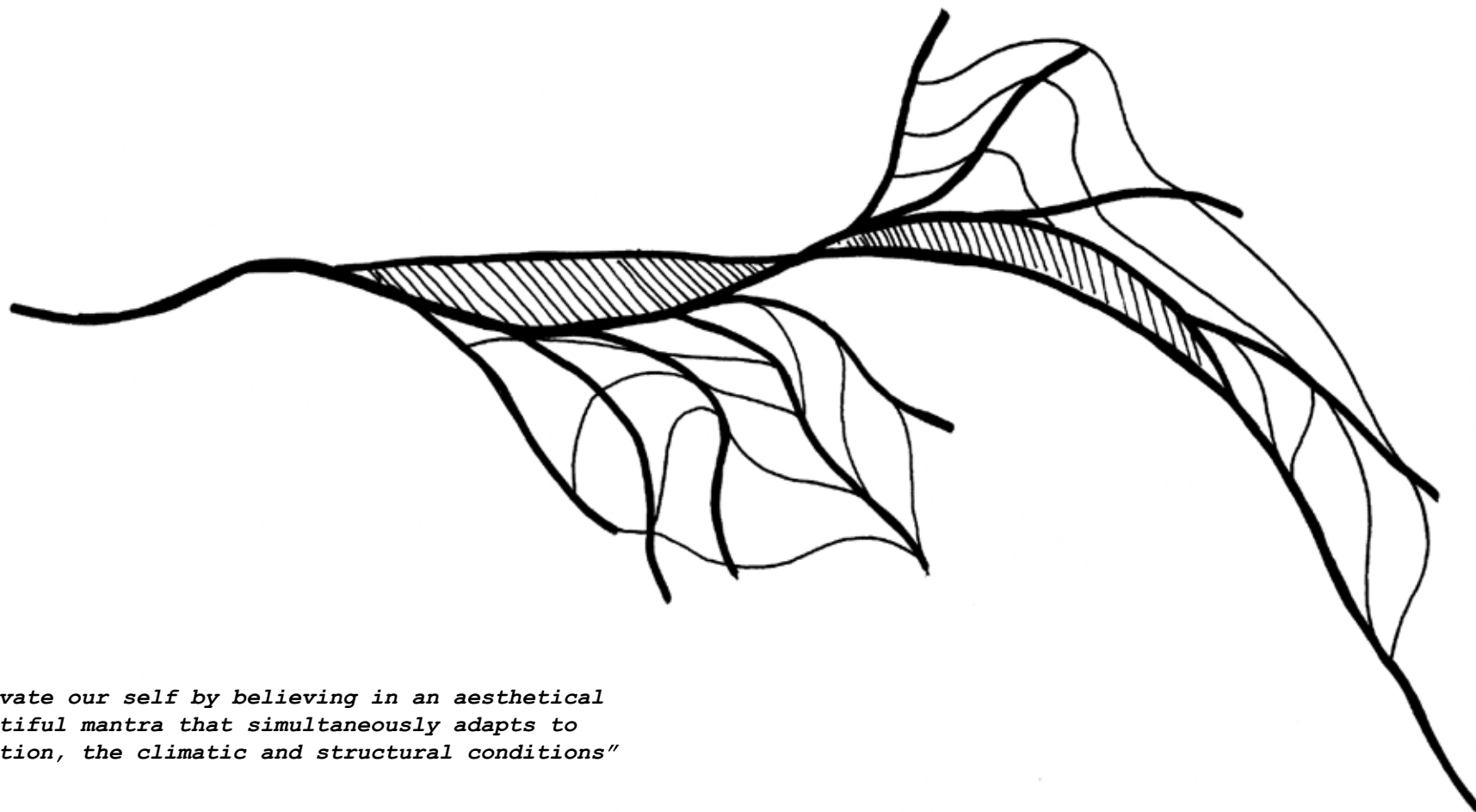
shift of visitors, the higher value is placed on the temporary stay, to focus on the main purpose, which is to experience the old Mayan excavations and the rainforest - hereafter return to the hostel. The essence of lodging temporary in the middle of the rainforest in Tikal will be one of the focal challenges in the design proposal.

Therefore it's important to note that the project brief is not followed thoroughly, but used as framework and guidelines for the thesis-project.

Motivation /

To design and contribute with ideas in a tropical, more harsh and challenging environment are one of the focal points in our thesis-project. Challenge the structural and climatic principles tutored in a Danish context and adapt these to a location in South America. We motivate ourselves by believing in an aesthetical and beautiful mantra that simultaneously adapts to the location, the climatic and structural conditions.

We want to evolve by creating a knowledge platform outside of Denmark that develop our competences and visions.



*"We motivate our self by believing in an aesthetical
and beautiful mantra that simultaneously adapts to
the location, the climatic and structural conditions"*

ill. 06 // Ideas merge together and generate a holistic direction.

BUILDING PROGRAM

An overview.

Building parameters subtracted from the project brief and implemented in the design proposal.

Hostel /

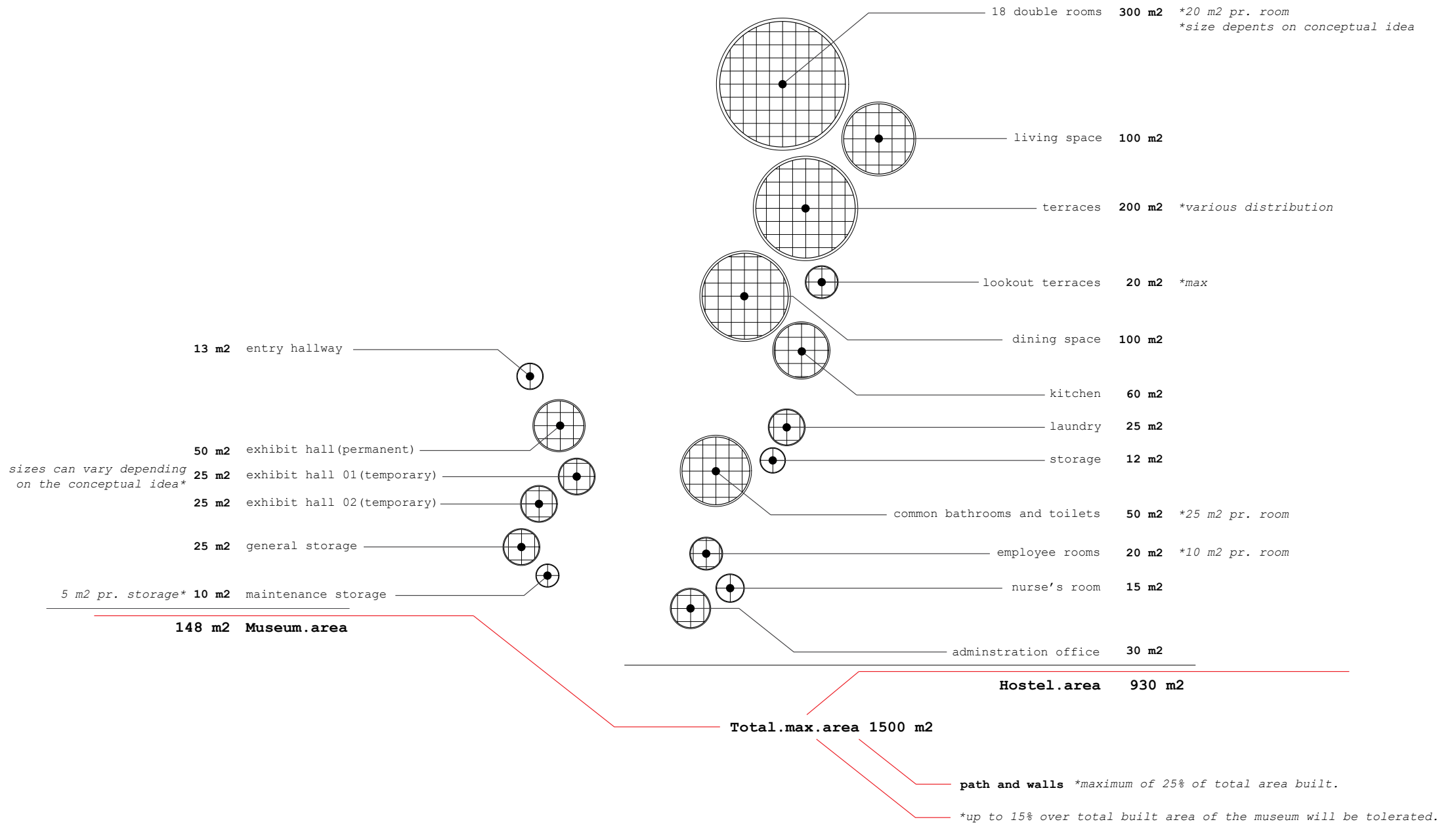
- The proposal may be located anywhere nearby the archaeological site.
- The dining space should have direct natural light.
- View from the cafeteria to the Citadel.
- Lookout terrace will be a vantage point (high point).

Museum /

- Entry Hallway will connect the Museum and Hostel.
- Permanent exhibition / various sized objects.
- Temporary exhibition 01 / small objects.
- Temporary exhibition 02 / large objects.
- Natural and artificial lighting, the Exhibition Rooms should have indirect natural light.

Special conditions /

- Rainfall must be controlled with some basic drainage strategies.
- Ecological ventilation strategies may be employed.
- Local materials that adapt to the context, weather conditions and the aesthetical arguments.
- Avoid a large environmental impact in the area.



ill. 07 // Graphical layout of the function-diagram.

ORGANIZATION

Internal connectivity.

To integrate a physical boundary while still keeping a visual contact between functions will define our internal organization layout.

The organization layout is clustered in three parts - public, semi-private and private. The experience is triggered when walking down a shared entrance towards a public walk-path. Here the visual experiences are shared but clearly divided through the use of different materials and expressions.

From the walk-path a visitor define his own experience; resting and hiding in the nests floating in space, social interaction in the shared living and dining spaces or walk back out and experience the Maya ruins. (Appendix E, F)

Basic organization requests from the project brief.

Entry /

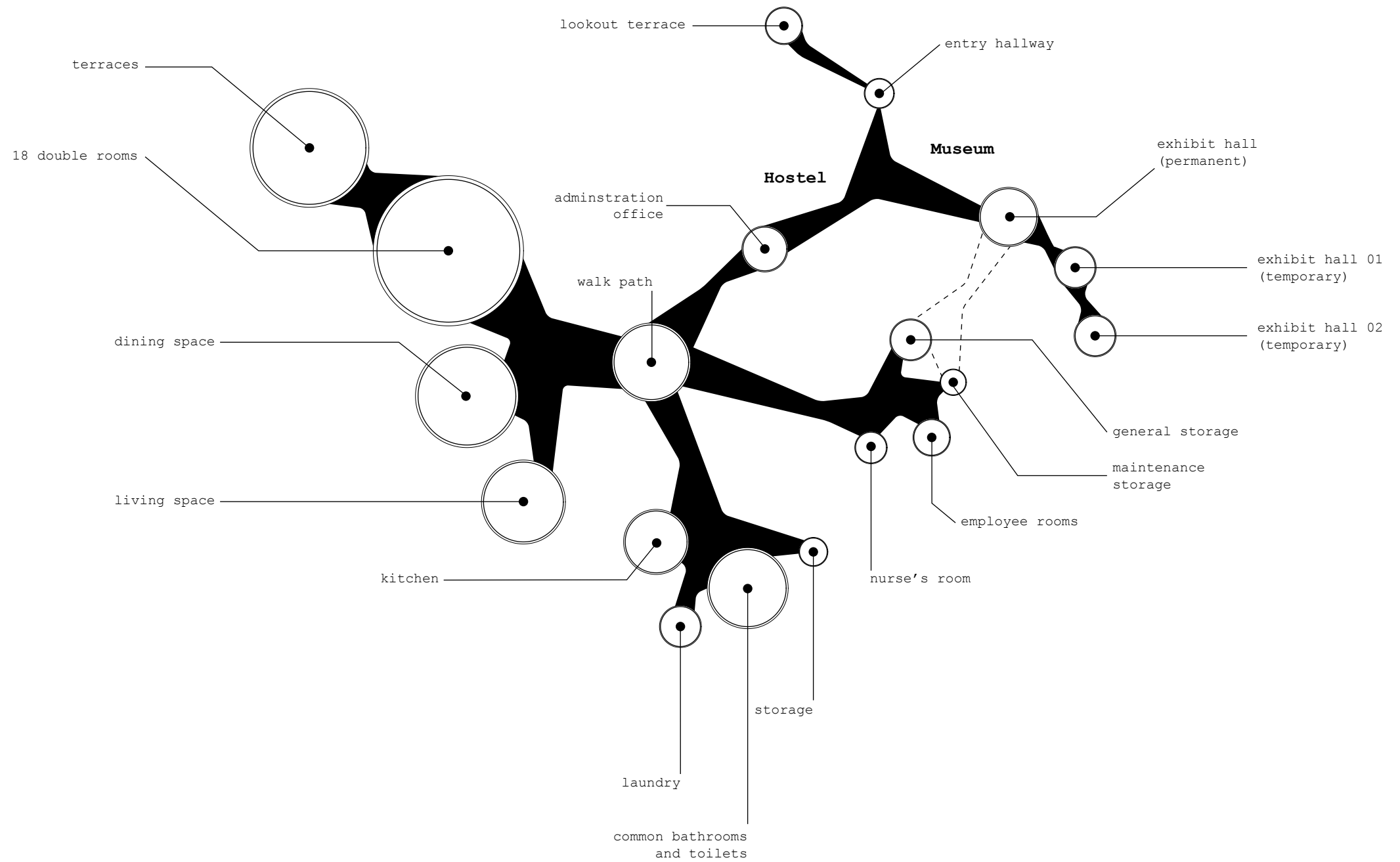
- In order to get into the museum from the hostel it should be necessarily to pass through the "Entry Hallway".
- The "Entry Hallway" will have an independent access so the tourist that would like to visit the Fortress may be allowed to go through this space without necessarily getting into the Hostel.

Path /

- The Museum and Hostel paths will be clearly differenced with the possibility of being integrated through a glass or "virtuel" element that allows them to be "spatially united" but not necessarily physically.

Time of use /

18 double rooms	- morning / evening
common bathrooms and toilets	- all day
adminstration office	- all day
living space	- evening
dining space	- all day
kitchen	- all day
employee rooms	- morning / evening
laundry	- evening
nurse's room	- various
terraces	- all day
lookout terrace	- all day
storage	- various
entry hallway	- all day
exhibit hall (permanent)	- morning / afternoon
exhibit hall 01 (temporary)	- morning / afternoon
exhibit hall 02 (temporary)	- morning / afternoon
general storage	- various
maintenance storage	- various

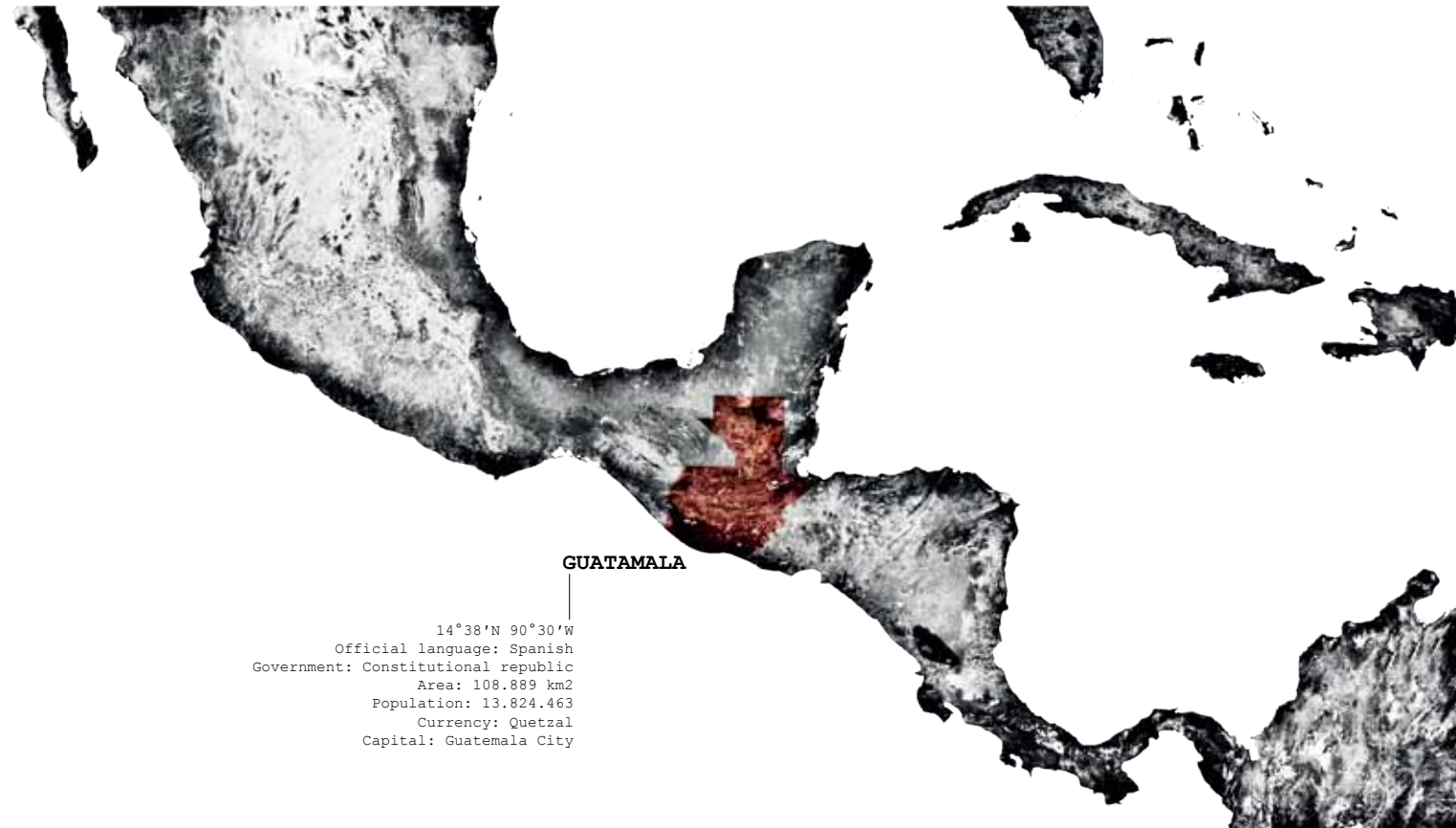


ill. 08 // Graphic layout of the room-program/organization.



Central America /

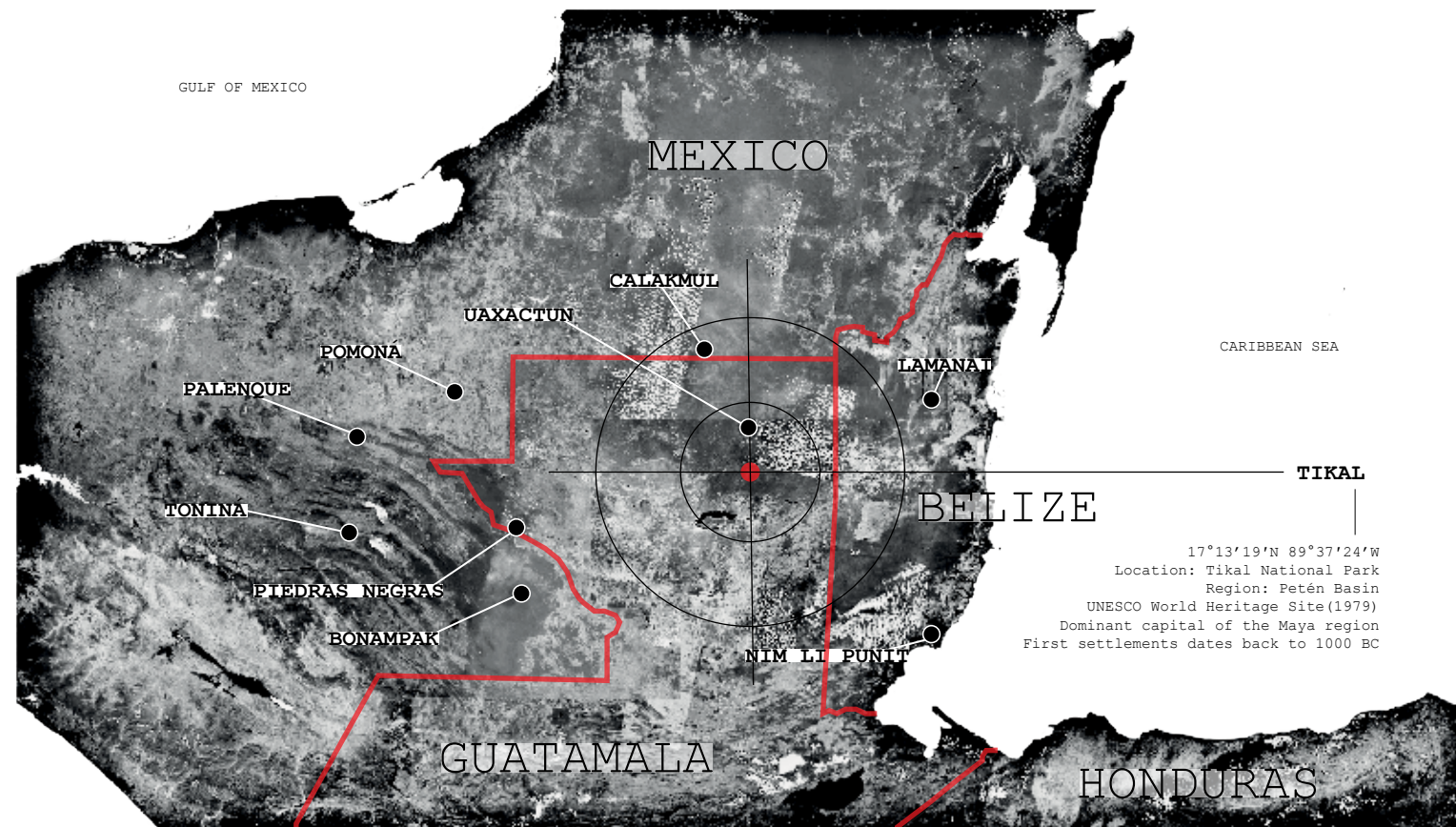
Traces of the Maya empire can be detected in Honduras, Belize, El Salvador, Mexico and Guatemala. The Maya civilization had its peak during The Classic Period, which was between 250-900 AD, though it has been there since 2000 BC. (Web 01)

**GUATAMALA**

14°38'N 90°30'W
Official language: Spanish
Government: Constitutional republic
Area: 108.889 km²
Population: 13.824.463
Currency: Quetzal
Capital: Guatemala City

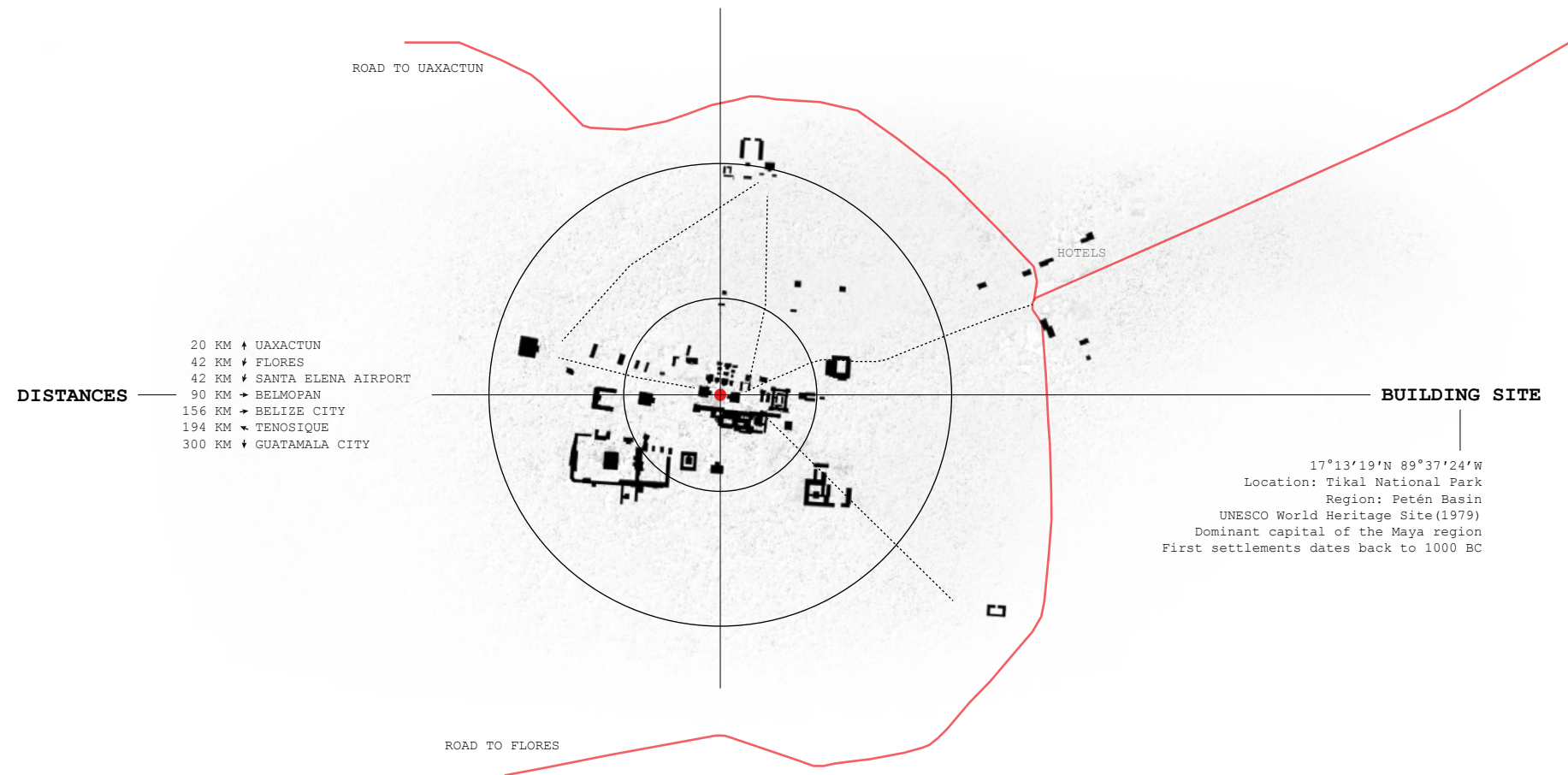
Guatemala /

Guatemala is located in Central America. It is bordered by Mexico to the north and west, Belize to the east, El Salvador and Honduras to the southeast, the Pacific Ocean to the west and the Caribbean to the east. The area of Guatemala is approximately 110.000 km² and is about 2.5 times the size of Denmark. The population holds 13.8 million. Guatemala City is the capital. (Web 01)



Region Peten /

Throughout Guatemala, Mexico and Belize, there are traces of Maya settlements. Maya art and architecture can be detected as far as 1000km. away from the actual Maya area. This map shows how far the Maya area stretches. Tikal and Calakmul were some of the most important and influential Maya cities. (Jones 2007)



Tikal /

This map shows the Tikal area. You can access the area from the nearest city Flores, 42km. south. When reaching the area of Tikal, there's a small gathering of hotels, before actually entering the area with temples and pyramids. At the moment visitors will get there on foot, through the forest, to access the area. (Web 02)



2 NORTHERN ACROPOLIS

Construction began in the Preclassic Period, around 350 BC. It was a funerary complex for the ruling dynasty of the Classic Period. By the 9th century AD, 43 stelae and 30 altars had been built. It is one of the most studied architectural groups in the Maya area.

3 CENTRAL ACROPOLIS

It is a huge complex of residential and administrative palaces. The Royal Family of Tikal and their relatives lived here. The complex stretches over 1.5 hectares. It is made up of 45 buildings and 6 courtyards. Stairways, halls and doorways communicate the buildings and plazas. The Mahler Palace and the Five Story Palace are the most outstanding buildings in the complex.

1 THE GREAT PLAZA

Located at the core of the site. Flanked by the two great pyramids, Temple I and Temple II and bordered by the North- and Central Acropolis.

4 TEMPLE I

Also known as "Temple of the Great Jaguar". The pyramid was completed around 740-750. Funerary pyramid dedicated to Jasaw Chan K'awil. Entombed in the structure in AD 734. It was discovered by Aubrey Trik of the University of Pennsylvania in 1962.

5 TEMPLE II

Also known as "Temple of the Mask". Completed around AD 700. The temple was dedicated to the wife of Jasaw Chan K'awil. No tomb has ever been found.



Citadel of Tikal - Site /

The building site is located in the center of the ruins of Tikal. The new building are located at The Great Plaza, and will be surrounded by four structures; Temple I, Temple II, Central Acropolis and North Acropolis. (Web 02)

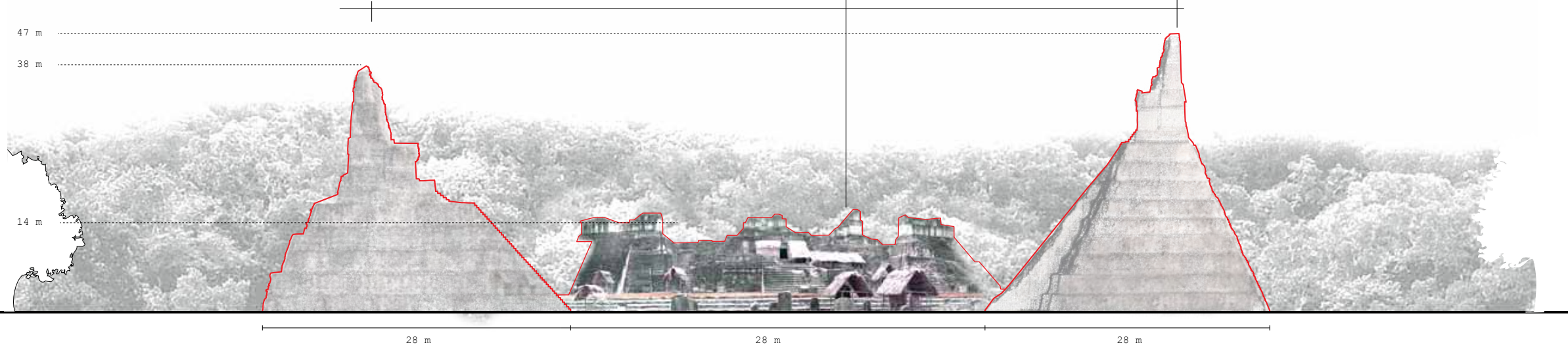
Materials / Elevation

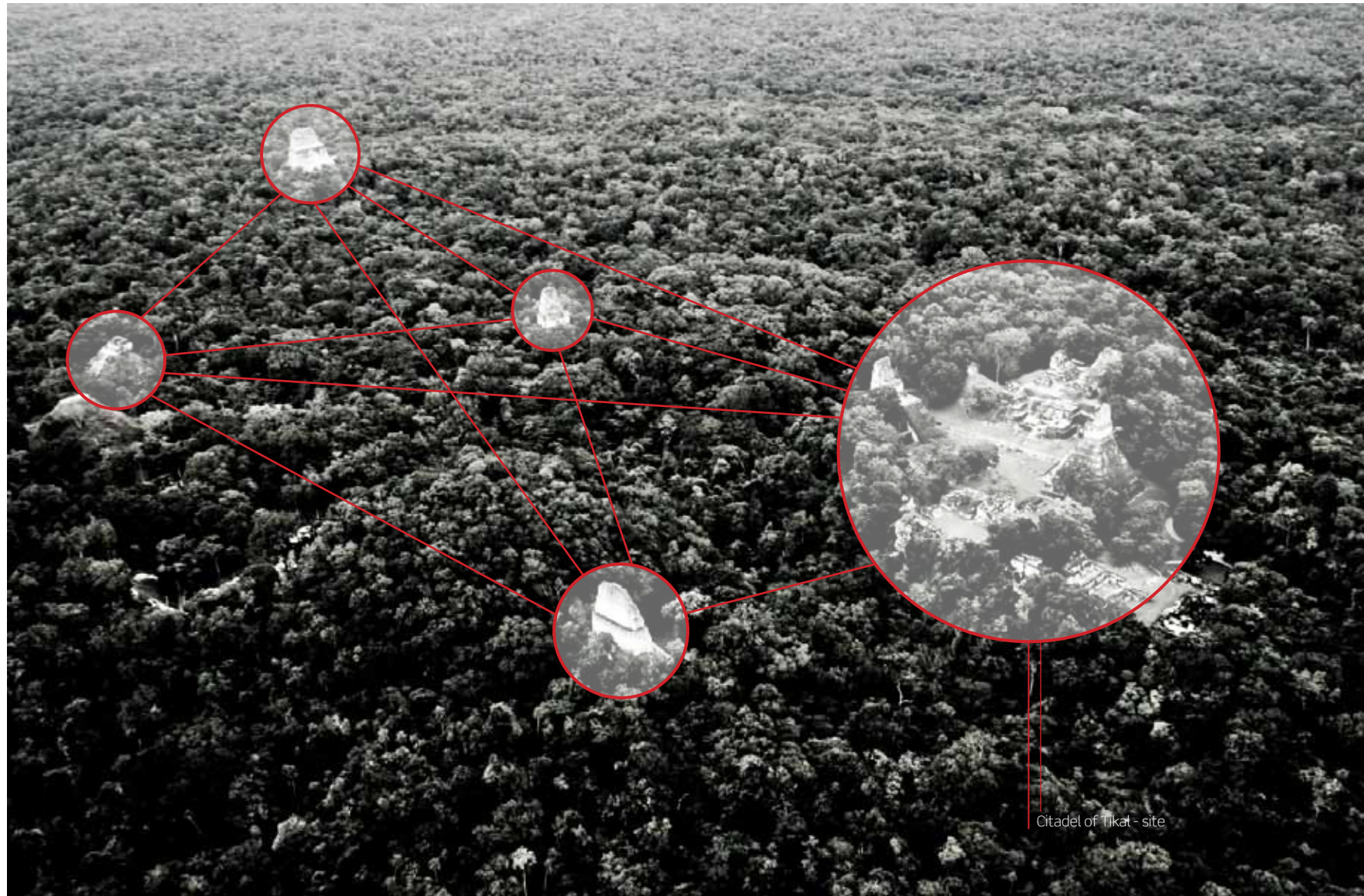
The rainforest in Guatemala is part of the global network of biosphere within the Maya biosphere reserve. It has a varied vegetation of various species, but the two most common are mahogany and cedar sources. (Arquitectum 2011)

Heavy ruins of limestone are the common material and used massively in various ruin-typologies. The hills and lakes around Tikal are limestone treasures and used as loadbearing material in walls, blocks to temples and palaces, but also as pavement, cladding and later engravings. (Kostof 1985)
Later archaeological excavations discovered the Mayans flair for pottery design by using polychrome material, where they created beautiful curved and organic designs. (Lavghton 1998)

Datasheet

Stone temples with corbel vaults on top of each other
Basis outline of a Mayan city -
Temple pyramids, ball courts, palaces ->
arranged around paved public places
Palaces: One story buildings
long and shallow shapes
Impractical arrangement, windowless small rooms.





ill. 09 // The Maya-civilization captured by the nature and only the largest ruins survived the clash with the rainforest. Ruins are located at various locations with the Citadel of Tikal as the dominant figure.

IMAGINATION

A path into a hidden and mysterious world.

Discovery, mystery and unknowing territories are just some of the words that describe the Maya ruins in the Citadel of Tikal. The path through the rainforest towards the focal point of Mayan territory, embraced by trees and other types of vegetation that frames the path with gleams of green perforated colour, mixed with sharp light rays from the burning sun, sets an amazing scenery in the search for discoveries. The passage ends brutally when the scenery shifts from an enclosed passage to a voluminous plaza with enormous limestone temples and palaces. The temples, which are geometrically rectangular proportioned and built in layers upwards and accompanied by large staircases. All the ruin-typologies are oriented towards a central public place where engraved gravestones are located in front of each ruin-typology and now seen as archaeological excavations.

Maya excavations are exhibited in the new design proposal with the purpose of activating the artefacts in an integrated design solution.

"Located in the Petén jungle in the territory of today's Guatemala, Tikal is one of the most important Mayan cities and definitely one of the most famous in the world, is home to majestic temples, palaces and public squares and the highest pyramids known to this culture", Arquitectum.



ill. 10 // Temples and Acropolis' distances to one another.



ill. 11 // Elevation of temple 2 - view from the plaza.



ill. 12 // One of the heavy limestone staircase constructions leading you all the way to the top.

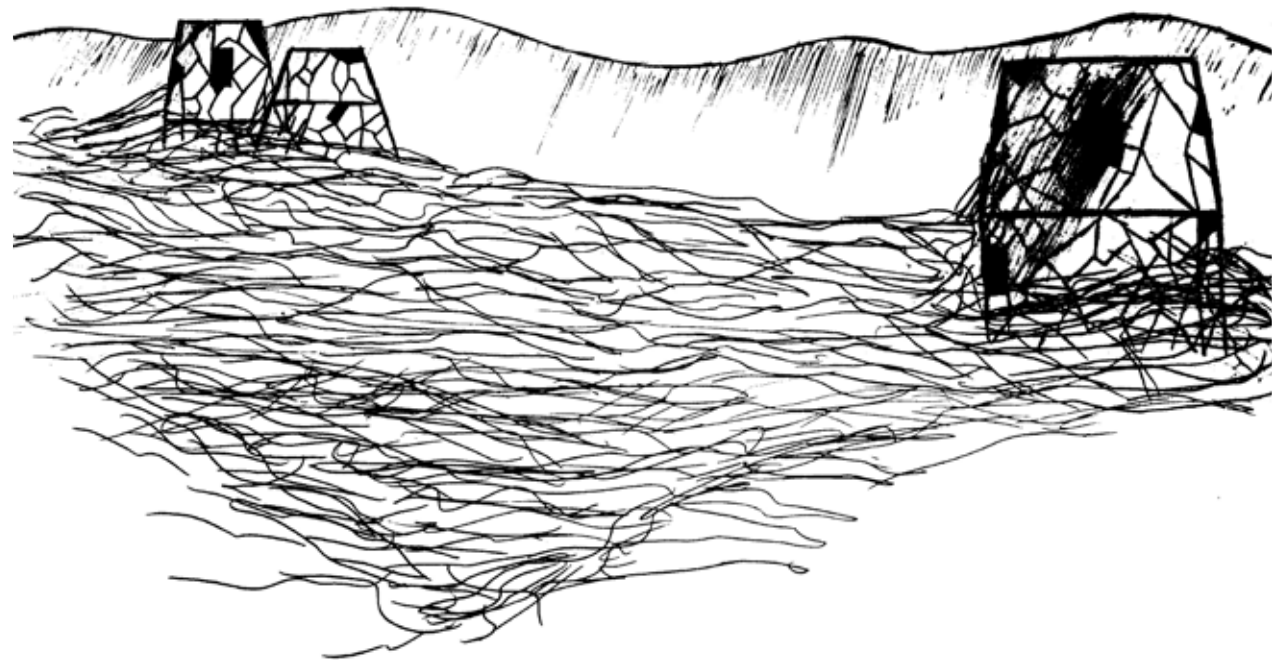
LANDSCAPE / RUINS

An artistic picturesque environment.

The scenery around the Citadel of Tikal is a picturesque environment where Maya fragments pops out of the green rainforest and artistically merges the Maya culture with the voluminous nature. Gradually the rainforest has captured the Maya city and only persistent works from the archaeologists have prevented a total takeover.

Trampled down passages have over time become an important element in explorers' search for Mayan culture. The rainforest is heavily overgrown, but a thoroughly investigation illustrates a connection generated over time between the Mayan culture and the rainforest. At numerous occasions the trees and leaves have created a certain framework towards the temples and thereby creating a direction and sight for explores. It's an interesting interplay between nature and element, which sets the Maya temples in scenery.

"Architecture must be created from the particular atmosphere of the place, the intense dialogue with the impressive landscape and with the static and homogeneous weather", Arquitectum.



ill. 13 // Vegetation is a dominant figure in Tikal.



ill. 14 // Interplay between the rainforest and ruins.



ill. 15 // The temple construction frames a view towards the scenery.

ill. 16 // Maya fragments pops out of the green rainforest.

CLIMATIC ENVIRONMENT

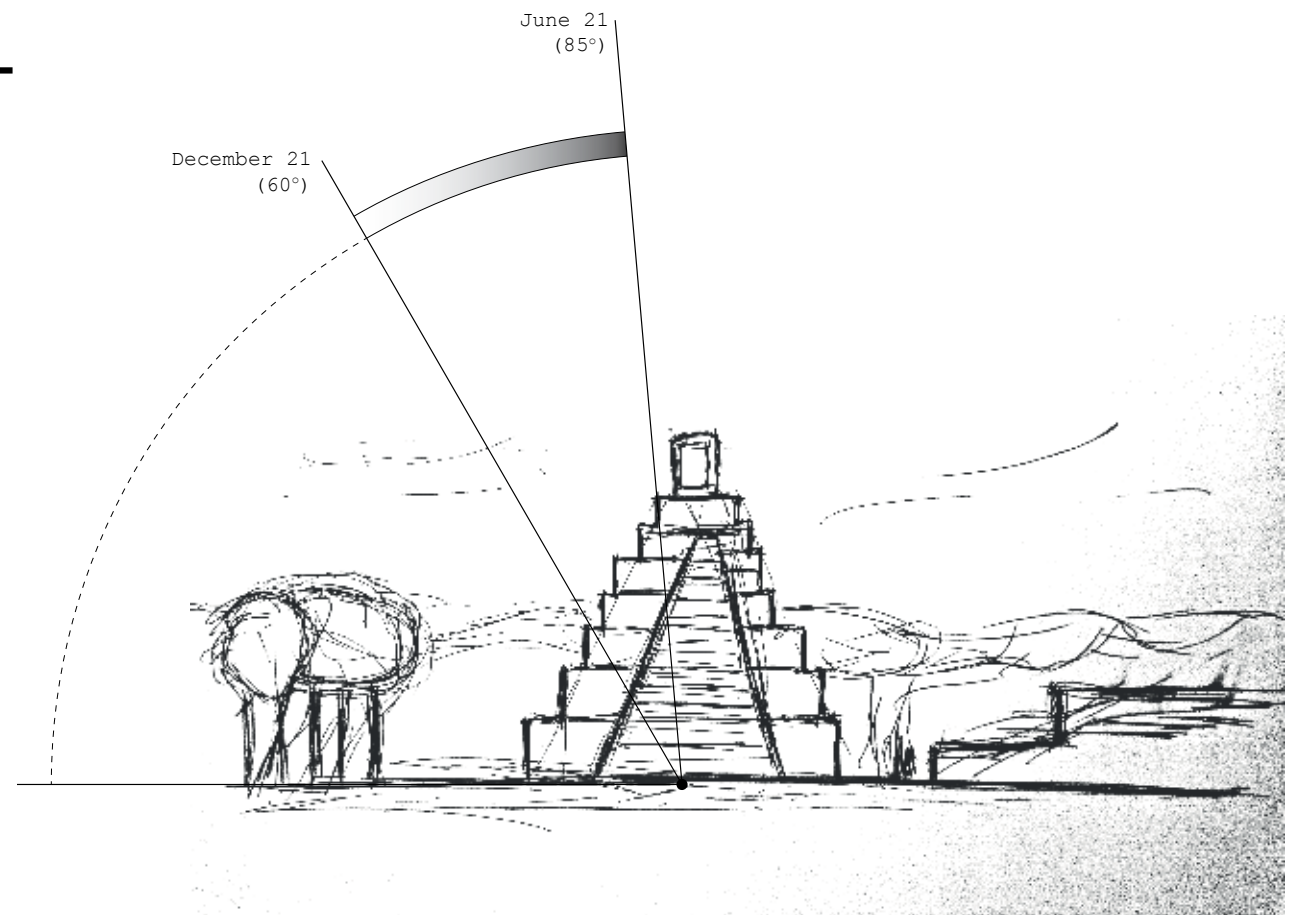
Solar, wind and precipitation conditions.

Sun /

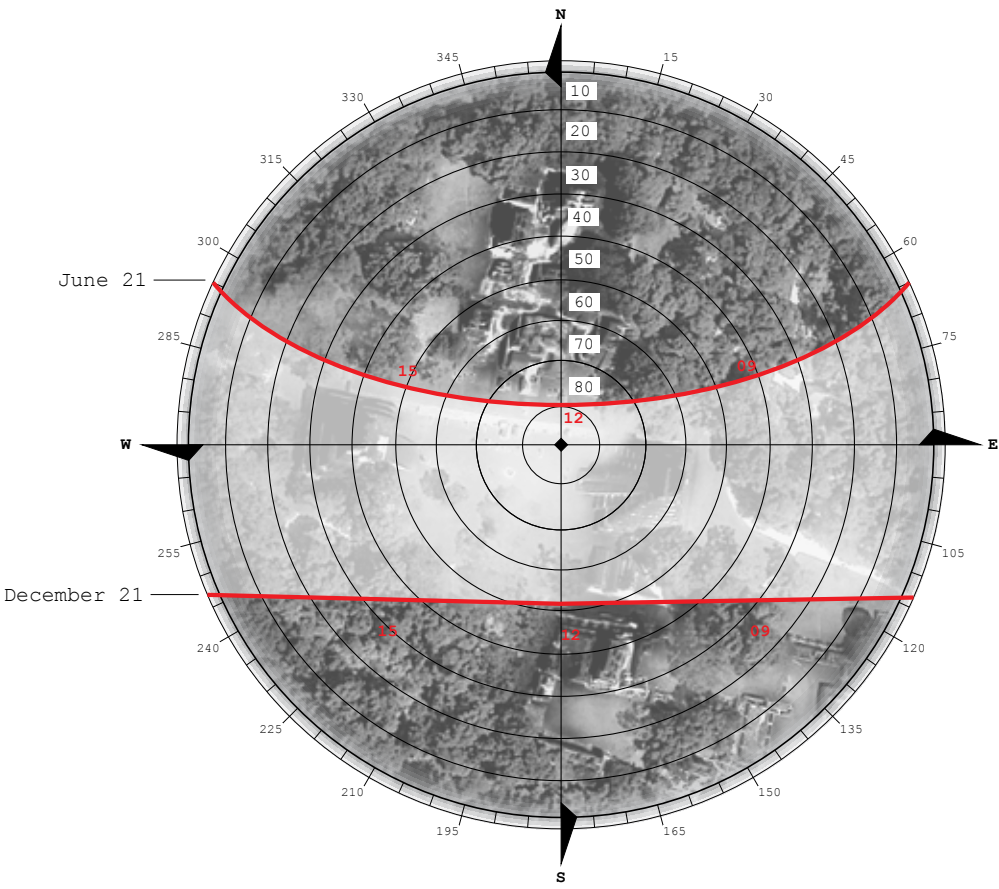
The design proposal is located at a flat and open site and it's therefore possible to use daylight. The shadow casts from the temples and trees will affect certain areas during the day, mostly in the morning and at late evenings because of the shift in the position of the sun. The average day and night temperature is 33° and 20° respectively. (Web 03)

Wind /

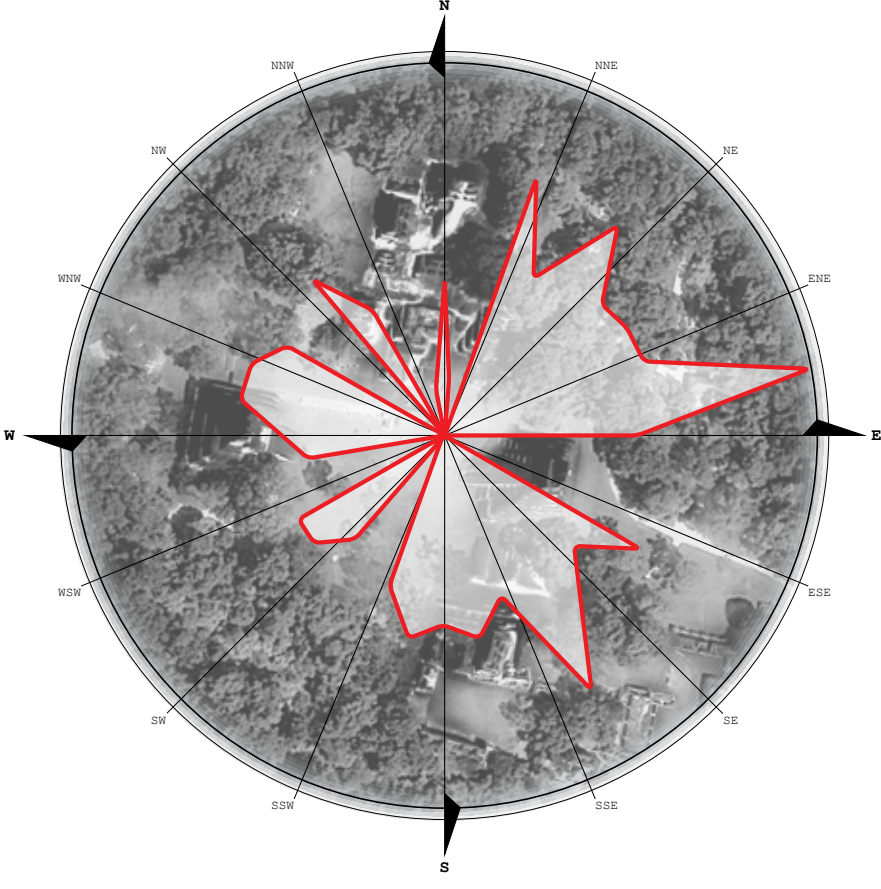
The prevailing wind direction when examining the wind-rose is north-east. It's also important to take the wind from south into consideration when examining potential wind opportunities. (Web 04)



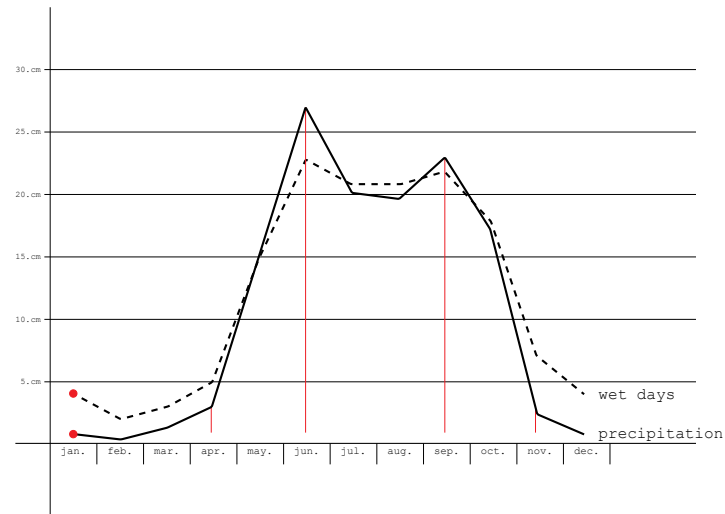
ill. 17 // Sun position at two focal dates during the year.



ill. 18 // Sun-Rose of Tikal.



ill. 19 // Wind-Rose of Tikal.



Precipitation /

A small area of the water canal system is revealed, beginning from the temples and evolving in to the rainforest towards another temple area and illustrates the importance of water and precipitation for the Maya civilization.

The rainy season in Guatemala happens in the period May - October, which generates a heavy rainfall in a short time during the day followed by sunshine. The precipitation in Guatemala is a long anticipated occasion both for farmers and their growth but also for cooling.

Due to heavy rains the chance for collapsing sink holes are perpendicularly rising. When a huge amount of water is collected at the same spot, it's forced underground and floods the subterranean passages and leaves an enormous gap in the earth's surface, dragging everything down. (Web 03) (**Appendix D**)

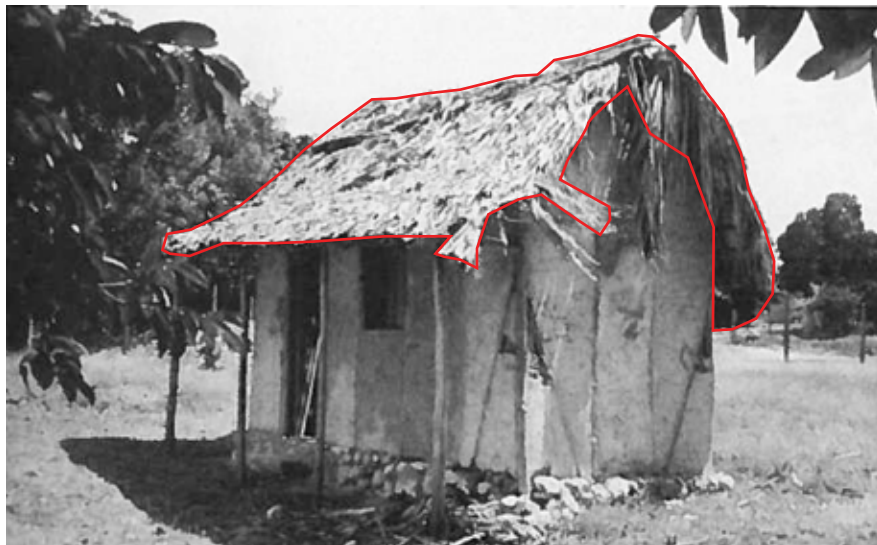


ill. 20 // Excavated Maya water system.

ill. 24 // Hawaiian Thatched Hut, Polynesian Cultural Center, Meeting Hall, Laie, Oahu
 - Natural airflow
 - Covered
 - Open
 - Wood structure



ill. 23 // Novotel, Lombok, Indonesia
 - Hallway
 - Concrete pillars
 - Wood structure
 - Open space



ill. 21 // Seville Estate, St. Ann, 1690-1840, Jamaica
 - Covered space
 - Materials
 - Light roof cover



ill. 22 // Hardy Guest House, Accra, Ghana
 - Covered space
 - Outside structure vs. Inside building structure
 - Material shifts

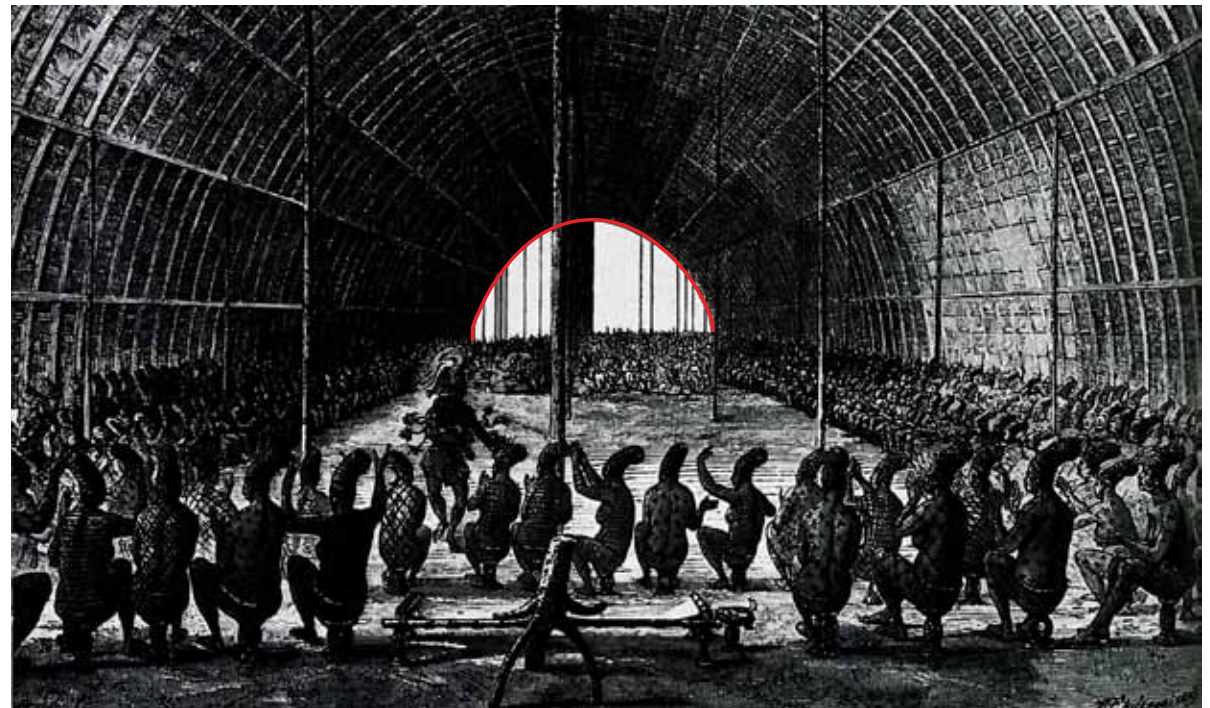
CLIMATE PRINCIPLES

Environmental and structural principles in Guatemala.

The following describes the use of local climatic principles, which will affect the structural and environmental strategies in an integrated building design. The global dominant factors of climatic changes are land, sea, sun and air. These conditions will be modified in a local environment depending on topography, vegetation, water and built structures. Ultimately the conditions of the site and the building proposal will determine how the climatic environment in a local context will unfold.

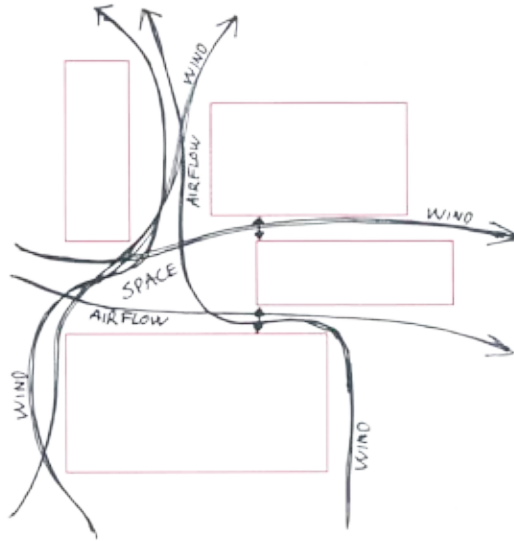
Tikal is located approximately 115m. above sea level and the landscape in the nearby context is relatively flat with no mountains in the area. Guatemala and Tikal are globally located in the hot and humid tropical climate zone - the hot-wet tropical climate.

The building proposal wish to make a benefit of the natural resources and conditions, ensuring that the building implements climatic principles in an aesthetical context to ensure an acceptable level of comfort. (Salmon 1999) (**Appendix B, C**)

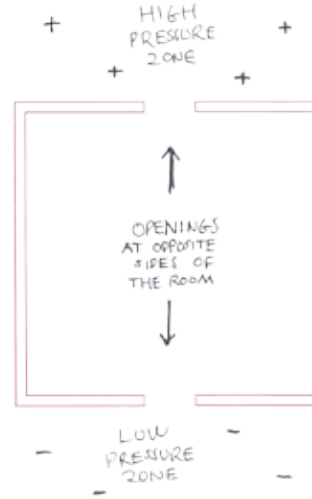


ill. 25 // Interpretation of the Mayans gathering in a modern bamboo structure.

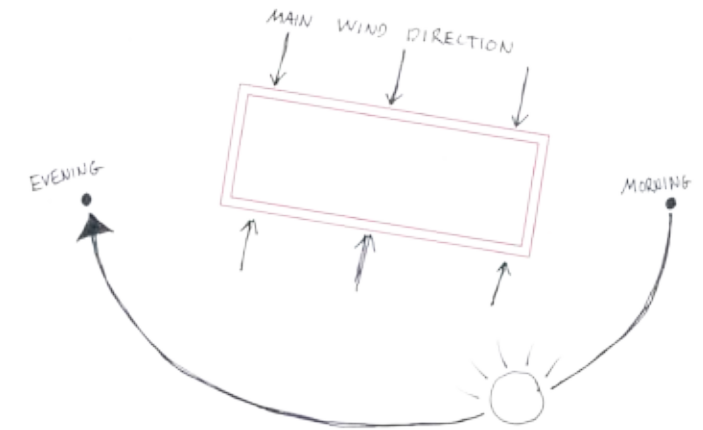
- Large - ventilated space.
- Space for gatherings.
- Integrated shading structure.



ill. 26 // Several building elements should be scattered with space between them to promote constant airflow.

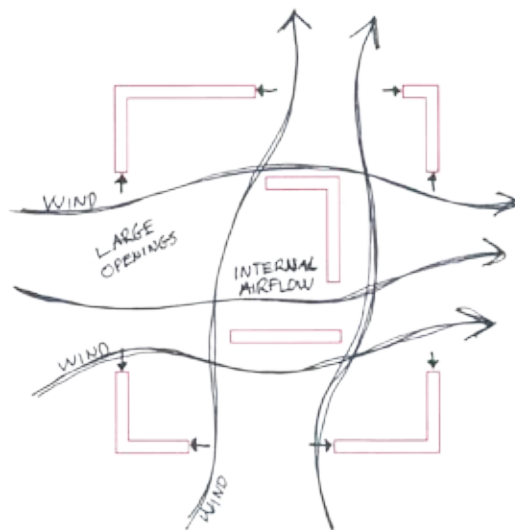


ill. 27 // Preferable all rooms should have access to an outside area and locate the inlet and outlet airflow to maintain a high pressure zone.

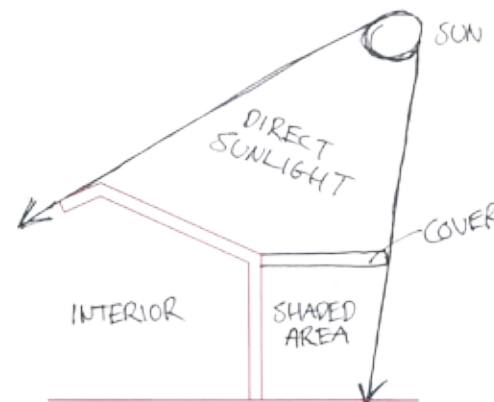


ill. 28 // Orient the building according to the main flows of wind and utilize these in a natural ventilation strategy.

Minimize the amount of large openings on the south side of the building.



ill. 29 // Openings in the buildings should be as large as possible to ensure internal airflow.



ill. 30 // Integrated shading solutions to avoid direct sunlight.

The roof should have a wide overhang to protect the interior or external covered spaces from glare, rain and sunlight.

// Walls that are exposed to sunlight should be insulated and have a kind of reflective external surface.

// Walls over-ground should be constructed in light materials with a low thermal mass

// Walls under-ground should be constructed in heavy materials with a high thermal mass to ensure cooling.

// Drainage for rainwater is necessary.

ESSENCE

Abstraction to the essence.

We have an intention about space, building and landscape - a building that generates spatial quality through a dialog and interconnection with its users, the surroundings in the rainforest and the reconnection with the historical heritage.

Through a creative mind-set we want to design a hostel *"that renews the hospitality traditional vision, and invites the guest to experience in a new and different way what it is to spend a night and wake up in front of the archaeological site of Tikal, in north Guatemala"*.

Why /

Why do we design? We wish to add value to a place, to tell a poetic story in the evolution of space that leaves an impression and interacts with the archaeological heritage. The why is that the building should become a fluent mediator between people's curiosity and the surroundings, to leave an impression. To tell a story, when landscape and object melts together in a harmonic coherence.

A building that is not only designed by pure formalistic principles, but furthermore interprets the way we see, hear and feel in an abandoned environment in the middle of the rainforest in Guatemala.

Generator /

The generator exemplifies our interpretation of the Citadel in Tikal. It's our machine to locate the focal points from the analysis and

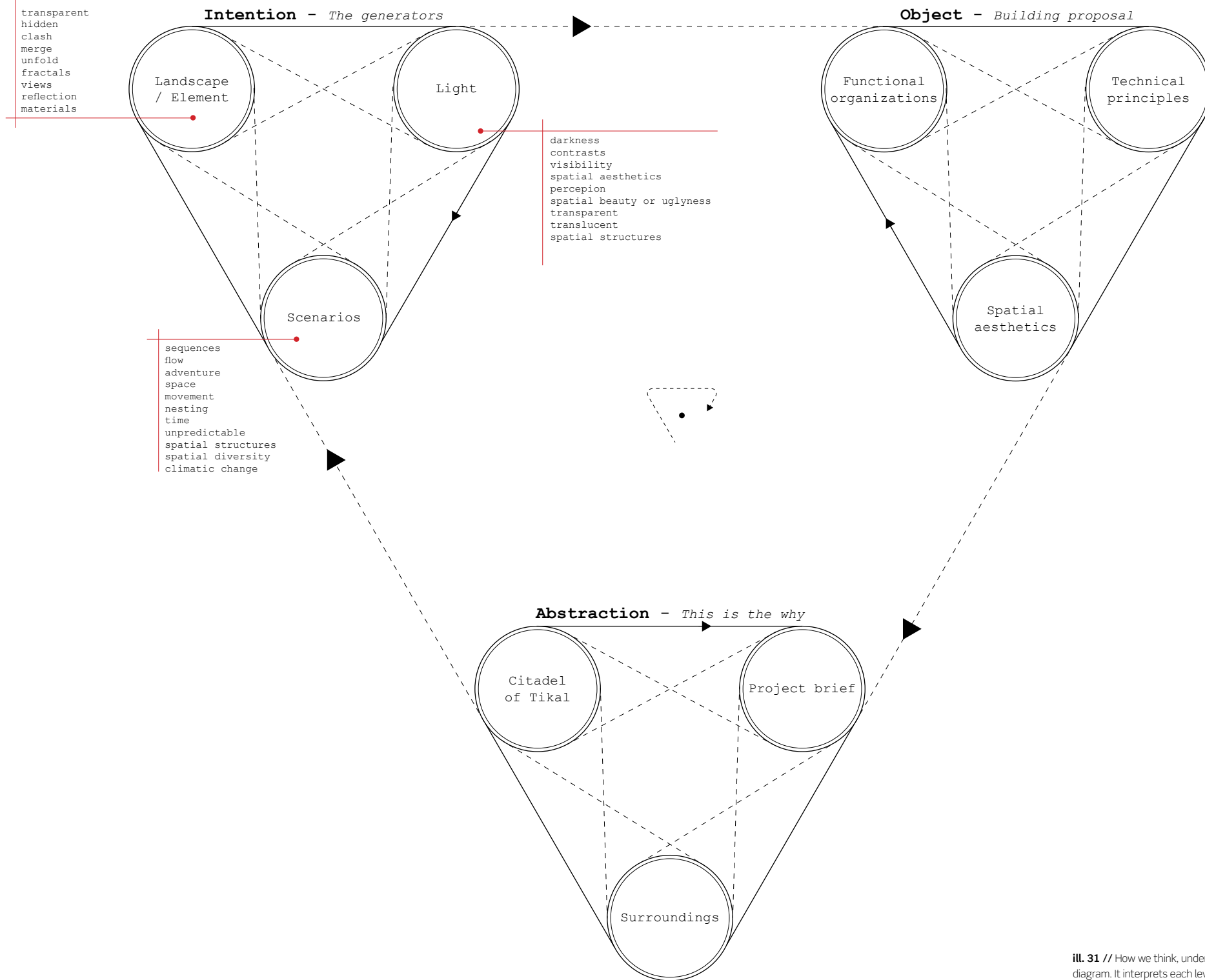
"It's the architectural element that strings the story together in an interconnection of spatial aesthetics, technical principles and functional organizations"

translate them into the story telling. The building should tell the story and we use the generator to create aesthetic design visions in the visualization of it.

We embrace the site, the picturesque scenery with large ruins positioned all around Tikal, but captured by nature and hidden in the rainforest. We want to emphasize the scenery and interpret the scale and brutality from the ruins. Through people's movements in Tikal, they experience and explore the scenery of mystery and surprises. We want to create a presence, which generates a natural coherence with peoples eager to discover - to create an extension to their movements by proposing adaptable scenarios.

Object /

The object is the physical representation of the why and the generator. It's the architectural element that strings the story together in an interconnection of spatial aesthetics, technical principles and functional organizations. The object is the only place to evaluate the design.



ill. 31 // How we think, understand and evolve is abstracted in the diagram. It interprets each level of the design process and shows that each level is intertwined with the rest. It's here we abstract the essence of the design proposal and strings the story together.

LANDSCAPE / ELEMENT

The balance between organism and land.

"In all cases, a building is one thing above all else: Not the land", said by James Steele and introduces a subject that architects have struggled with through history. It seems like architects assume that the land we walk on is not enough or as James Steele describes it; "We must enclose a space with walls, smooth the surface, and put a roof over our heads to protect ourselves" (Steele 2005). Why do we protect ourselves against the landscape? Why not change the mindset and let our architecture dissolve into nature, become one with the landscape or James Steele' description about Tadao Ando: "Ando does not focus on view for its own sake but as a means of evoking responses and emotions about nature in relationship to his architecture". (Steele 2005)

A fact is that an element stops air, sunlight and views; it replaces the land with architecture. We design interior spaces, but then hide them in facades with small transparent openings towards the landscape. (Betsky 2002)

We accept that we need some variation and cover, but do we need to close everything off? We see an interesting concept in a building

"We accept that we need some variation and cover, but do we need to close everything off?"

layout that dissolves in to earth and leaves a physical interpretation in the landscape, almost dissolving from a closed boundary to an open space.

The Citadel of Tikal was built on land, vegetation that over the years evolved and is now a dominant figure in Tikal. The landscape is our scenery and we want to interact with it. We want to unfold our architecture in the landscape and create interplay between, landscape, element and people - form that looks more inevitable than intrusive. (Steele 2005) (Arquitectum 2011) **(Appendix A, B, D)**



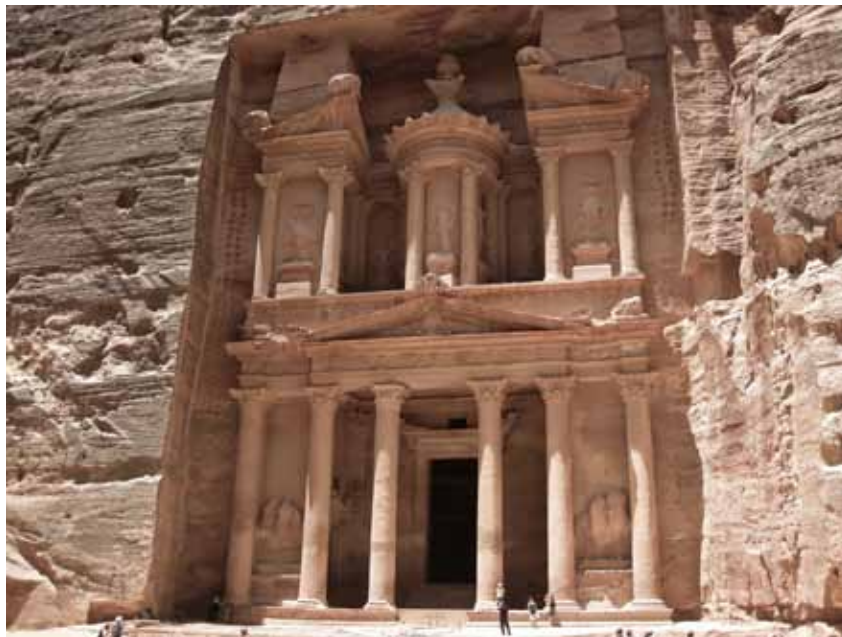
ill. 34 // Anasazi Ruins, Utah.

- One material - Two expressions
- More inevitable than intrusive
- Contrasts
- Space



ill. 35 // Concrete blocks, Donald Judd, 1980-1994, Chinati.

- Simplicity
- Contrast
- Cover
- Concrete material

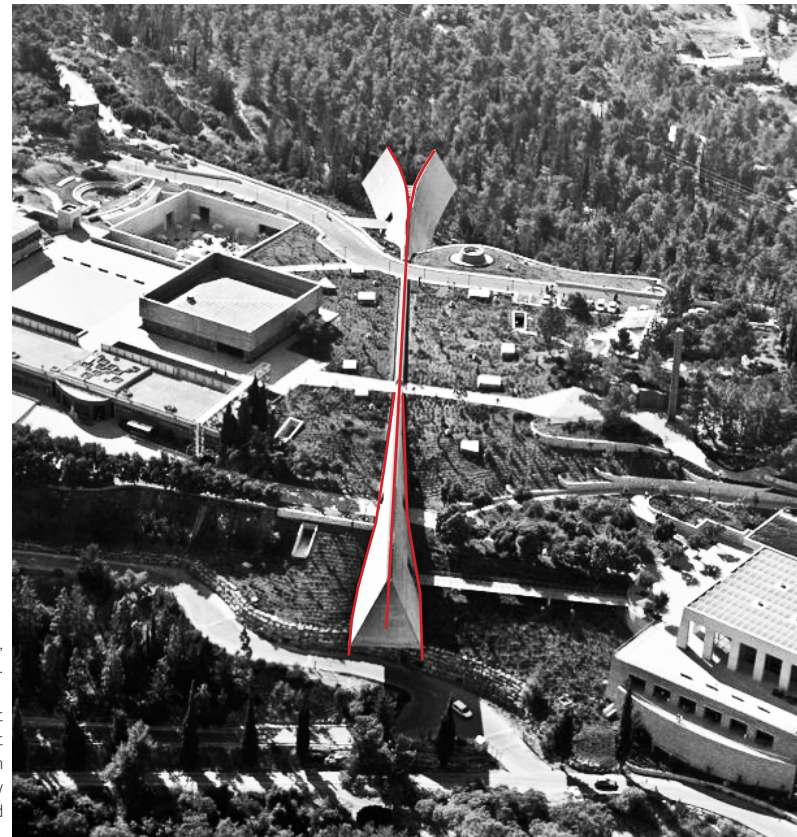


ill. 32 // The treasury at Petra, Jordan.

- Landscape vs. Element
- Stone construction
- Scale
- Poetic
- History

ill. 33 // Holocaust History Museum, Jerusalem, 2005, Safdie Architects.

- Cut
- Contrast
- Direction
- View
- Underground



LIGHT

Spatial qualities of light.

Light visualizes our physical world and is the source of energy that drives our growth and activity of all living things (Plummer 2009). Light set the scenery for the physical world and generates contrasts and gradients between the actors - the physical elements. Light create space, spatial formations, spaces to be in, spaces to experience, we interact and live in spaces. In a cohesive formation between light and space, architecture is born. (Gage 2011)

Light and space are connected and as Andrew Ballantyne advocates in his book, Deleuze & Guattari for architects, *"it makes no sense to think that an organism stands a chance of survival independently of the survival of its milieu; the milieu is a precondition for the organism's development"*, through light an organism as space or building lives, it's the mere presence of light that creates a spatial scenery. (Ballantyne 2007)

We know that daylight is important to ensure comfortable living spaces, but we need more from architecture than a number-controlled physical environment. We need spaces and architecture to be appealing rather than dead and we want spaces that activate our perception and dreams (Plummer 2009). In his search for the poetics of space,

"At simplest, light allows us to see, to know where we are and what lies around us", Henry Plummer.

Gaston Bachelard describes the lamp that glows in the window as one of the most powerful expressions, where light is fighting of darkness in a picturesque image. (Bachelard 1964)

Therefore it's important that spaces are not judged merely on the quality of numbers, but also on the impact from non-scientific arguments - physical, formal and aesthetic beauty are also valid arguments in the perception of space (Gage 2011). In the generation of form and space, Vitruvius advocates that through mediation of concepts, it's important to reconcile what is actually correct, mathematically and abstractly, with what looks correct. (Gage 2011)

Nothing would be visible without light, ergo space and light are bound together in a cohesive formation where architecture are driven by the quality of light and shadow shaped by solids and voids, by opacities, transparencies and translucencies (Major 2005). Spaces need to produce affects, precisely what affects they produce can vary from one person to another, it depends on their experiences, but through spatial interaction they are able to judge, see and feel the spatial experiences. (Ballantyne 2007) **(Appendix B, G)**



ill. 36 // Anasazi Ruins Mesa Verde,
National Park, Colorado.

"In architectural space, the public is the most imaginative component", Daniel Libeskind.

SCENARIOS

Orchestrating architectural sequences in spatial formations.

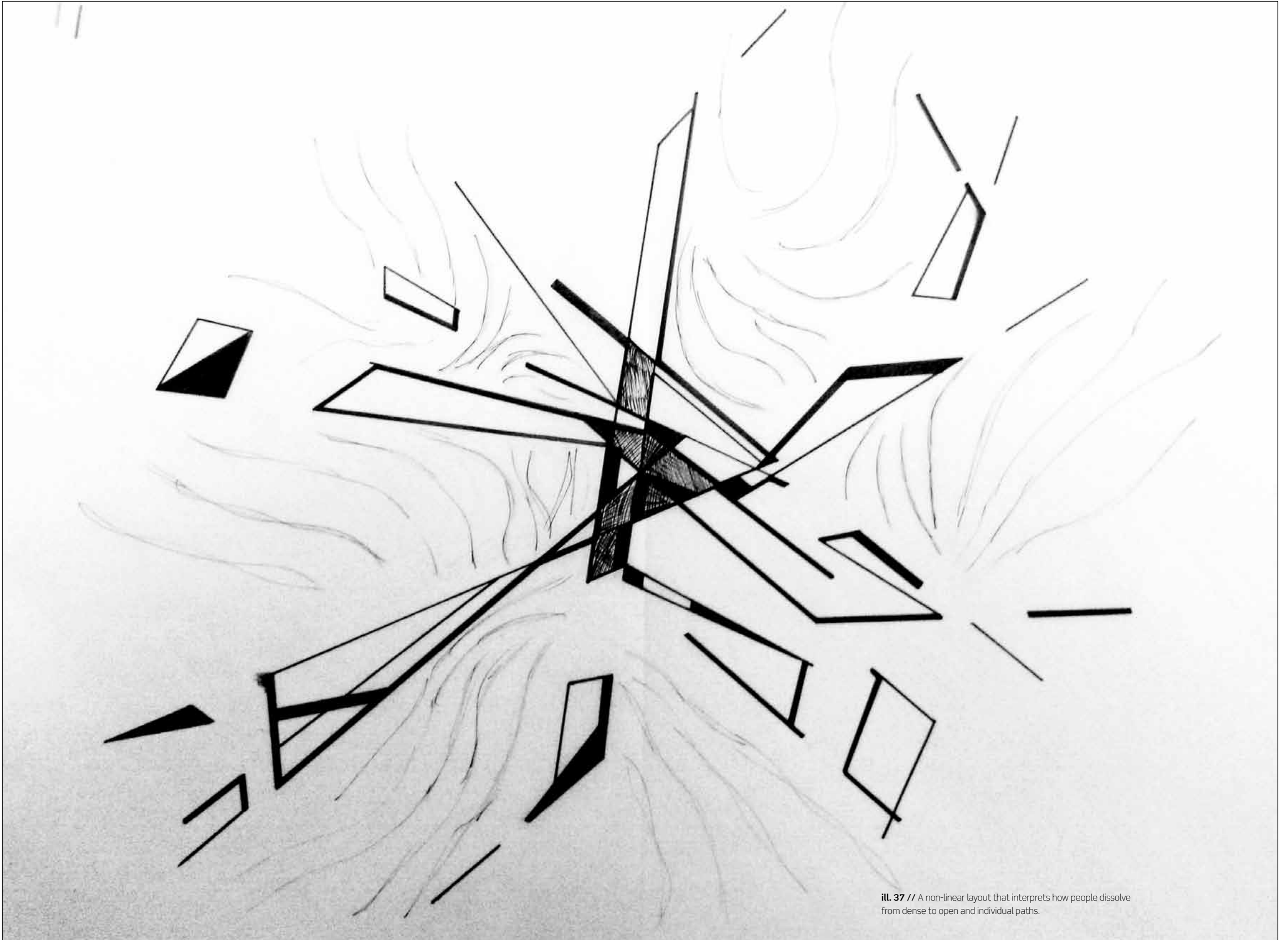
Architects and craftsmen define the framework for spaces; they propose spatial sequences in a network of scenarios and imagine people's movements in their organizational layouts. But people's patterns are unpredictable, how they understand, perceive and move in spaces varies from one person to another. Architectural spaces need to be in an evolving process and not search for an end result, *"an adventure that has an obscure genesis and an open history"*. (Penz 2004)

"Tadao Ando shows a finely tuned appreciation of and response to each of the four seasons" (Betsky 2002). His architecture performs in various sequences during the year by implementing the climatic conditions from the surroundings. Or Hassan Fathy who's interest lies in cultural performances of the site and implements vernacular building techniques to perform differently during the day (Serageldin 2007). Both architects orchestrate their spaces to perform in collaboration with the climate.

We know that people are imaginative and we can't predict the dialog between architecture and people, but we can design fluent spaces and

non-linear layouts that don't demand specific schedules or movements, but proposes transformative spatial sequences and allows for a diverse interaction with the architecture. (Penz 2004)

In order to design transformative spatial sequences we address the climatic environment in dialog with the picturesque scenery in Tikal. We orchestrate spatial sequences in our architecture through an adaptation of climate conditions, people's memories and their unpredictable desire to explore and perceive. (**Appendix B, D, E, F**)



ill. 37 // A non-linear layout that interprets how people dissolve from dense to open and individual paths.

"Is it possible to alter an ancient setting, without compromising its historical significance, and implement a spatial element that is as much physically present, as it is carefully integrated?"



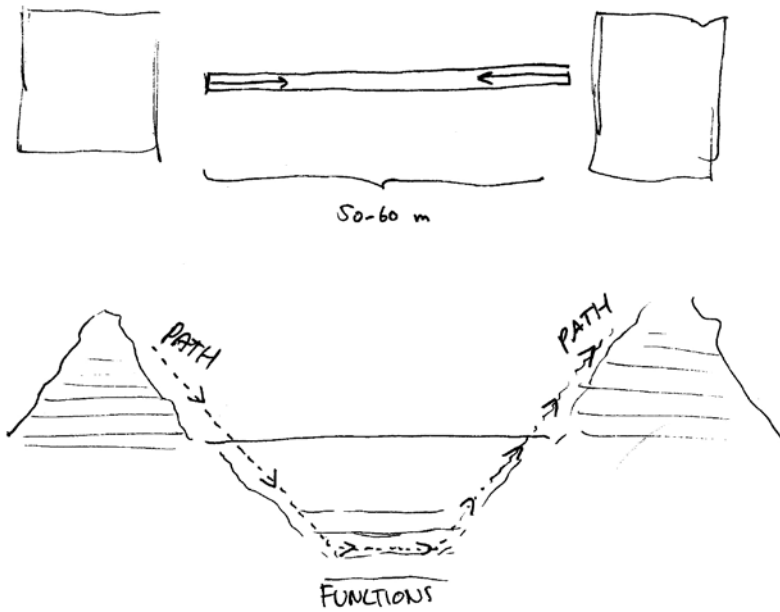
CONCEPT

We develop our concepts.

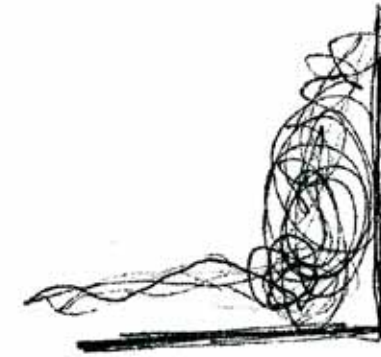
We see a big potential to define a connection between the temples and the design proposal. They develop a coherence with each other while still maintaining a distance between heritage and contemporary.

We integrate a structural design proposal that defines the building boundaries and establishes a hybrid between above- and underground.

We want to extend the adventure from exploring Maya culture to spending a night in Tikal. From public to private we define diversity in flows, aesthetics and expression. (ref. appendix)



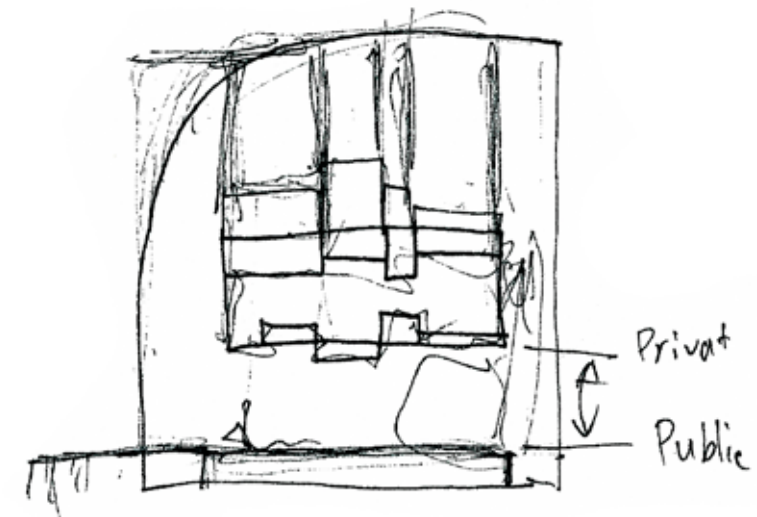
// **Concept 01.** Extend the paths into ground - they define the cut and movement. (Appendix A, B, D)



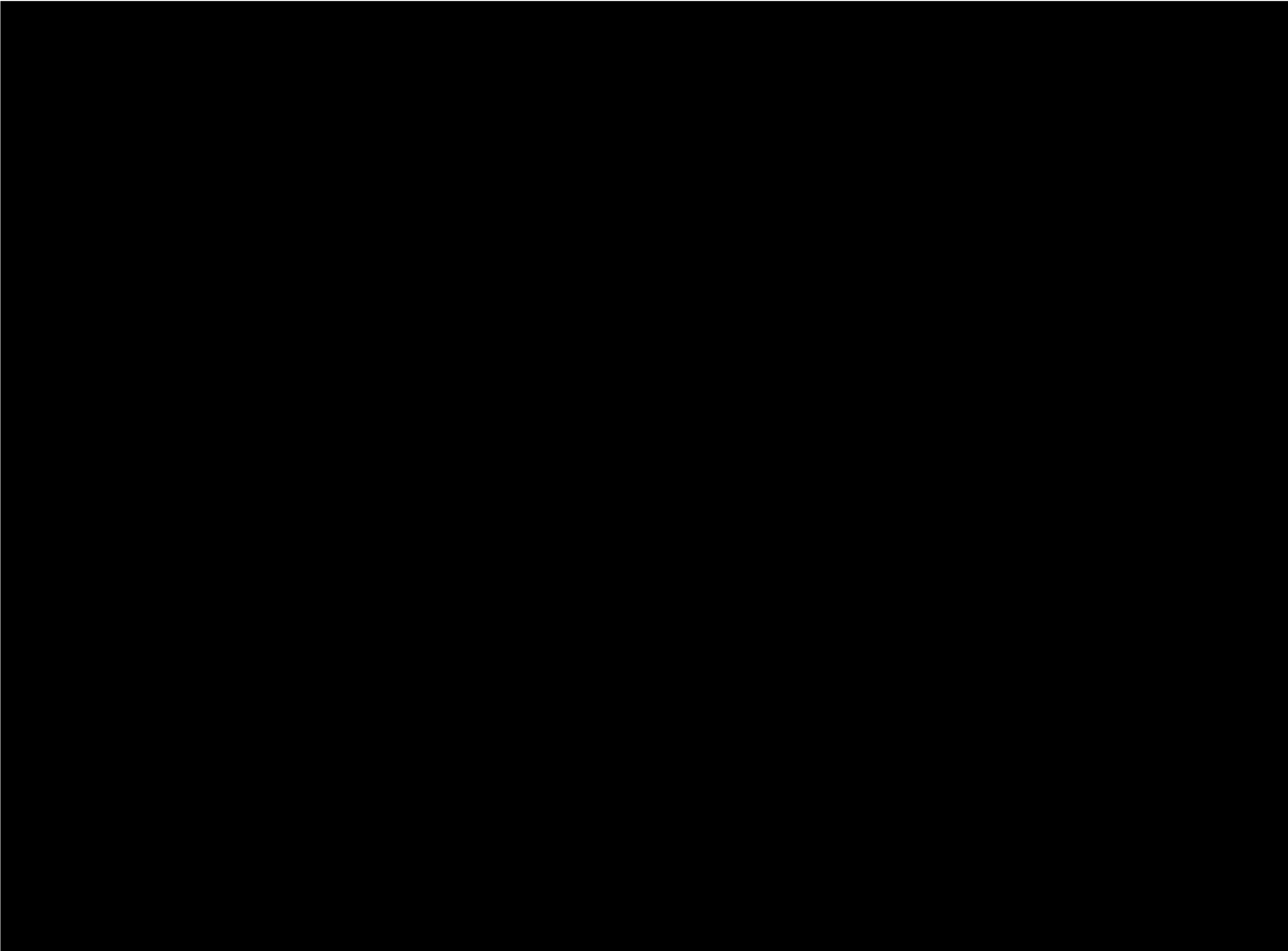
// **Concept 03.** The interior organisation transforms from dense to open space. (Appendix E, F)



// **Concept 02.** A spatial structure defines the boundaries and connects the building in multiple levels. (Appendix B, C)



// **Concept 04.** Dividing space - private vs. public. (Appendix G, H)



PRESENTATION

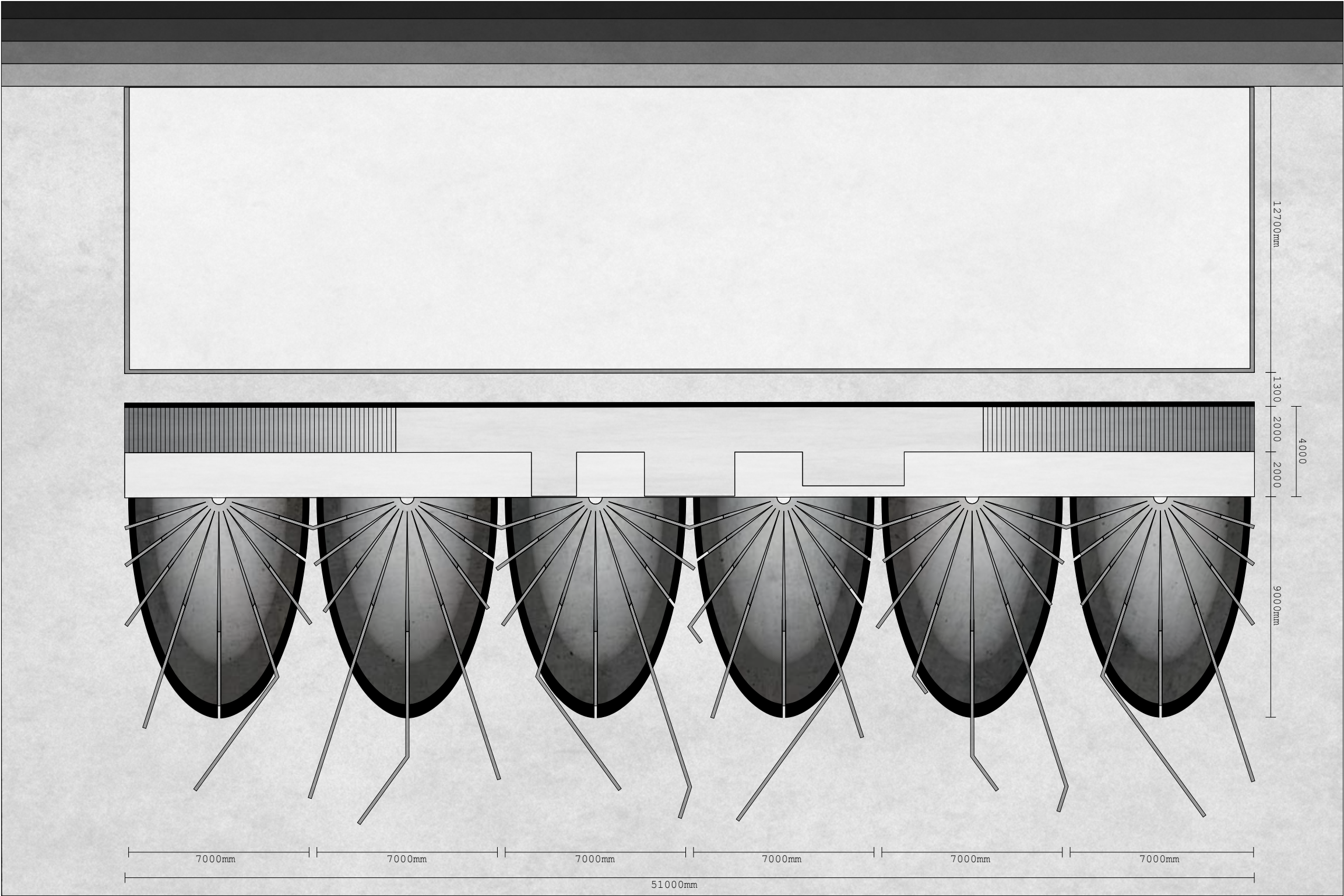
Our design proposal.



ill. 39 // Trees and ruins create the picturesque environment for the building. The building activates the whole plaza and in interplay with its surroundings, they shape new and unpredictable experiences at the Citadel of Tikal. (Appendix A, B, D)



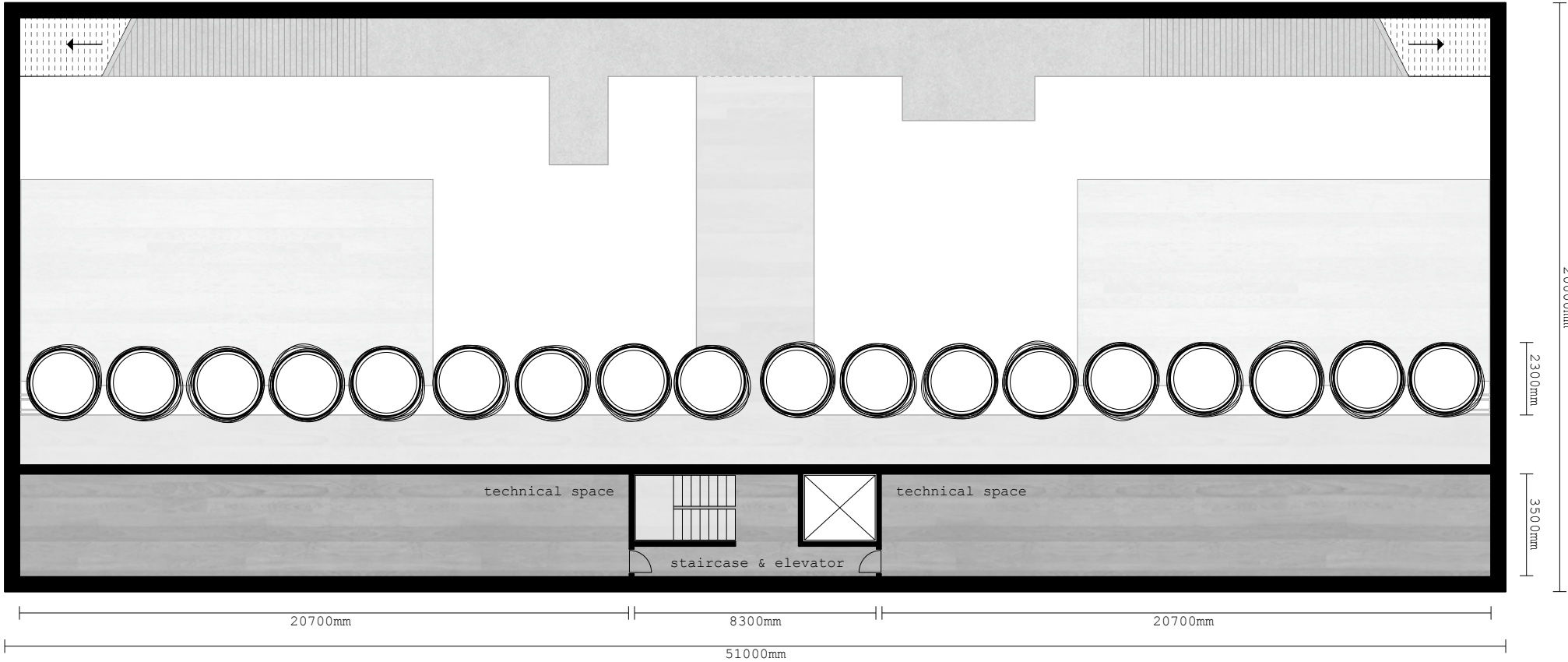
ill. 40 // From here you gain a full overview of the plaza, both under- and over ground. From here you are able to follow the path from one entrance to the other.



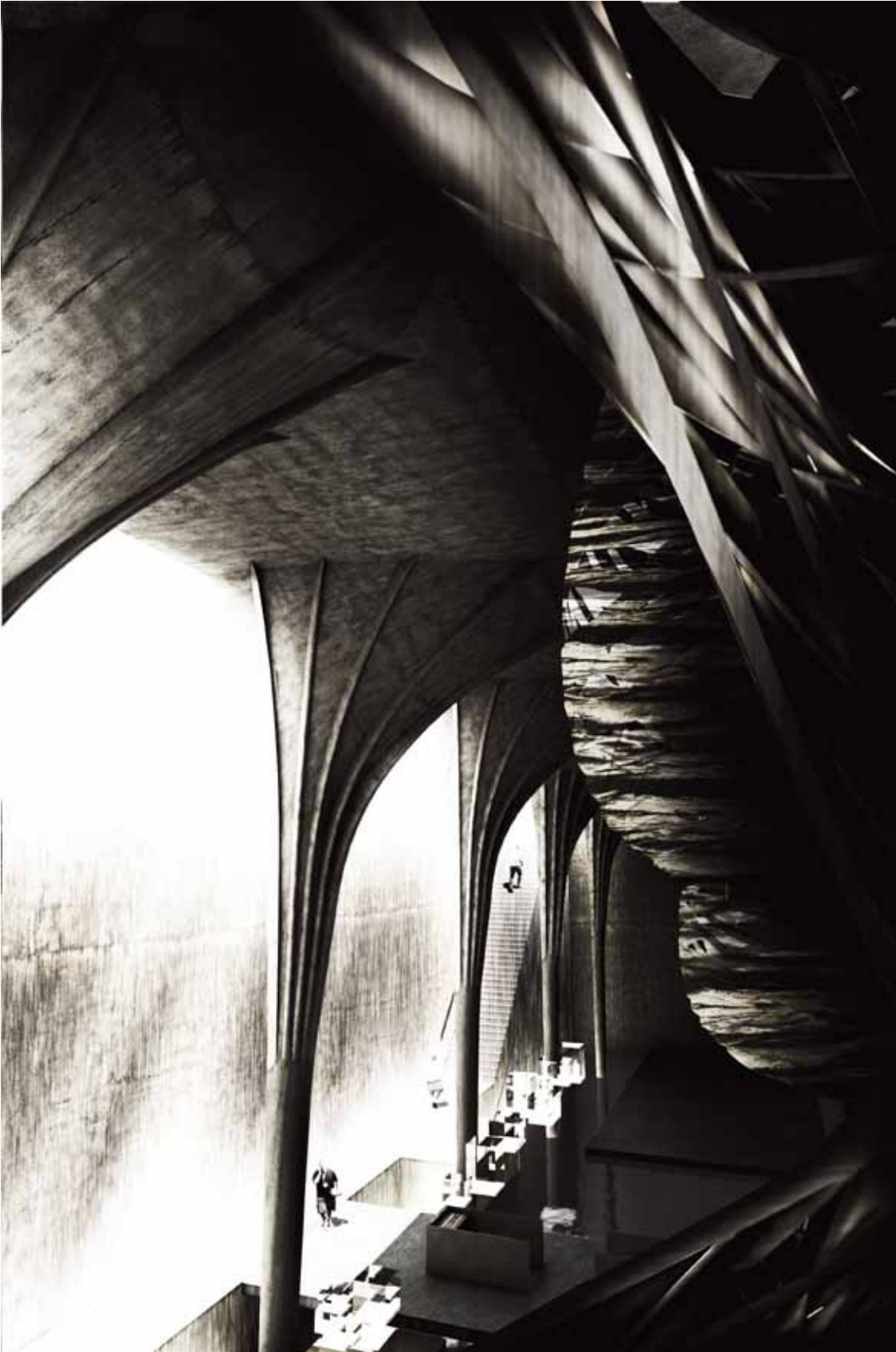
ill. 41 // Two main flows move perpendicular at both sides of the building structure. The columns transform into rails, split by water canals that collect water and sub-divide part of the plaza into a flow pattern. (Appendix B, D)



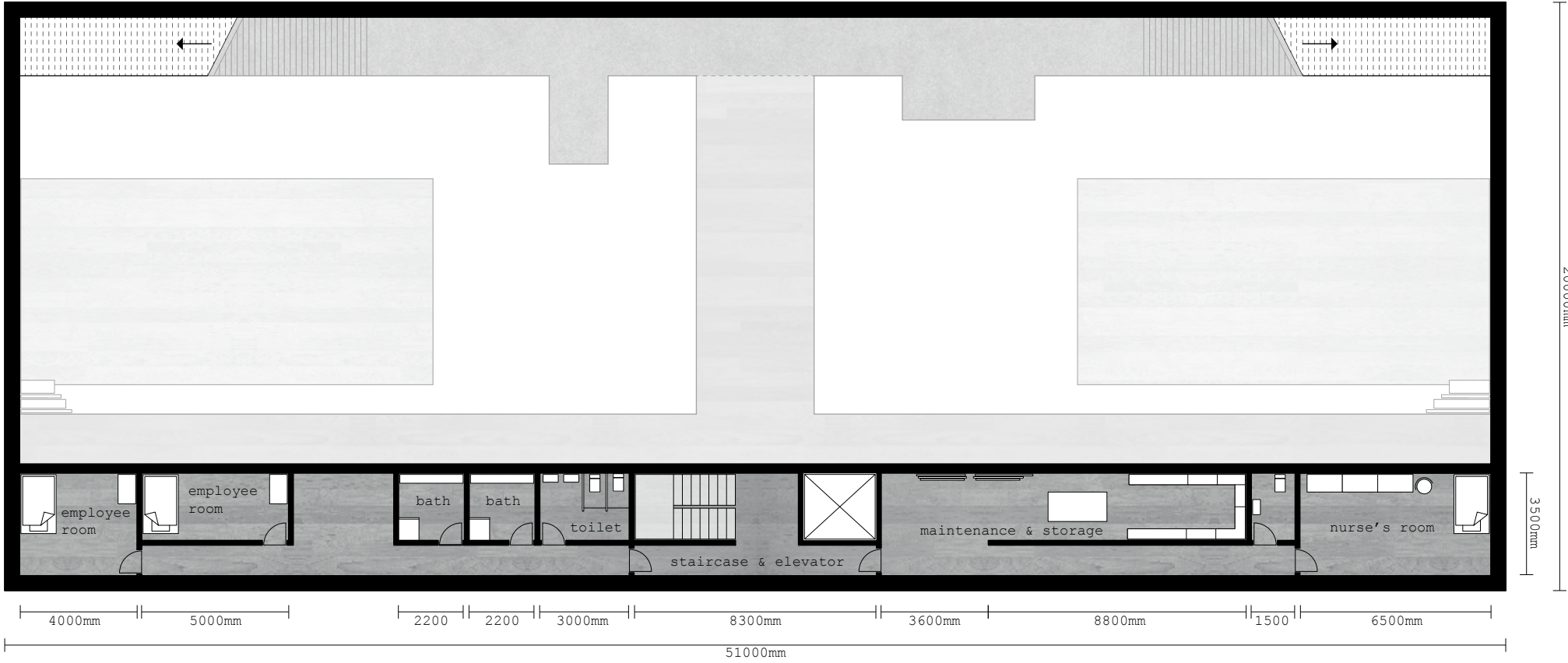
ill. 42 // Building, landscape and circulation merge together.



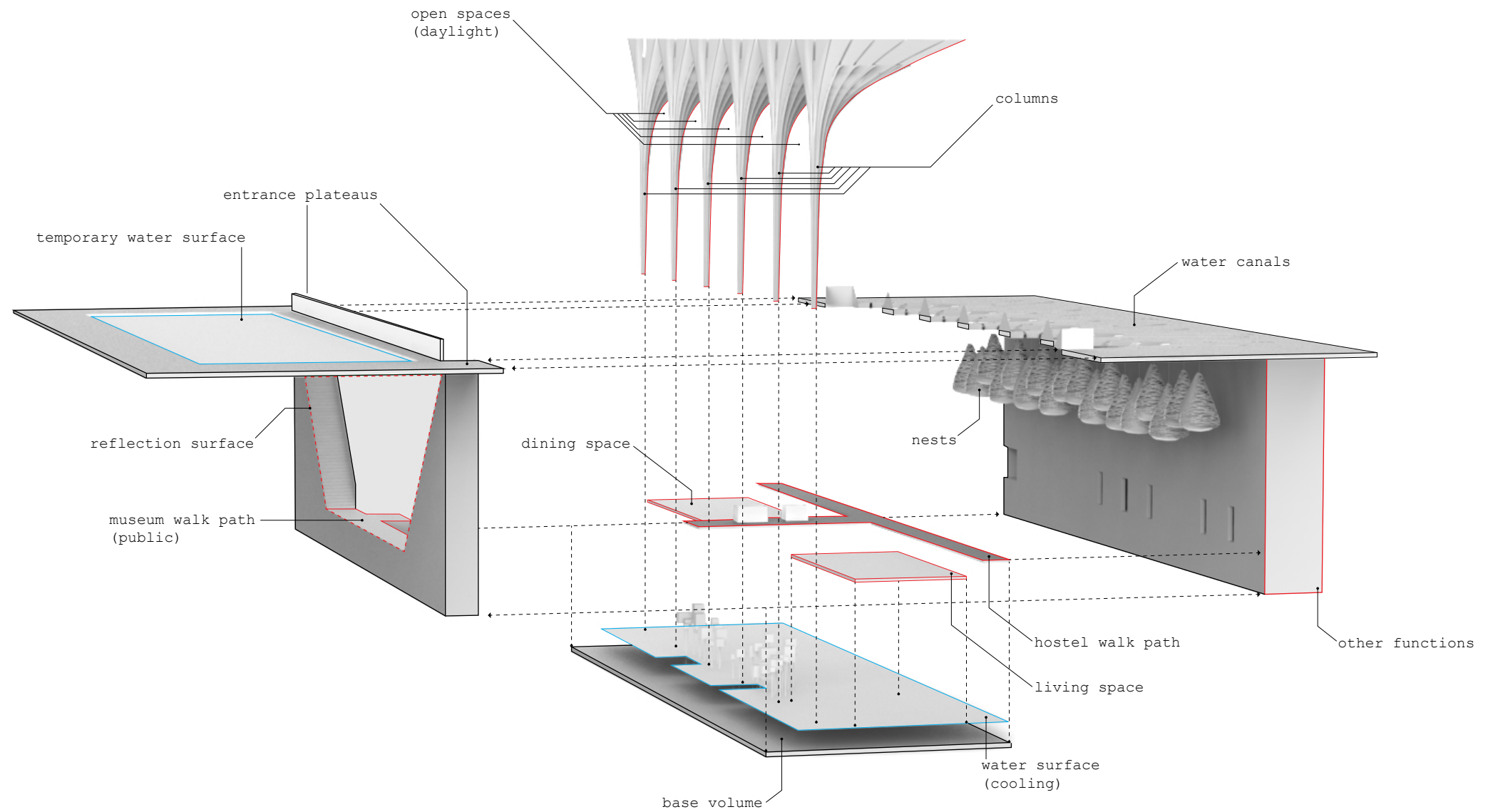
ill. 43 // Level -4 / 1:200.



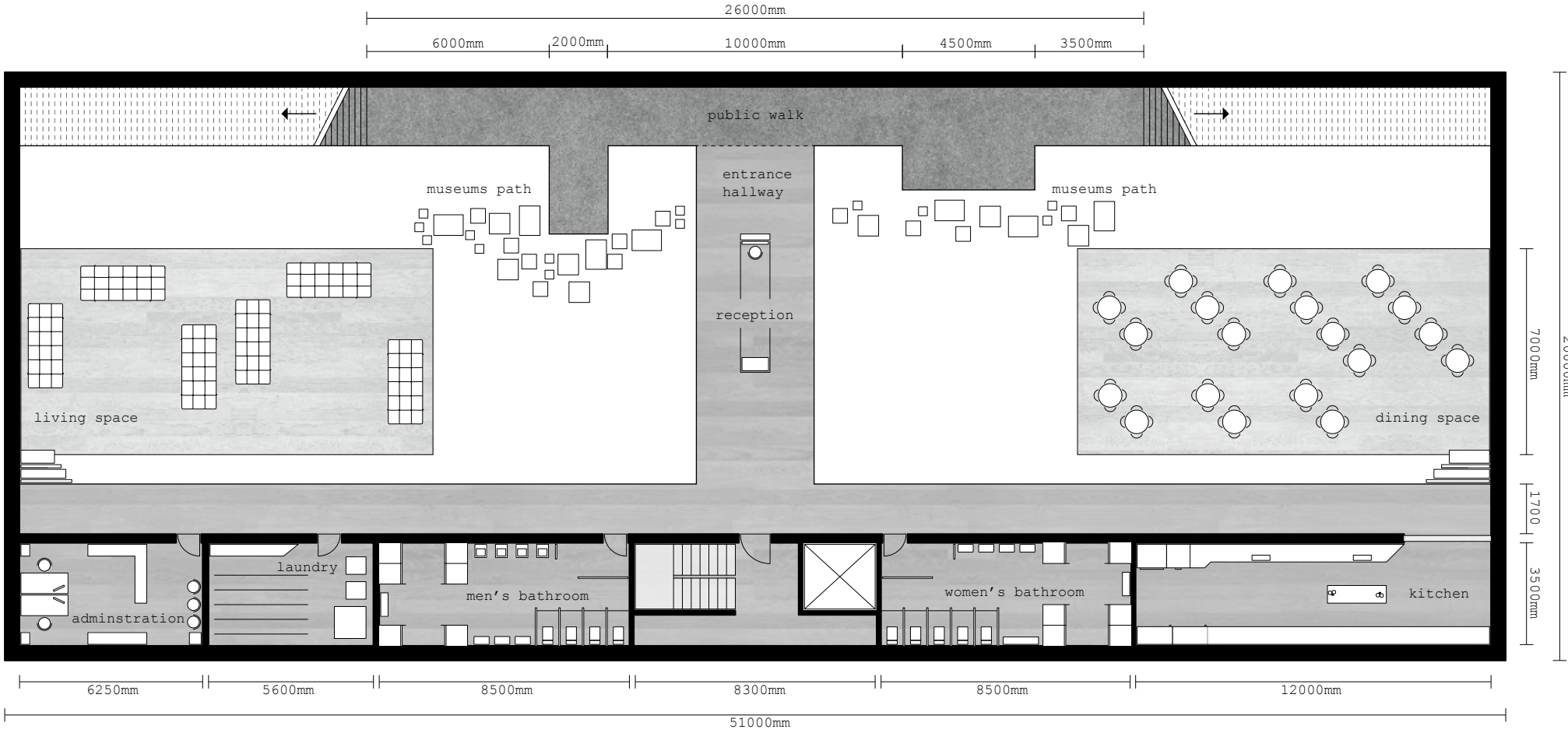
ill. 44 // View from one of the nests floating in space. From here you can gain a full overview, hide and rest from visitors and extend your full experience from walking up in a nest in the Citadel of Tikal.



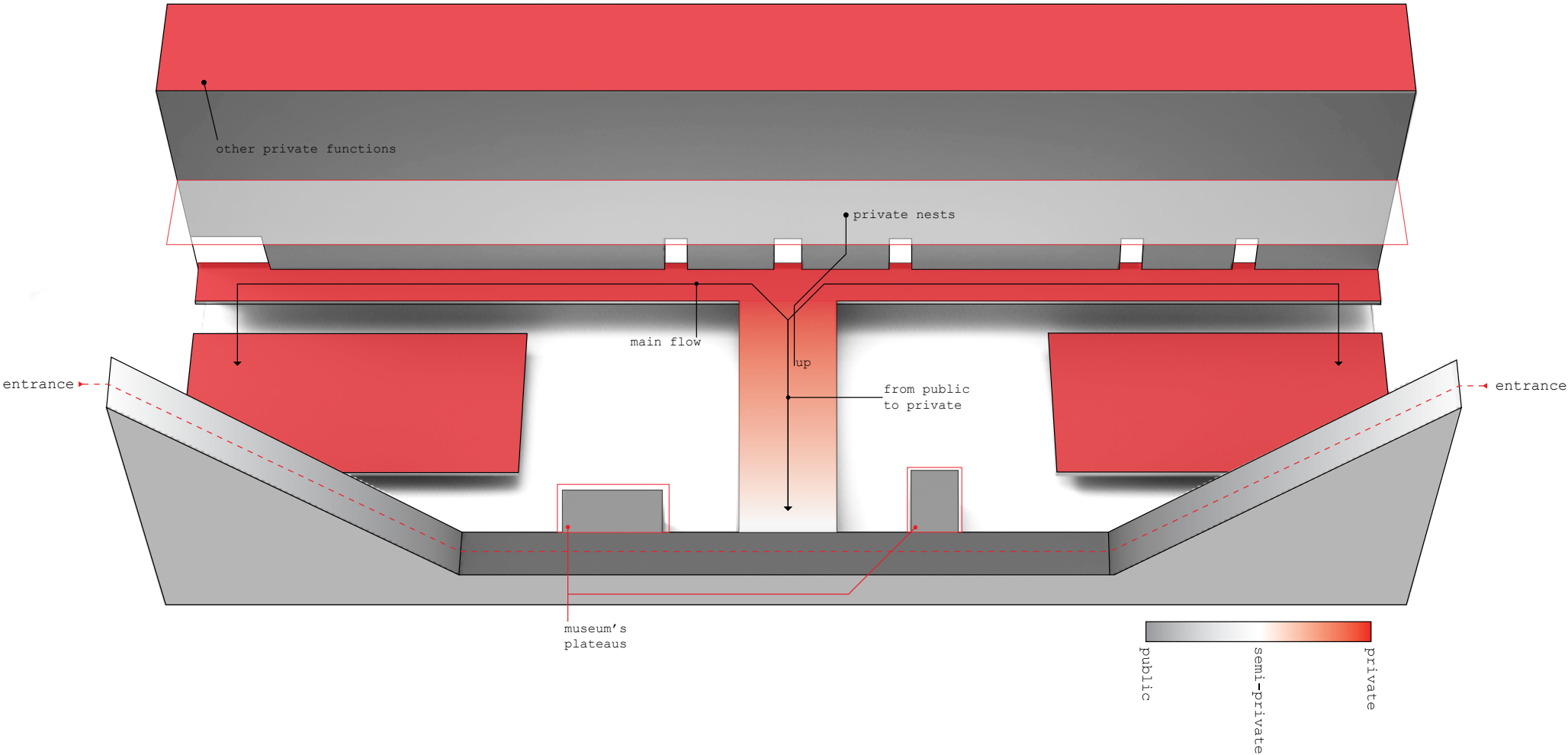
ill. 45 // Level -8 / 1:200.



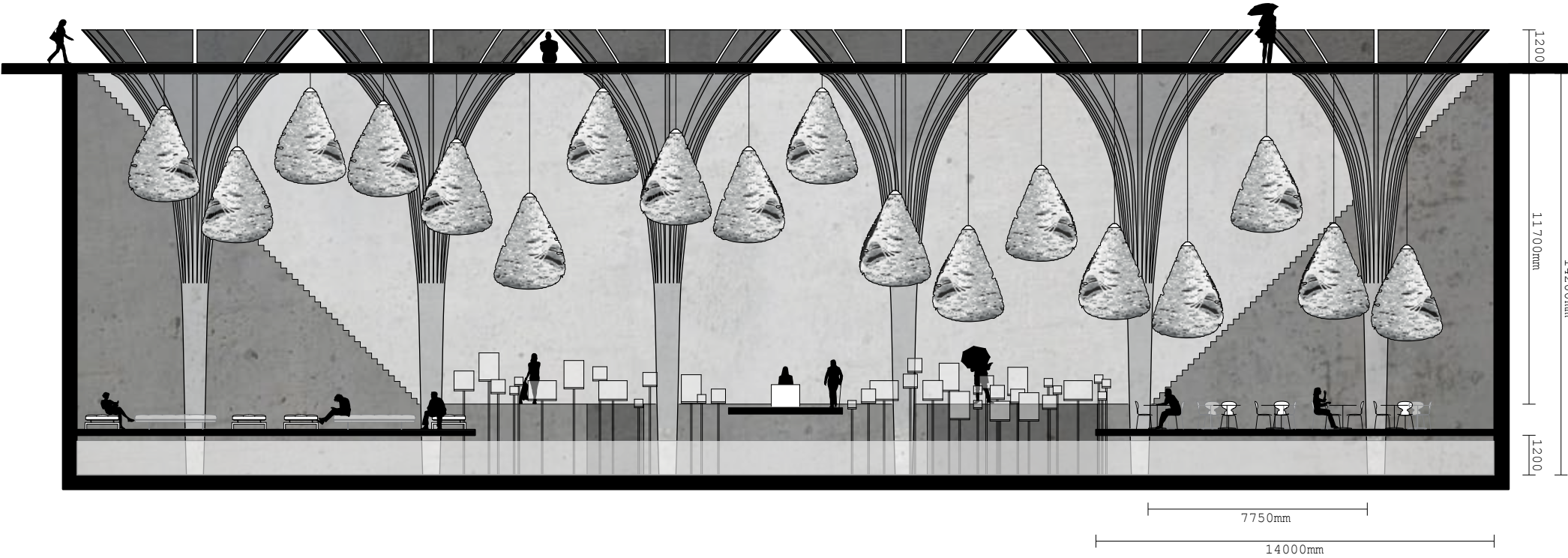
ill. 46 // Building components in formation.



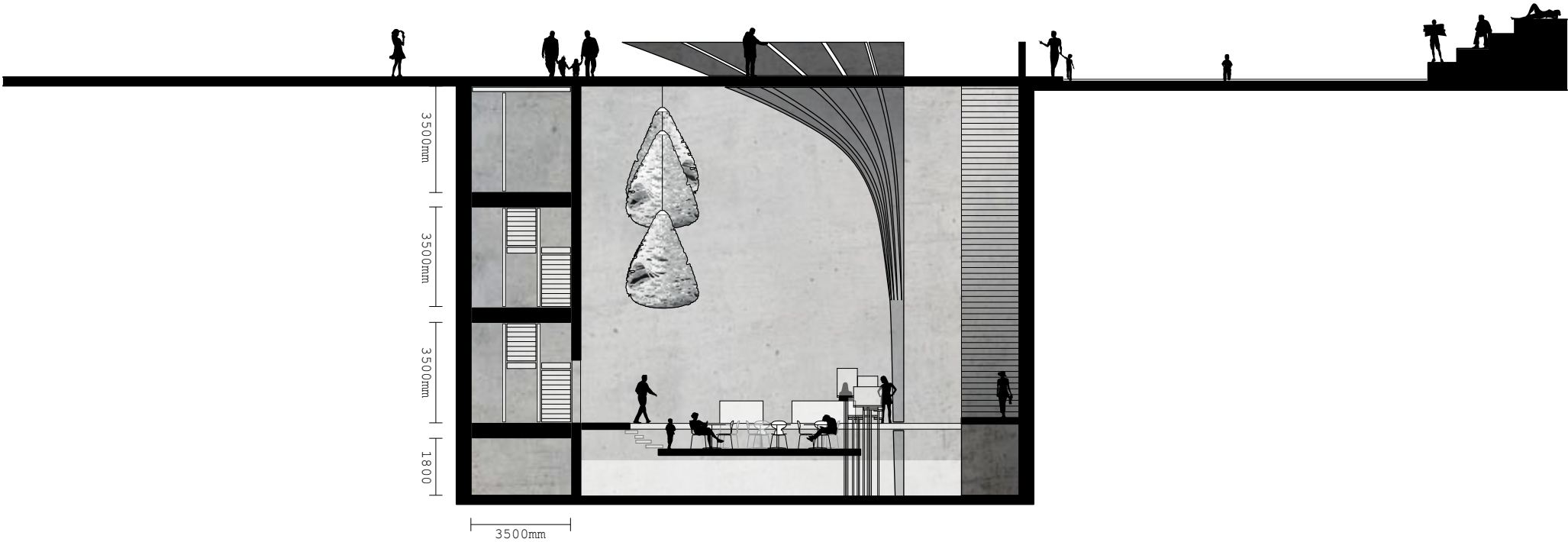
ill. 47 // Level -12 / 1:200.



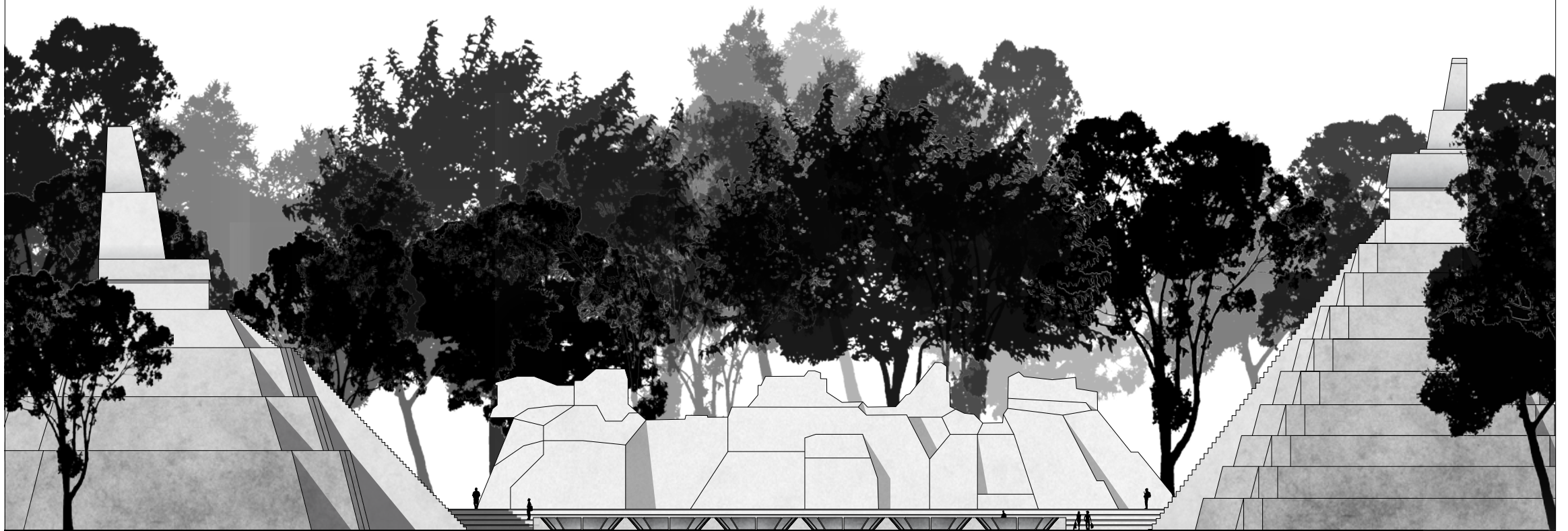
ill. 48 // Flow and internal connectivity. (Appendix E, F)



ill. 49 // Section A / 1:200.



ill. 50 // Section B / 1:200.



ill. 51 // Elevation North / 1:200.



ill. 52 // Elevation East / 1:200.

TECTONIC

Spatial structures in an intelligent formation.

The construction plays an important role in perceiving the interior and exterior of the hostel and museum in Tikal. The columns obtain various qualities when moving from one space to another. Being smooth and curved in the large and open space underground, they transform and interact with the diversity and scale of the Maya ruins over ground.

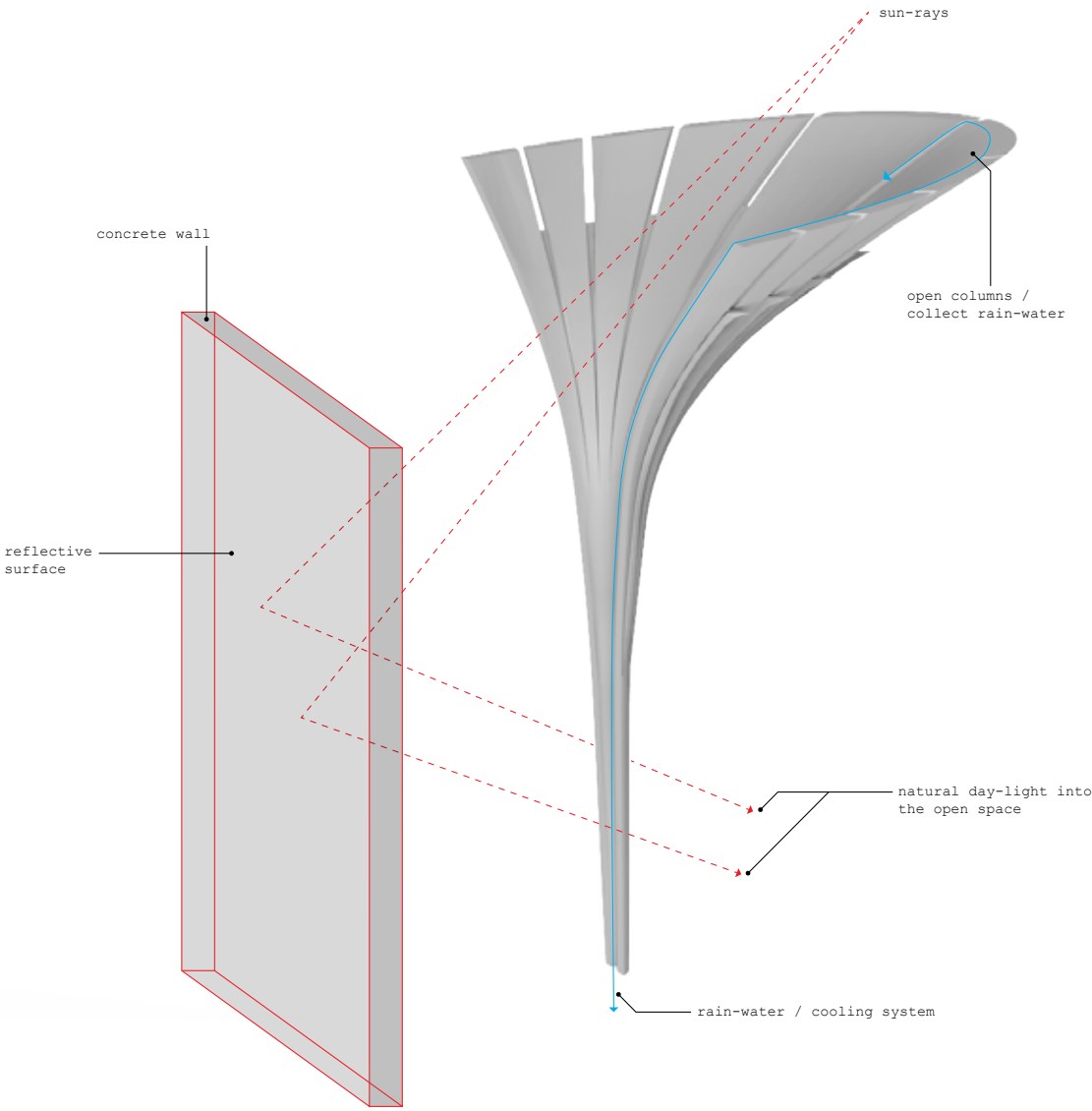
Structure and diversity /

As you can see in ill. 53 and ill 54 the columns obtain climatic and structural specifications. High and thin column structures transform from verticality and strength in space to large curve shaped sun and water collectors over-ground. They interplay with visitors, water canals and flows, and emphasize a feeling of something moving underground.

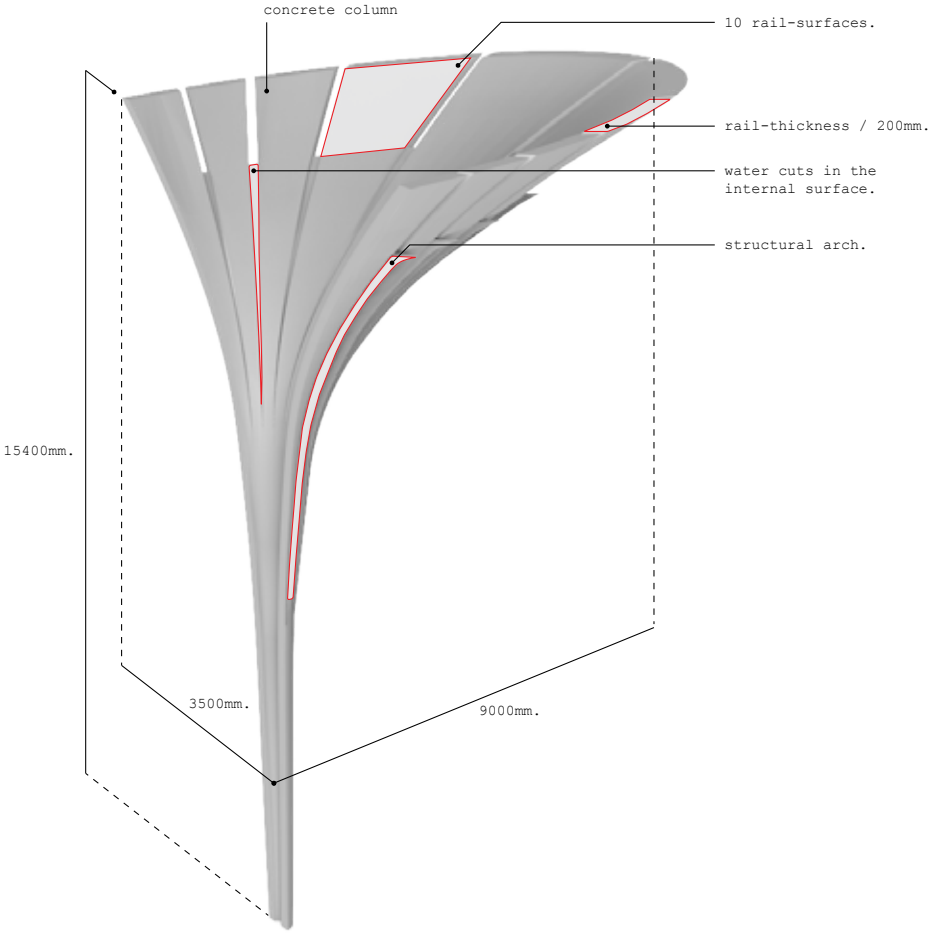
Being located at the central plaza, the column structures are at first glance perceived as small elements but transformed into large column structures when walking underground.

Construction of space /

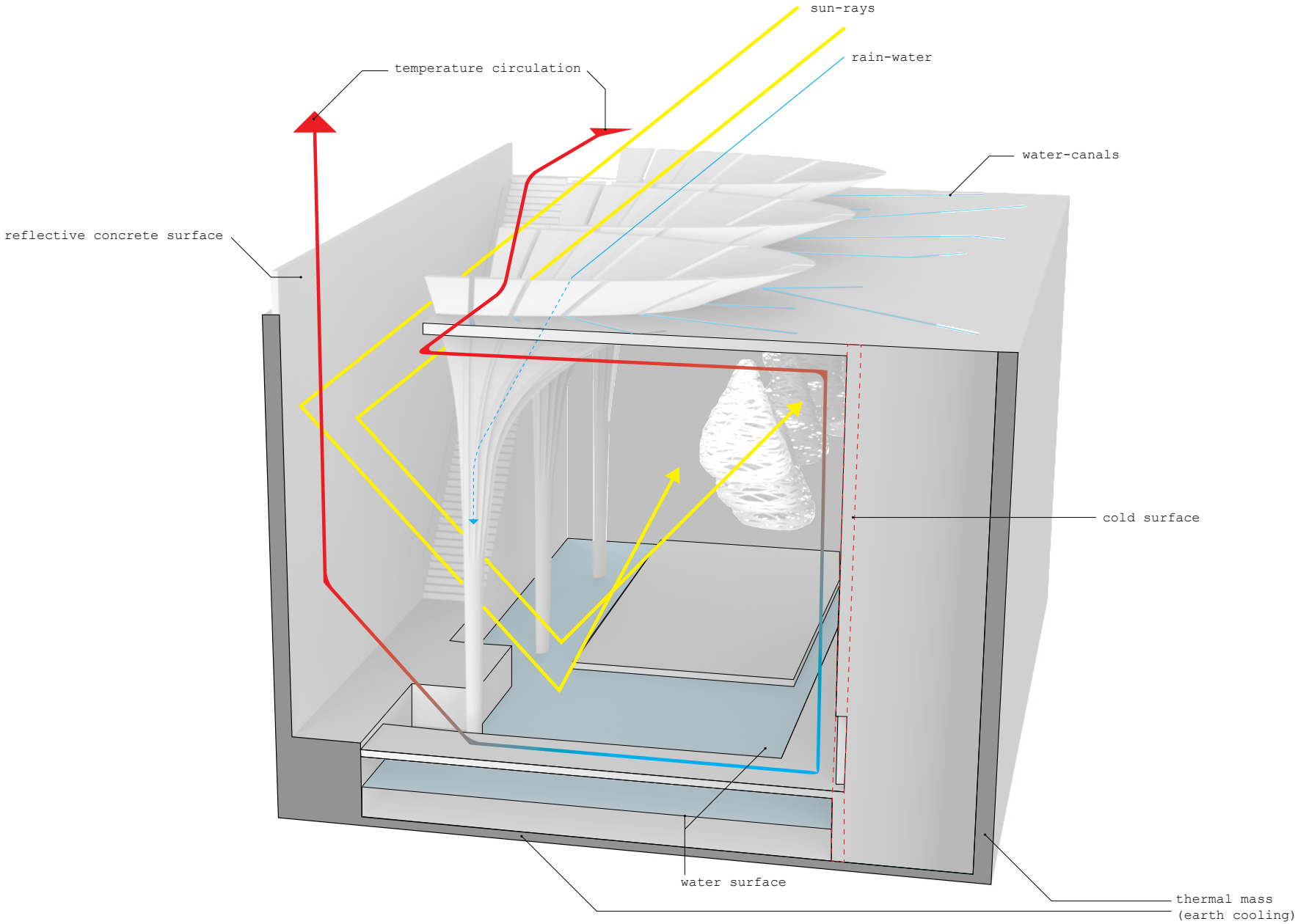
All elements are interrelated in a structural system. The concrete columns obtain the loads from the concrete deck, concrete rails and nests hanging down from the roof. It's the interplay between column and nest that trigger the tectonic qualities in the building. The quality of space is enhanced when structural principles emphasize each other through the use of materials, aesthetical qualities and proportions. (Moussavi 2009) (**Appendix C**)



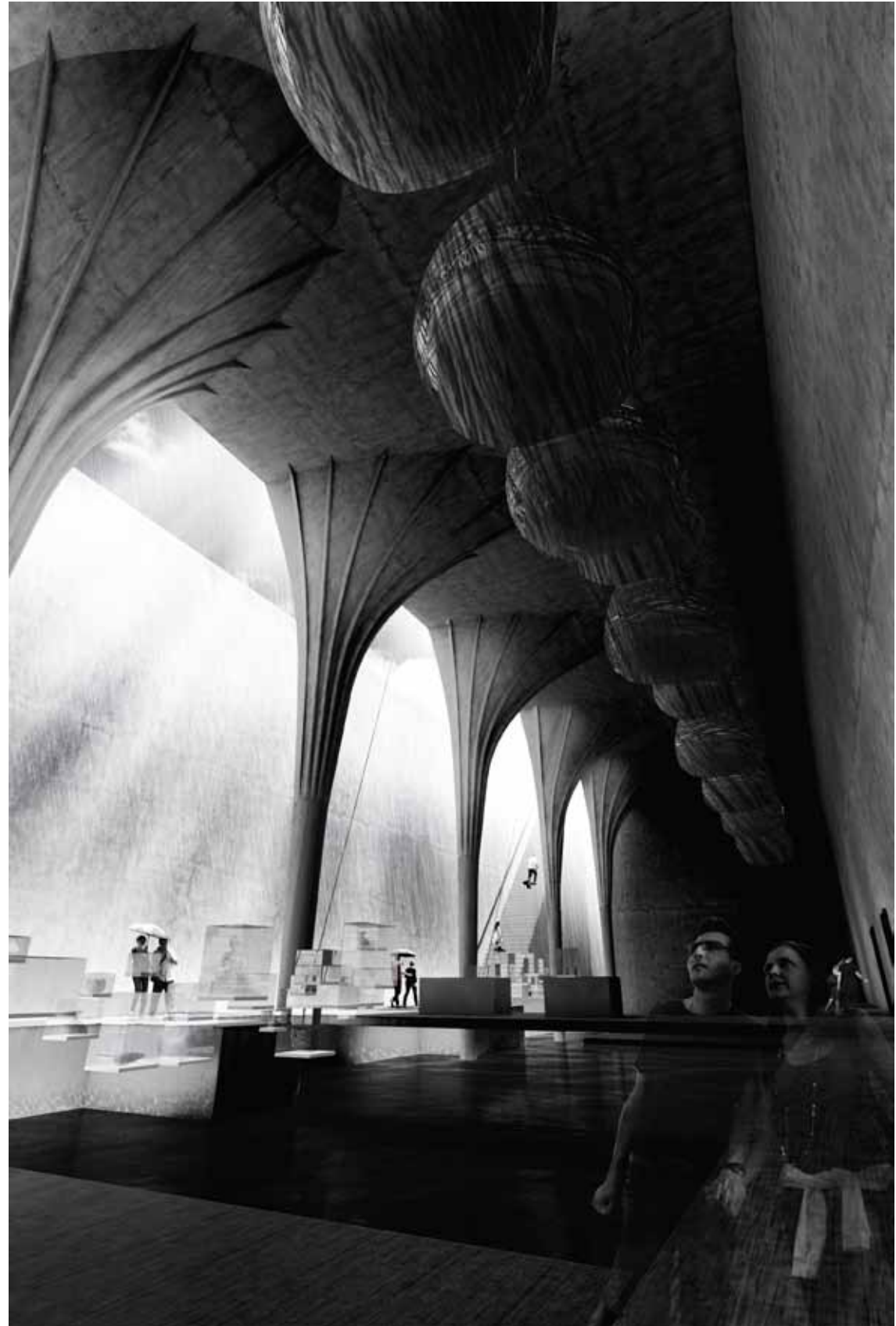
ill. 53 // Designing with environmental principles.



ill. 54 // Components in the column.



ill. 55 // Environmental principles integrated in the building proposal. Additional mechanical ventilation shafts can increase the temperature circulation.



ill. 56 // A view from inside the hostel illustrates are large and open space. Light is reflected from the outside wall into the hostel - creating a various light conditions from public to private clusters.

*"When it really comes to analysing space,
one gets lost", Daniel Libeskind.*

NESTING

A place of refuge.

The rooms are a focal point in the spatial experience. Here the guest extends his adventure, subtracting himself from the main circulation in the building and almost hides away while still obtaining a visual contact to the spatial setting around him.

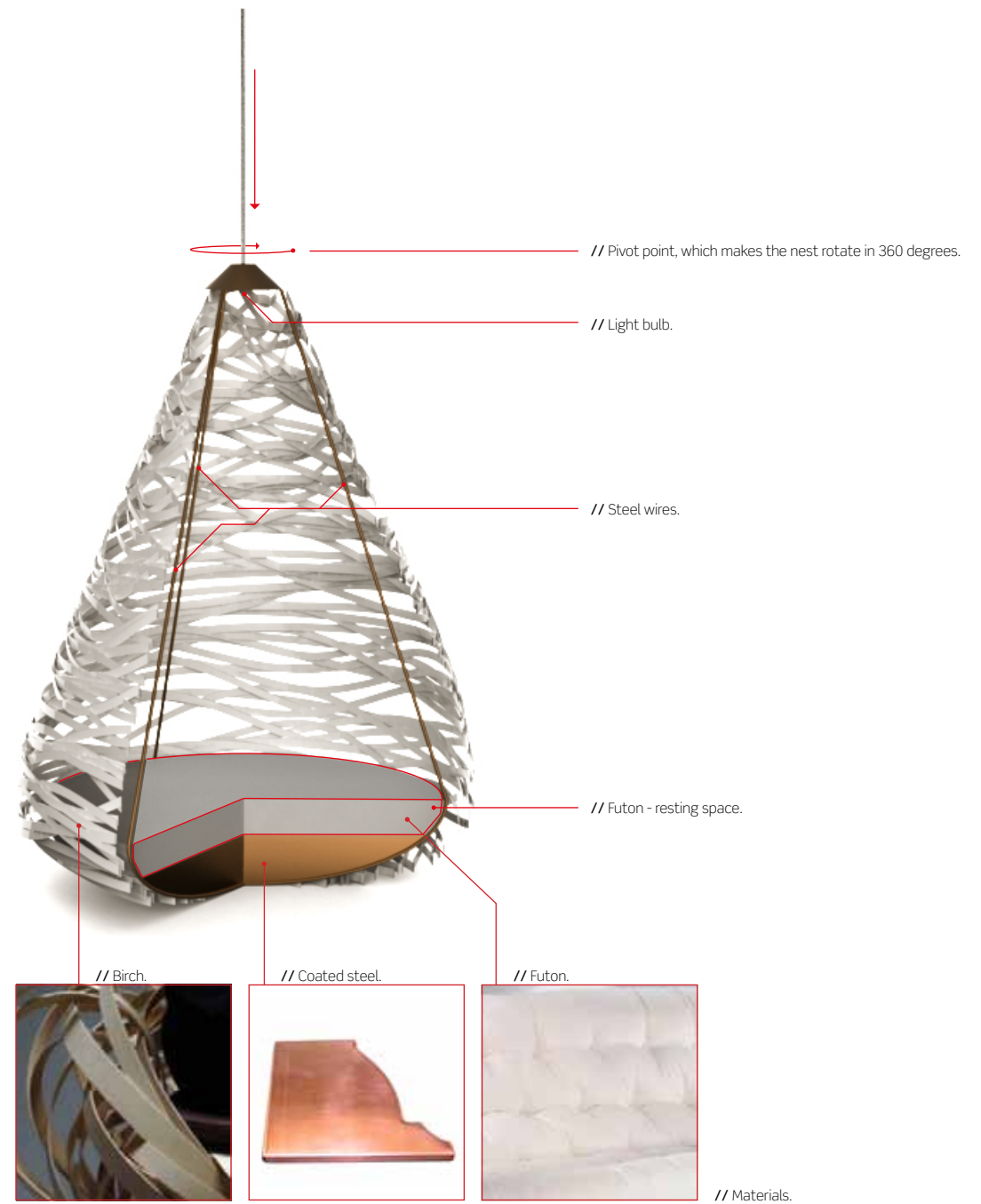
The nesting place allows you to develop your own private space. It's developed through an extensive study to determine a cover that on one hand is dense and close and on the other hand still maintains an open cover for sunlight, ventilation and views.

The nest is constructed through a set of components; a coated steel structure that keeps the nest in balance and a light birch steamed cover that is bolted to the main structure. Inside the nest a circular futon is positioned in the bottom and a light bulb is integrated in the top component. A mechanical movement controls the vertical position in the space. **(Appendix G)**





III. 57 // Presentation of a nest.



III. 58 // Components included in the nest.

CONCLUSION

On our building.

Among Mayan temples within the rainforest, we design a hostel and museum. We believe that the new structure complements the spatial qualities and correlates with the original organizational scheme of the area. The fear of obstructing space gave reason to locate almost everything underground. To ensure a constant presence of the Maya temples when we move underground, we developed an open structure that allowed us to work in multiple levels, break various guidelines and avoid obstructing the original setting in Tikal.

The new structure marks an impact on the site. Visitors were once able to move freely without direction or guide. We place a wall that simultaneously define a boundary, enhancing a strong coherence between Temple I and II, forcing visitors to consider and interact. Visitors freely define their own path, but their possibilities of movement are more defined than before. The collaboration between the huge concrete wall and cut enhances a clear coherence with the temples when moving down towards the museum. Both elements are axially aligned and they therefore always create a visual connection. This also applies when the semi-private space underground is experienced. One is constantly aware or reminded of the Maya ruins; columns define huge openings, express verticality and thereby lead the eye towards the huge concrete wall and ancient Mayan ruins. The underground semi-

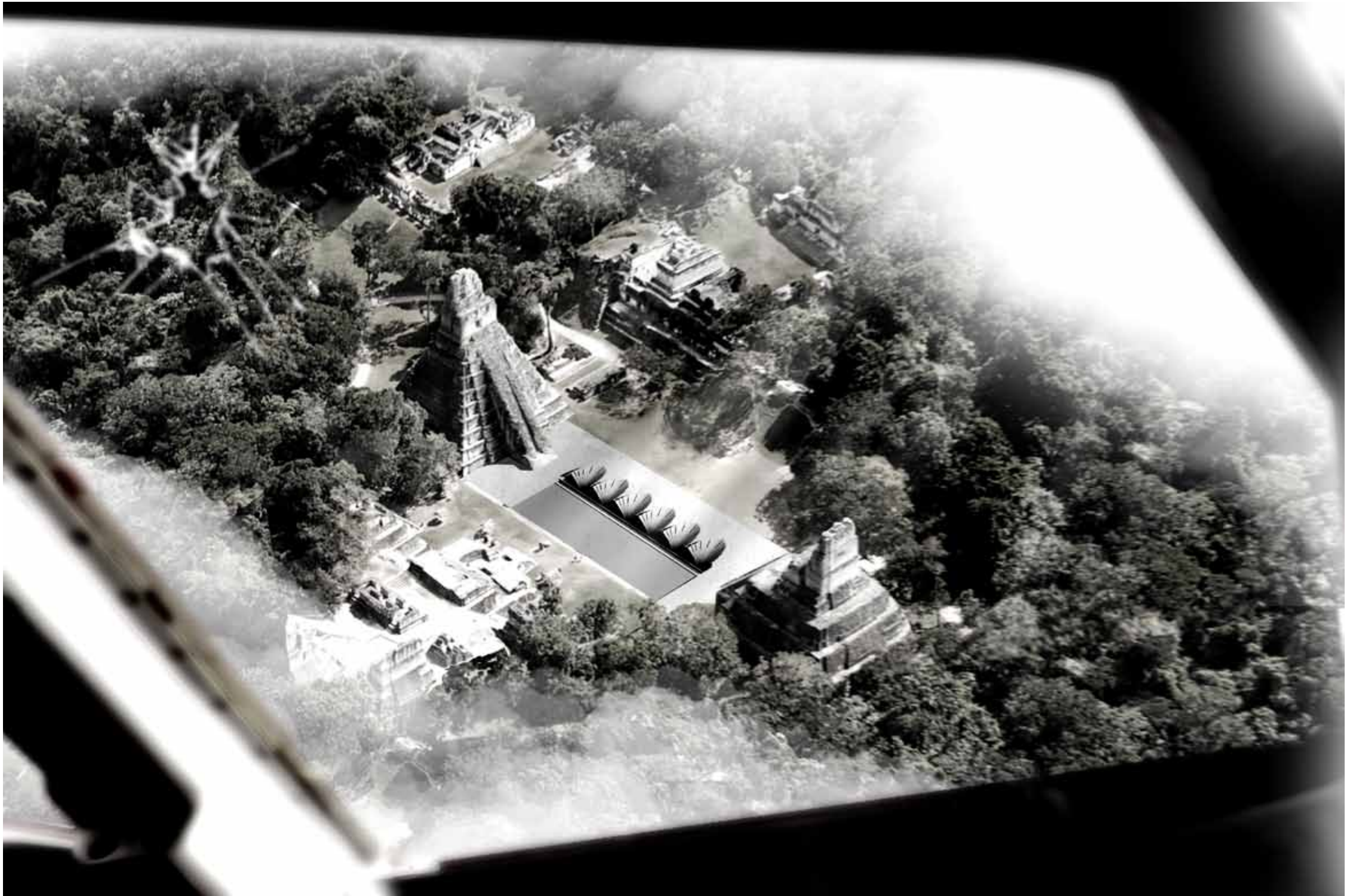
"We believe that the new structure complements the spatial qualities and correlates with the original organizational scheme of the area."

private space carries no walls or boundaries except a wood path that limits and defines the flow in the open space. The wood path vary in levels and shifts in materiality to distinguish functions from each other. No boundaries ensure a natural cooling circulation in the building.

Retracting to the bedroom zone, which we like to define as nests, inspired by dwellings or huts in trees. Here one can climb to hide and retreat while still maintaining a visual connection to the surroundings. The weaving nest structure allows the visitor to see the museum and hostel through cracks and still perceive the atmosphere from the ancient culture.

Interplay between building and climate vary the physical and visual experiences underground, both in terms of light, temperature and rain.

Also at ground level the interplay between elements and climate affects the spatial experiences and flow. Heavy rainfall affect two levels: It defines a temporary reflection reservoir from building to the staircase in north and interacts with the water canal system to the south.



ill. 59 // The view from an airplane captures the Maya ruins in Tikal. From here we understand the scale, the geometrical proportions of the site and how our building proposal adapts and transforms the central plaza.

PERSPECTIVE

Reflection on the design process.

The project evolved from a subjective vision for how a hostel and museum should be experienced in the Citadel of Tikal. An extensive balance between our generators from the abstraction, our vision for the project and the object itself were essential to evaluate, create and control the design proposal.

Global design context – using competition material/

We wanted to gain new knowledge by introducing a project competition from Tikal in Guatemala. We were eager to implement and test our techniques, ideas and creativity in another milieu and develop our competencies. We did not travel to Tikal ourselves but developed a lot of knowledge through the project brief, internet and 3D models. It was difficult to grasp the enormous scale of the site in the beginning, but after developing a context model we could adjust and define the proportions.

On sketching /

The design was developed through an extensive collaboration between hand sketching and digital models. A hand sketch is an important tool in arguments and discussions and is an extension of our thoughts and ideas. Here we drew everything from abstract ideas to diagrams

"We feel that the building define, obstruct and respect the site at Tikal and it enhances the experience when exploring the site of Tikal."

and details. On the other hand, a hand sketch is easy to manipulate because you only consider parts of your design in a two dimensional drawing and do not necessary perceive all spatial relations.

On digital sketching /

The 3D sketch played an important role in our design process. A 3D sketch is an extended hand sketch, thought or idea that develops a more profound understanding of space. It's more time consuming to model in 3D but the advantage of 3D modelling extends to investigating, evaluating and re-modelling your spaces is more effective. It was our focal tool when communicating about spaces in architecture and we were able to extract data, in collaboration with parametric tools, to analyze and re-model various design concepts.

On physical models and scale /

Physical models are more time consuming than the previous techniques but they allow us to understand scale, context and proportions. To understand scale and context, we modelled a physical context model. It helped us to understand scale of the project but we also created a more thorough understanding of the site. We did not extract many models, but always returned to our context model, when we had to re-

interpret scale from our computer models.

Methodology and abstraction:

"Abstraction to the essence" developed an extensive understanding of our design visions. They were our main drivers and we always introduced the generators when we felt inspired from a reference, designing an idea or having a discussion. Together with the methodology they framed our working methods to not only contain data measured argumentation but also applied an aesthetical knowledge and vision argumentation.

Integrated structural design /

The column structure defines the tectonic element in our building. From sketch to analysis they interpret an integrated design process. Small and simple studies introduced the column structure and they developed into a fluent hybrid between ground level and underground. Furthermore they strived for verticality and transformation. Grasshopper, a parametric design plugin for Rhino was introduced. Control the design parameters for the column and explore various structures effectively were a focal point in the integrated design process. We established a definition that implemented structural calculations and gave us a good workflow between column expression and loads on each

column.

We introduced a finite element program to the work flow to establish a connection between form and analysis to study the balance between deformation, thickness and aesthetics. It was important for us to establish a variable load calculation in our Grasshopper definition that adapted to various column formations. It ensured a fluent workflow between sketching, 3D modelling and structural analysis. Further developments to enhance the workflow would be to develop a direct link between Grasshopper and Autodesk Robot to establish a more fluent and safe connection when importing and exporting an organic shell structure. Our analysis only tested the displacement factor for a column, but further analysis would be to study stresses to ensure a safe column structure.

In the end /

We developed our knowledge through various media but to visit Tikal would be a focal next step in the process. We feel that the building define, obstruct and respect the site at Tikal and it enhances the experience when exploring the site of Tikal. It's necessary to analyze and investigate for the design proposal to develop further, but the appendix and presentation folders show an integrated and informed design.

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ILLUSTRATION LIST

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