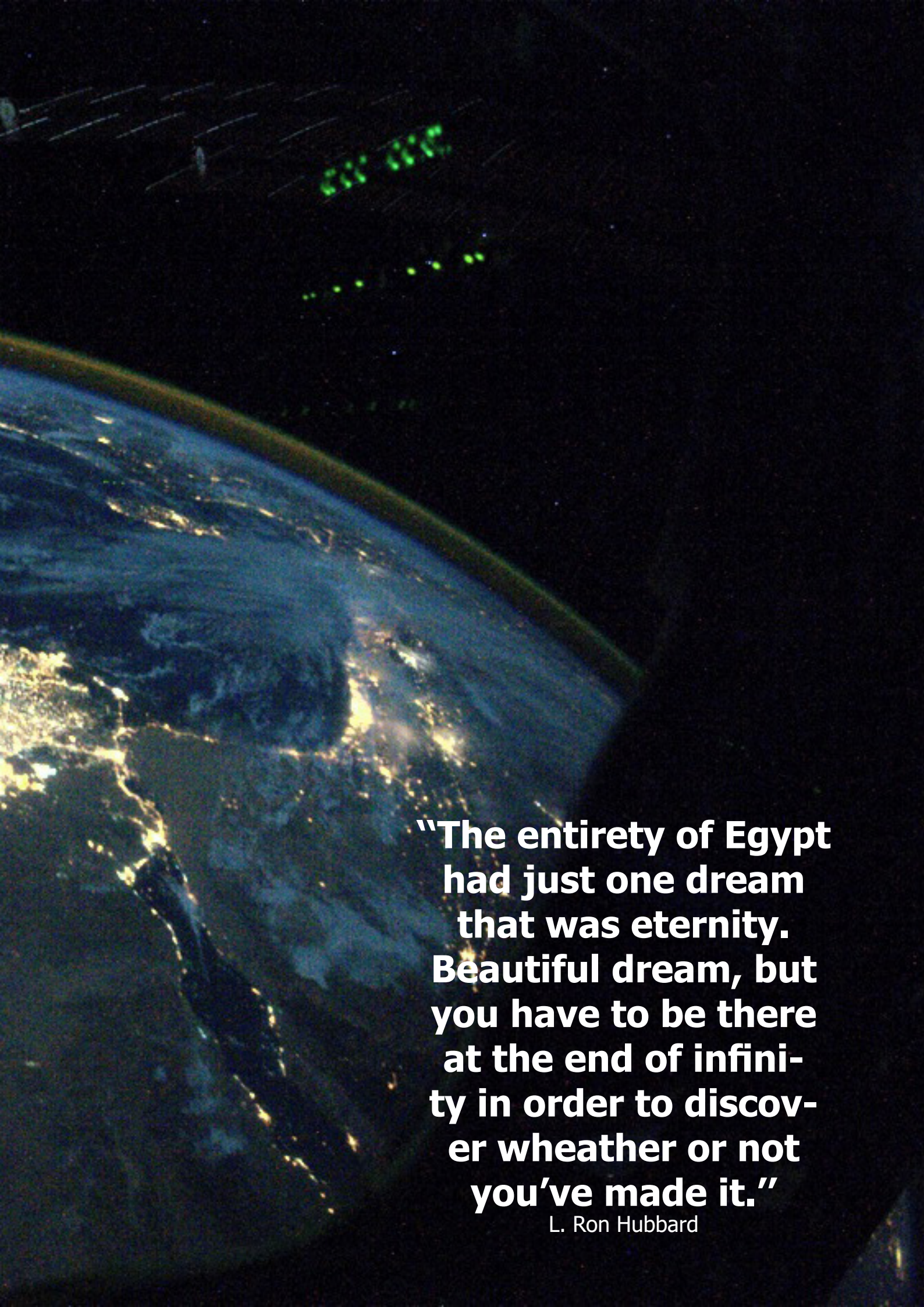
Bibliotheca Alexandrina

International Union of Architects (UIA)

SCIENCE CITY







"The entirety of Egypt had just one dream that was eternity. Beautiful dream, but you have to be there at the end of infinity in order to discover wheather or not you've made it."

L. Ron Hubbard


WELCOME
SCIENC


E TO THE
CE CITY











Content

"This is my simple philosophy. There is no need for temples: no need for complicated philosophy. Our own brain, our own heart is our temple; the philosophy is kindness"

Dalai Lama

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pyramids as a shell for fictional imagination
Saqqara archaeological remains
Islamic & Christian influence
science and technology in ancient Egypt
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political analysis
collages
science cities
Egyptian scientists

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Snøhetta_1989-1995-2002_Bibliotheca Alexandrina
Heneghan Peng Architects_ 2012-2018 _(GEM) Grand Egyptian Museum
Shigeru Ban_ 2010 _Centre Pompidou-Metz
Jean Nouvel_ 2016 _Domed Louvre Abu Dhabi
Moreau Kusunoki Architectes_ 2015_ Guggenheim Museum Helsinki
David Chipperfield Architects_ 1997-2009_ Neues museum
RMJM_2009_ Zliten Al-Asmariya University for Islamic Sciences, Libya


SCIENCE CITY

1. The Challenges of the Science City

The Bibliotheca Alexandrina, the New Library of Alexandria, aspires to implement a landmark honouring the enterprise of science. In light of its mission, the Library of Alexandria has endorsed a science city project by organizing an open, one stage international architectural competition for the comprehensive master plan and conceptual design. The new "**Science City**" complex will be built on the western edge of Cairo, in the heart of the 6th of October City. This new complex, to be constructed on prime land, calls for inspiring new comprehensive master plan and conceptual design; that will ultimately create the first 21st century science museum, learning and research facility in Egypt.

2. The Philosophy of the Science City

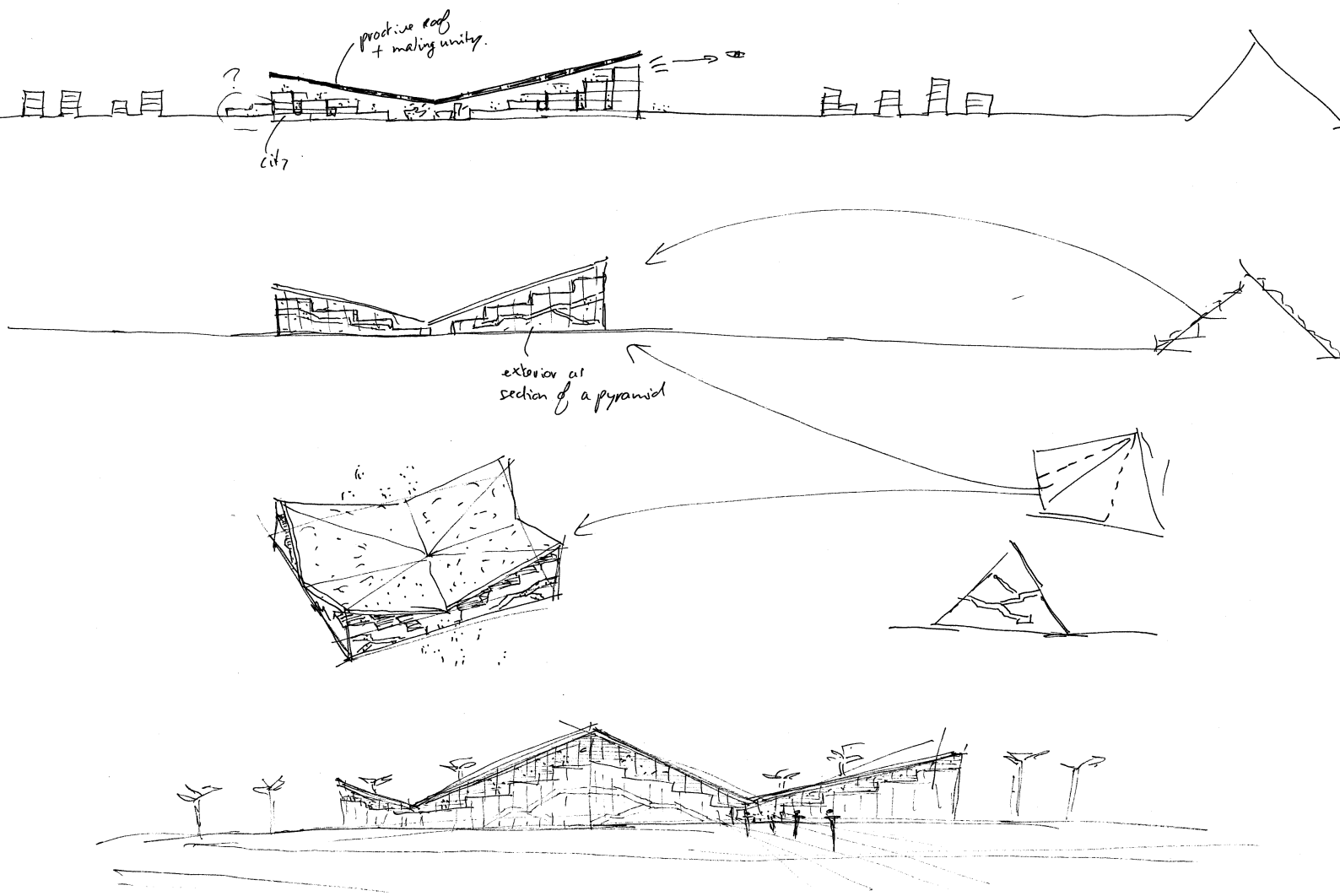
The design of science city will create a set of buildings and spaces that must be inspiring on the outside and motivating and exciting on the inside to visitors and employees alike. It must express a particular vision of the search for knowledge and the pursuit of science.

Humans interact with one another and with nature. They explore the limitless universe and the inner self and the subtlety and complexity of these explorations and social relations form the web of life. Such explorations result in expressions that we have come to call Art or Science. But exploration is at the root of being human from our youngest years to the winter of our lives.

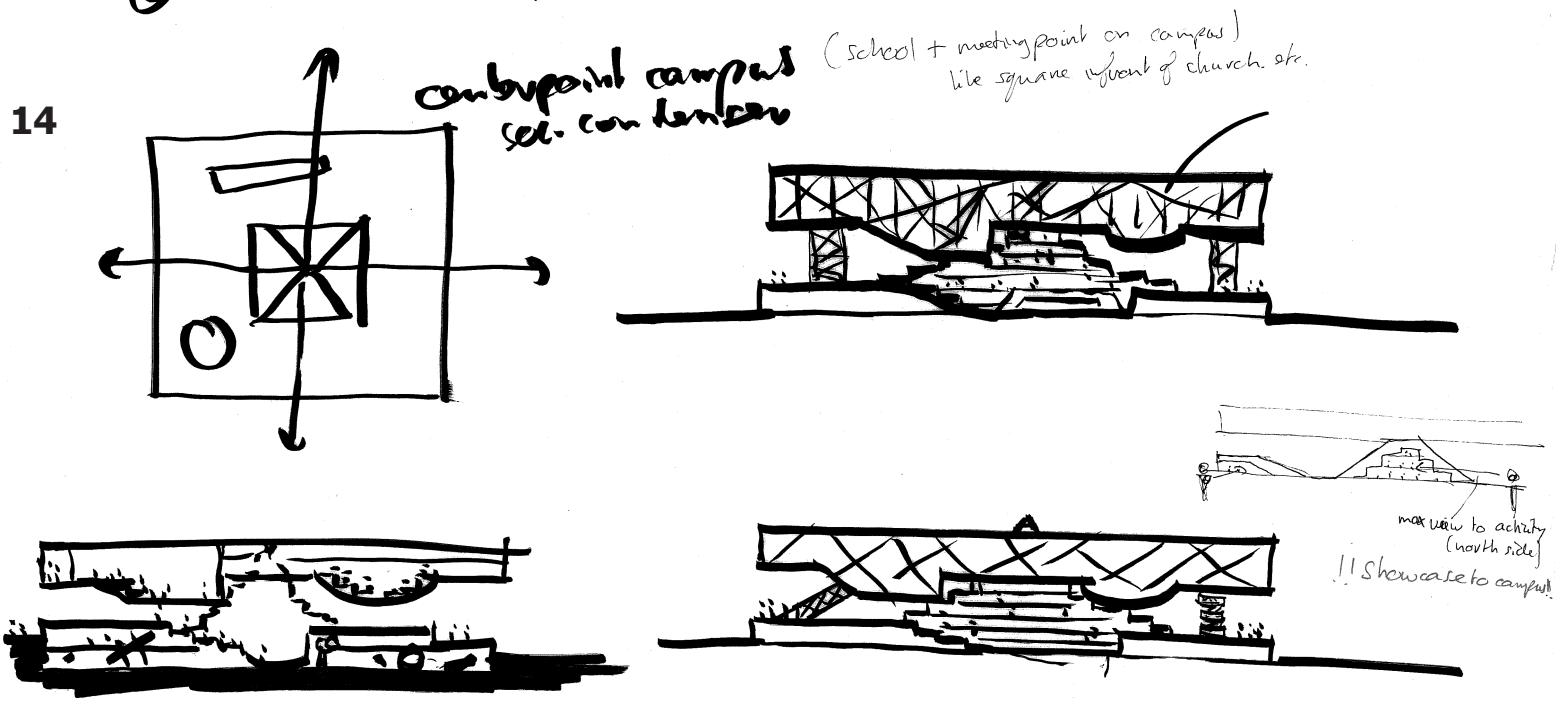
Science is driven by curiosity about the natural world and the inner self. It is empirical, rational and logical. It is about the joy of discovery and the delight of understanding.

Technology is the utilitarian application of Science. It may precede science, as it did when people used tools and levers without understanding the scientific principles that underlie them. More recently, technological development kept pace with scientific research. "Research and Development" or R&D, has engineered progress throughout the 20th century.

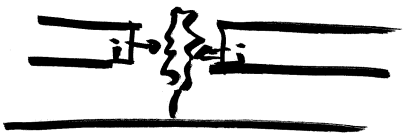
The Science City celebrates scientific enterprise with its exhilarating and unending journey of discovery, and promotes the "Culture of Science". It is a place where we honor the past, celebrate the present and invent the future. It helps our greater society, as well as its national and foreign visitors, gain insights into and an appreciation of scientific culture, which is more than a widespread knowledge of scientific facts and figures. Scientific culture embraces the acquisition

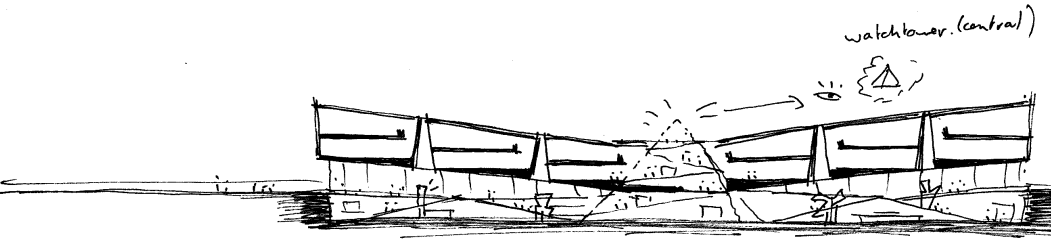


① masslandscape vs technical. (agadir ref)



incl hoen Veton voids :

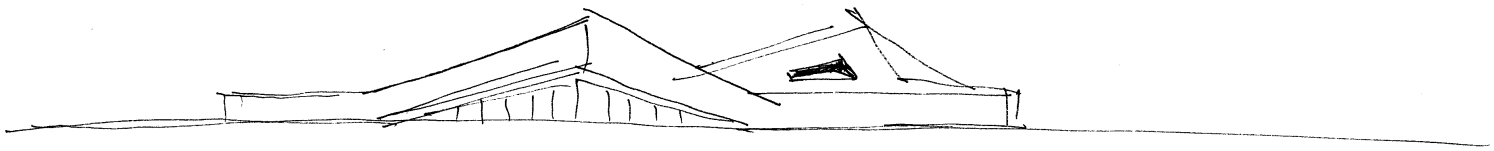


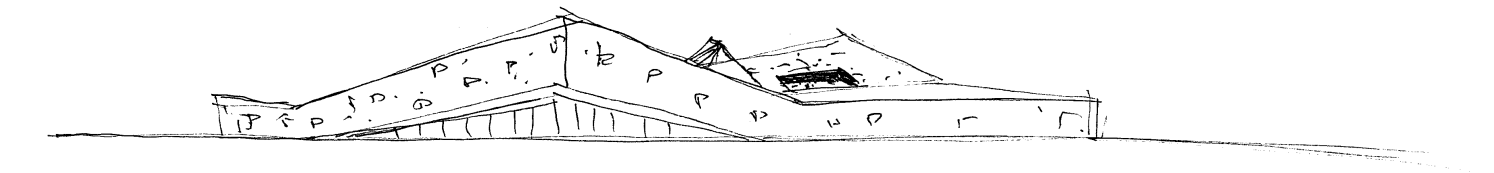


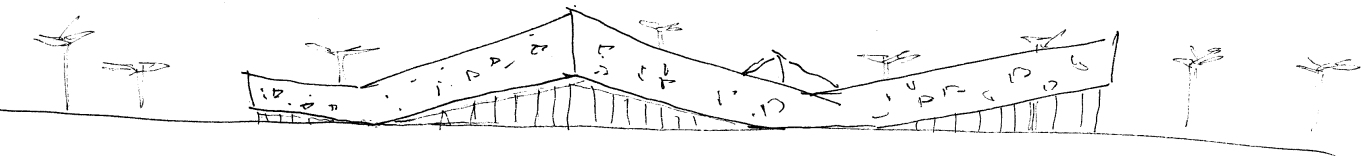
School = national + social interaction

expo = dramatic experience + light

= reflect carving out reach space. (contextual)







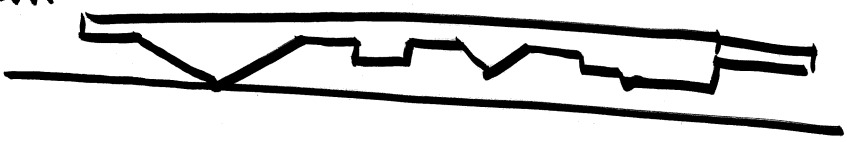
② Inverted landscape.
like a space ship just landed.



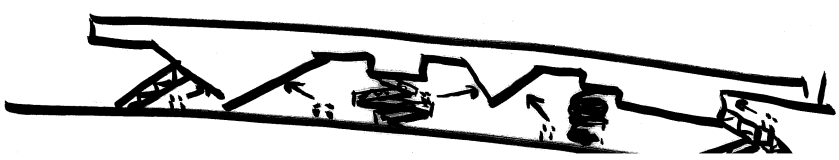
→ Concept: ① Egypt:

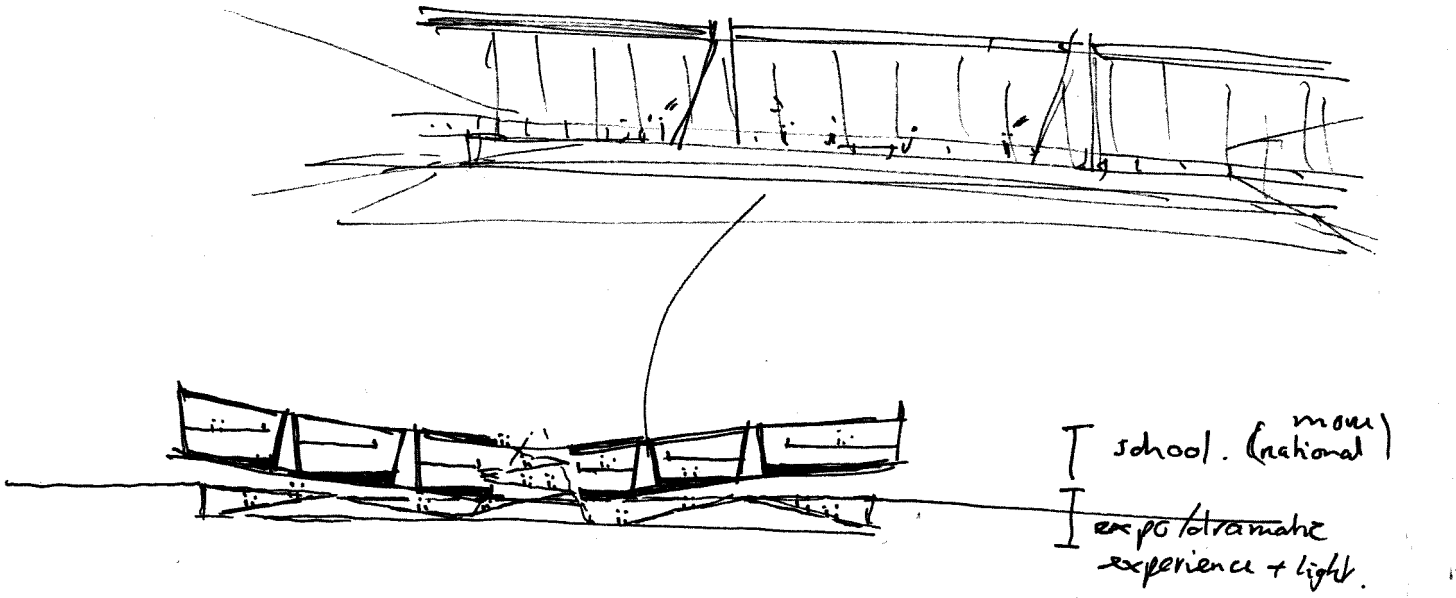


② inwall:

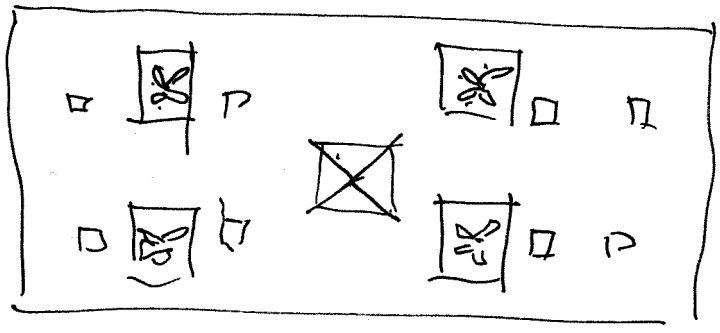


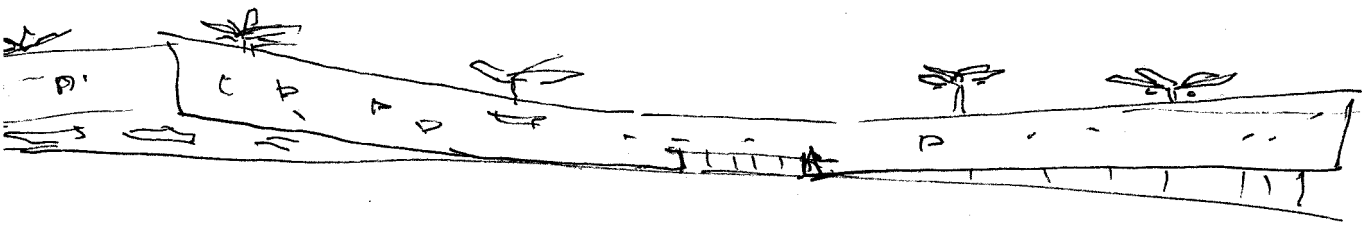
③ convex:

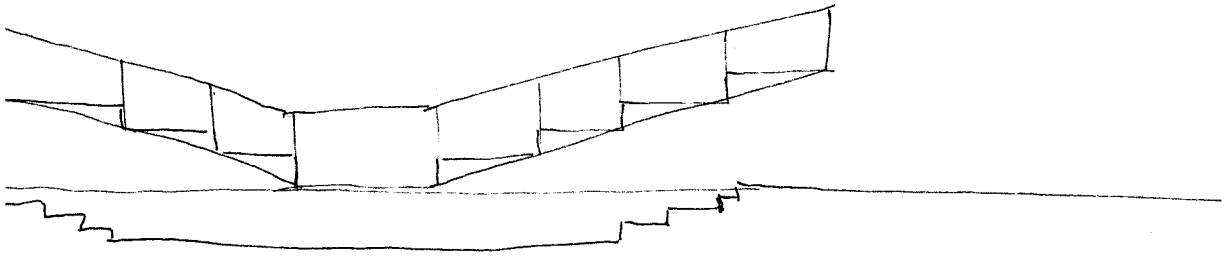




16





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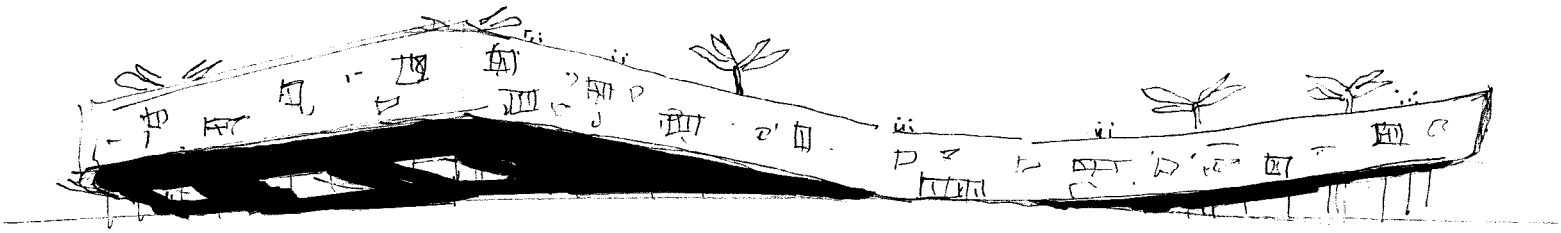




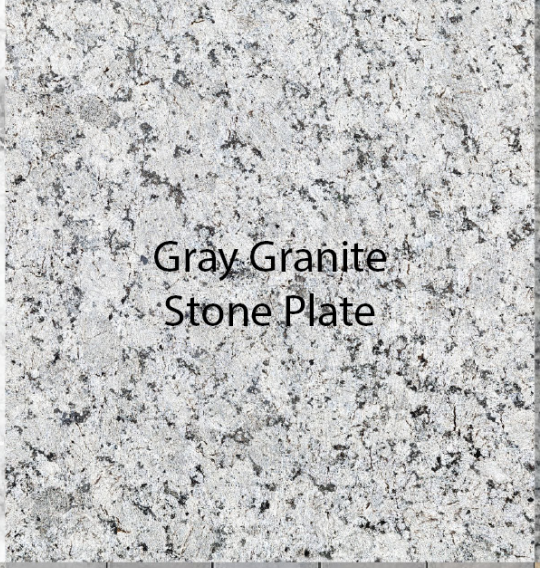


PART 1

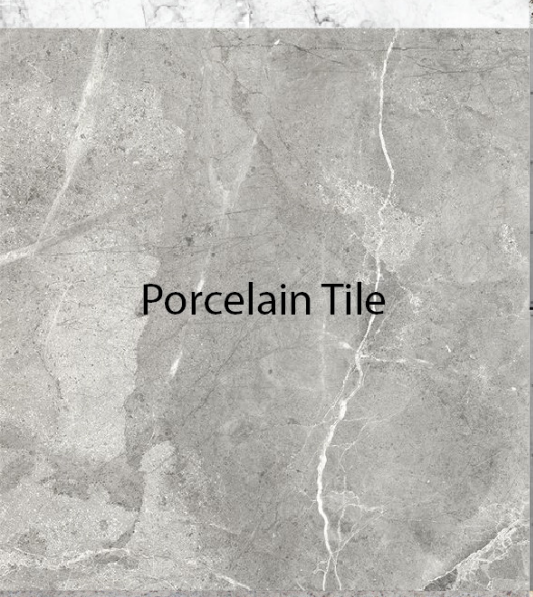
19

context analysis


White Marble


Gray Granite
Stone Plate

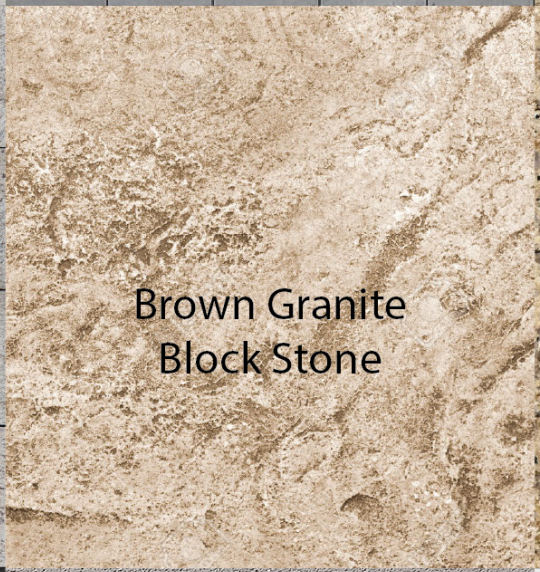

Granite


Porcelain Tile


Galvanized Steel

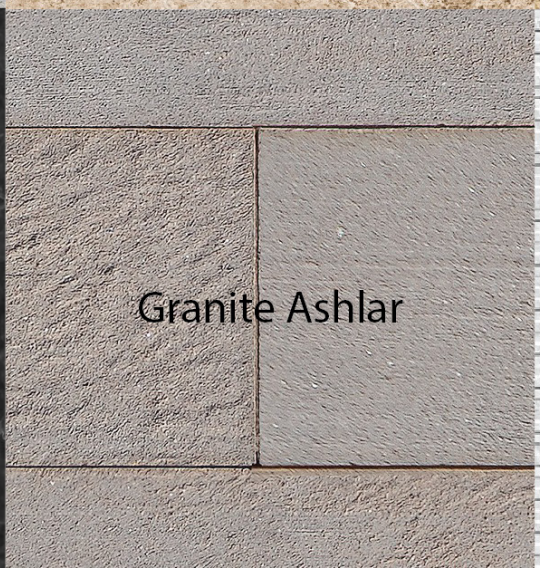

Rough Stone Wall

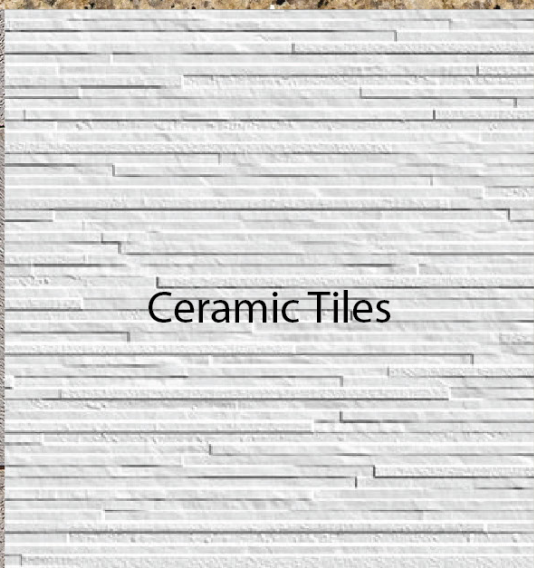

Big Marble Tiles


Brown Granite
Block Stone


Granite Brown


Marble Black
Seamless

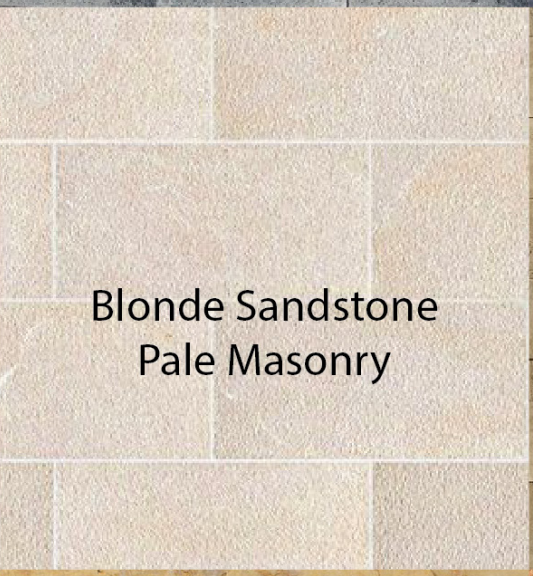

Granite Ashlar


Ceramic Tiles



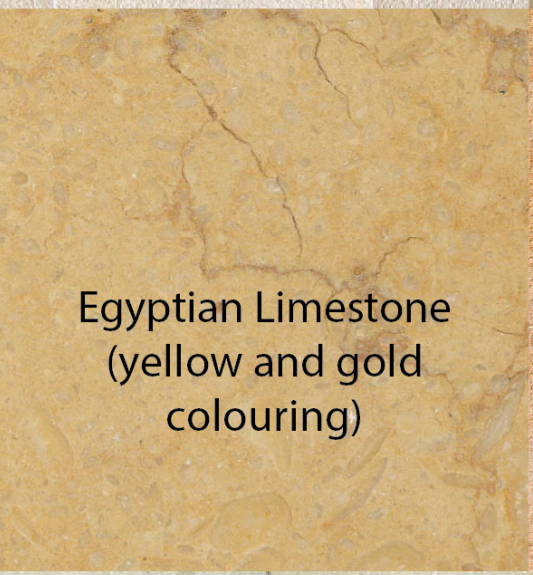

Stone Wall

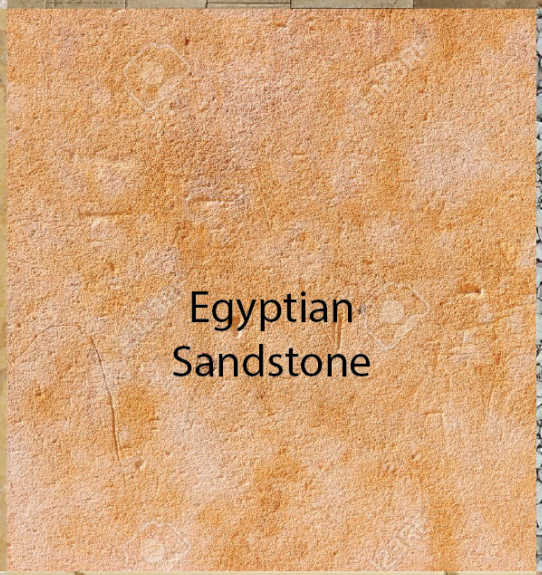

Black Stone Wall


Blonde Sandstone
Pale Masonry


Yellow Stone Wall


Sand Beach Soil

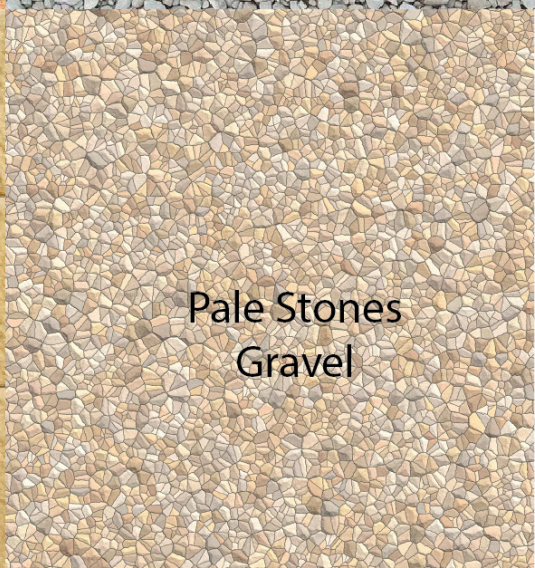

Egyptian Limestone
(yellow and gold
colouring)


Egyptian
Sandstone


Gravel


Egyptian Stone
Floor


Sand Stone


Pale Stones
Gravel





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PYRAMIDS



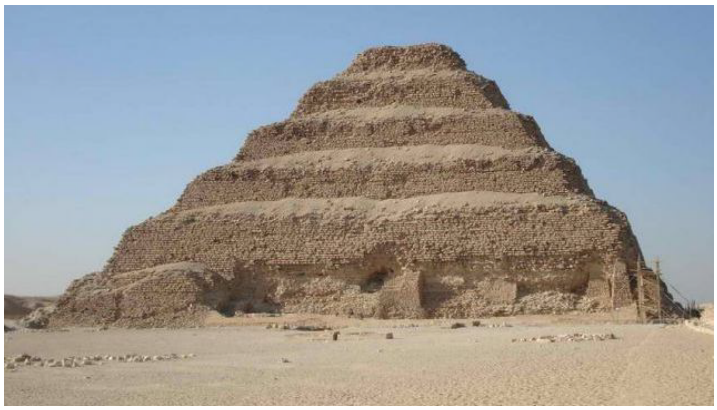
Pyramid of Khafre. Al Haram, Giza, Egypt.
1372 B.C.



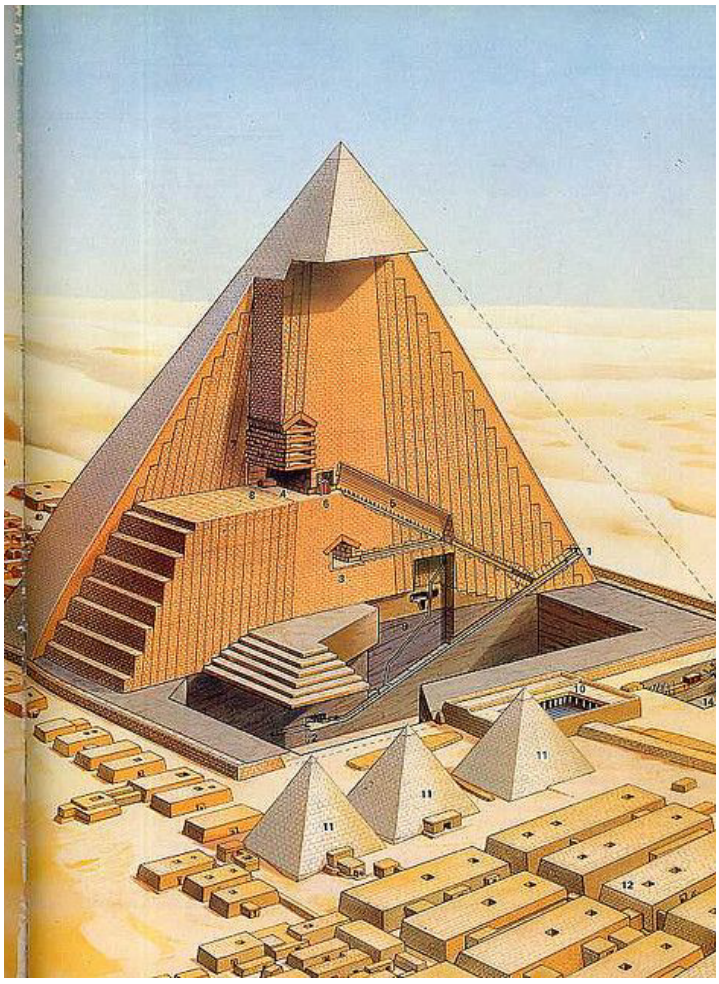
Pyramid of Dashoor, Egypt.
c. 2600 BC



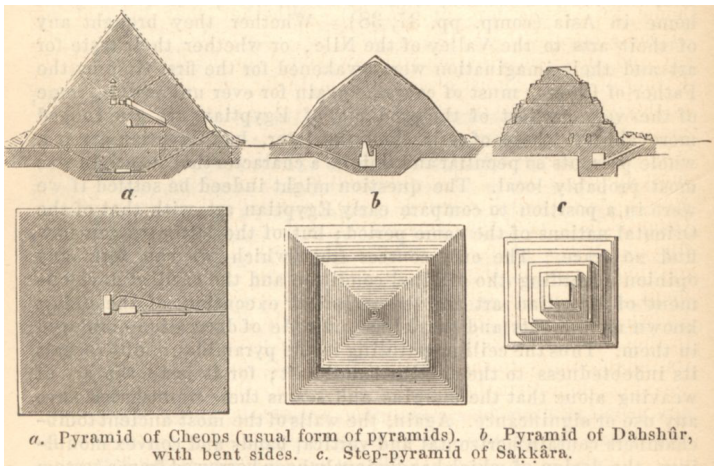
Pyramid of Meidum. Meidum, Egypt.
c. 2613 to 2498 B.C.



Step Pyramid of Djoser. Saqqara, Egypt.
c. 2750 B.C.

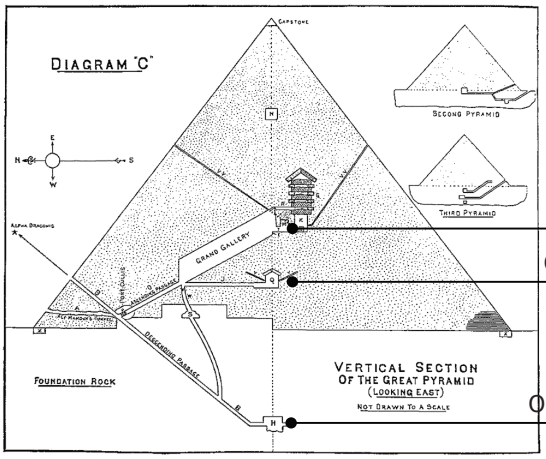


Pyramid Section Axonometric



a. Pyramid of Cheops (usual form of pyramids). *b*. Pyramid of Dahshûr, with bent sides. *c*. Step-pyramid of Saḳḳâra.

Pyramid typologies



Section diagram



Seti I's tomb_secret tunnelsystem

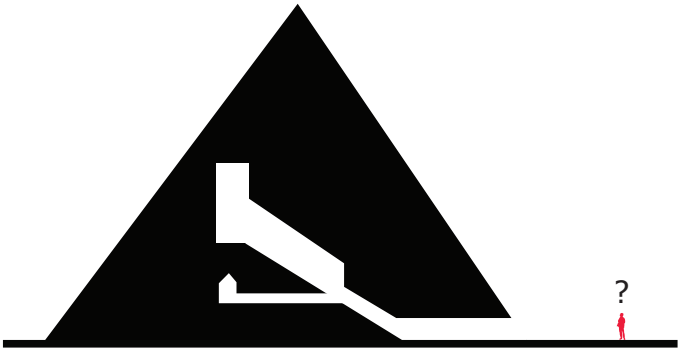


Queen's chamber

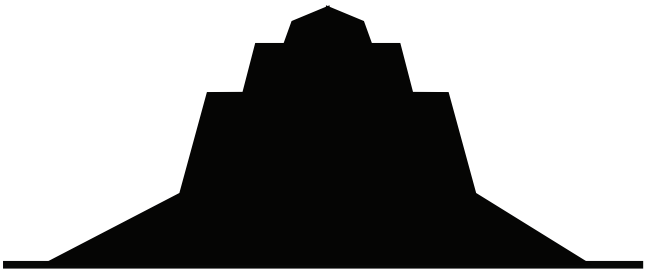


King's chamber

ARCHITECTURAL ELEMENTS:

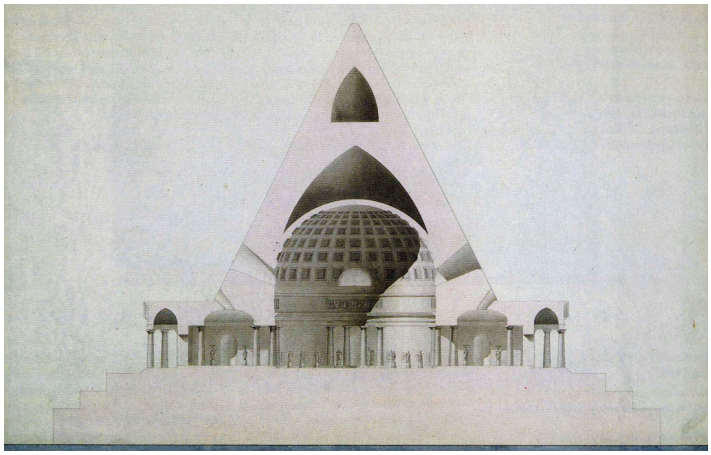


Dissociation inside-outside

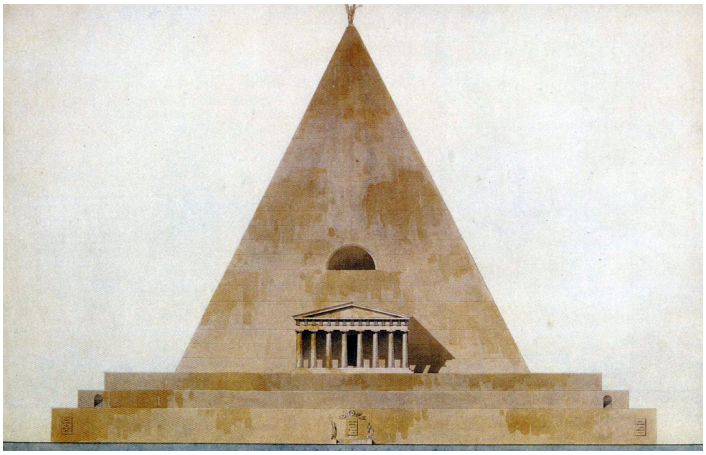


Sculpturality/ monolythic

PYRAMID AS A SHELL FOR FICTIONAL IMAGINATION



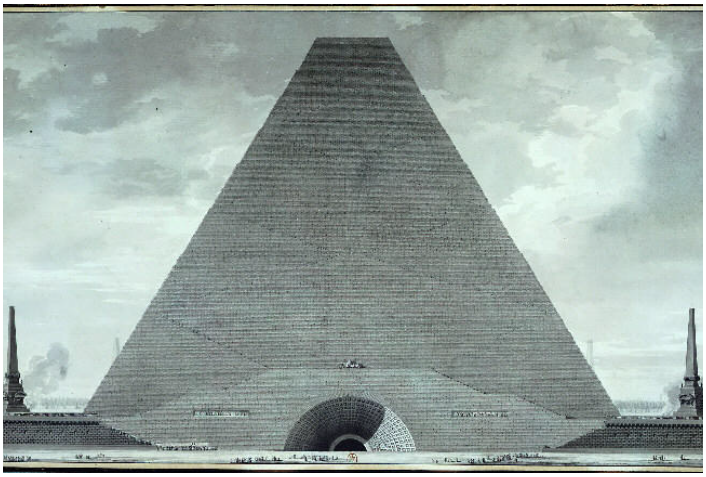
competition for a monument in honor of Napoleon
Mont Cenis, 1814, Abraham van der Hart



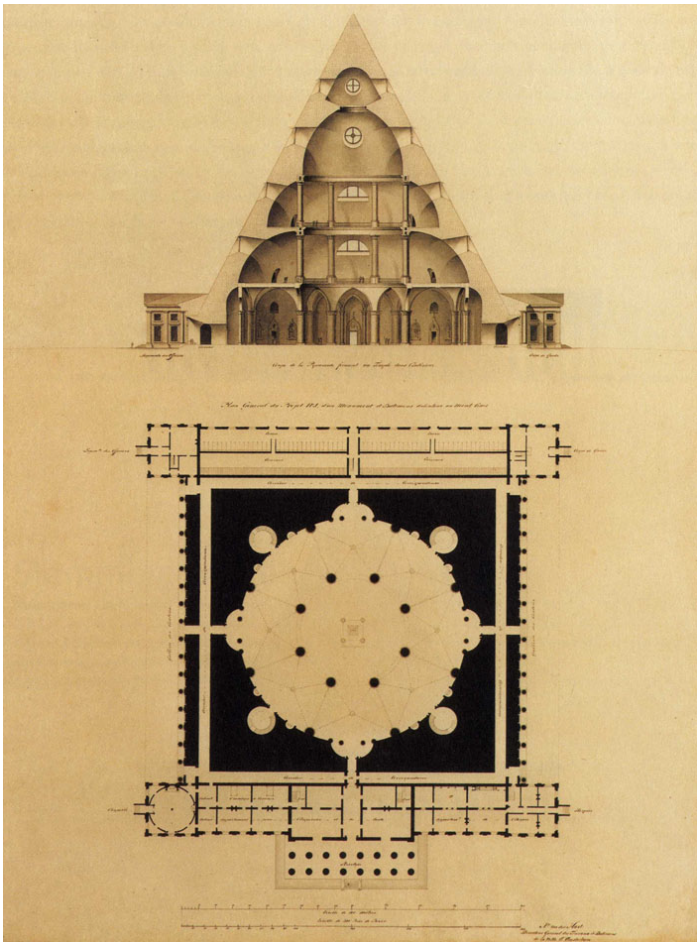
Mont Cenis, 1814, Abraham van der Hart



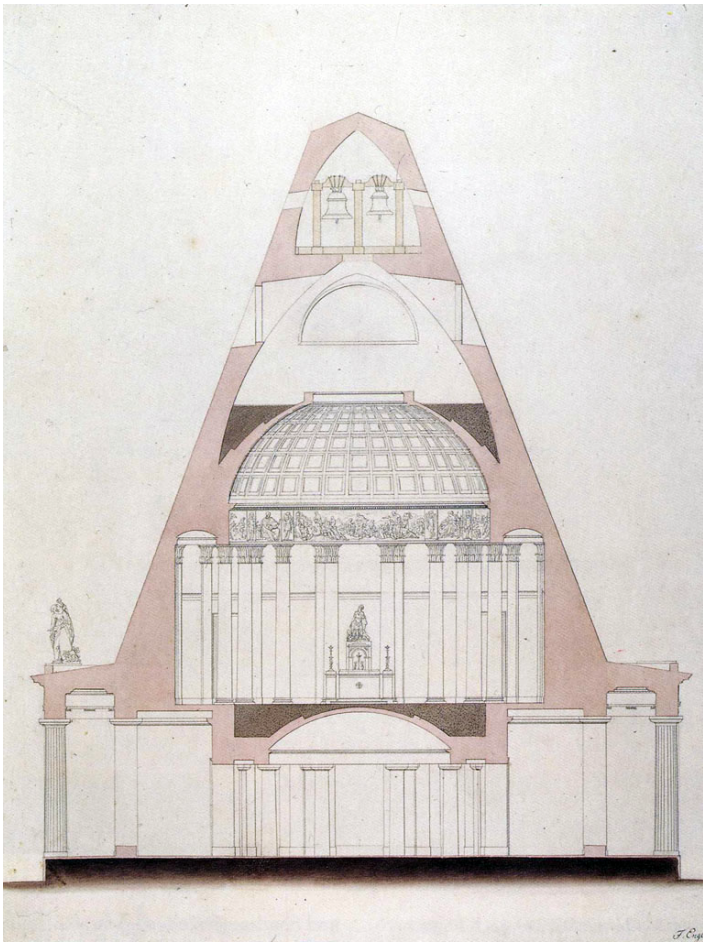
Death's pyramids, Boullée



Death's pyramids, Boullée



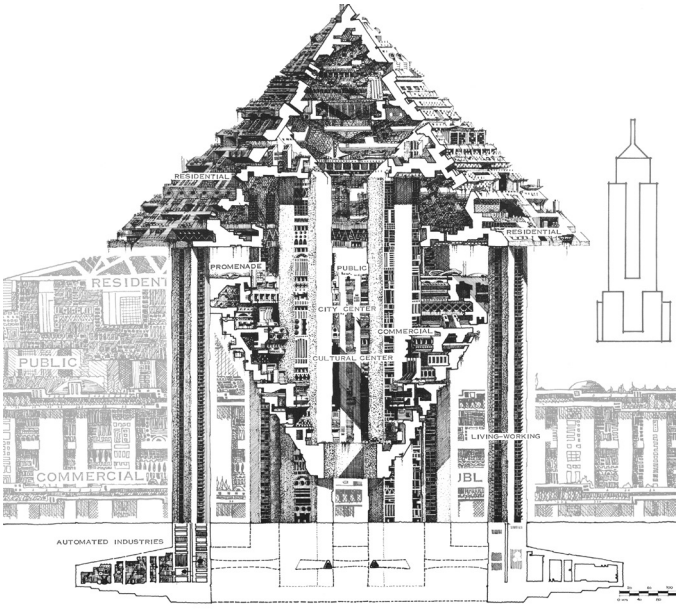
Mont Cenis, 1814, Abraham van der Hart



Mont Cenis, 1814, Abraham van der Hart



Secret base pyramid, dr who



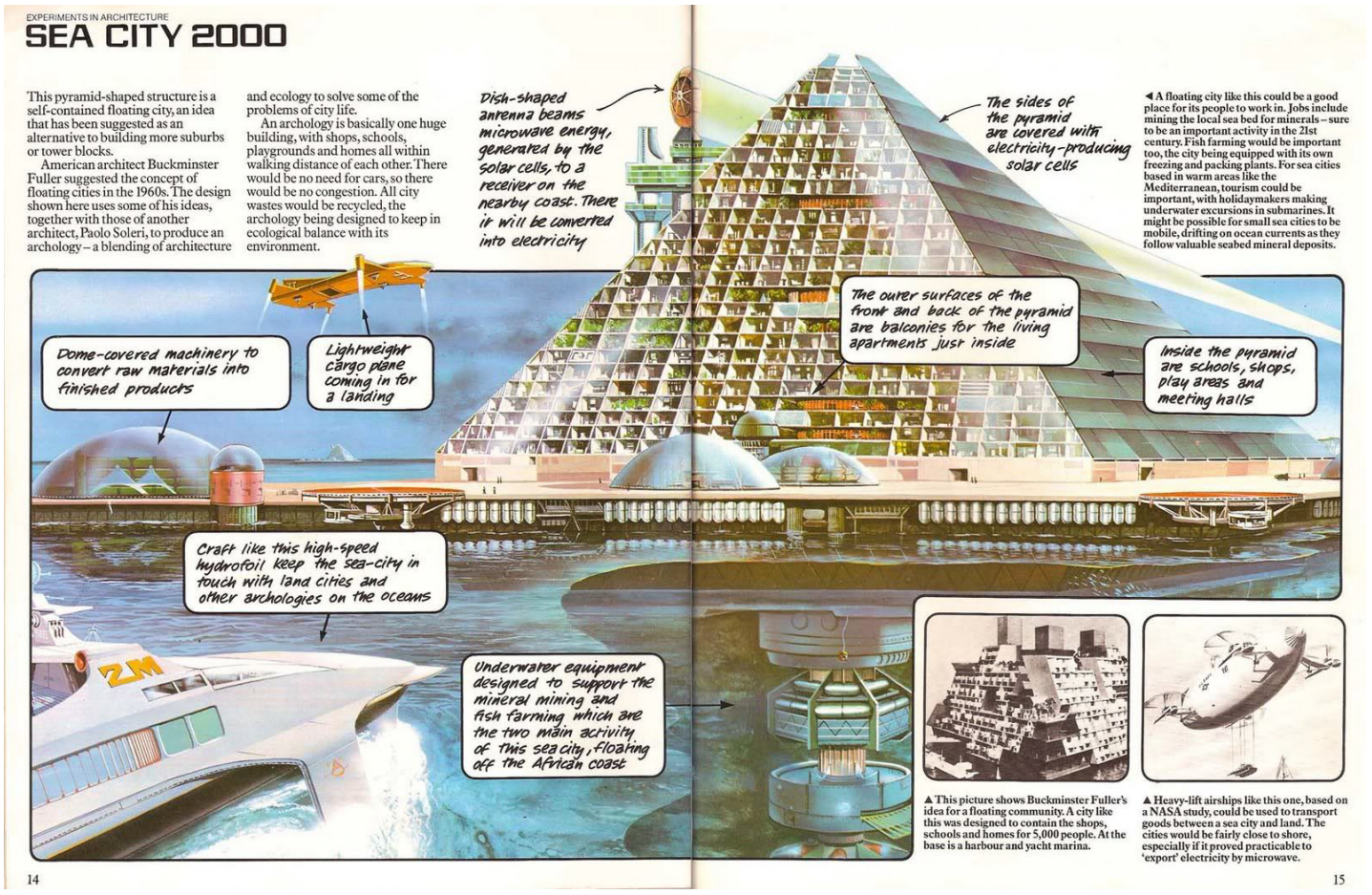
Soleri's Hexahedron Arcology



Pyramid as a spaceship



Pyramid as landing base for alien spaceship

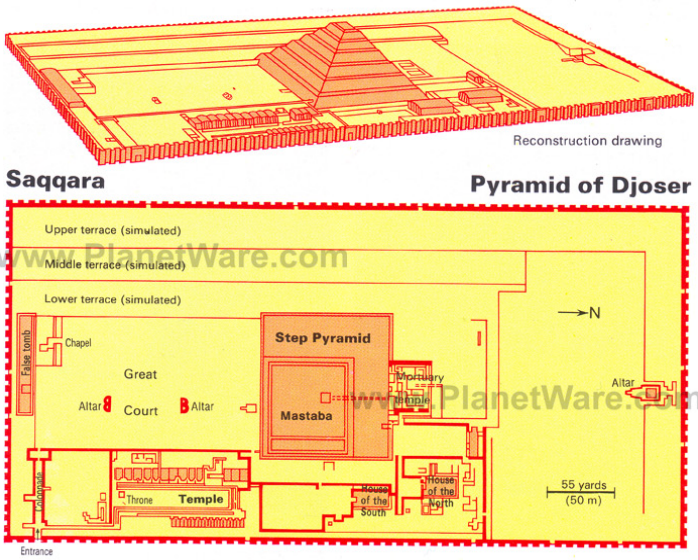


Mega-City Pyramid, Shimizu

SAQQARA ARCHEOLOGICAL REMAINS



Saqqara, Egypt





Saqqara Pyramid of djoser, Tomb complex














© Nahid Sultana Tithi







ISLAMIC INFLUENCE



Rifaii Mosque and Sultan Hasan Mosque, Cairo


Amr Ibn Al-As Mosque, oldest in Egypt 642 AD



Ibn-Tulun Mosque , Cairo


Ali Pasha Mosque, Cairo


Courtyard of Al-Azhar Mosque , Cairo



Prayer hall of Rifaii Mosque



Rawdah or tomb of Sayyidina Hussein AS

CHRISTIAN INFLUENCE



Al-Sorian_coptic monastrie , Wadi el-Natrun



Monastery Of Saint Bishoy, Wadi El Natrun



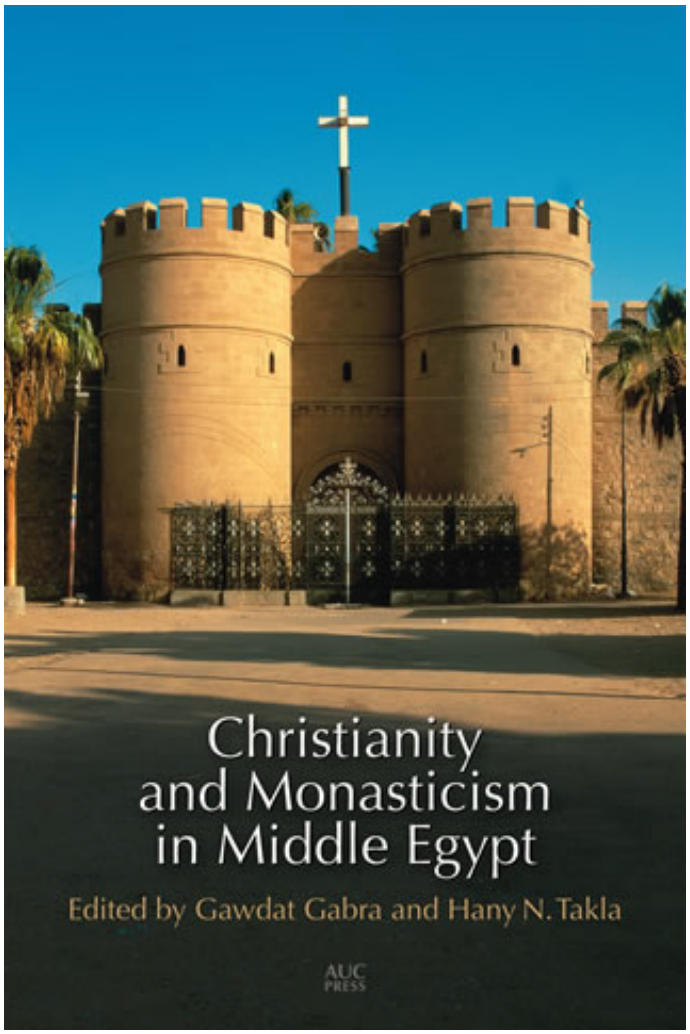
Monastery Of Saint Bishoy, Wadi El Natrun



Monastery Of Saint Bishoy, Wadi El Natrun



Monastery Of Saint Bishoy



church, city of Assiut

SCIENCE AND TECHNOLOGY IN ANCIENT EGYPT



Aerodynamics, Wooden carving, 3rd century B.C.
Did Ancient Egyptians Have Airplanes?
Mechanical Engineer Thinks So



Electrical:'Dendera light',
Understanding the electric phenomena



Metallurgy: Metal-Workers workshop,
Egypt 2900 B.C



Writing: Egyptian hieroglyphs



Alchemy: The Leyden papyrus, 250 A.D.
111 recipes for extracting precious metals

"Egyptian hieroglyphs, a phonetic writing system, served as the basis for the Phoenician alphabet from which later alphabets were derived. With this ability, writing and record keeping, the Egyptians developed one of the - if not the - first decimal system."



Medicine:Ancient Egyptian Medicine papyrus





Engineering: First monumental stone buildings

"How the Egyptians worked the solid granite is still a matter of debate. Dr. Patrick Hunt has postulated that the Egyptians used emery shown to have higher hardness on the Mohs scale. Regarding construction, of the various methods possibly used by builders, the lever moved and uplifted obelisks weighing more than 100 tons."

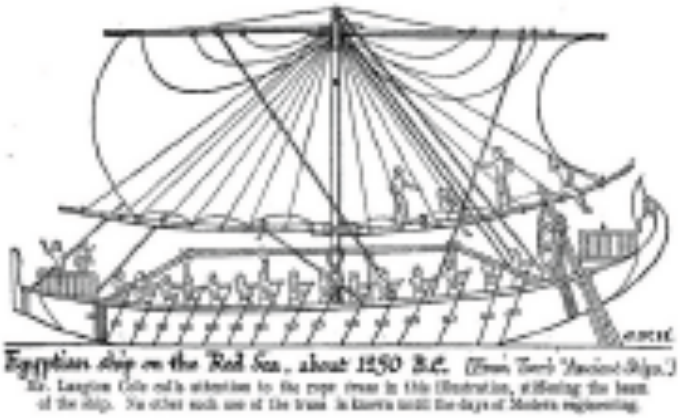


Irrigation and Agriculture, hydraulic civilization



Irrigation and Agriculture, hydraulic civilization

To lift the water from the canal they used a shaduf

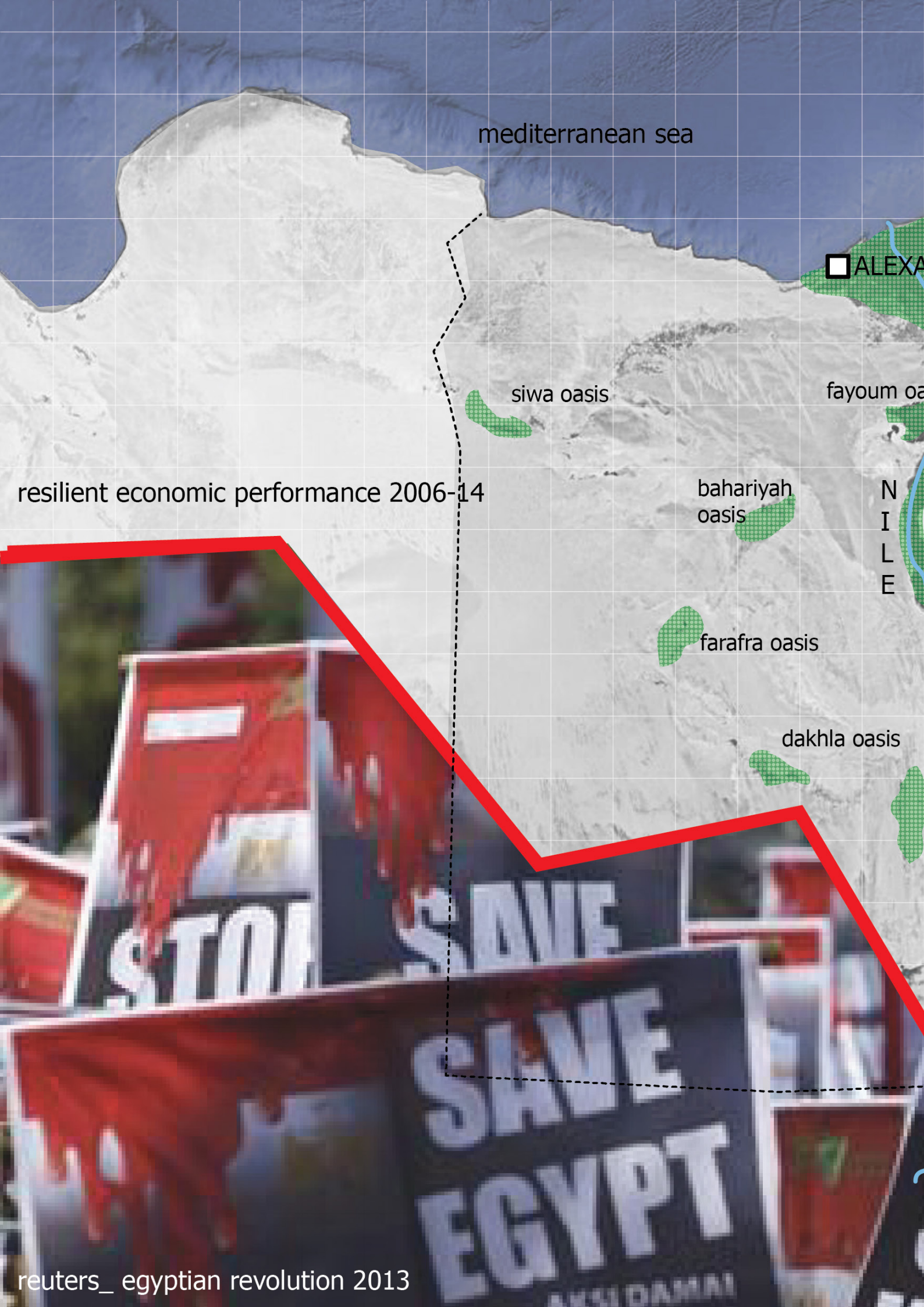


Egyptian ship on the Red Sea, about 1250 B.C.

Aerodynamics, Navigation and ship building



Mummification


mediterranean sea
ALEXA
siwa oasis
fayoum oa
resilient economic performance 2006-14
bahariyah
oasis
N
I
L
E
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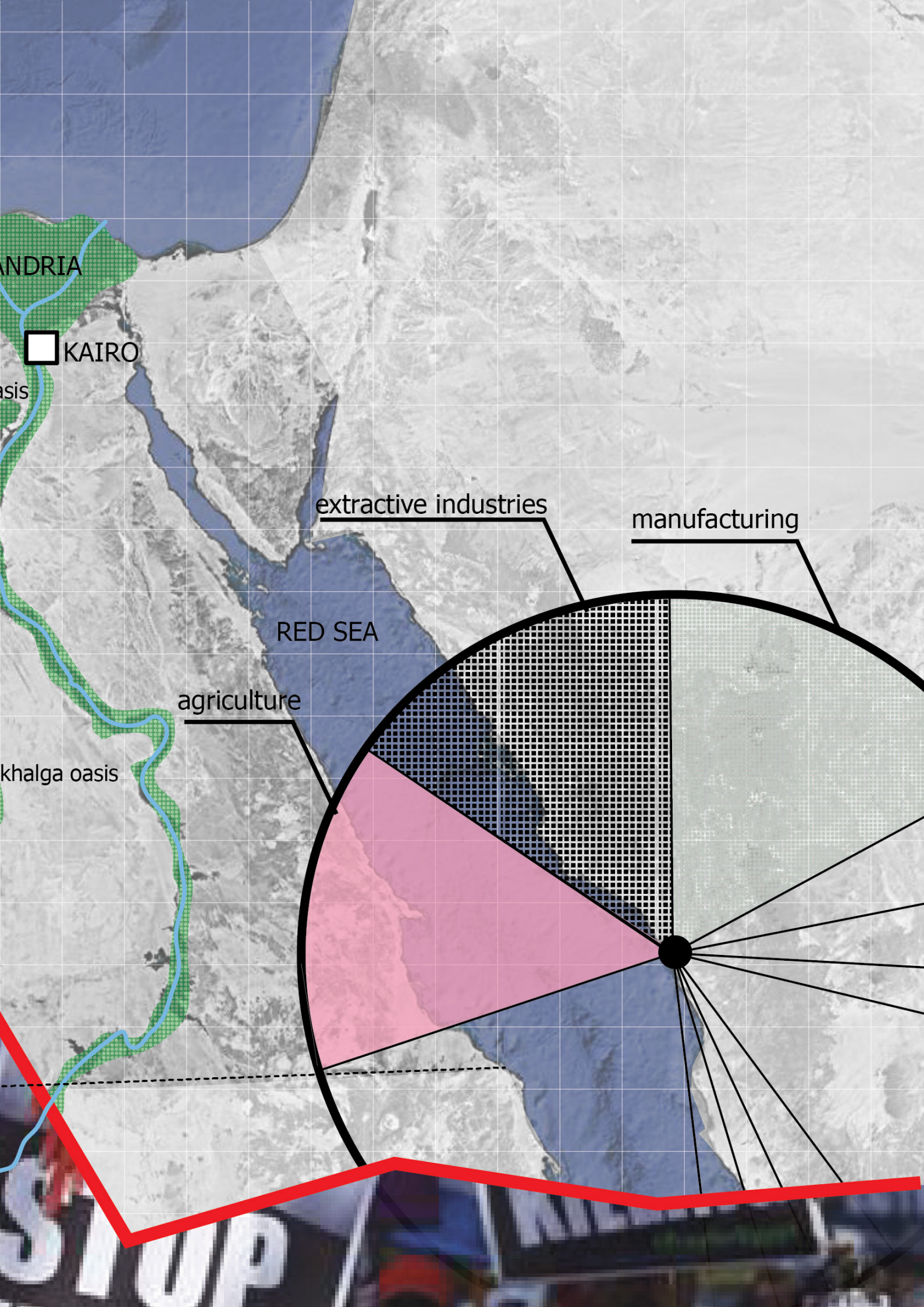
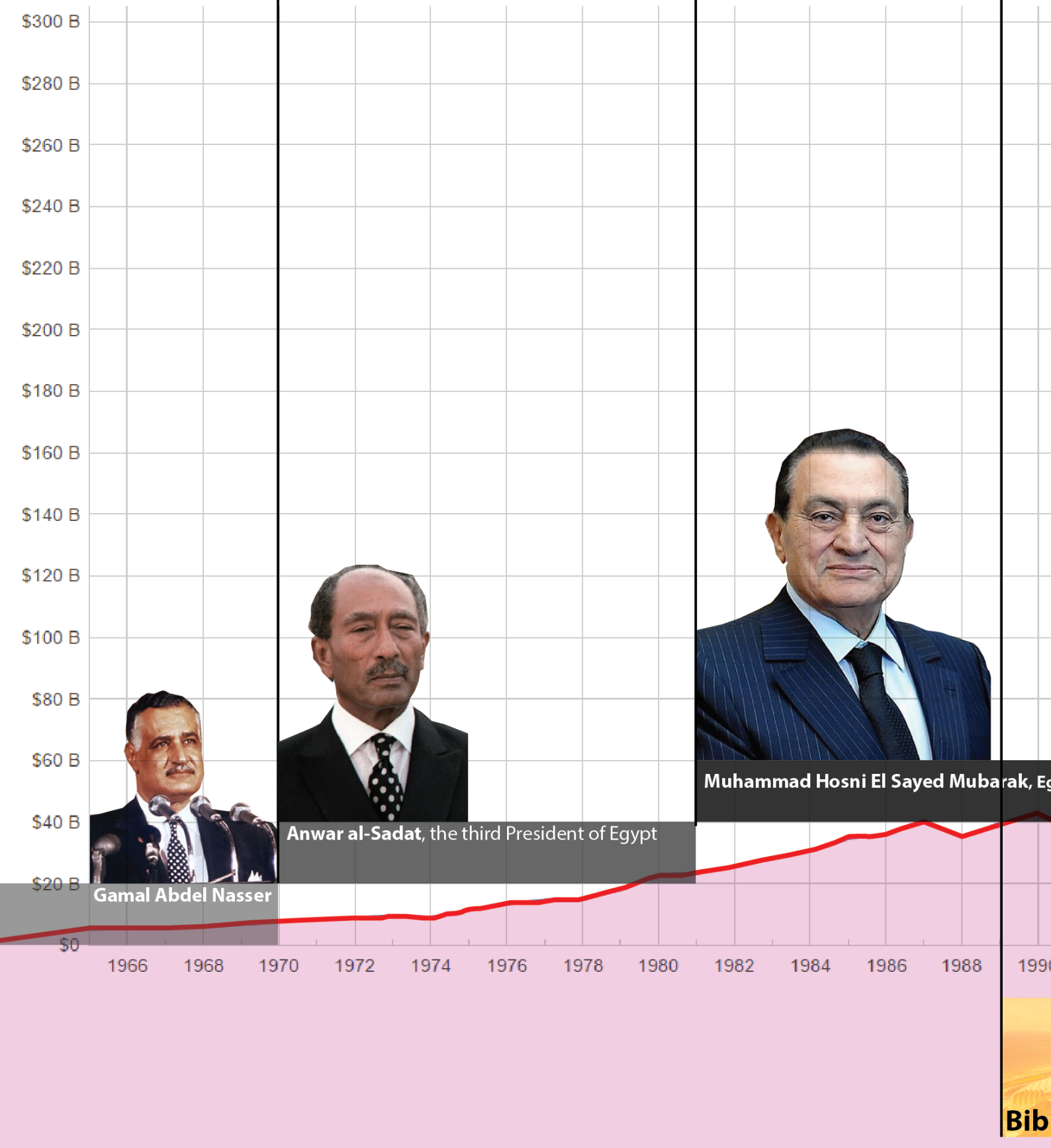
dakhla oasis
SAVE
EGYPT
reuters_ egyptian revolution 2013


NDRIA
KAIRO
asis
extractive industries
manufacturing
RED SEA
agriculture
khalga oasis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1966
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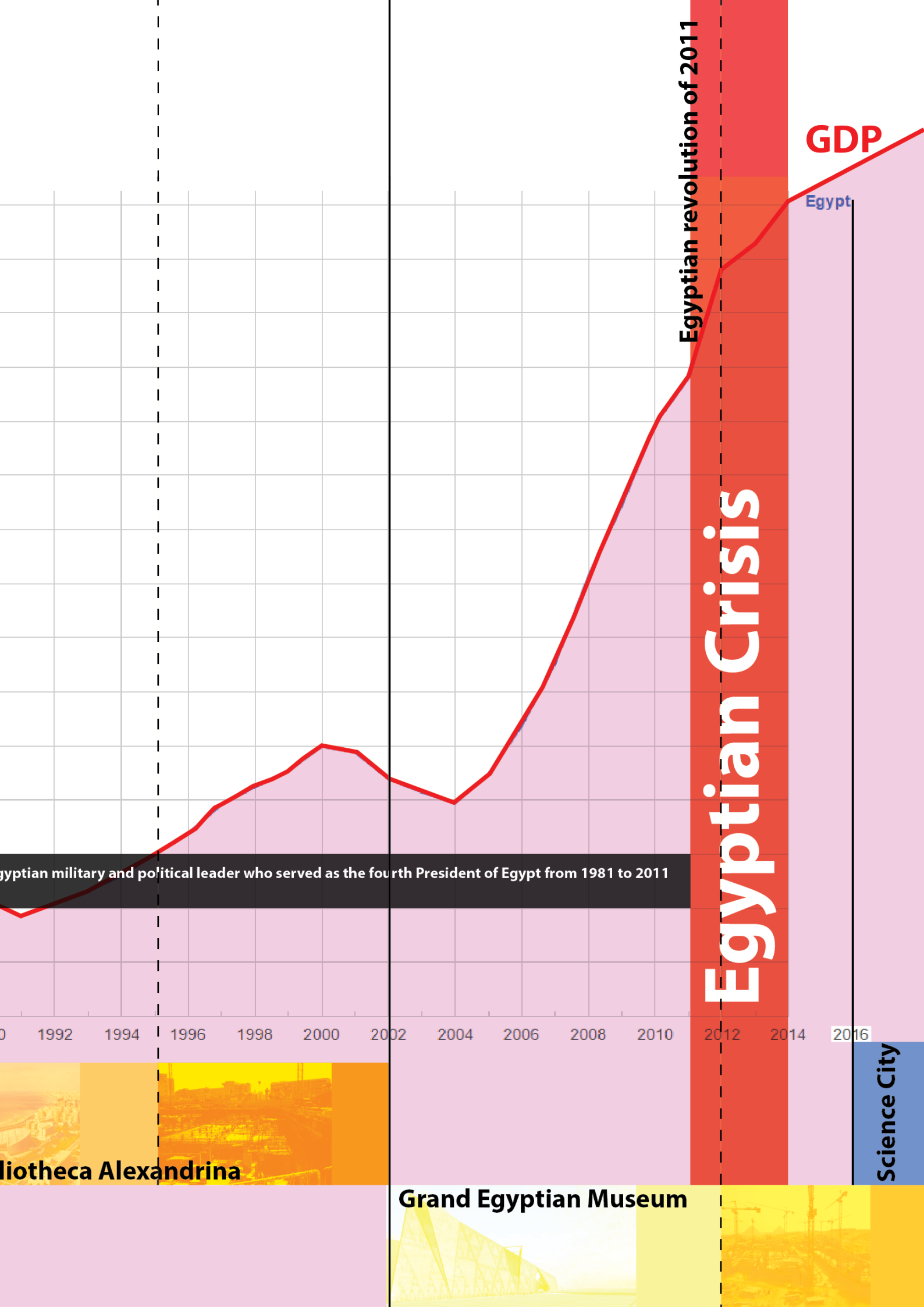
1988
Gamal Abdel Nasser
Anwar al-Sadat, the third President of Egypt
Muhammad Hosni El Sayed Mubarak, Eg
Bib


GDP
Egypt
Egyptian revolution of 2011
Egyptian Crisis
gyptian military and political leader who served as the fourth President of Egypt from 1981 to 2011
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Grand Egyptian Museum
Science City


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EXIT


EXIT




SCIENCE CITY


SCIENCE CITY




44




PERIODIC TABLE


EVOLUTION


©Sanjoy Roy


SCIENCE CITY










45





Why has Egypt produced so many top scientists?

As an Egyptian scientist myself, I think the answer to this question is that we don't believe in the word impossible. Everything is possible if you think, experiment, and analyse. Egyptians keep trying and trying, with the internal belief that we will eventually succeed.

Our history also plays a part. For 7,000 years, Egypt has inspired artists, writers, scientists and intellectuals. The pharaohs left a huge scientific legacy. They were the first to introduce mummification, medicine, agriculture, fermentation, engineering and architecture. The ancient Egyptians were pioneers in astronomy: their expertise played an important role in determining the annual flooding of the Nile, and aligning the pyramids towards the pole star. They were very interested in observing the night sky and phenomena associated with sun and moon. We still haven't worked out all the exact processes they used for mummification, which shows how skilful they were in chemistry.

In the tenth century, Ibn Al-Haytham founded the science of optics, and in the 13th century, the physician Ibn Al-Nafis discovered how blood circulates in the body. In the modern era, Moustafa Mosharafa, the Egyptian theoretical physicist, contributed to the development of Einstein's quantum theory. Today, Sir Magdi Yacoub, a professor of cardiothoracic surgery at Imperial College London, is considered one of the world's top surgeons in heart transplantation. The success of these Egyptian scientists, who have all benefited humanity with their contributions to science, has had a great impact on attitudes to innovation in Egyptian culture.

(Nancy Elhalfawy, science faculty member at the University of Alexandria)

Why has Egypt produced so many top scientists?



Dr. Sameera Moussa
"the Mother of Atomic Energy"
1917-1952

Under the banner "Atoms for Peace" she tried to convince the world to come together and use nuclear energy for something besides blowing each other up. She famously endeavored to "make nuclear treatment as available and as cheap as Asprin."



Dr. Ali Moustafa Mosharafa
1898-1950

Theoretical physicist, Dean of the Faculty of Science at the University of Cairo, contributor to quantum theory and the theory of relativity, and was best friends with Einstein.



Dr. Samah El-Tantawy

Developed an adaptive traffic signal control system, known as MARLIN. Using smart traffic lights capable of learning and communicating with each other in ways reminiscent of Terminator's Skynet, Samah has created a robot overlord.



Sir Magdi Habib Yacoub

Pioneering new heart surgery techniques.
Earned Knighthood, an Order of Merit, and an Order of the Nile.



Hatim Zaghloul

Haitim Zaghloul's inventions, made together with his long-time friend Dr. Michel Fattouche, made possible multiple wireless communication technologies that laid the basis for Wi-Fi and multiple cell phone standards.

7 EGYPTIAN SCIENTISTS WHO CHANGED THE WORLD



Azza Faiad

This brilliant Alexandrian teenager tackled two of the world's biggest issues at once: pollution and energy when she discovered a more efficient way of converting plastic garbage into highly valued biofuel.

Dr Sara Mohamed of Mansoura

Stem cell breakthrough reverses infertility after cancer Scientists from Egypt's Mansoura Medical School show it is possible to restore fertility by injecting stem cells directly into the ovaries

EGYPT

1900

1920s-1930s

Ali Moustafa Mosharafa

He studied Maxwell's equations and the special relativity and he had correspon-dence with Albert Einstein.



1937

Selim Hassan



Encyclopedia of Ancient Egypt

Excavations at Giza

1953

Sameera Moussa

The Mother of Atomic Energy



"Atom for Peace"

1967-1972

Far



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1895

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Wilhelm Conrad Röntgen

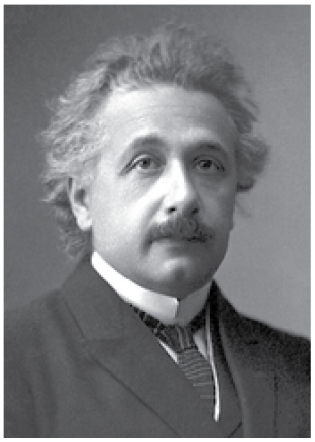


X-rays

1907-1915

Albert Einstein

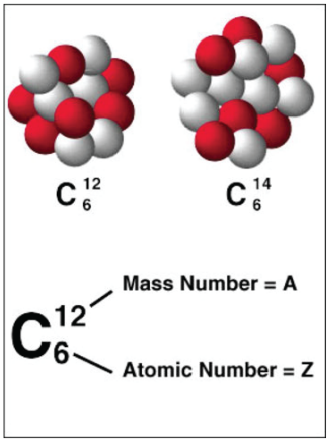
E = mc2



Theory of special **relativity,** explanation of Brownian motion, and photoelectric effect

1913

Henry Moseley



The atomic number

1915

Karl Schwarzschild



Identification of **Black holes**

1927

ouk El-Baz



1980

llo Program

upervisor of
nar Science
anning at
comm Inc., a
sion of AT&T
t conducted
ems analysis
for NASA

Magdi Yacoub



Established heart transplantation in the UK and becoming the world's leading transplant surgeon

1992

Hatim Zaghloul



2015

Based on his patents in WOFDM (Wide-band Orthogonal Frequency Division Multi-plexing) he co-founded Wi-LAN Inc

Azza Faiad

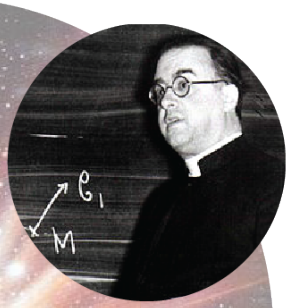


Egyptian Petroleum Research Institute

she discovered a more efficient way of converting plastic garbage into highly valued biofuel.

2016

Georges Lemaître

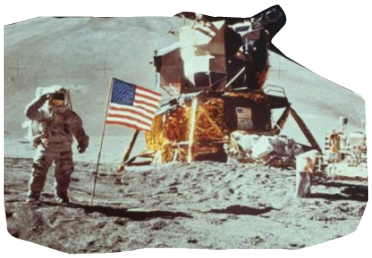


1927

Theory of the **Big Bang**

1969

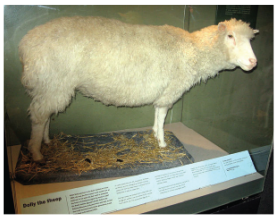
Edwin Aldrin Neil Armstrong



Men Land on the **Moon**

1997

Roslin Institute



Roslin Institute cloned **Dolly** the sheep using the process of nuclear transfer.

2015

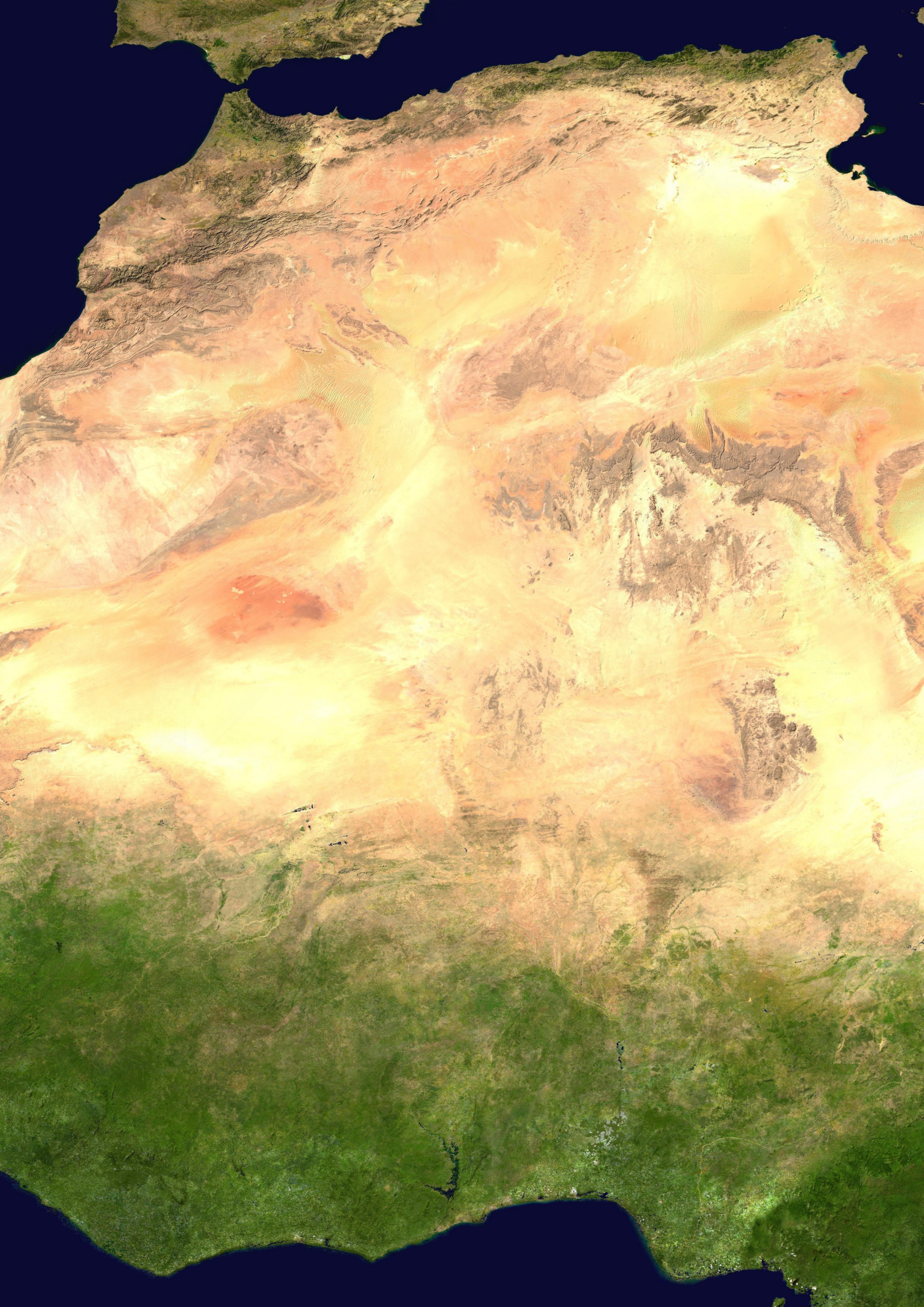
NASA

Presence of briny flowing salt water on the Martian surface



MARS

WEST




PART 2
urban context

001. The Sahara is the world's largest desert, extending 4,000 kms from the Atlantic Ocean to the Red Sea, and from the Mediterranean Sea southwards to merge with the tropical savannas of West Africa. With an area of almost 10 million square kilometres it covers almost a third of the African continent!

002. This region has not always been arid. In places the surface of today's desert is littered with fossils, which demonstrate that at different stages in geological time the area was covered by sea. (Fossil bed near Bir Wahed in the Libyan Sand Sea)

003. Its initial desiccation was caused by changes in atmospheric circulation in late Cainozoic time (roughly 3 million years ago), and by plate tectonics -- notably the movement of the northern portion of the African plate from wet equatorial latitudes into the dry tropics. (Part of the Erg d'Admer near Djanet)

004. Its progressive desiccation thereafter was caused in part by prehistoric peoples who contributed to the destruction of the local plant cover. It is a process that continues to this day because of overgrazing and the ploughing of lands ill-suited to cultivation. So the desert continues to grow in size. (Cave painting of prehistoric herding in the Tassili-n-Ajjer)

005. The word "Sahara" is derived from the Arabic word sahra, which indicates an "empty area" or "wilderness". It is one of the most hostile environments on earth, where all life -- plant, animal and human -- must adapt if it is to survive. (The Erg d'Admer near Djanet)

006. There are deserts in Australia, too, but nowhere where you could you climb on to the roof of a 4WD, look around you and see no vegetation at all. In the Sahara, though, you can drive for days and not see a single plant! (South of In Amenas)

007. When they think of the Sahara most people imagine an ocean of large sand dunes. However, sand seas (or ergs) cover only a sixth of its area. The sand itself is driven by the wind and can assume several different forms. (Grand Erg Occidental near El Golea)

008. Barchans like this form where there is plenty of sand and winds that blow consistently from one direction. In plan they are crescent shaped, with arms pointing downwind in the direction of their advance. (Libyan Sand Sea near Bir Wahed)

009. They have a steep leeward slip face and a gentler windward slope. Some appear to be stationary but others are definitely moving. At In Salah they are advancing by almost half a metre annually. (Libyan Sand Sea near Bir Wahed)

010. Where there is less sand it may be scraped into long narrow dune ridges parallel to the direction of the prevailing wind. They are known as "seif" dunes, after the Arabic word for a "sword". (Grand Erg Occidental

near El Golea)

011. Pyramid or star-shaped dunes are characteristic of areas where winds change direction with the season; and they can be hundreds of metres in height. (South of In Amenas)

012. Invasion by moving dunes threatens many agricultural areas. The commonest technique used to stem their advance is to build fences from the branches of date palms pushed into the ground. It works for a while, but they will be over-run eventually and a new battle line will be drawn closer to the settlement. (Oasis in Grand Erg Oriental near El Oued ringed by fences)

013. However, the greater bulk of the Sahara is occupied not by sand dunes but by featureless plains covered in small stones, from which the sand has been blown away. Surfaces like these are termed reg in the Western Sahara and serir in the east. (North of In Amenas)

014. Since none of the intermittent streams that flow here after rain actually leave the region, the Sahara is covered by the waste products of weathering and erosion. Across flat areas the wind develops its full force, and moves pebbles as well as sand, sorting them according to size.(Edge of Hoggar massif near Ideles)

015. The plateau north of In Salah is named appropriately, in the language of the local Tuareg, "Tademait," meaning "naked as the palm of a hand" -- for you won't see a blade of grass here for hundreds of kilometres. (Plateau du Tademait)

016. In places, too, the surface of the reg may be covered by a desert varnish of iron and manganese oxides, brought to the surface by capillary action and deposited following the evaporation of soil moisture. (Tassili-n-Ajjer)

017. Elsewhere you will find wind-scoured rocky plateaux -- hammada -- flattened by the work of water in times past, and polished later by wind abrasion. (Near Arak; between In Salah and Tamanrasset)

018. And the centre of the desert is actually mountainous. In southern Algeria the Ahaggar Mountains, also known as the Hoggar, rise to heights in excess of 3,000 metres. (The Assekrem highlands of the Hoggar)

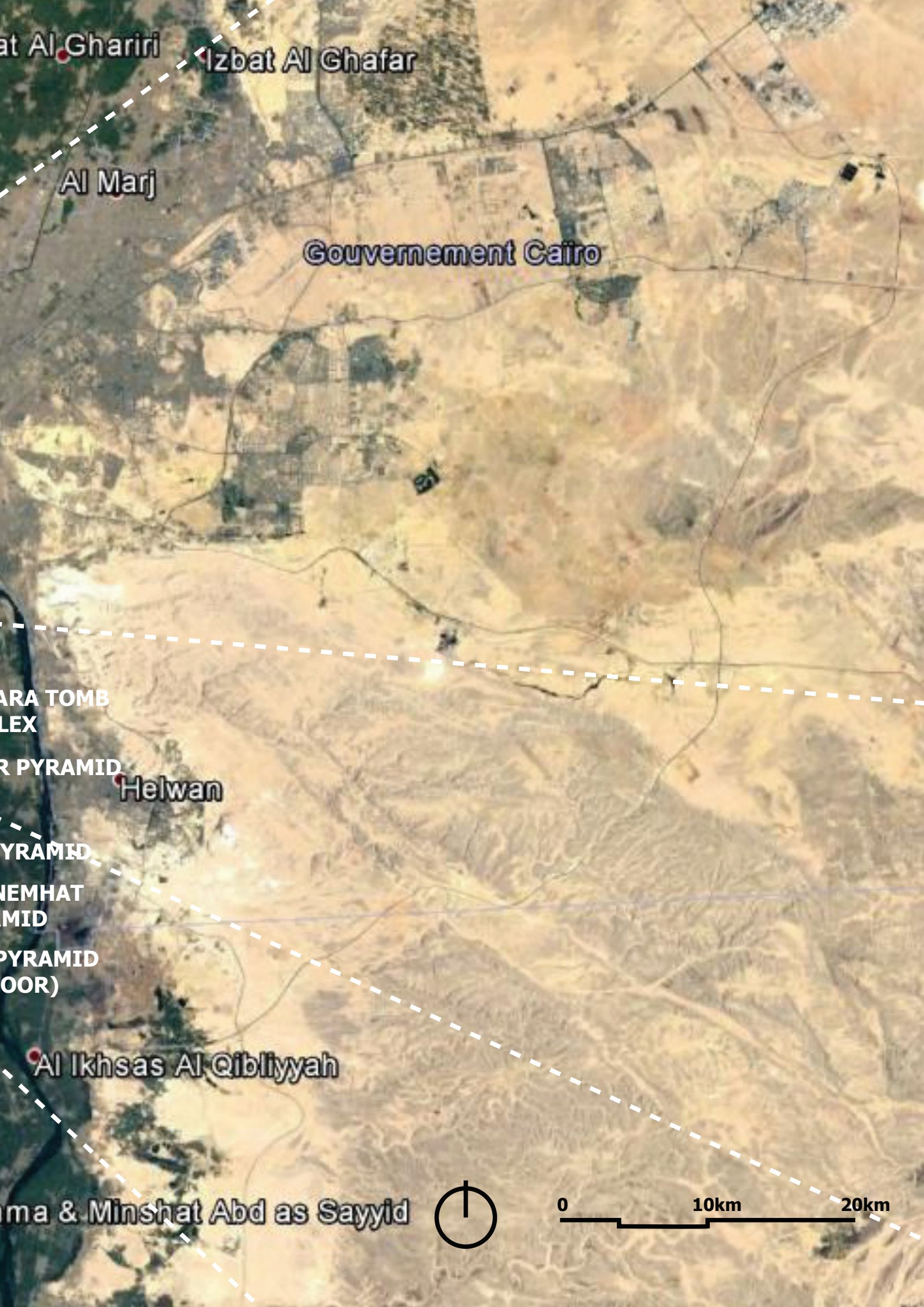
019. The surface of the mountainous heart of the Sahara is dissected by dry river channels (wadis), for the streams which drain these slopes flow only intermittently, after rain. (Tassili-n-Ajjer between Illizi and Serouenout)

020. You sometimes find pools of water even in the Sahara, but they do not last long. There are no perennial streams here, for obvious reasons. The Nile only flows year-round because it is nourished by well-watered lands to the south, far beyond the boundaries of the desert. (Hoggar Massif south of Ideles)


bibliotheca Alexandrina
SCIENCE CITY


grand Egyptian museum
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat


PYRAMIDS
Shalaqan
Cairo
DJEDEFRE
PYRAMID
17km
PYRAMIDS OF
GIZA
Zes Oktober
27km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6TH OF OCTOBER CITY
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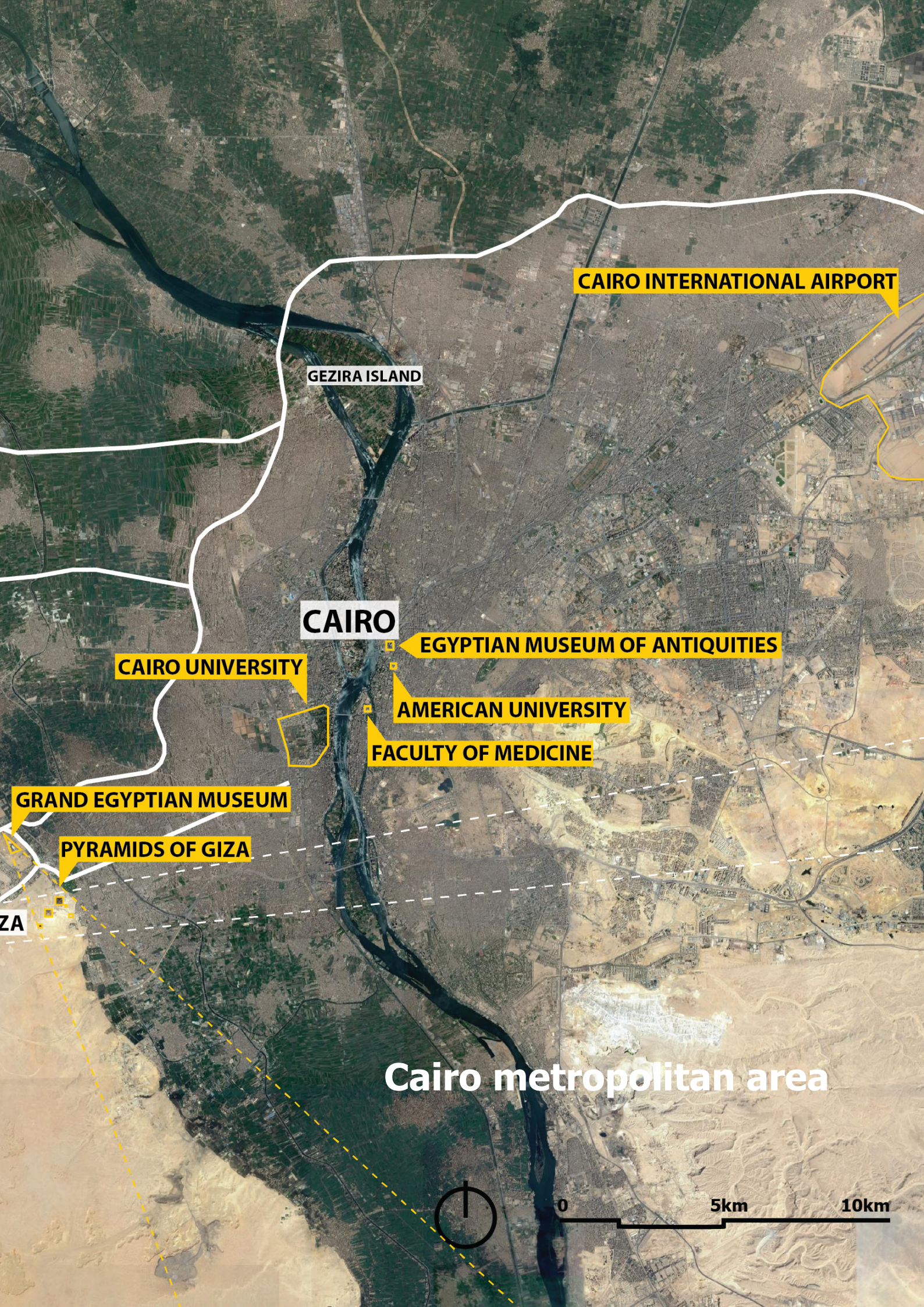
CAIRO INTERNATIONAL AIRPORT
GEZIRA ISLAND
CAIRO
EGYPTIAN MUSEUM OF ANTIQUITIES
CAIRO UNIVERSITY
AMERICAN UNIVERSITY
FACULTY OF MEDICINE
GRAND EGYPTIAN MUSEUM
PYRAMIDS OF GIZA
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DOLPHIN LAND MALL
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MODERN SCIENCES AND ARTS
MSA UNIVERSITY
AKHBAR EL YOUMACADEMY
AHRAM CANADIAN UNIVERSITY
6TH OF OCTOBER CITY
OCTOBER CEMETERY


GRAND EGYPTIAN MUSEUM
PYRAMIDS OF GIZA
GIZA
6th of October City
2km
5km


RESIDENTIAL COMPOUND
RESIDENTIAL COMPOUND
ELECTRIC PLANT


MSA UNIVERSITY
RESIDENTIAL COMPOUND
Site
0
200m
500m



Site and Maximum Footprint



Pyramid of Khufu, Giza



Grand Egyptian Museum, Giza



Bibliotheca Alexandrina, Alexandria



Cairo Stadium, Cairo



MSA University, 6th of October



Recreation Center, 6th of October



Informal Housing, Cairo



Housing Complex, 6th of October



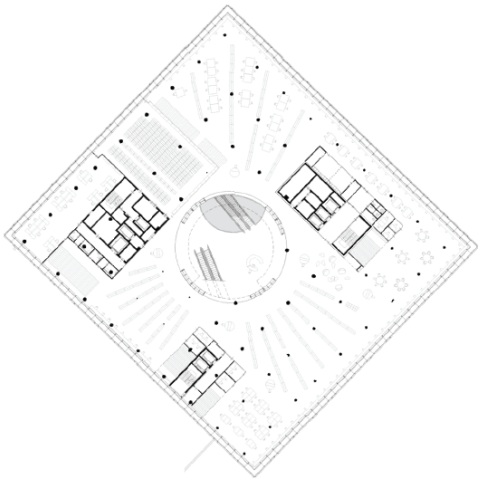
Housing, Cairo

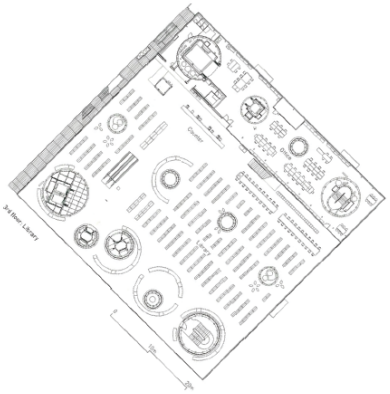


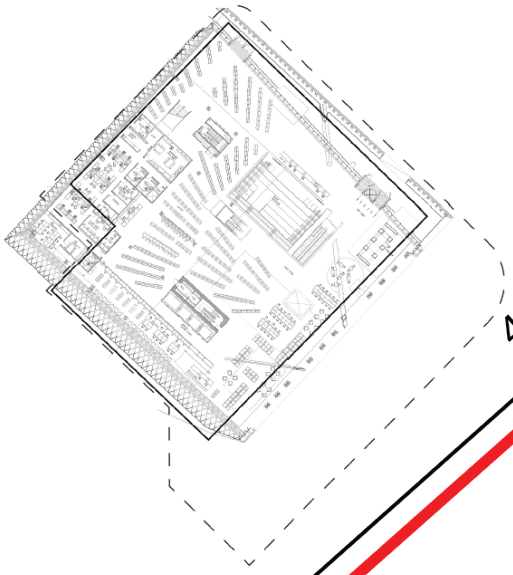
Housing Complex, 6th of October

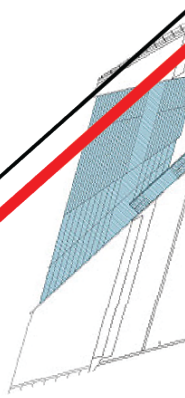


Cairo Center & Nile, Cairo









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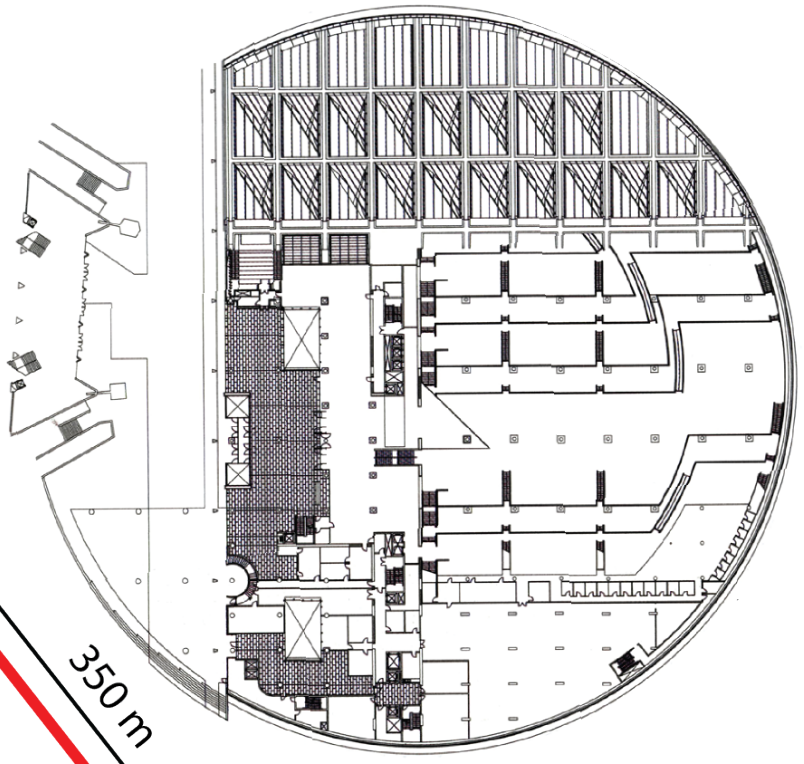
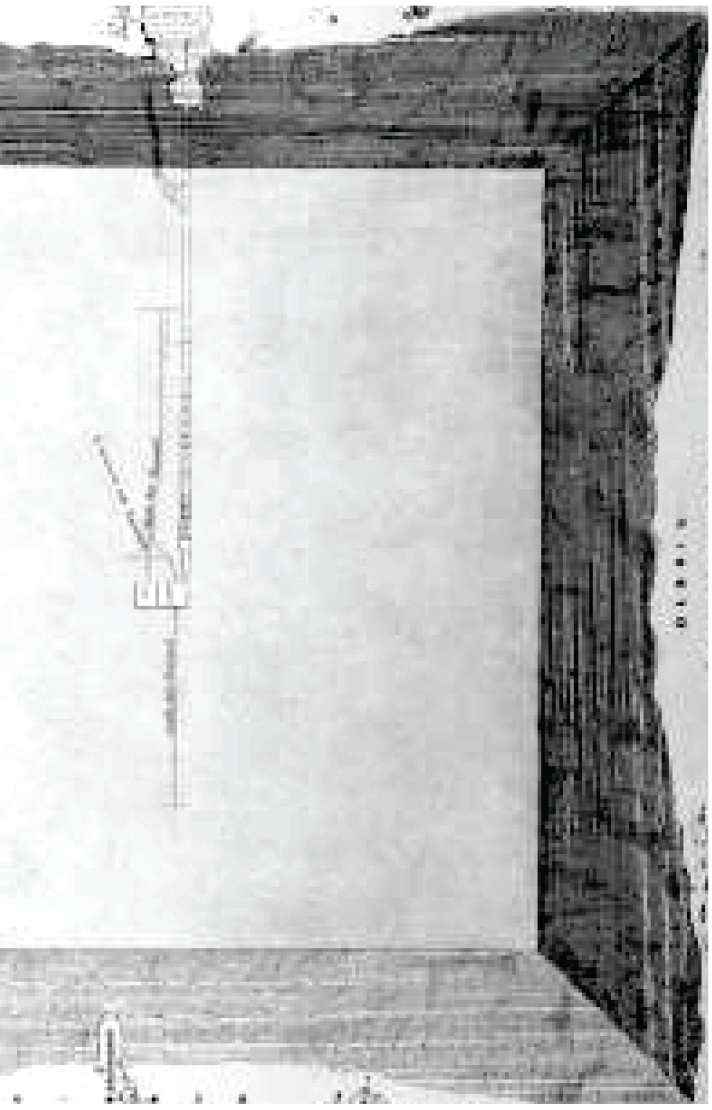
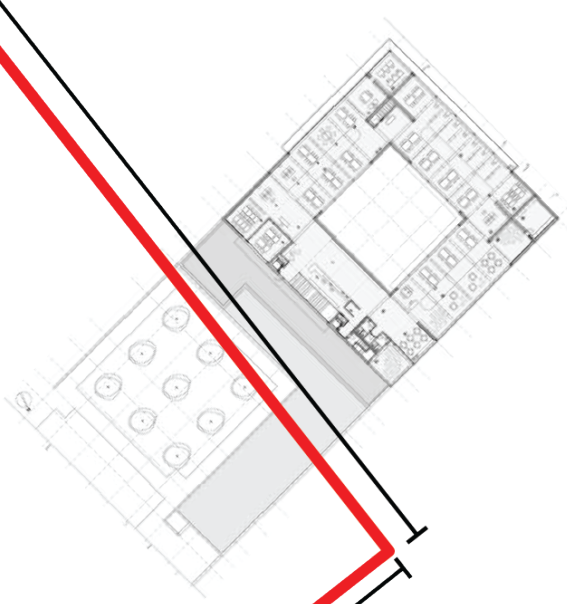


350 m





230 m

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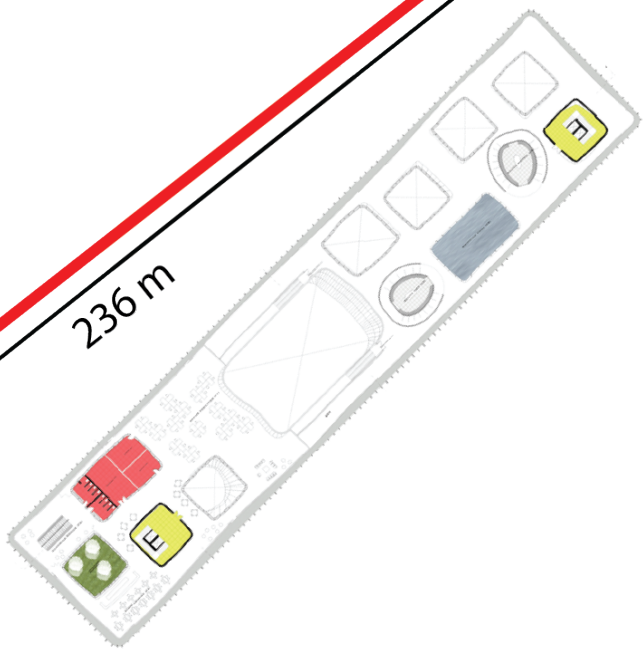




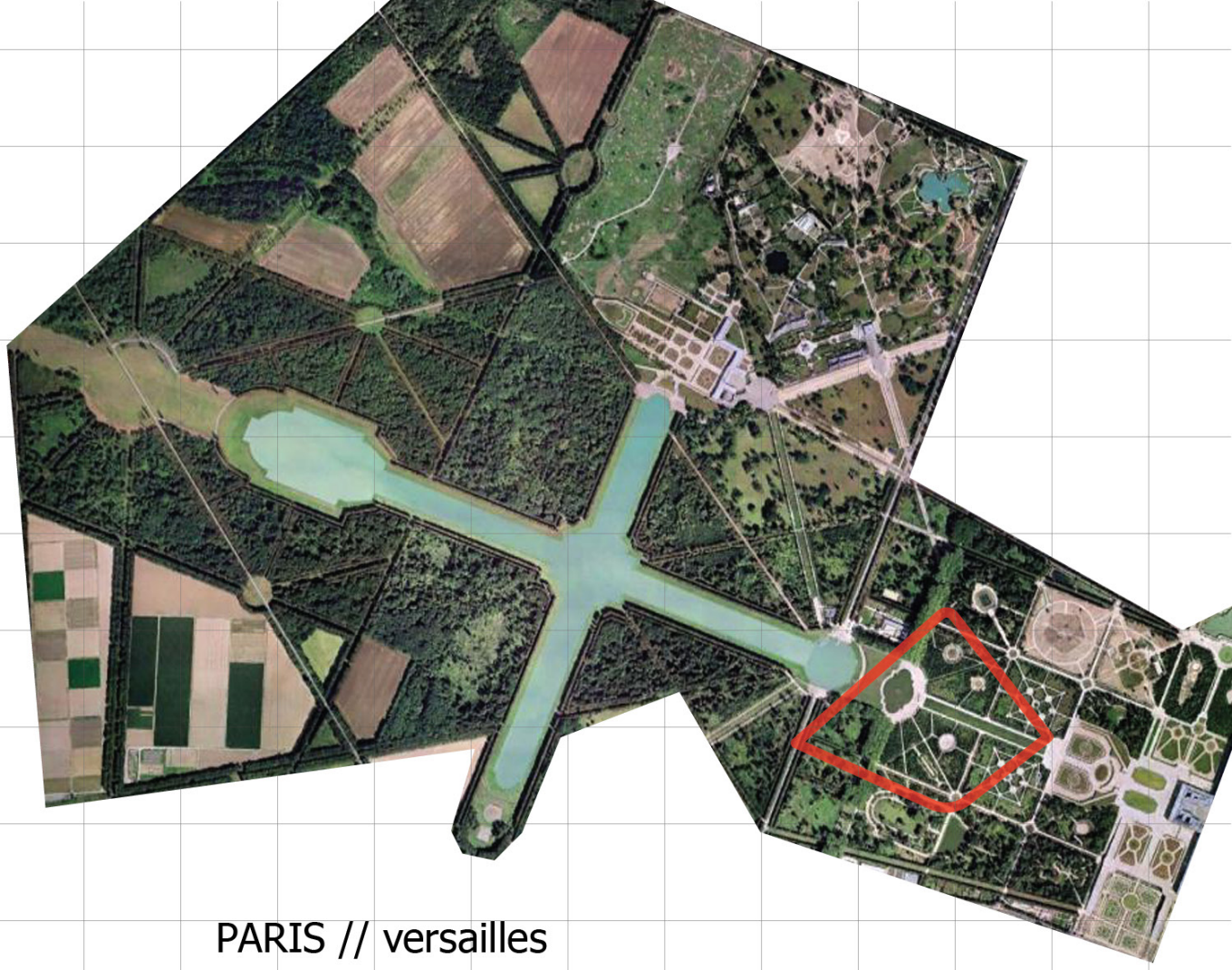
BARCELONA // Montjuïc





Amsterdam // Museumplein

PARIS // parc de la villette



PARIS // versailles

NEW YORK // central park



BARCELONA // Montjuïc



Disseminate scientific knowledge and scientific thinking among the general public.

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The delight of u

"Culture of

Journey of discovery.

Research and

Nature of science.

Techno

Scientific method.

Search for knowledge and the pursuit

Creating connections between separate col

Flexibility to absorb changes in museology or e

Egypt

Overlapping scientific domains.

Curiosity.

Open to new possibilities.

PRESENT

BA

Physical Sciences

Bibliotheca Alexandrina

PA

Promote science

Suppor
science
education and
researcl

PART 3

program

C

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understanding.

Science".

The search for truth.

Development.

joy of discovery

ology

Producers of knowledge.

of science.

Celebration of rationality.

lections of data or specimens.

xhibition.

Local and international network.

has been a world leader in scientific achievements.

Involve public in an exciting and entertaining manner.

FUTURE

Earth Sciences

GEM

AST

Grand
EgyptinanMuseum

for development

SITE AREA

SCIENCE PARK

OUTDOOR
GREEN AREA
56 000 m²

OUTDO
PEDES

PARKING 62 350 m²

1 900
VEHICLES

400
VEHICLES

SHADED AREA
51 500 m²

UNSHADED
AREA
10 850 m²

125 000 m²

70%

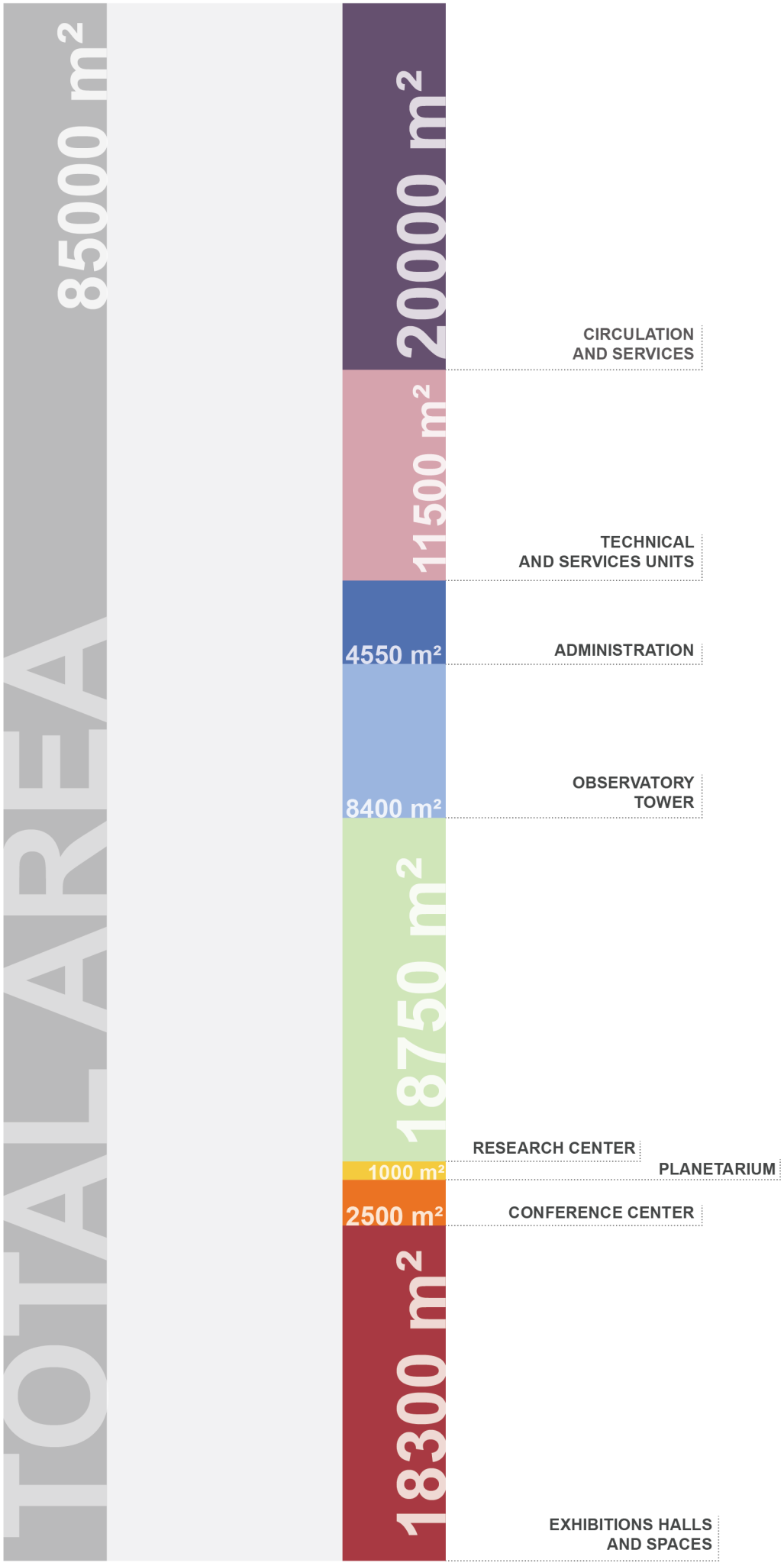
30%

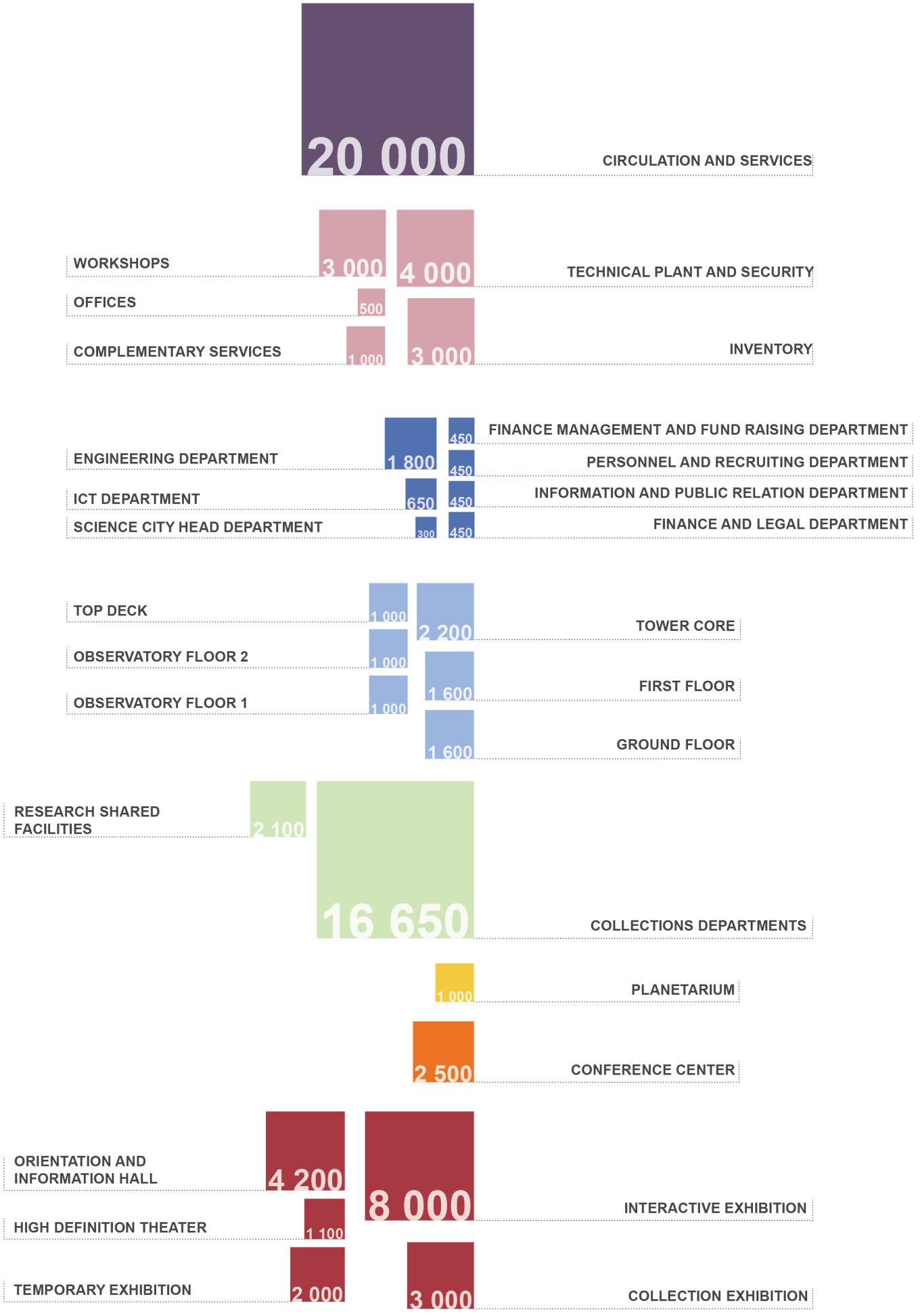
88 200 m²

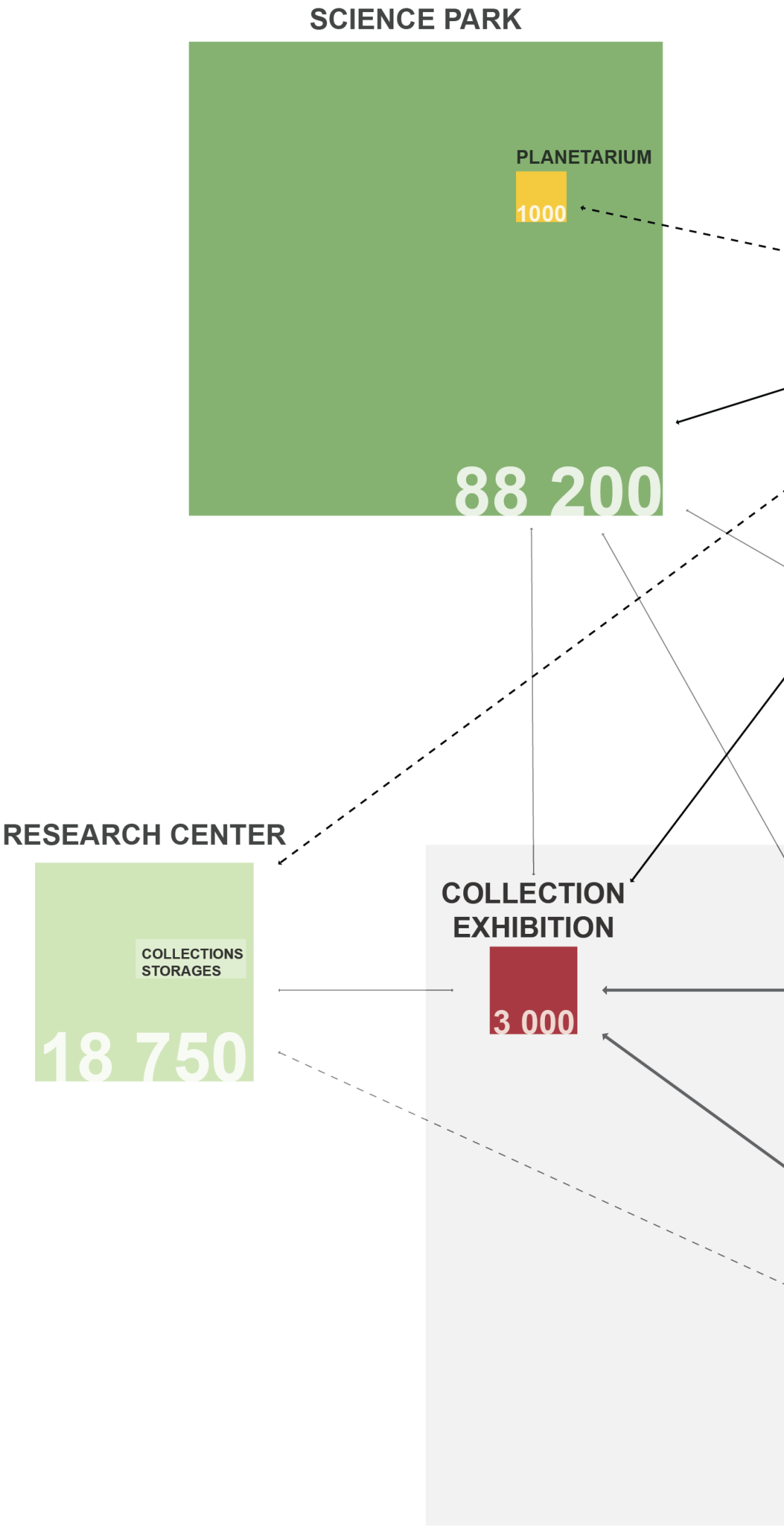
BUILDING AREA COVERAGE 36 800 m²

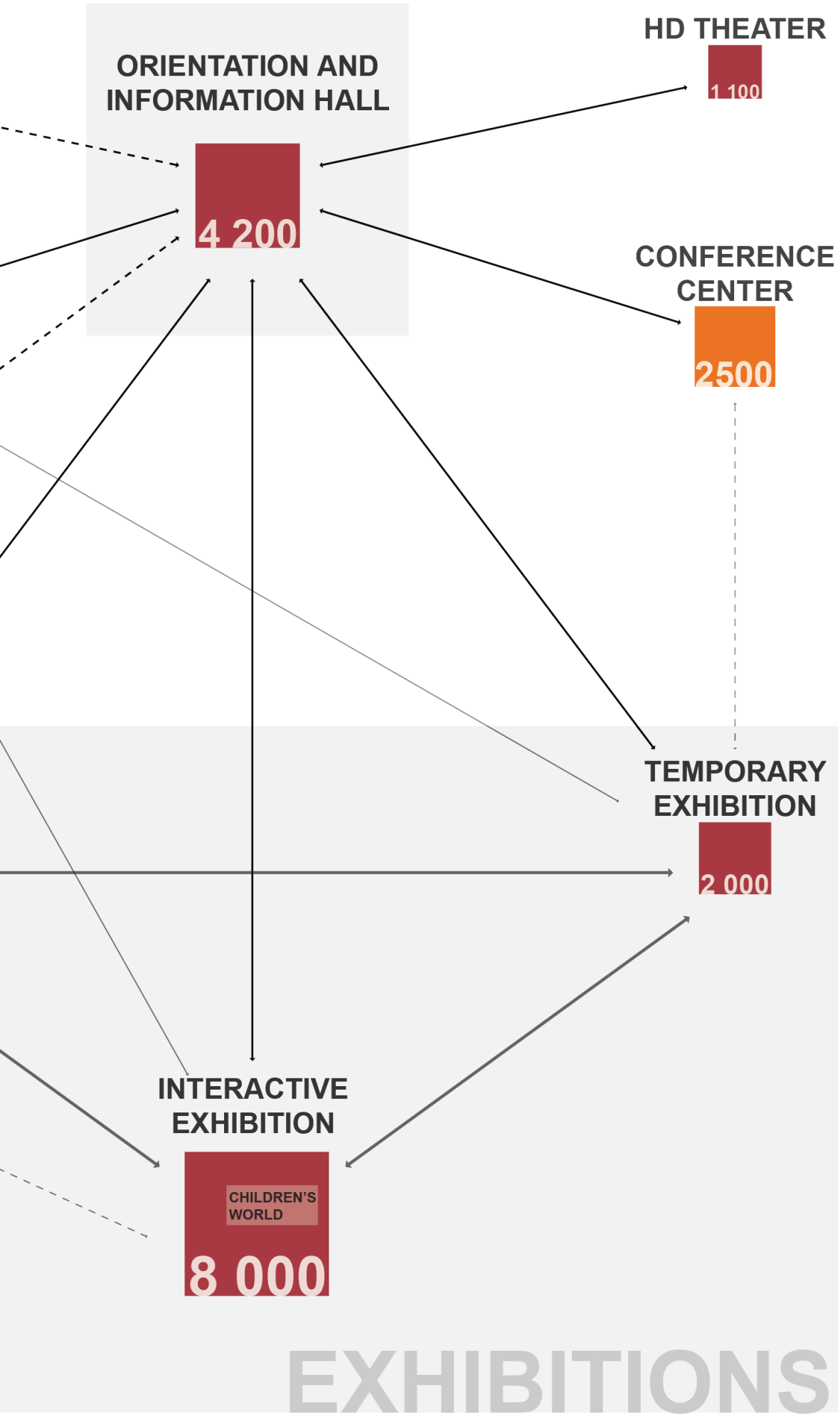
OOR CIRCULATIONS AND
TRIAN PATHS

32 200 m²


TOTAL AREA
85000 m²
20000 m²
CIRCULATION AND SERVICES
11500 m²
TECHNICAL AND SERVICES UNITS
4550 m²
ADMINISTRATION
8400 m²
OBSERVATORY TOWER
18750 m²
RESEARCH CENTER
1000 m²
PLANETARIUM
2500 m²
CONFERENCE CENTER
18300 m²
EXHIBITIONS HALLS AND SPACES


20 000
CIRCULATION AND SERVICES
WORKSHOPS
3 000
4 000
TECHNICAL PLANT AND SECURITY
OFFICES
500
COMPLEMENTARY SERVICES
1 000
3 000
INVENTORY
ENGINEERING DEPARTMENT
1 800
450
FINANCE MANAGEMENT AND FUND RAISING DEPARTMENT
450
PERSONNEL AND RECRUITING DEPARTMENT
ICT DEPARTMENT
650
450
INFORMATION AND PUBLIC RELATION DEPARTMENT
SCIENCE CITY HEAD DEPARTMENT
300
450
FINANCE AND LEGAL DEPARTMENT
TOP DECK
1 000
2 200
TOWER CORE
OBSERVATORY FLOOR 2
1 000
1 600
FIRST FLOOR
OBSERVATORY FLOOR 1
1 000
1 600
GROUND FLOOR
RESEARCH SHARED FACILITIES
2 100
16 650
COLLECTIONS DEPARTMENTS
1 000
PLANETARIUM
2 500
CONFERENCE CENTER
ORIENTATION AND INFORMATION HALL
4 200
8 000
INTERACTIVE EXHIBITION
HIGH DEFINITION THEATER
1 100
TEMPORARY EXHIBITION
2 000
3 000
COLLECTION EXHIBITION


SCIENCE PARK
PLANETARIUM
1000
88 200
RESEARCH CENTER
COLLECTIONS
STORAGES
18 750
COLLECTION
EXHIBITION
3 000


ORIENTATION AND INFORMATION HALL
4 200
HD THEATER
1 100
CONFERENCE CENTER
2500
TEMPORARY EXHIBITION
2 000
INTERACTIVE EXHIBITION
CHILDREN'S WORLD
8 000
EXHIBITIONS

ADMINISTRATION

SCIENCE CITY
HEAD DEPARTMENT
300

ENGINEERING 1 800
ICT DEPARTMENT 650

DEVELOPMENT AND FUND RAISING 450
PERSONNEL AND RECRUITING 450
INFORMATION AND PUBLIC RELATION 450
FINANCE 450

CENTRAL ADMINISTRATION

EXHIBITION HALLS AND SPACES
OBSERVATORY TOWER
RESEARCH CENTER
PLANETARIUM
SCIENCE PARK
TECHNICAL AND SERVICE UNITS

SATELITE ADMINISTRATION UNITS

EXHIBITIONS HALLS AND SPACES

ORIENTATION AND INFORMATION HALL 4 200
- EXHIBITION HALL
- POST OFFICE
- RESTAURANT
- MEDICAL CENTER
- CYBER CAFÉS
- BANKS
- SHOPS
- PRAYERS AREA

COLLECTION EXHIBITION 3 000
8 COLLECTIONS:
- GEOLOGY
- PALEONTOLOGY
- NATURAL HISTORY
- ANTHROPOLOGY
- PLANTS
- ???
- ANIMALS
- ???

INTERACTIVE EXHIBITION 8 000

TEMPORARY EXHIBITION 2 000

HIGH DEINITION THEATER 1 100

CONFERENCE CENTER

CONFERENCE CENTER 2500
- AUDITORIUM (500 PERSONS)
- 2 x LECTURE HALL (150 PERSONS EACH)
- MULTIPURPOSE HALL (150 PERSONS)
  - CAN BE DIVIDED INTO 2 OR 3 HALLS
- 4 x MEETING ROOM (50 PERSONS EACH)

PLANETARIUM

PLANETARIUM 1 000

TECHNICAL AND SERVICES UNITS

INVENTORY 3 000
- STATIONARY STORAGE
- EXHIBIT STORAGE
- WORKSHOP STORAGE
- OTHER STORAGES

WORKSHOPS 3 000
- WORKSHOPS FOR THE INSTALLATION AND MAINTENANCE OF EXHIBITS

COMPLEMENTARY SERVICES 1 000
- LOADING / UNLOADING BAY
- DOCK
- SECURITY
- CRATING SERVICES
- WORKER'S SERVICES
- OFFICES

CRATING/ UNCRATING AREA
- ← RECEIVING OFFICE
- ← CRATE WORKSHOP
- CRATE STORAGE

TECHNICAL PLANT AND SECURITY 4 000
- TECHNOLOGICALLY ADVANCED MECHANICAL SYSTEMS
  - TECHNICAL SYSTEMS
  - SECURITY
  - FIRE AND SAFETY CONTROL AND MANAGEMENT

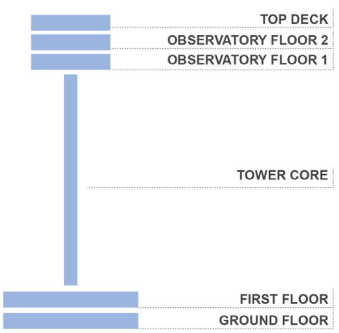
OFFICES 500

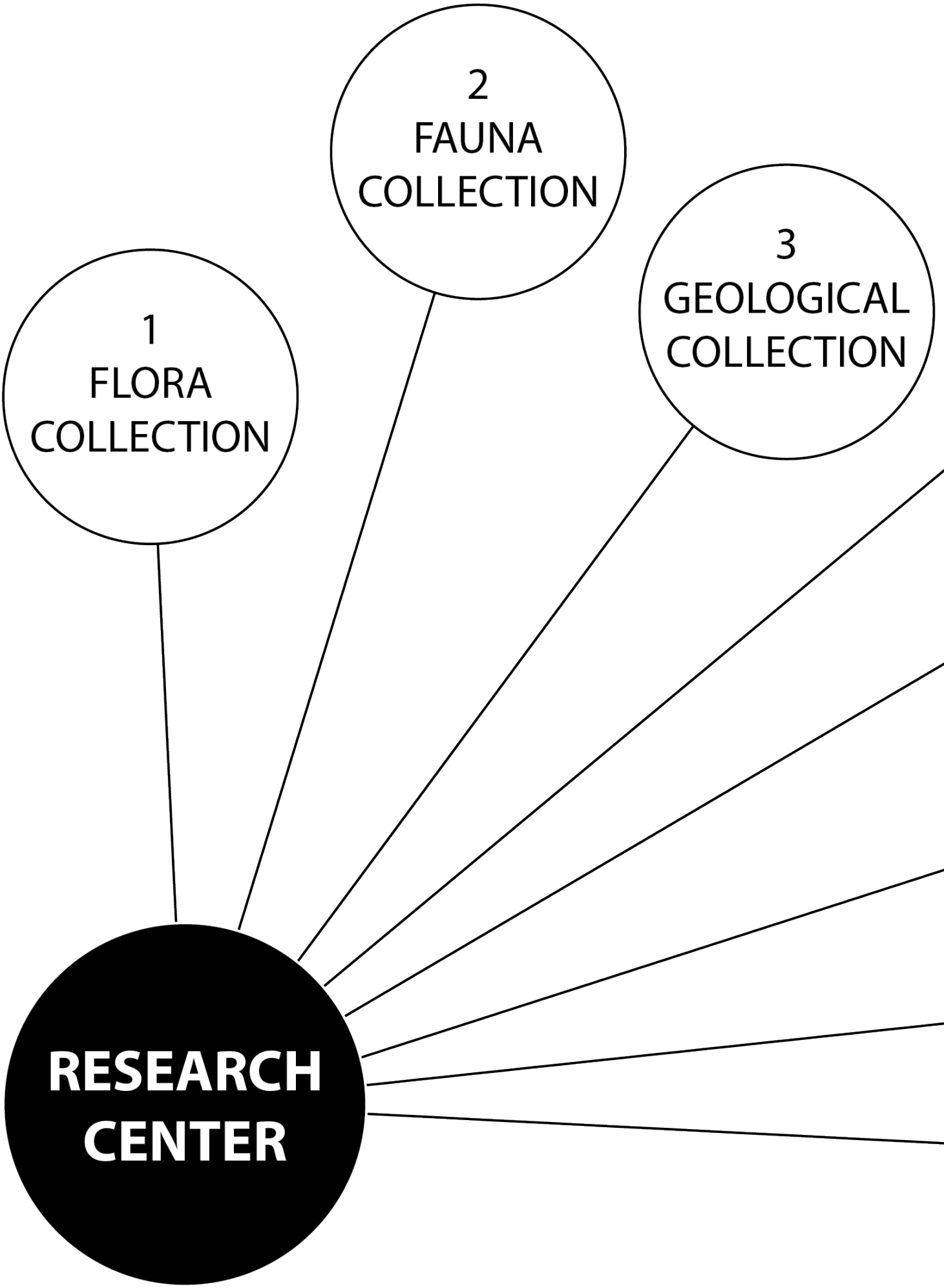
EXHIBITIONS HALLS AND SPACES

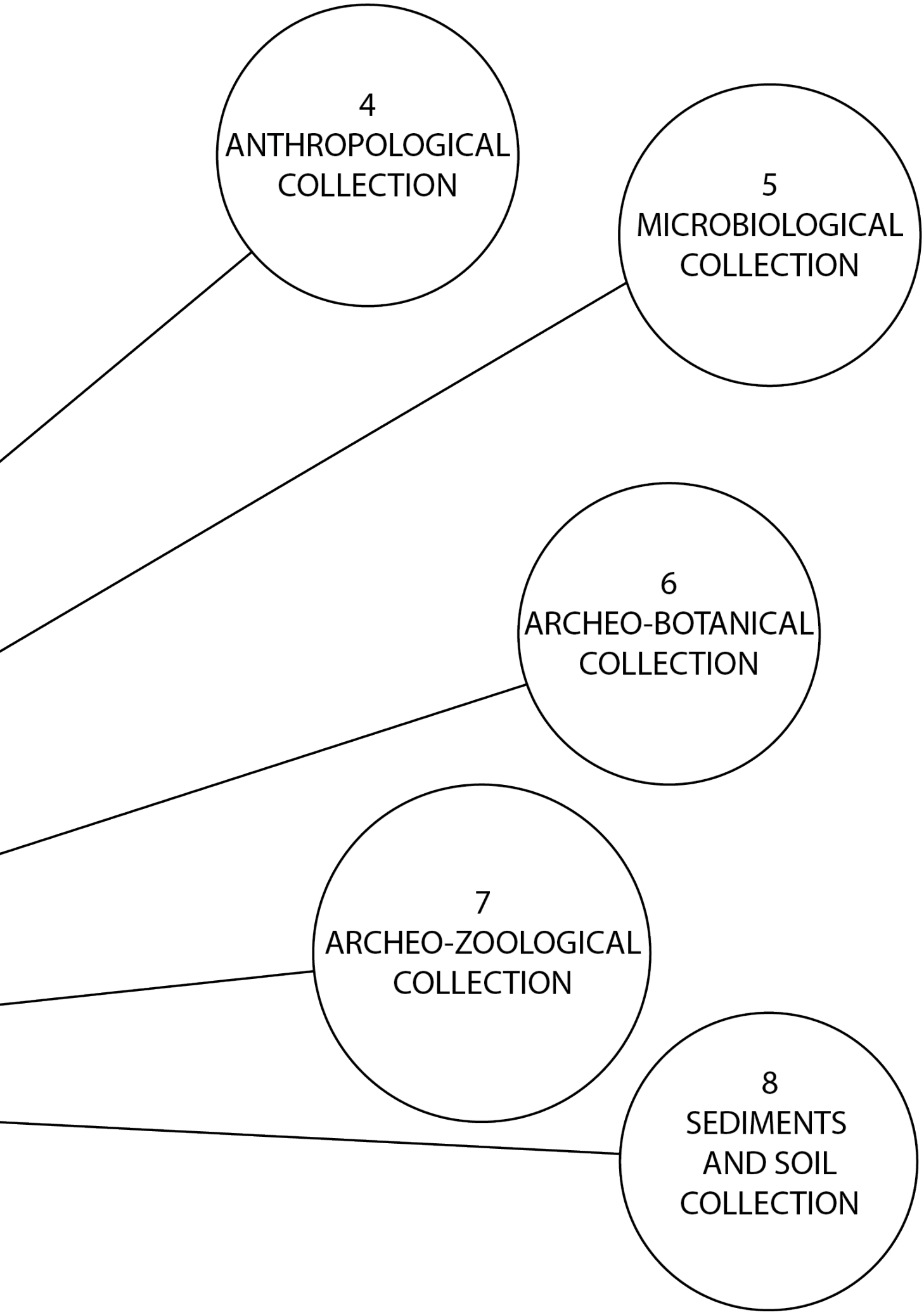
COLLECTIONS DEPARTMENTS 16 650
- 8 DEPARTMENTS (~2000M2 EACH)
  - 8 X
    - CURATORS' OFFICES
      - IDENTIFYING ?
      - ACQUIRING ?
      - DESCRIBING ?
      - CATALOGING ?
      - ANALYZING ?
      - RESEARCHING ?
    - STORAGE AREA

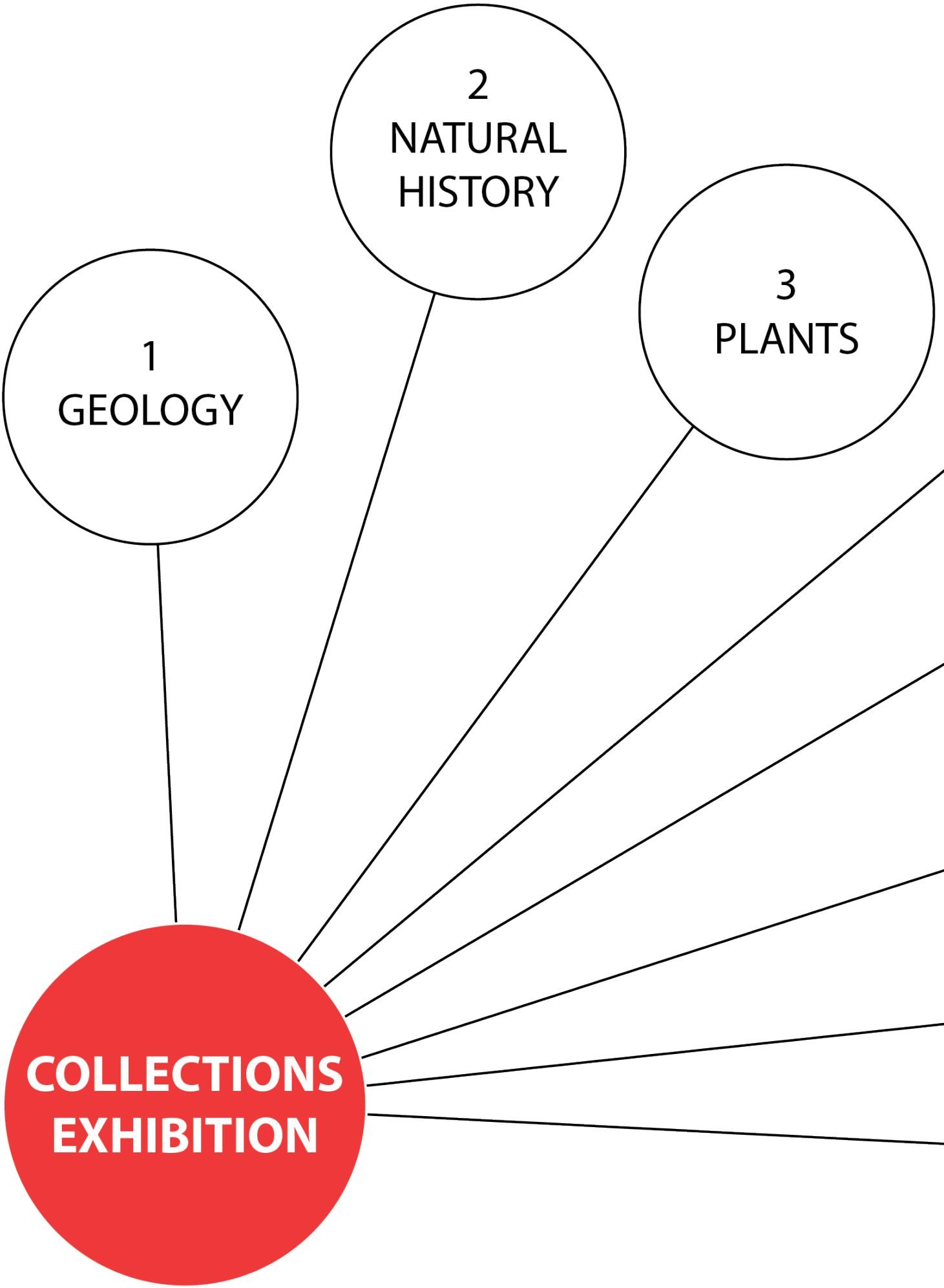
RESEARCH SHARED FACILITIES 2 100

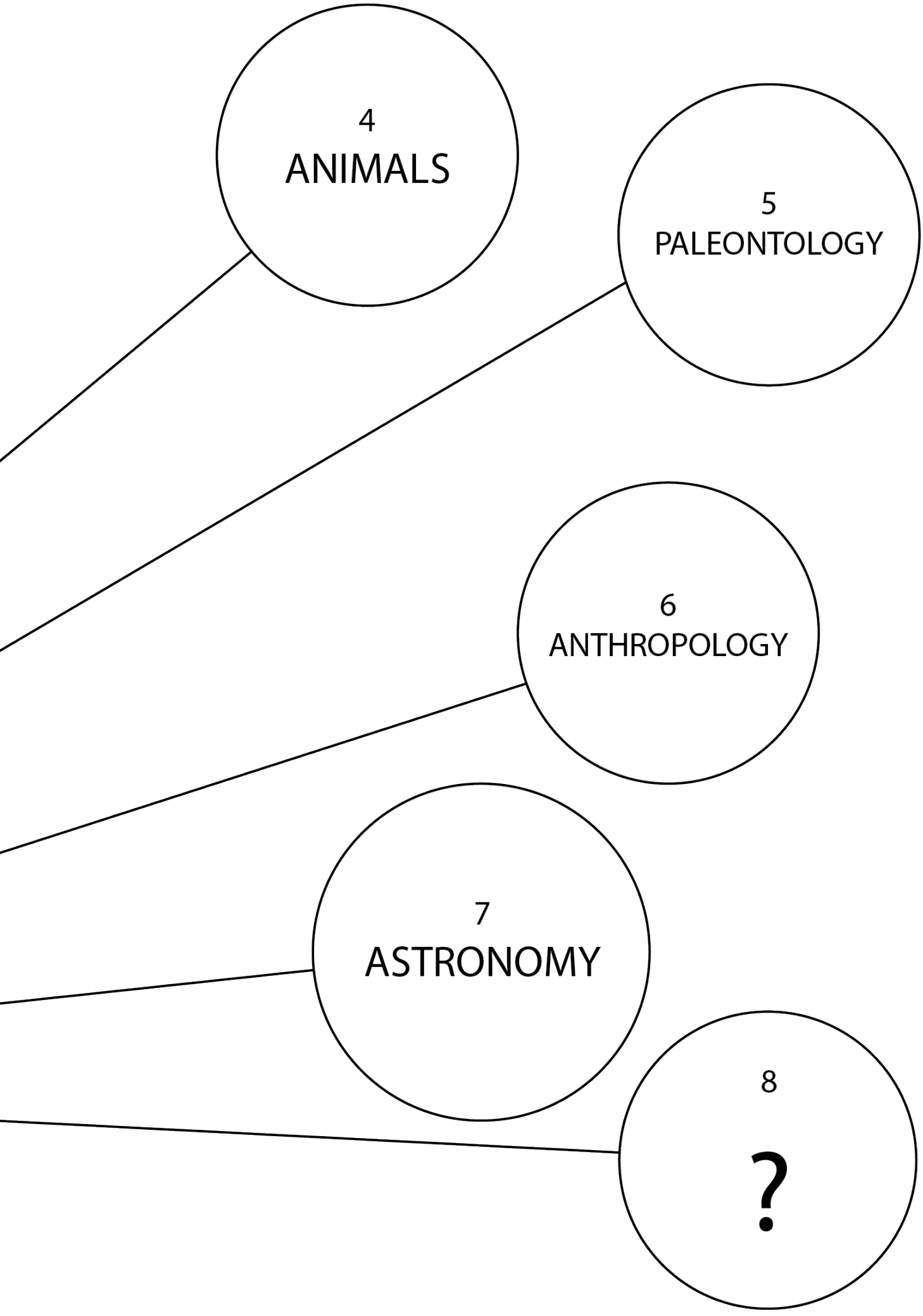
OBSERVATORY TOWER 8 400
- GF / 1st FLOOR
  - RECEPTION AREA
  - INFORMATION DESK
  - ADMINISTRATION
  - MEDIA ROOM
- TOP FLOORS
  - OBSERVATORY
  - SERVICES
  - OPEN DECK / VIEW AREA

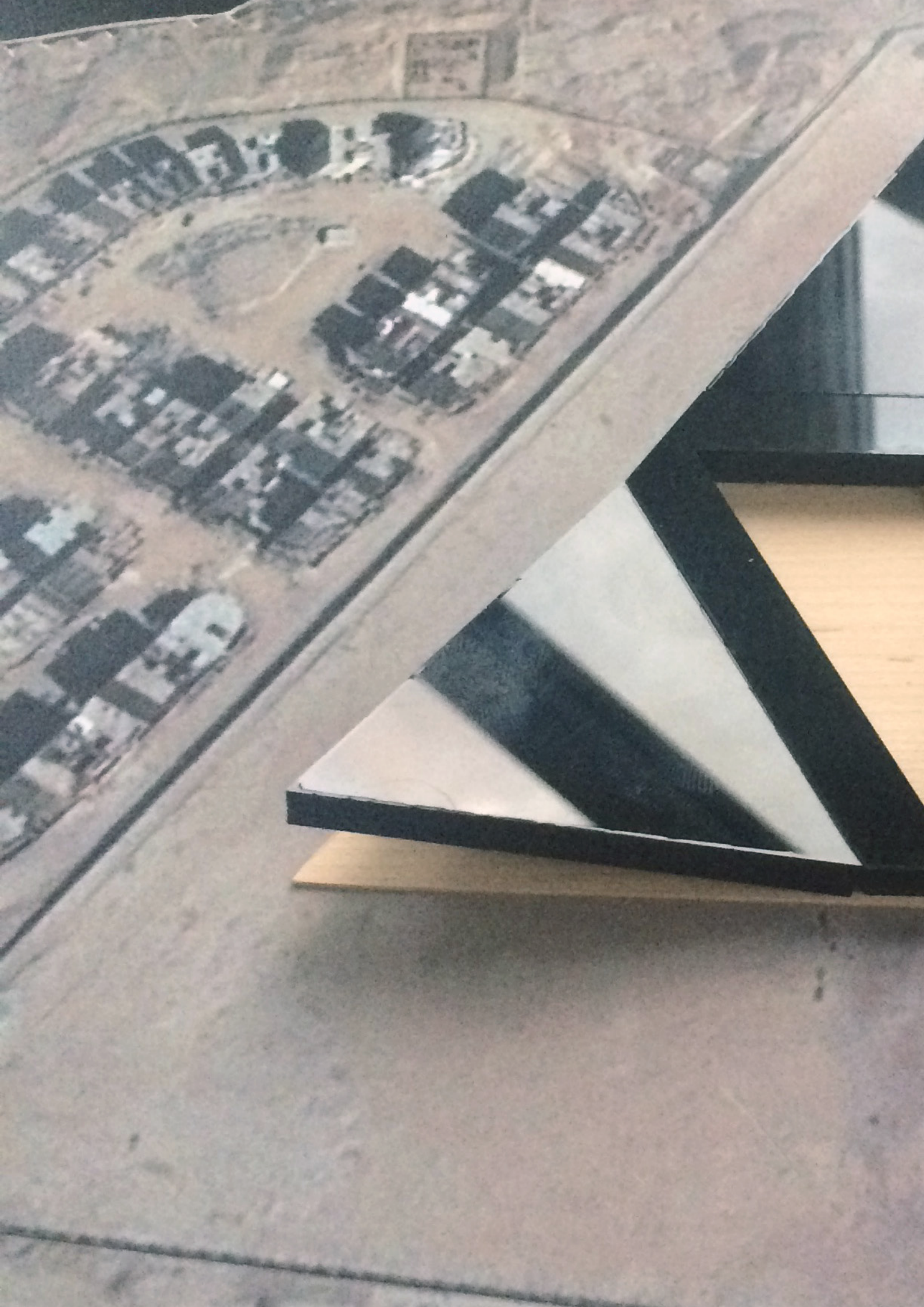


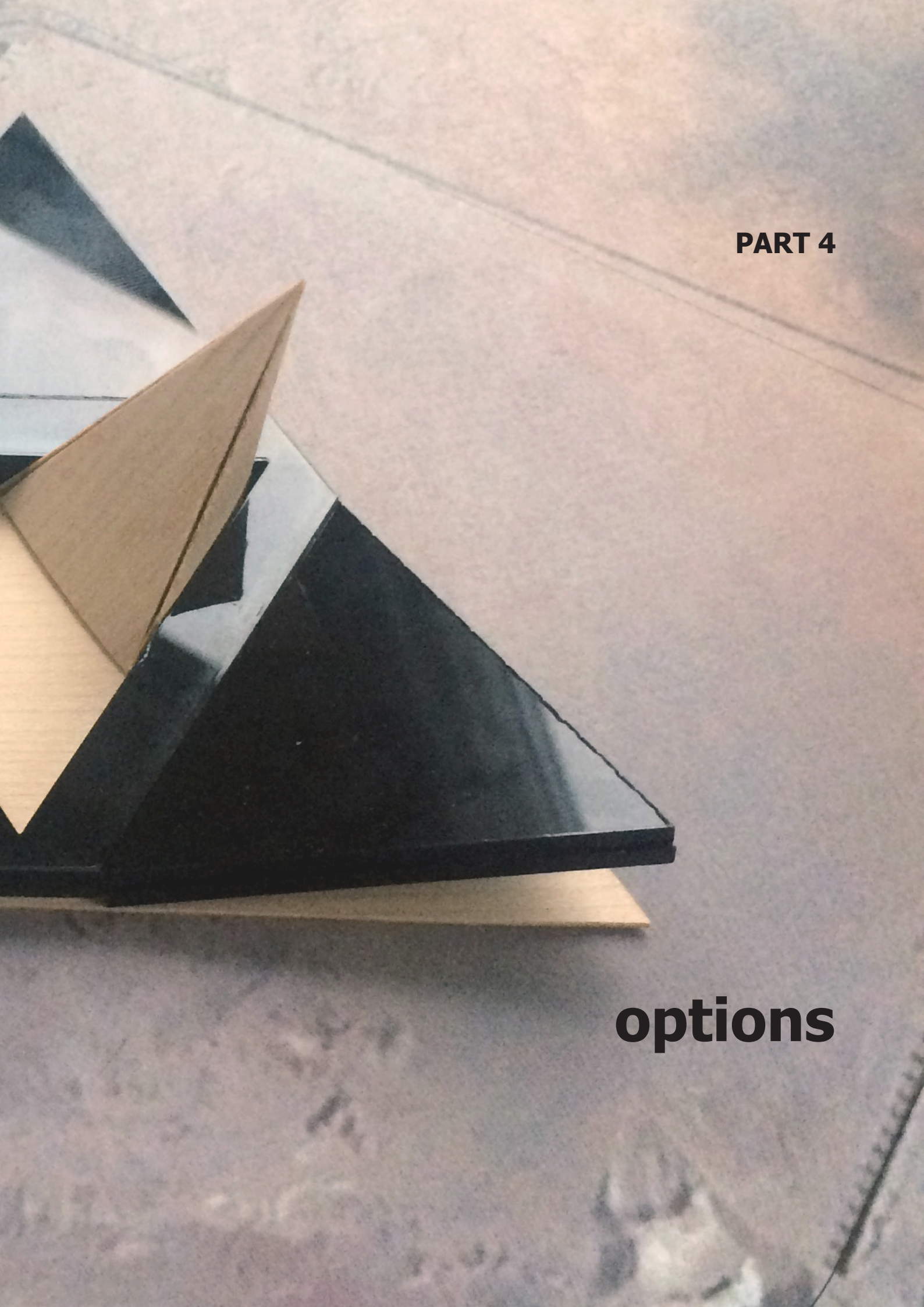

2
FAUNA
COLLECTION
3
GEOLOGICAL
COLLECTION
1
FLORA
COLLECTION
RESEARCH
CENTER


4
ANTHROPOLOGICAL
COLLECTION
5
MICROBIOLOGICAL
COLLECTION
6
ARCHEO-BOTANICAL
COLLECTION
7
ARCHEO-ZOOLOGICAL
COLLECTION
8
SEDIMENTS
AND SOIL
COLLECTION


1
GEOLOGY
2
NATURAL
HISTORY
3
PLANTS
COLLECTIONS
EXHIBITION

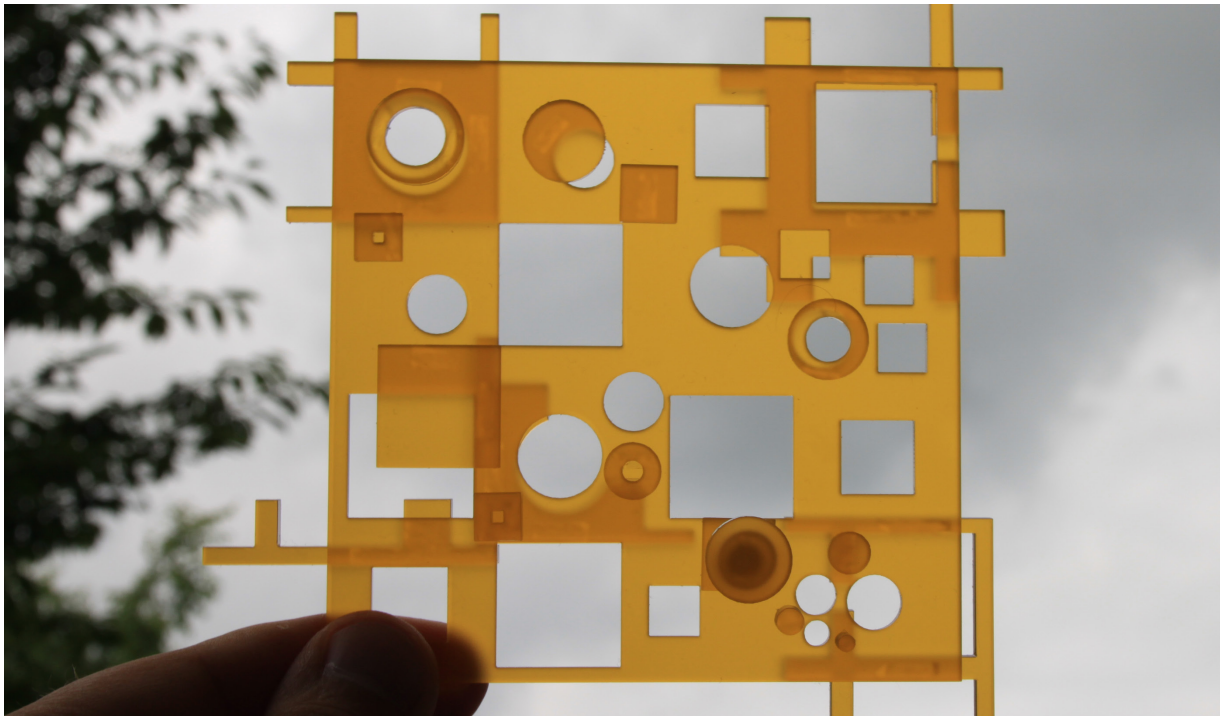

4
ANIMALS
5
PALEONTOLOGY
6
ANTHROPOLOGY
7
ASTRONOMY
8
?

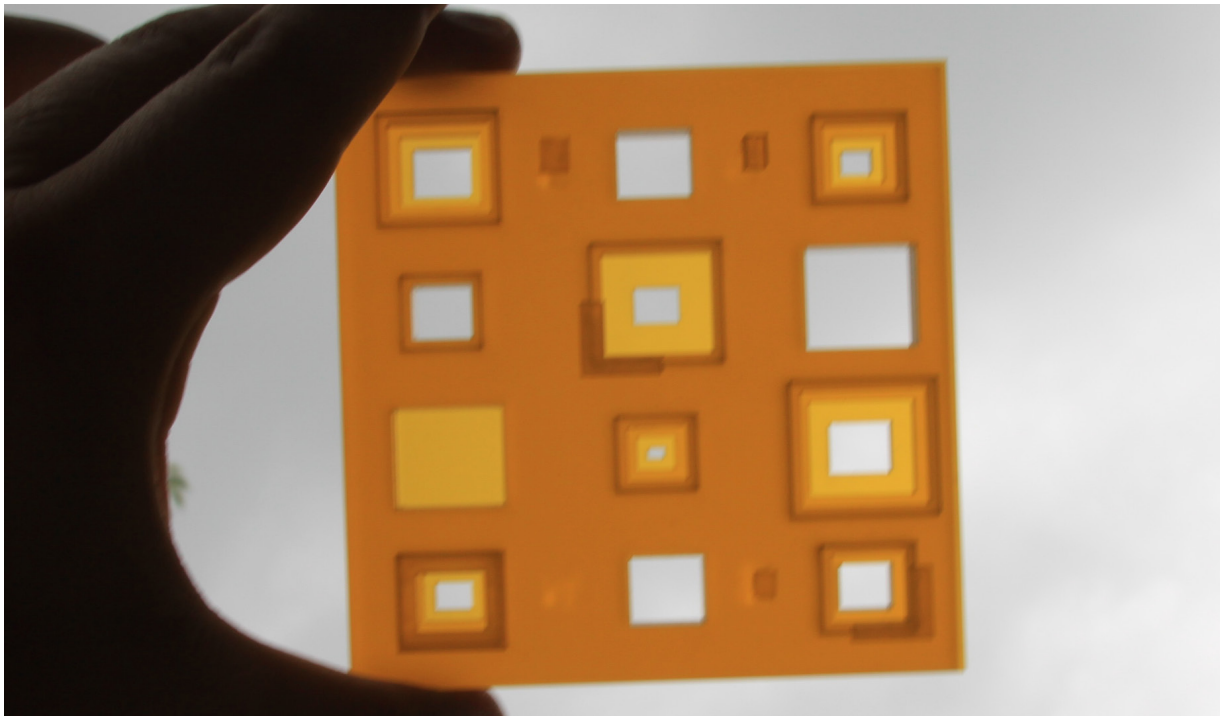


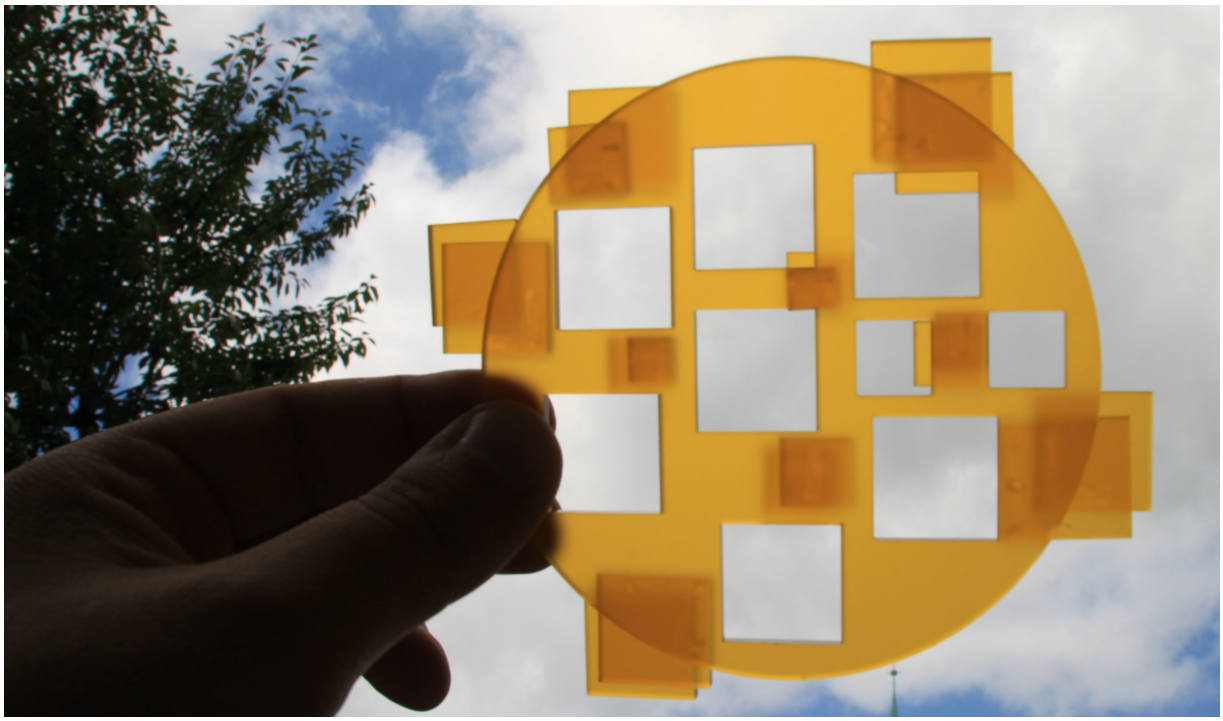


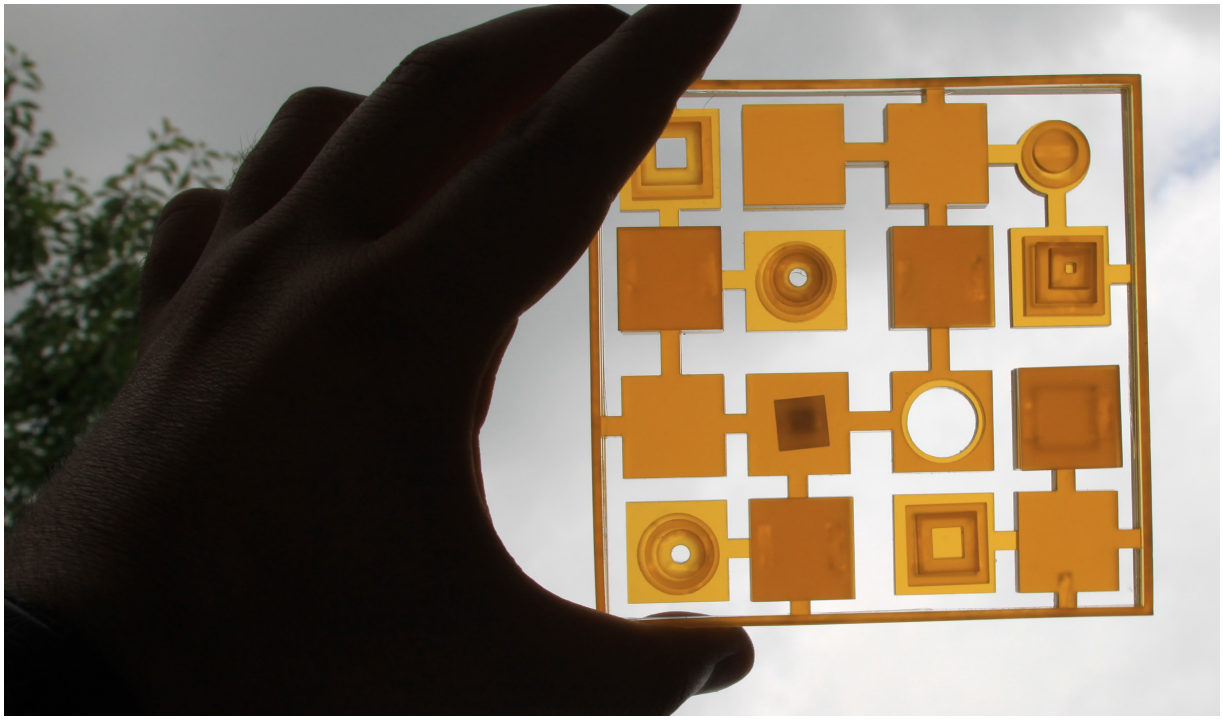
PART 4

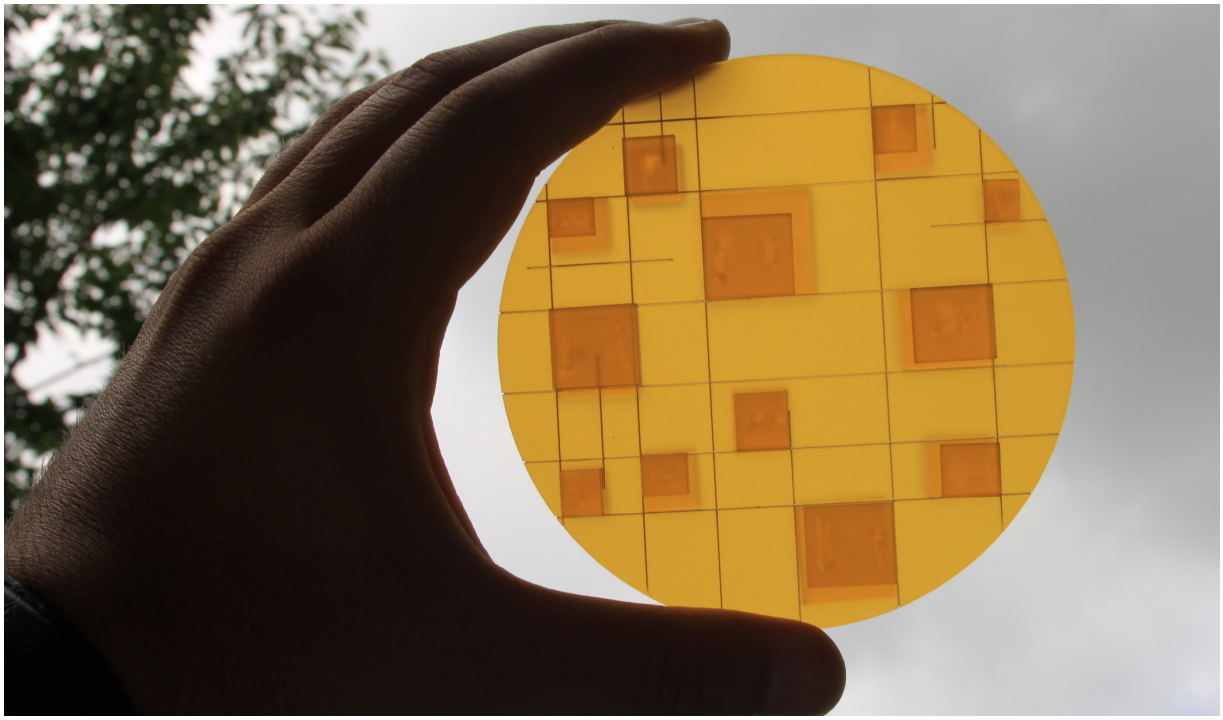
options

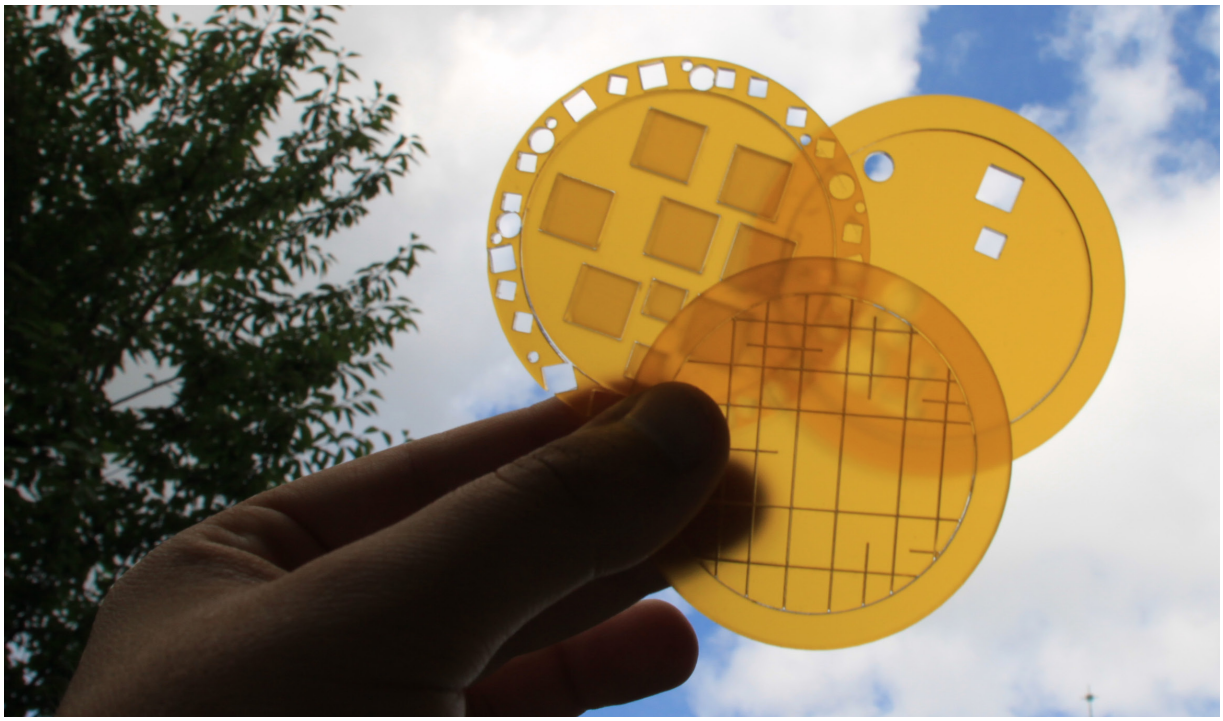


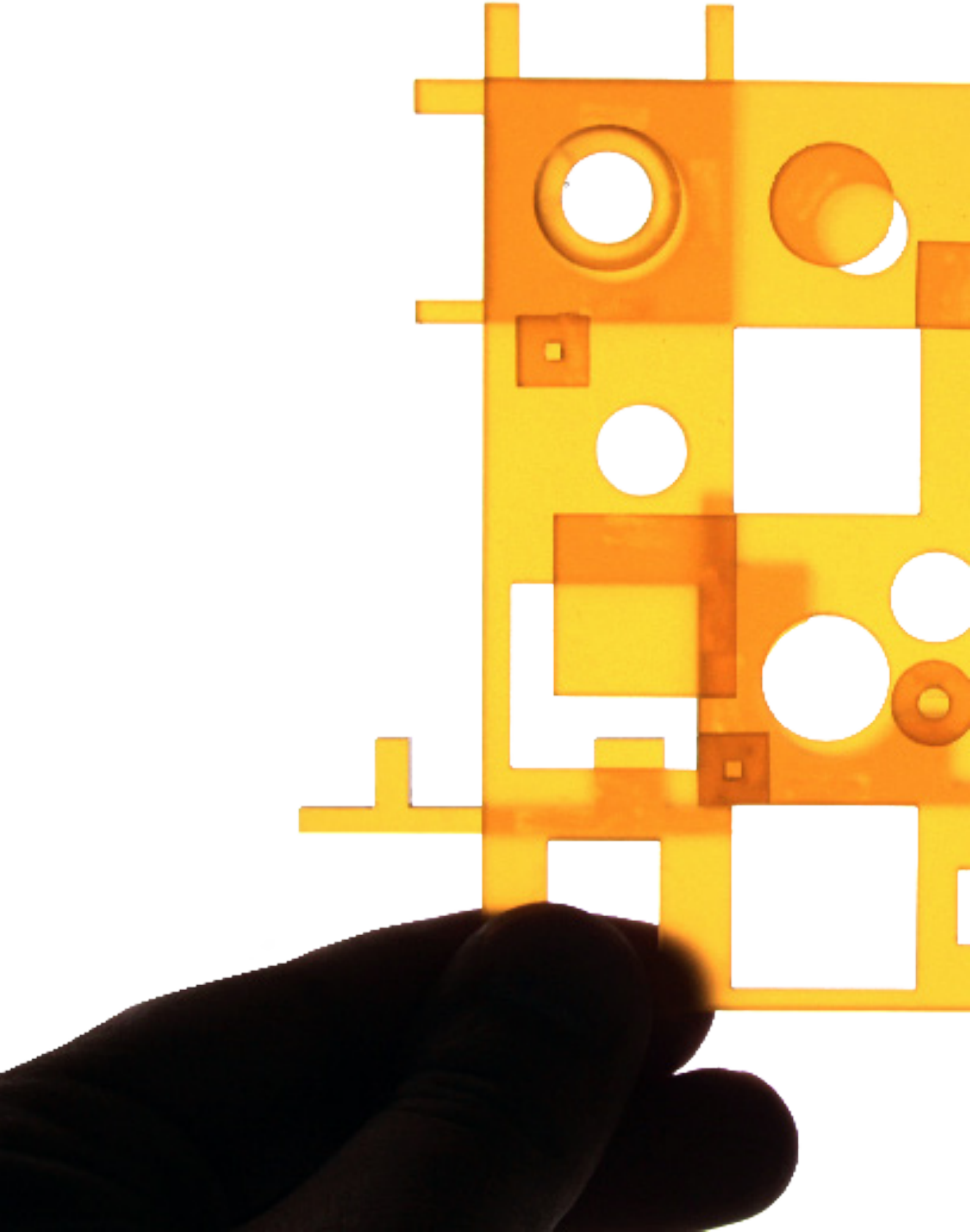


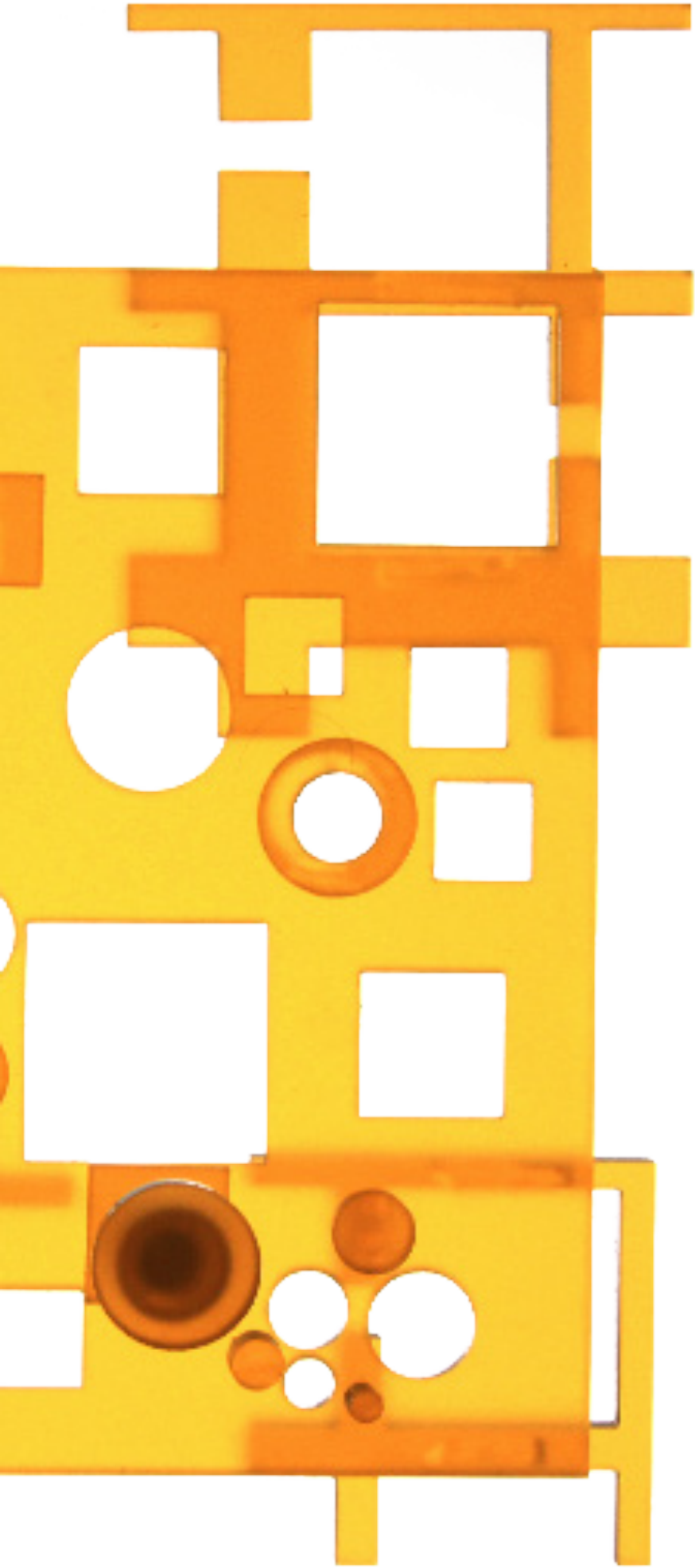


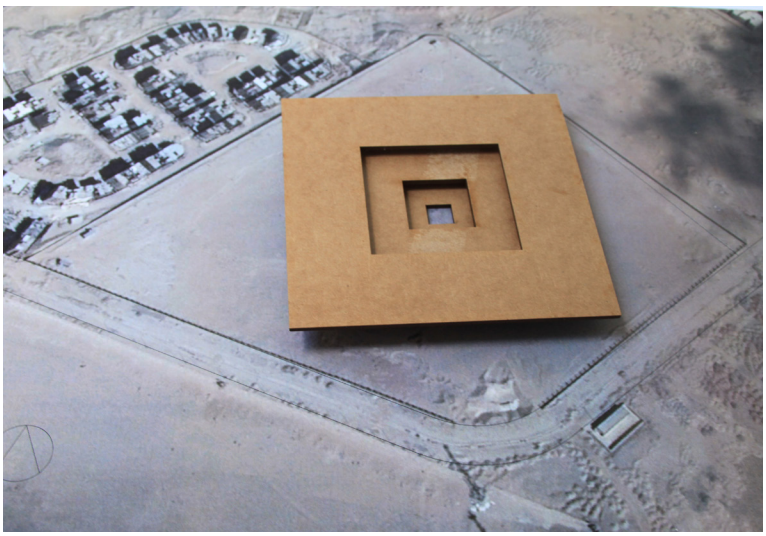


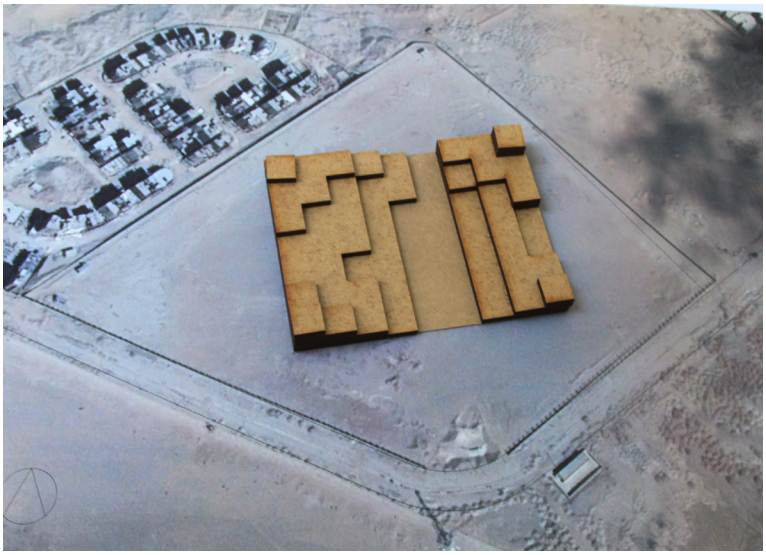


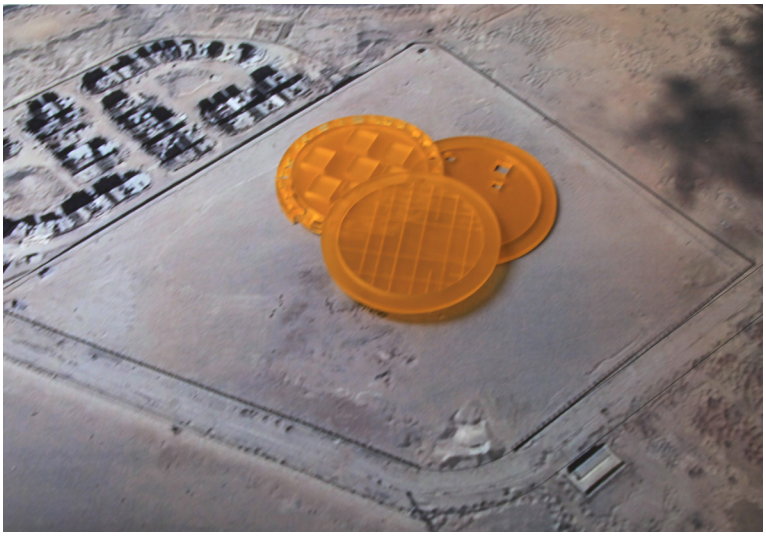
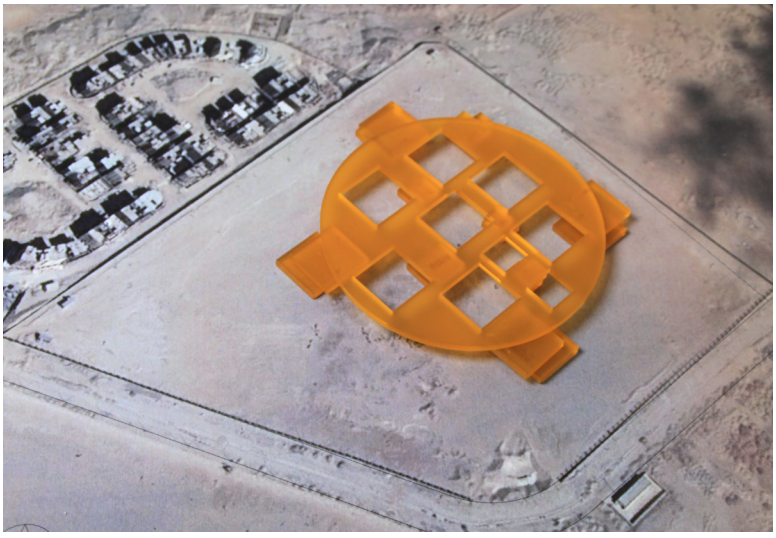
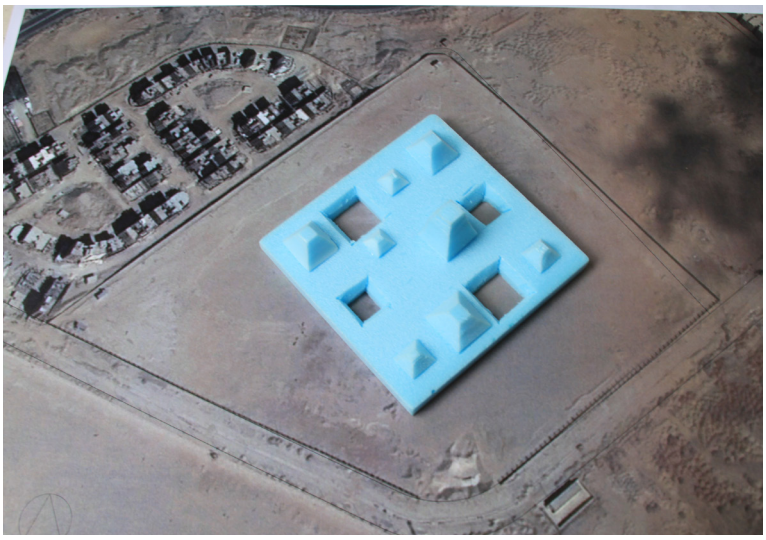
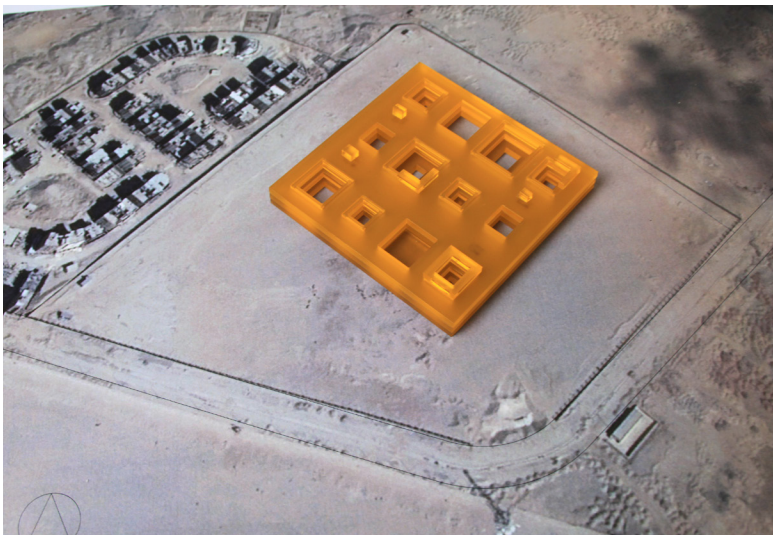


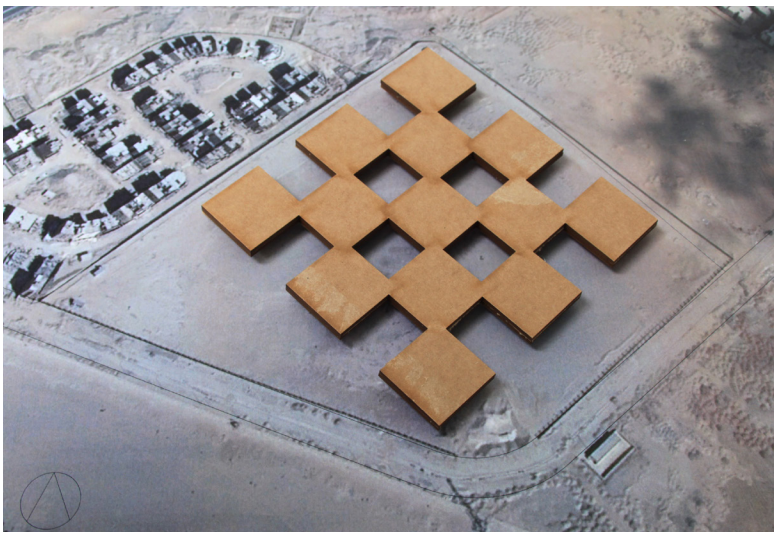
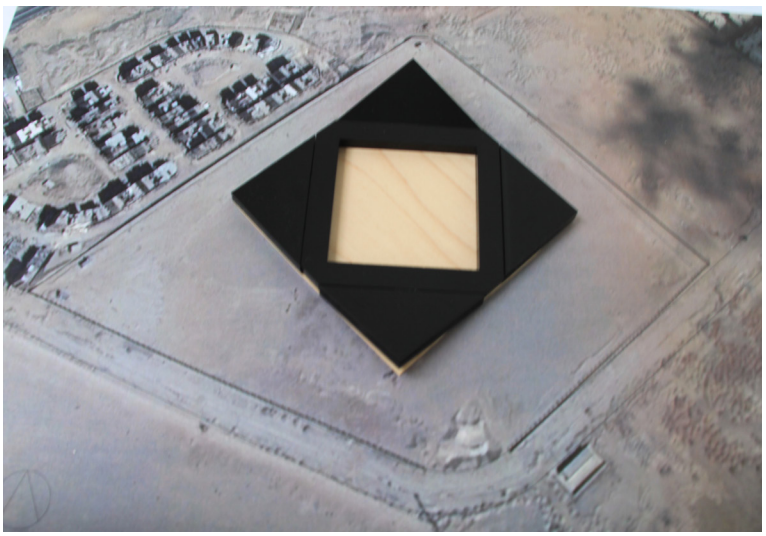
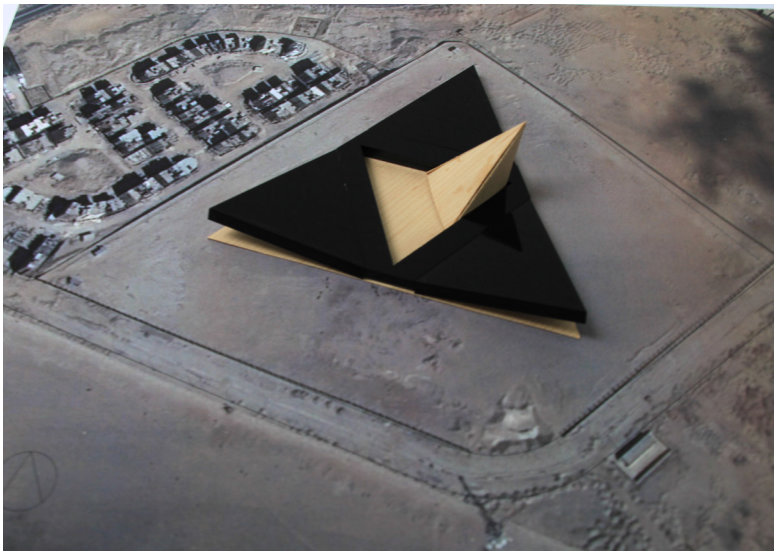
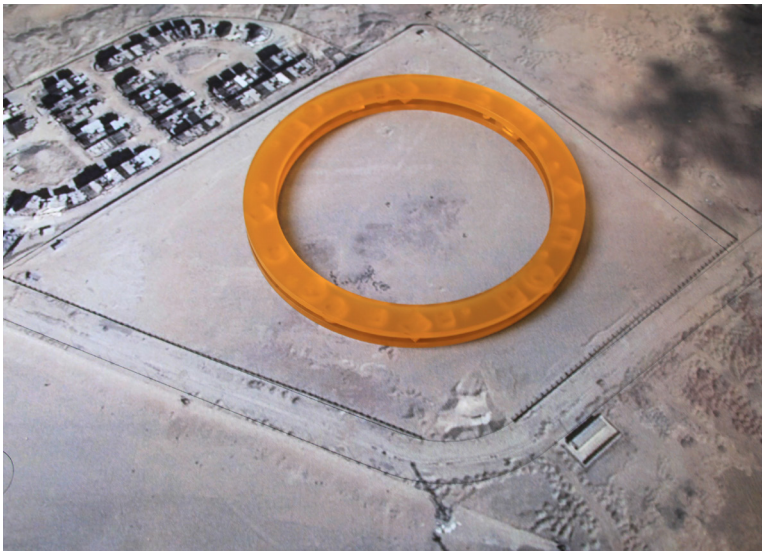
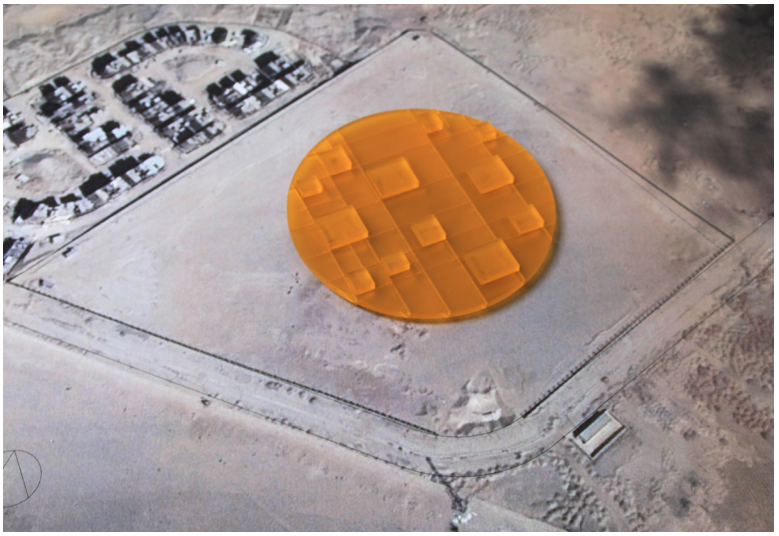


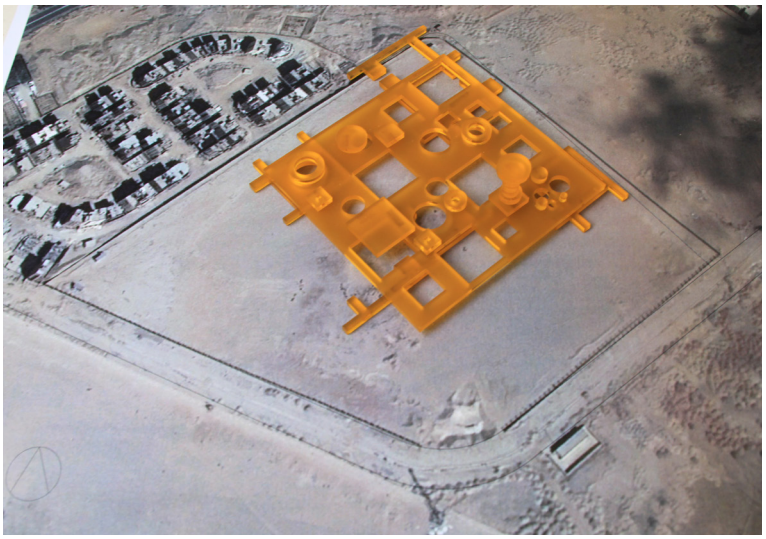






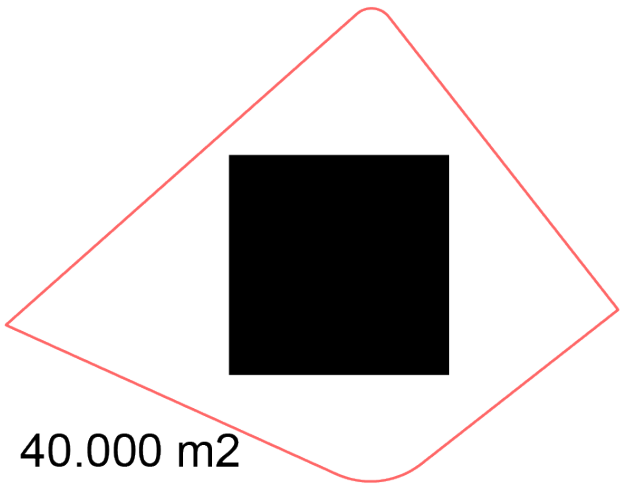





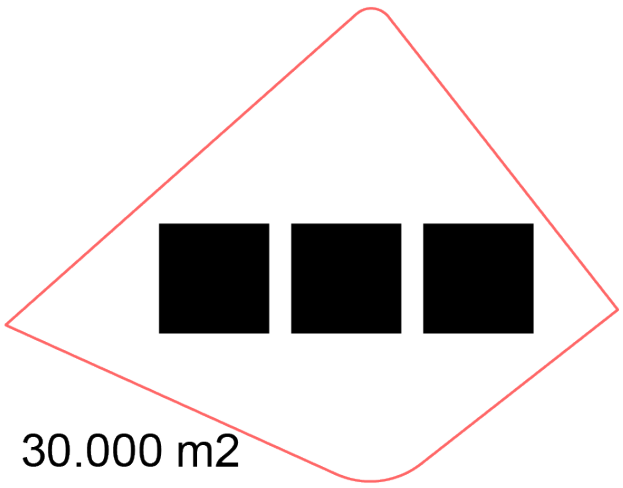




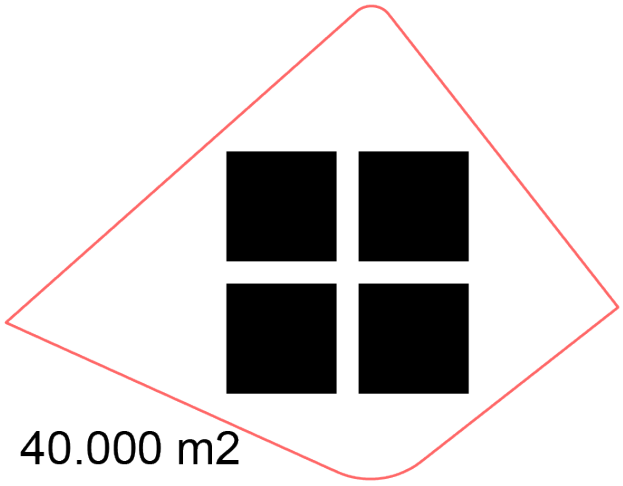


40.000 m2



30.000 m2



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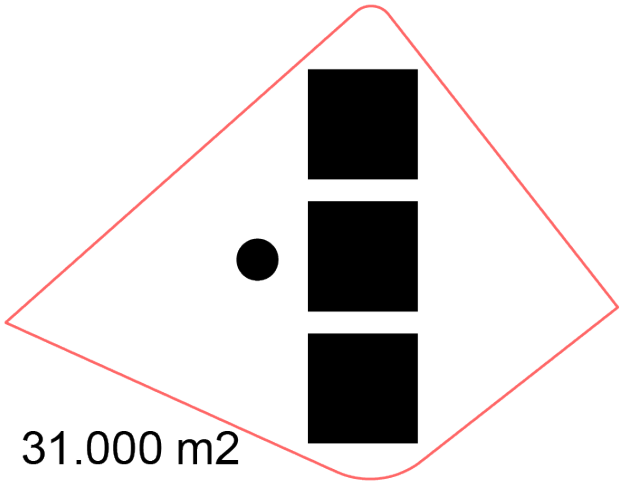

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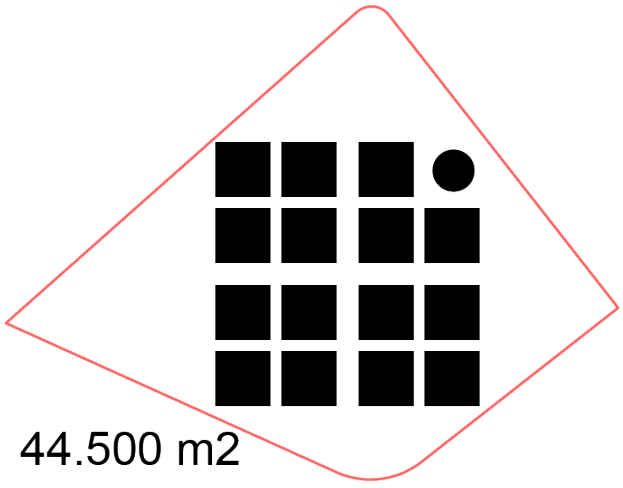
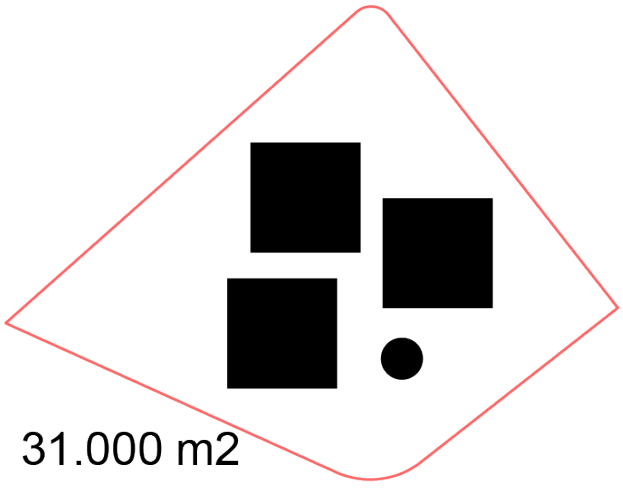


44.500 m2



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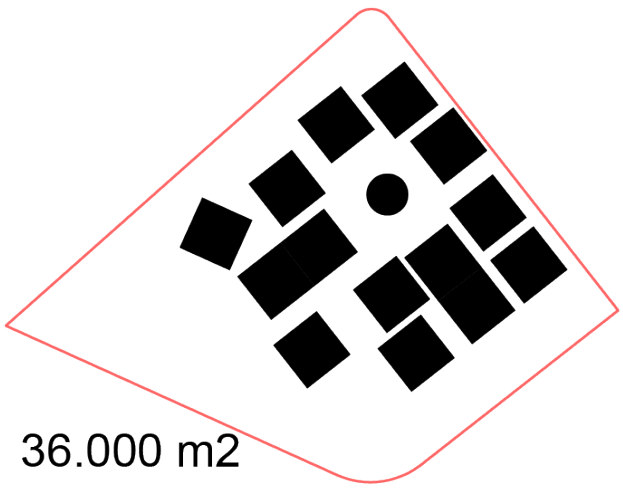

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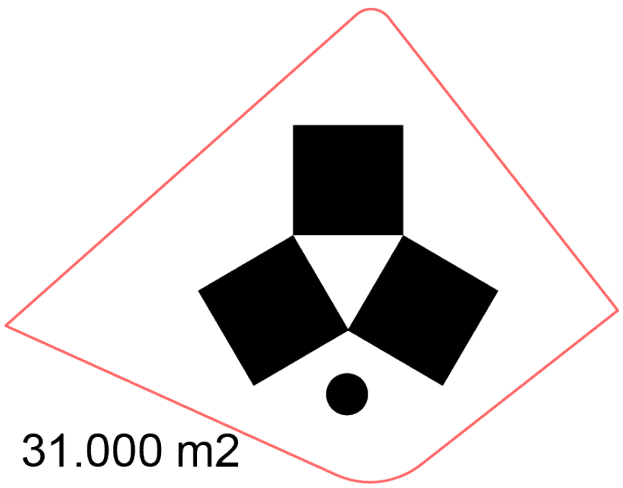

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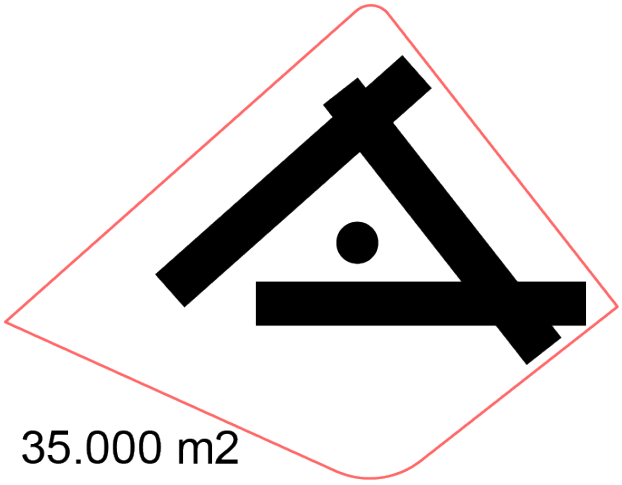

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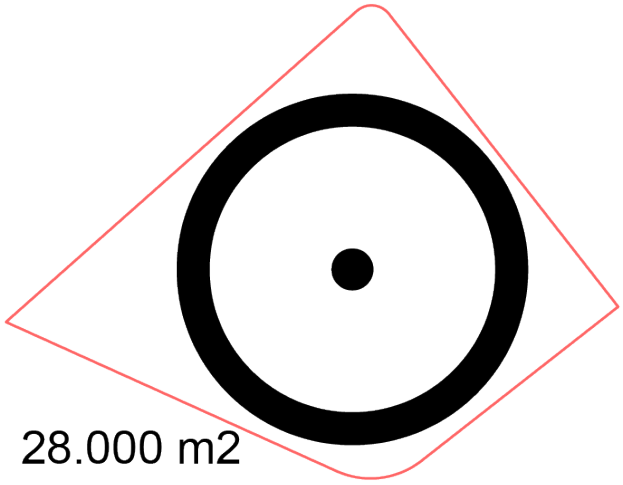
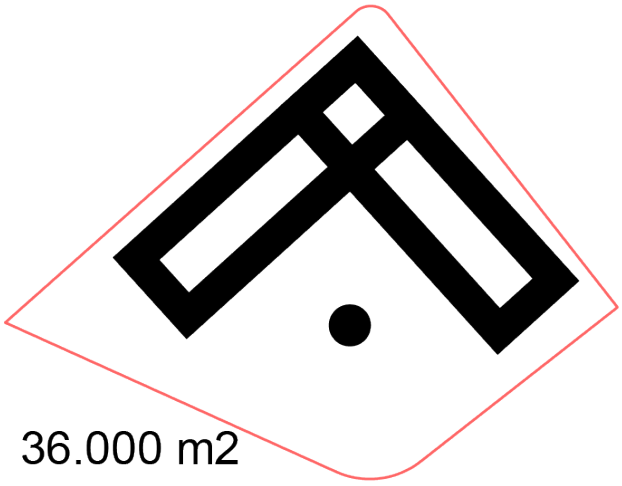
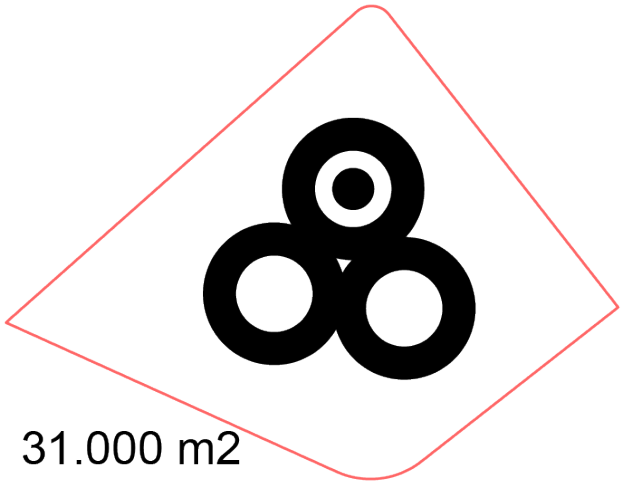


28.000 m2



36.000 m2



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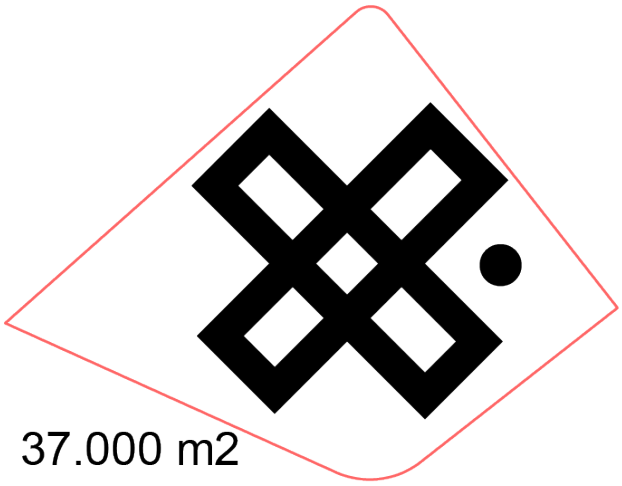
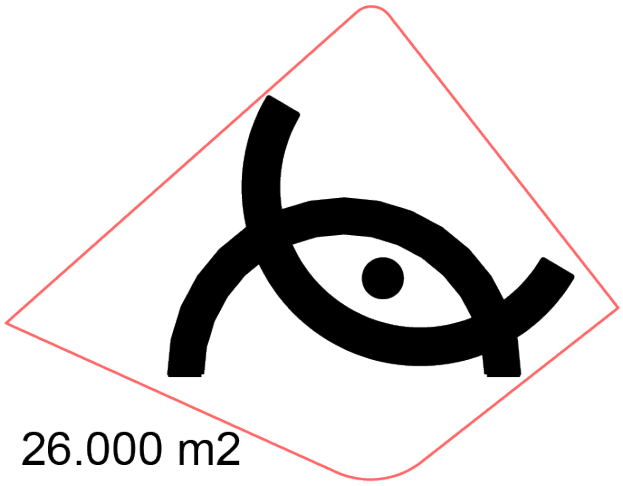
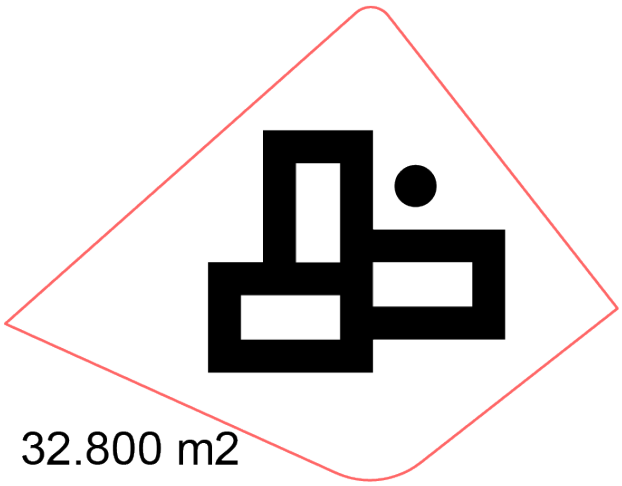


37.000 m2

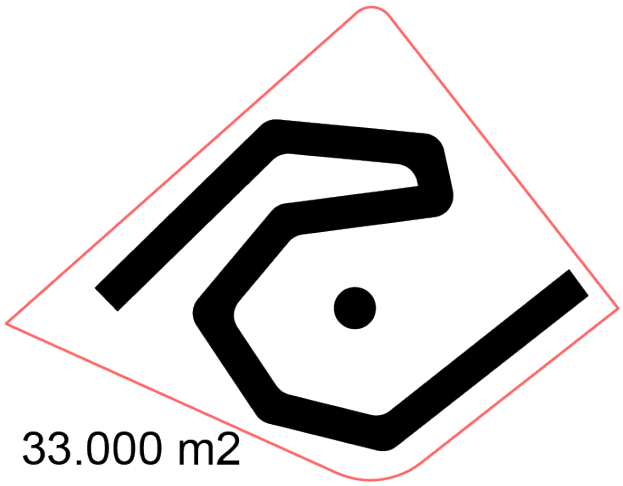


26.000 m2

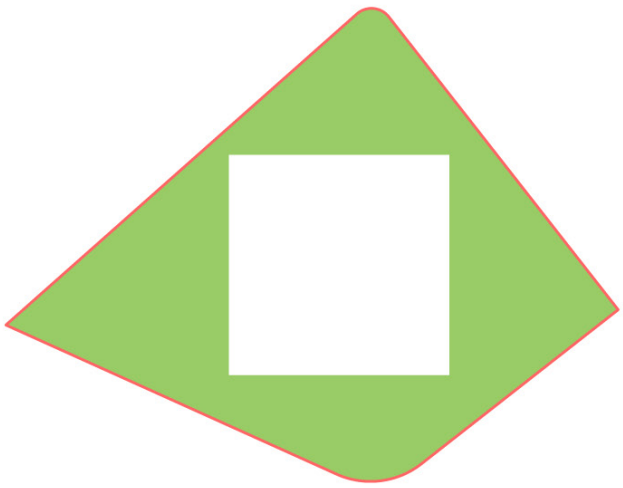
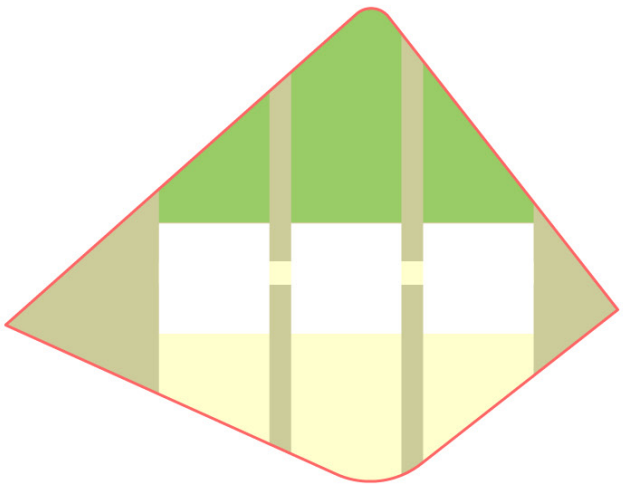
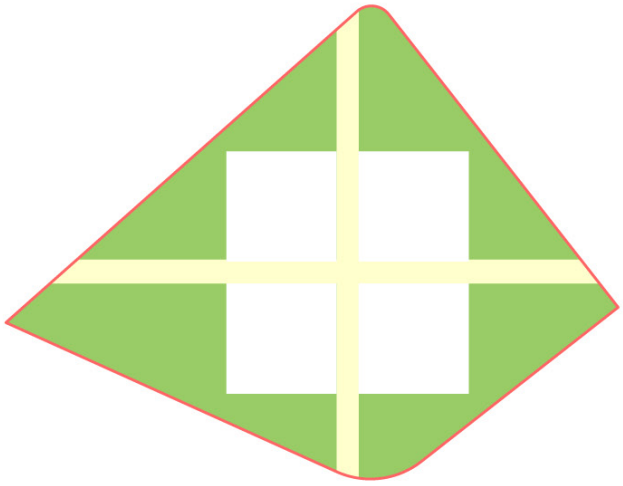
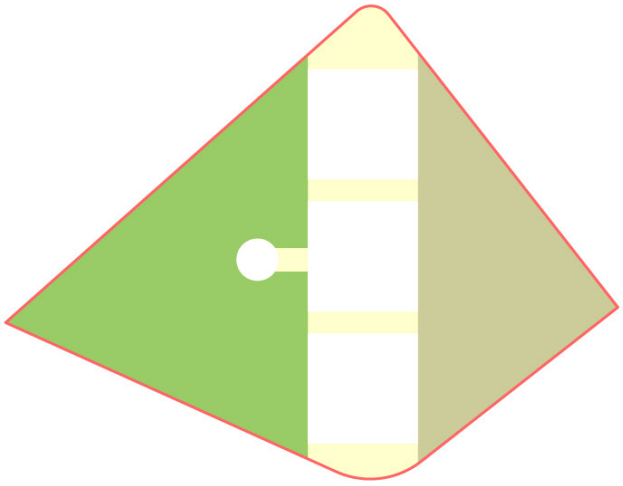
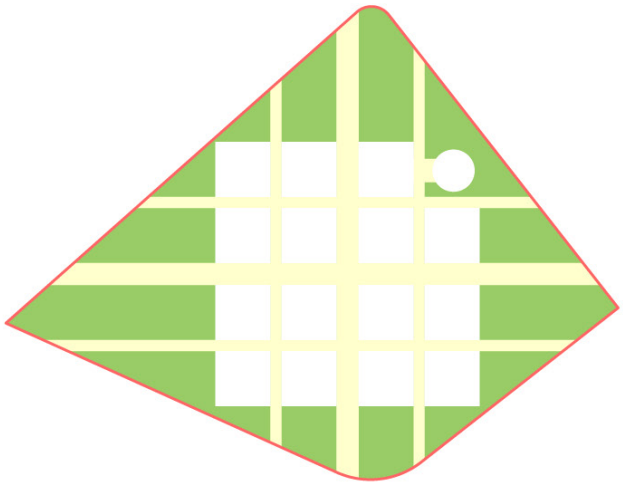
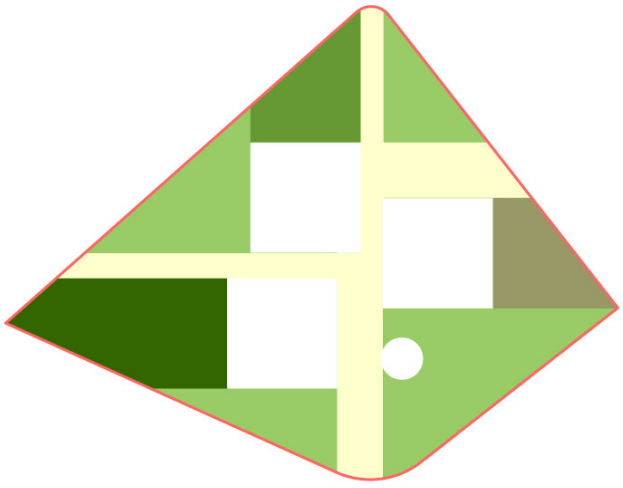
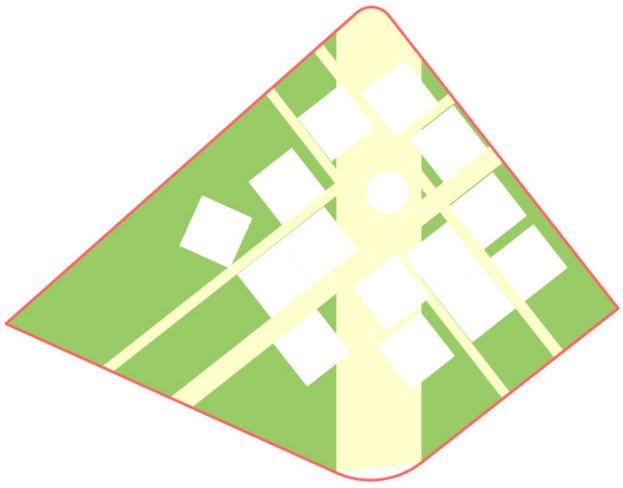
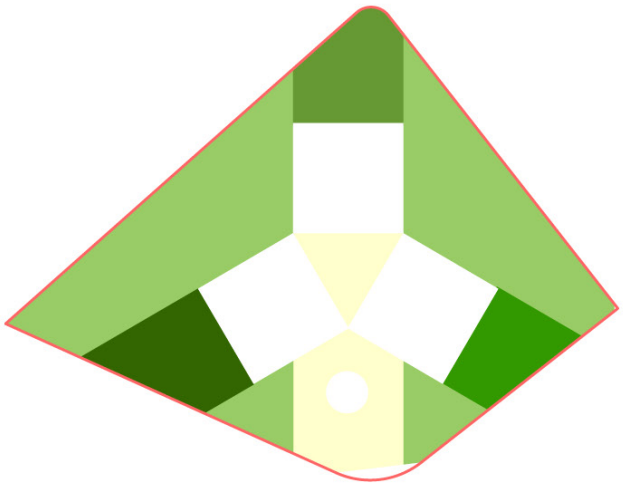
building footprint



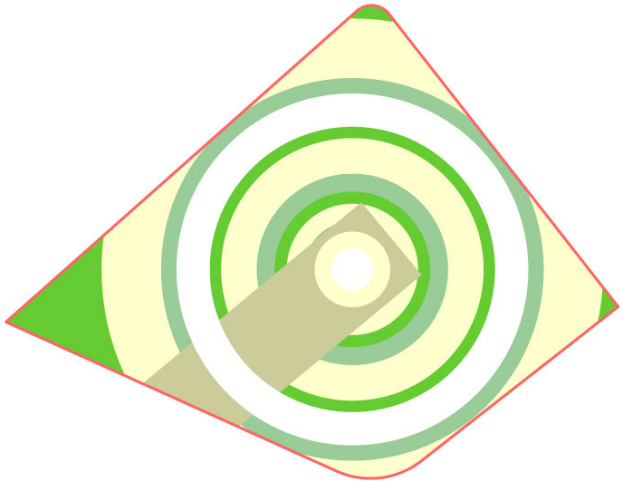
32.800 m2

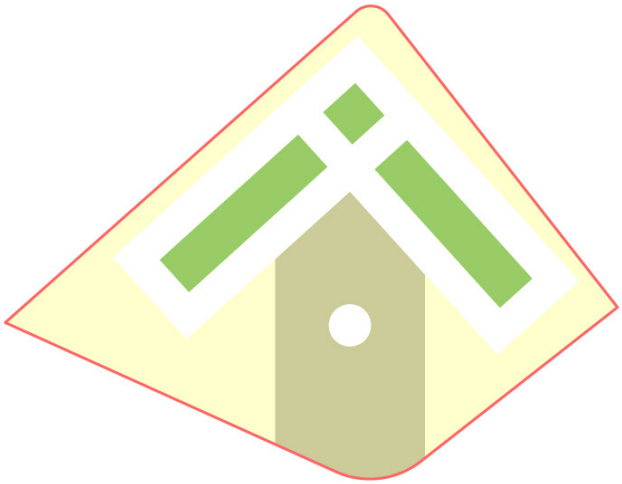


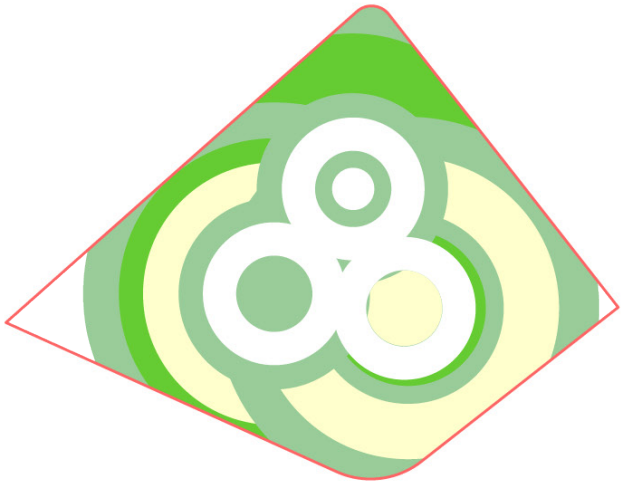
33.000 m2

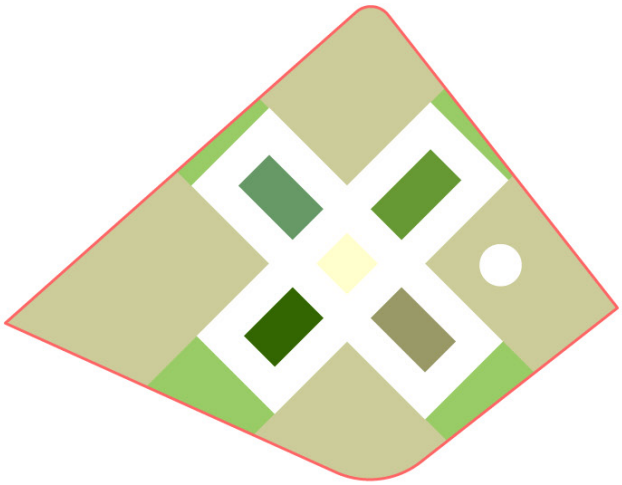









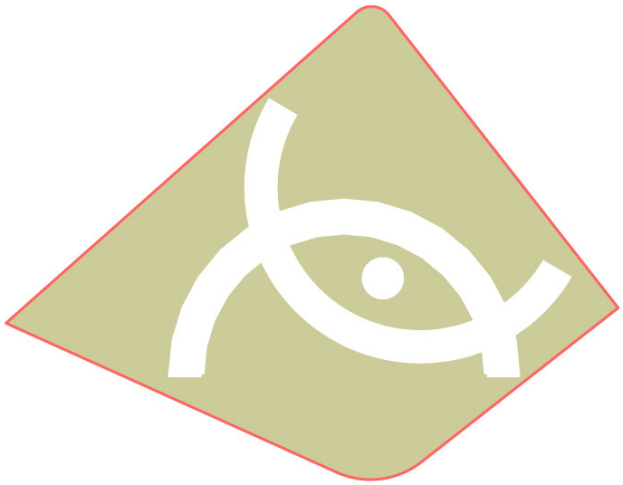




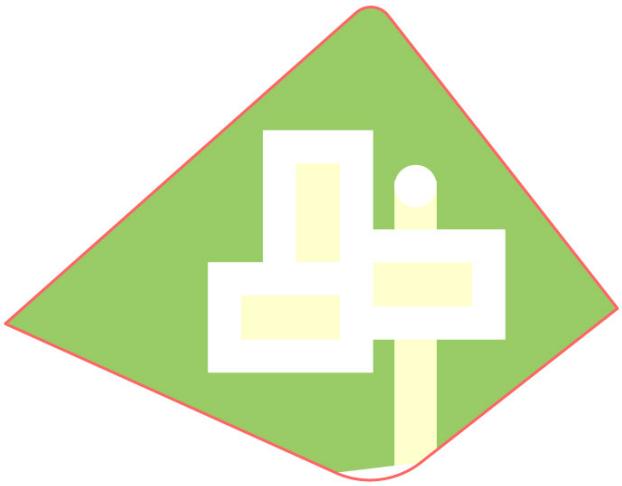








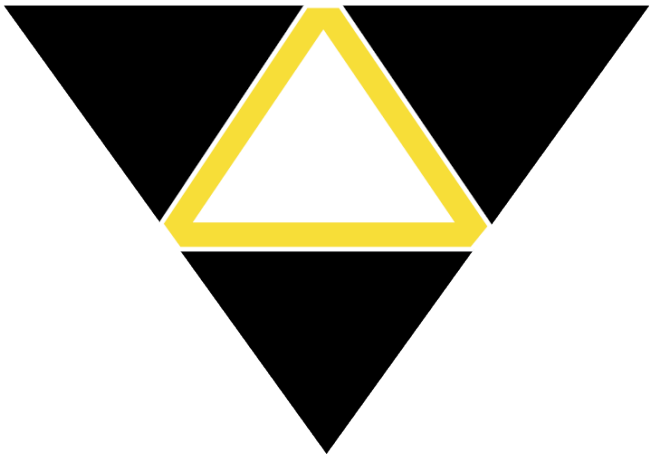
landscape footprint

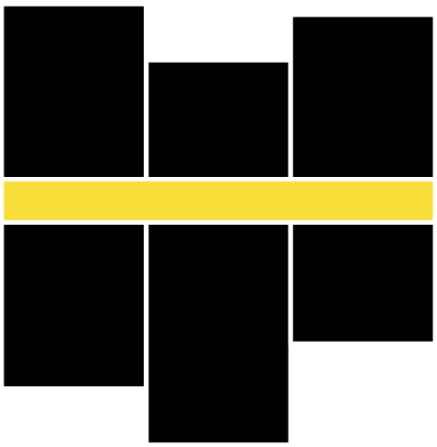


















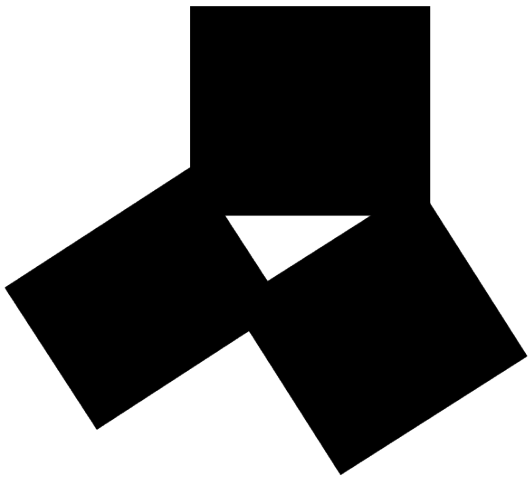








phasing options



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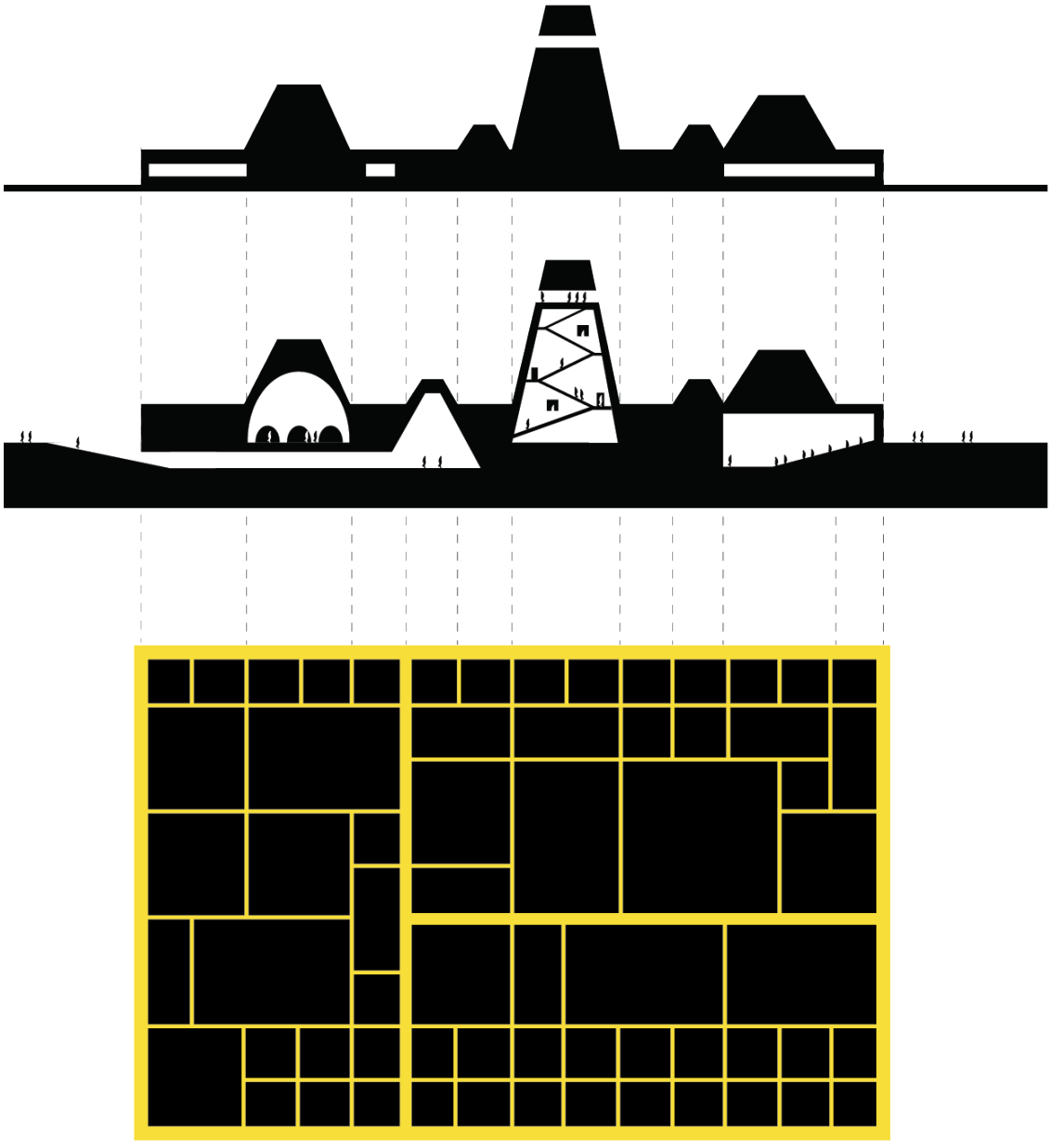

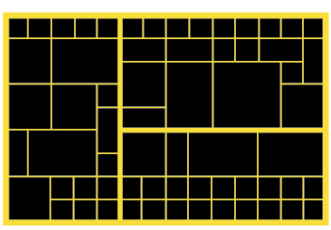

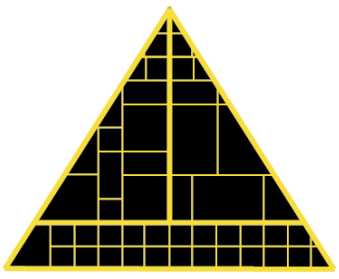

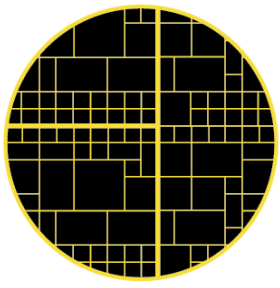



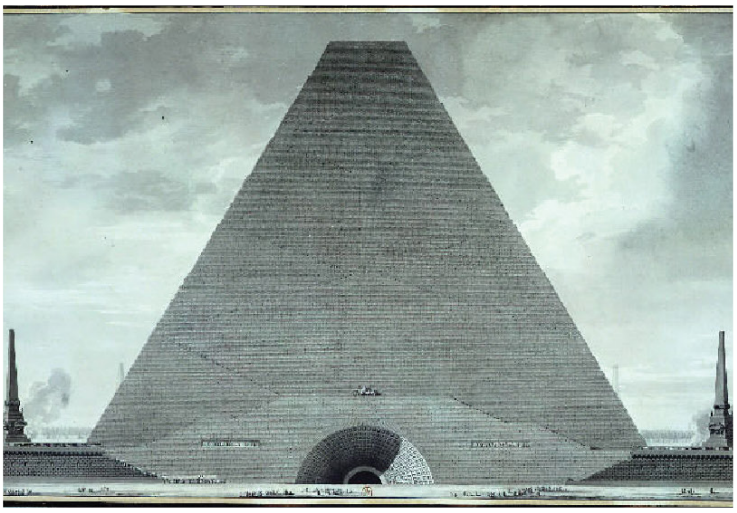

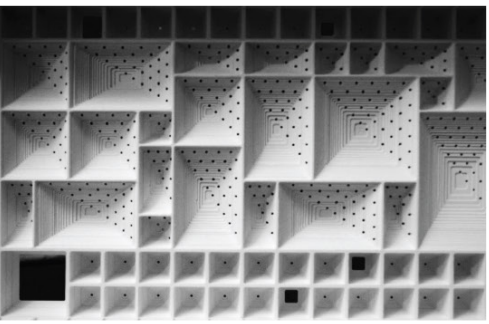

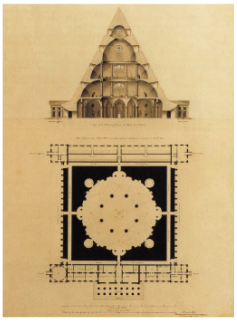

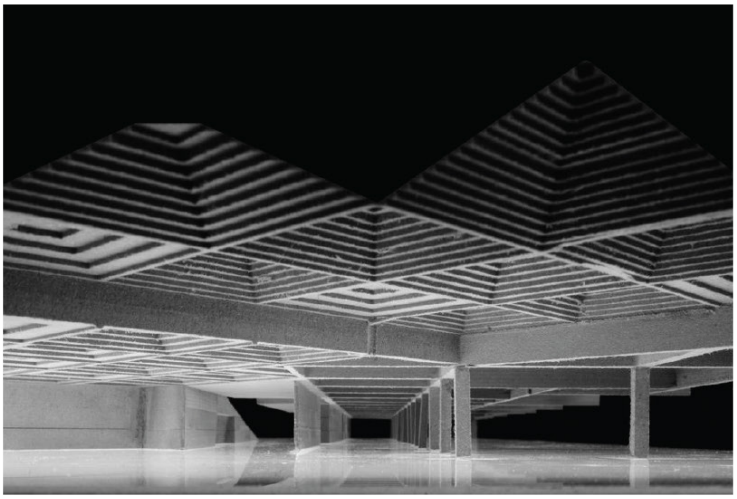

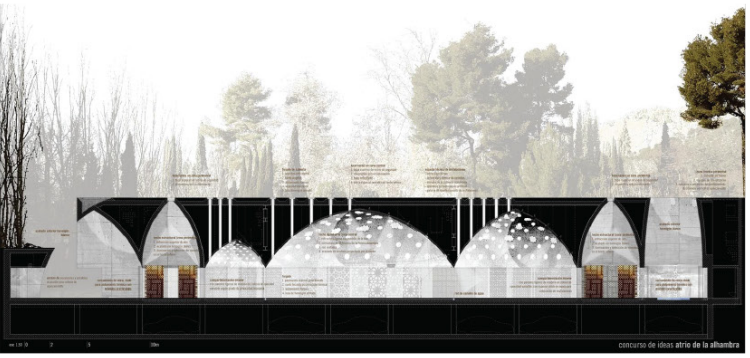
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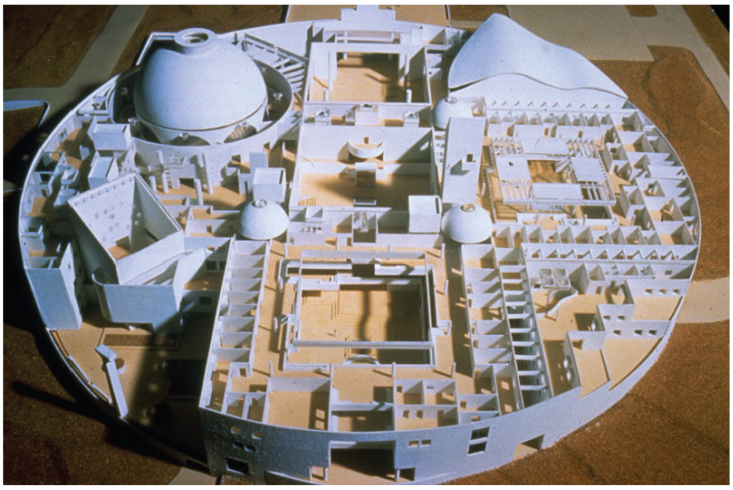











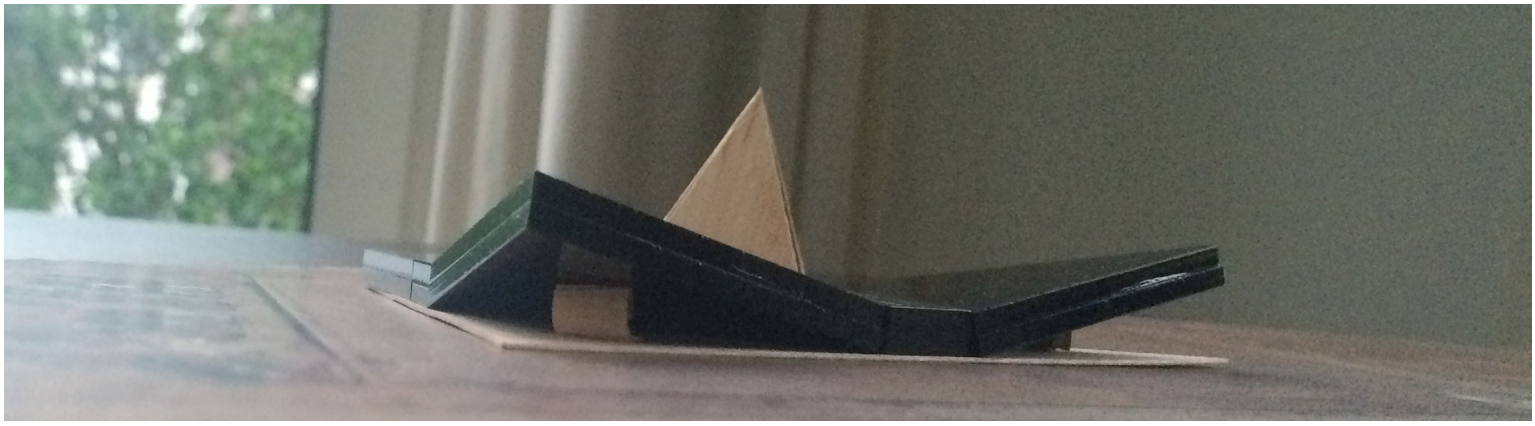

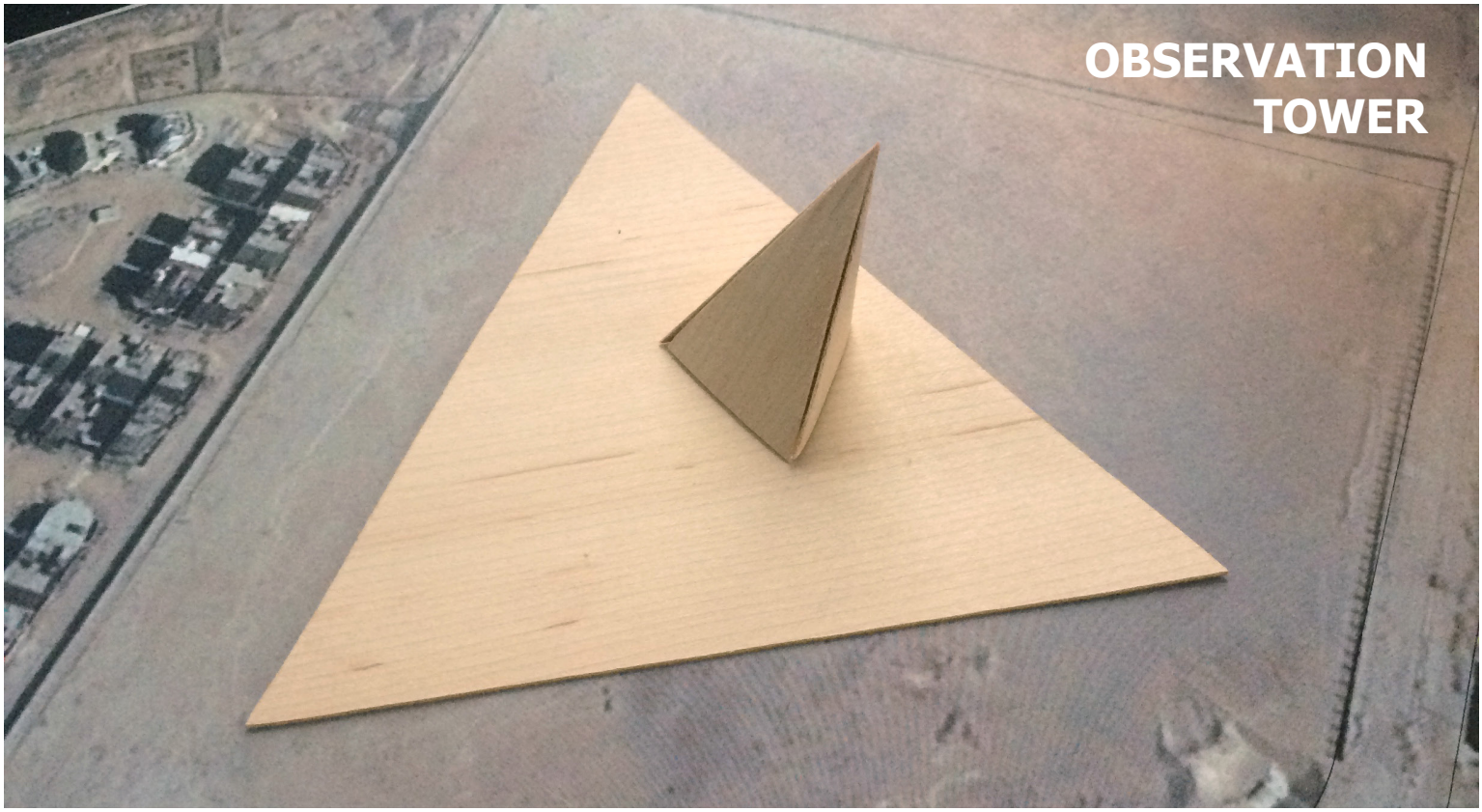
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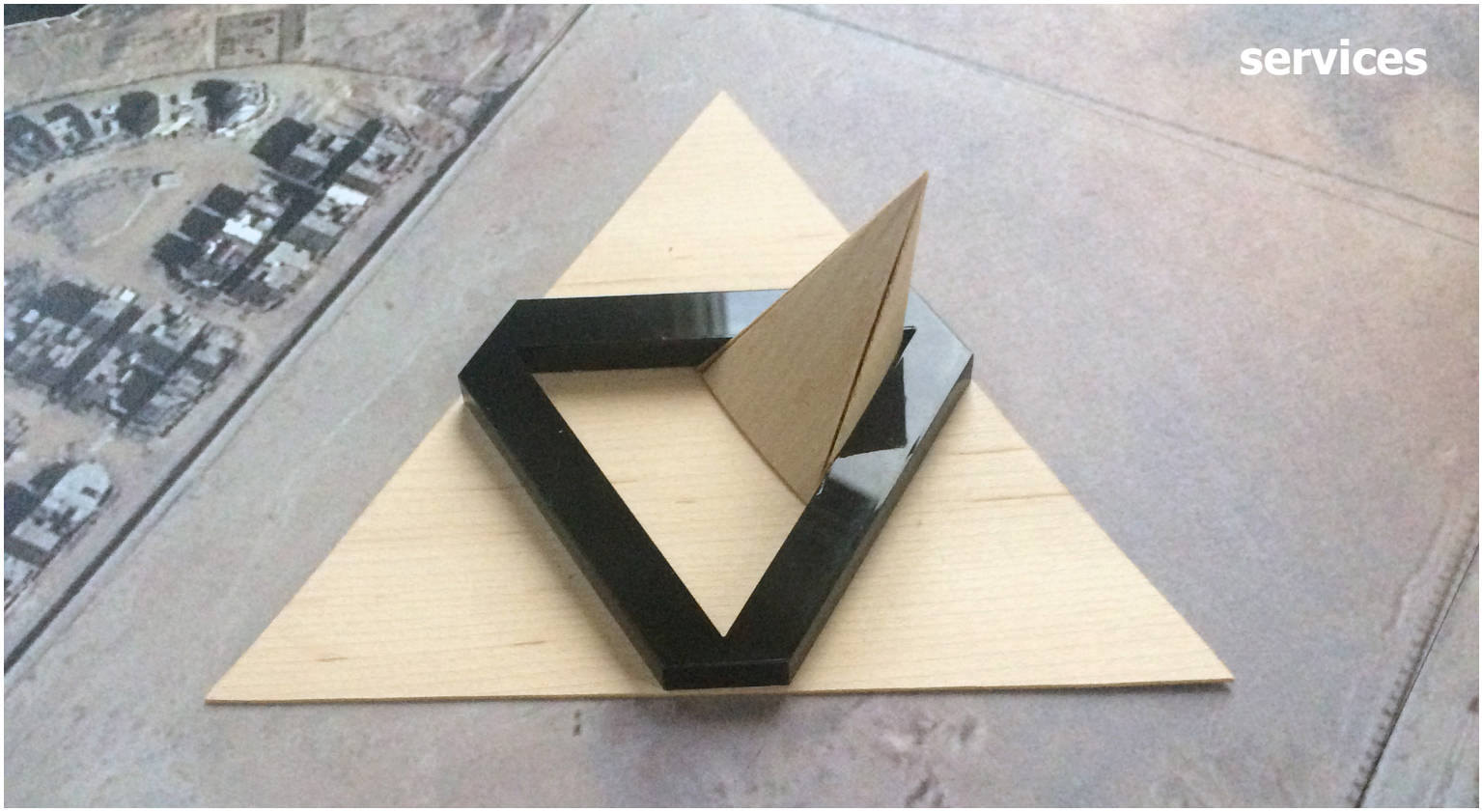
TOWER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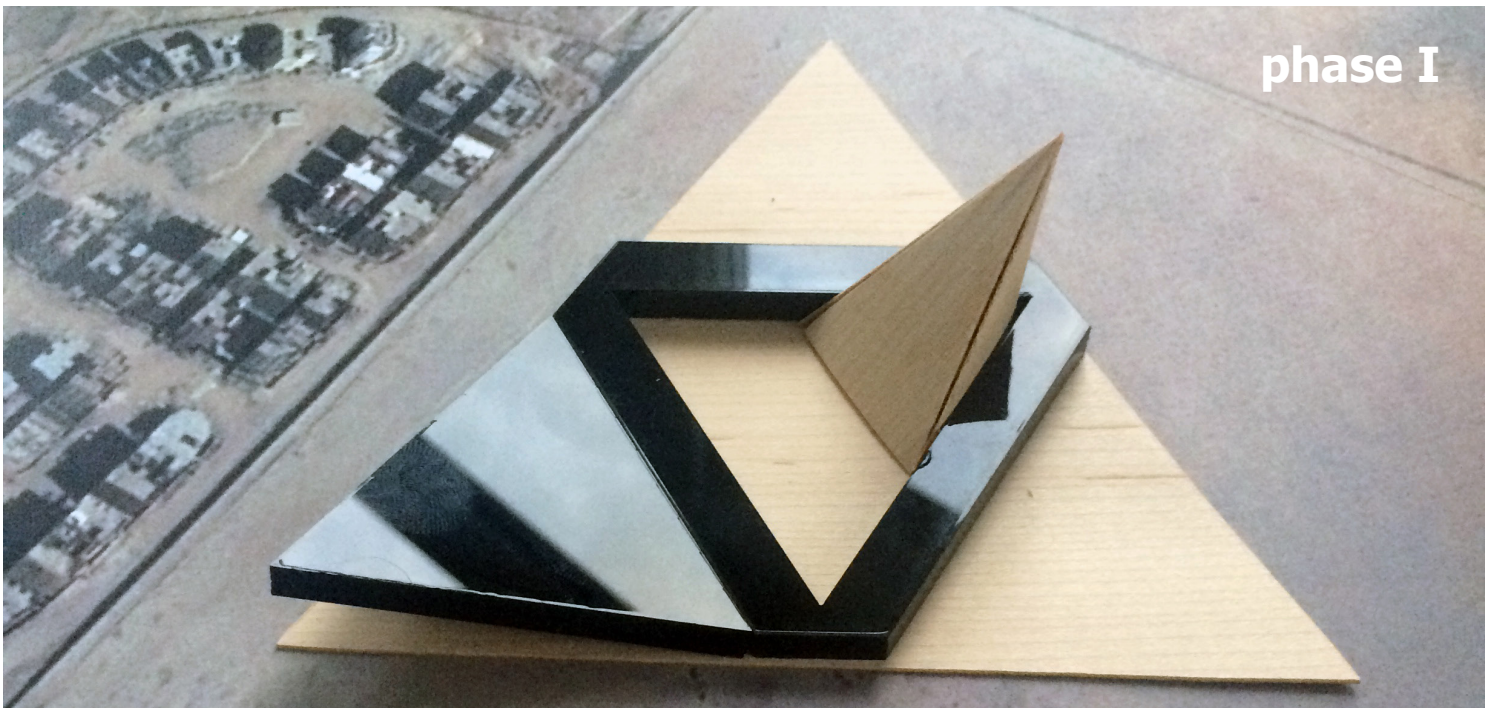
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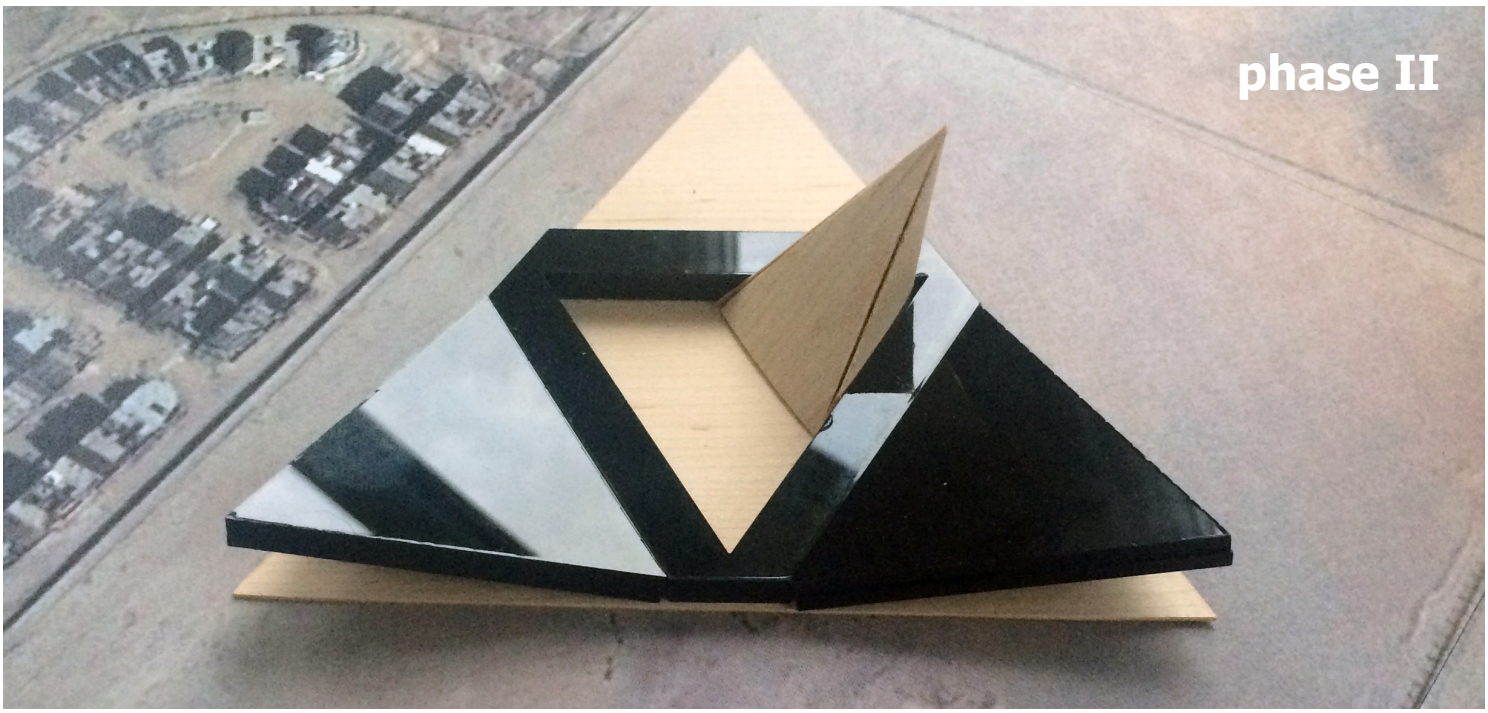
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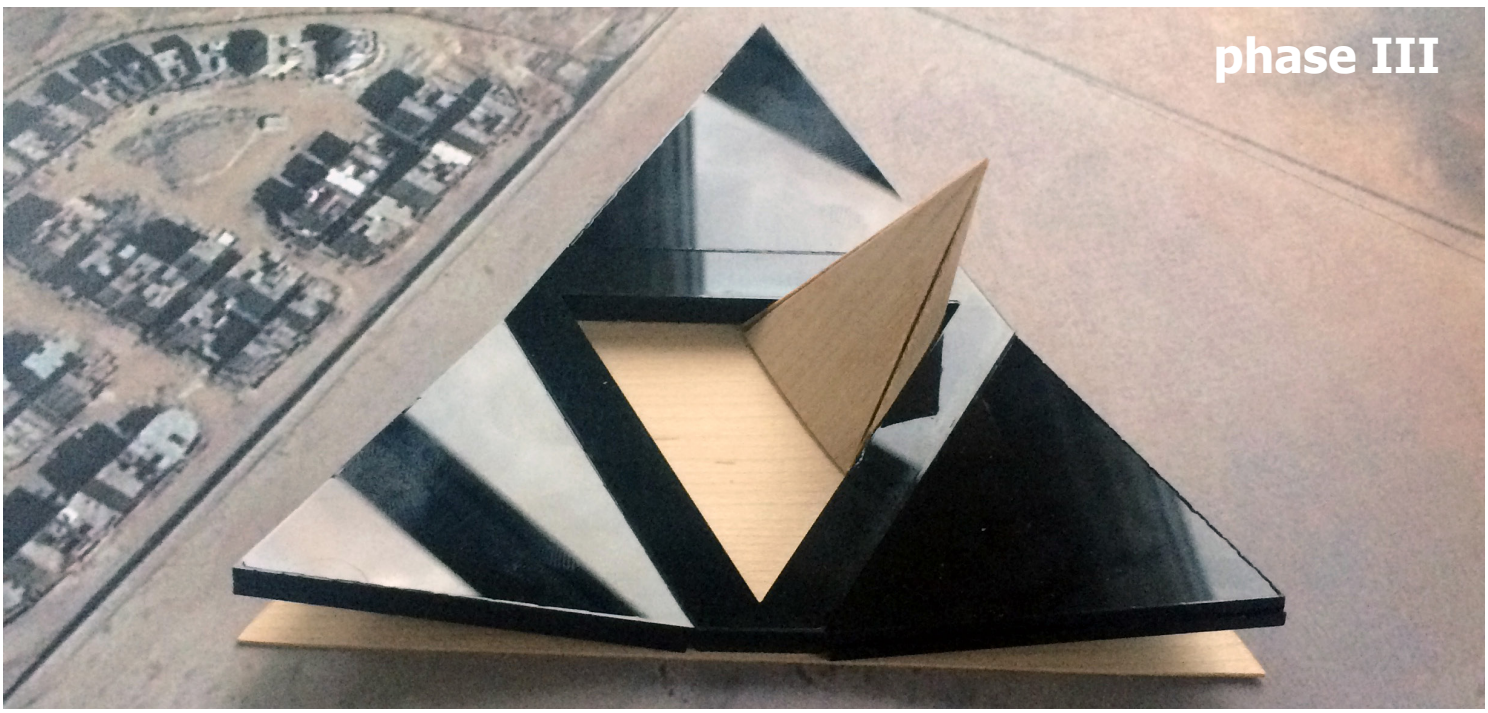
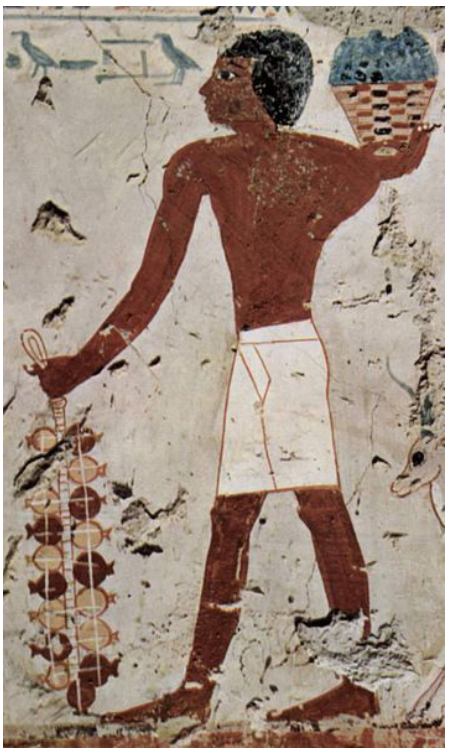

phase III

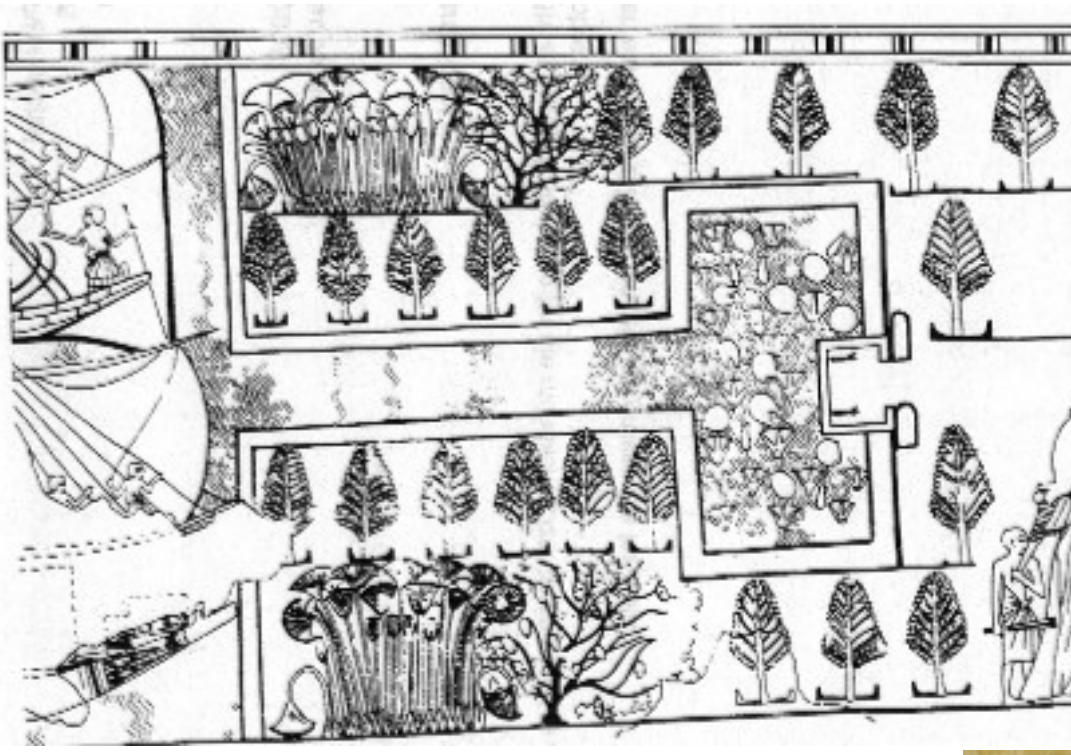




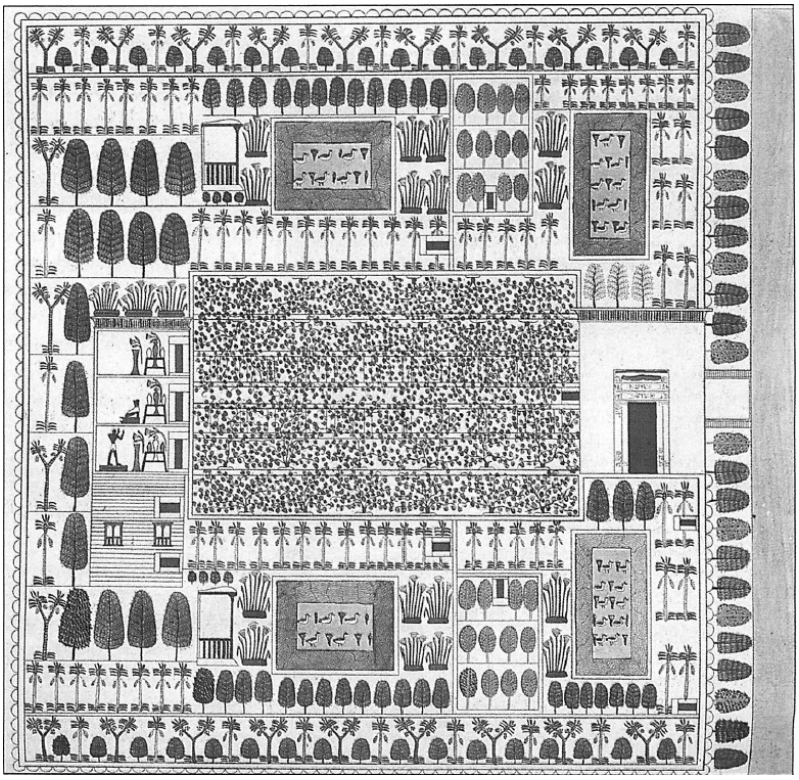
PART 5

landscape



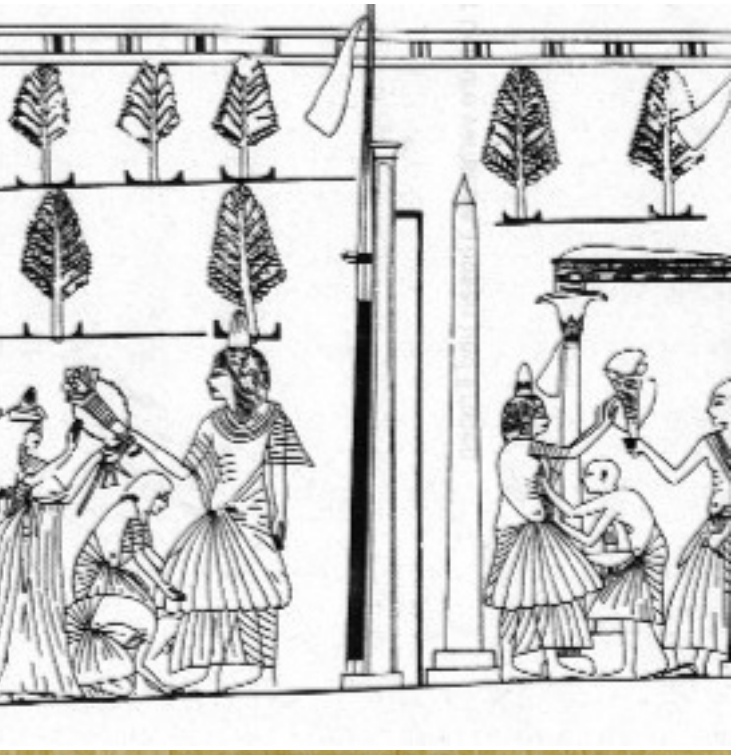


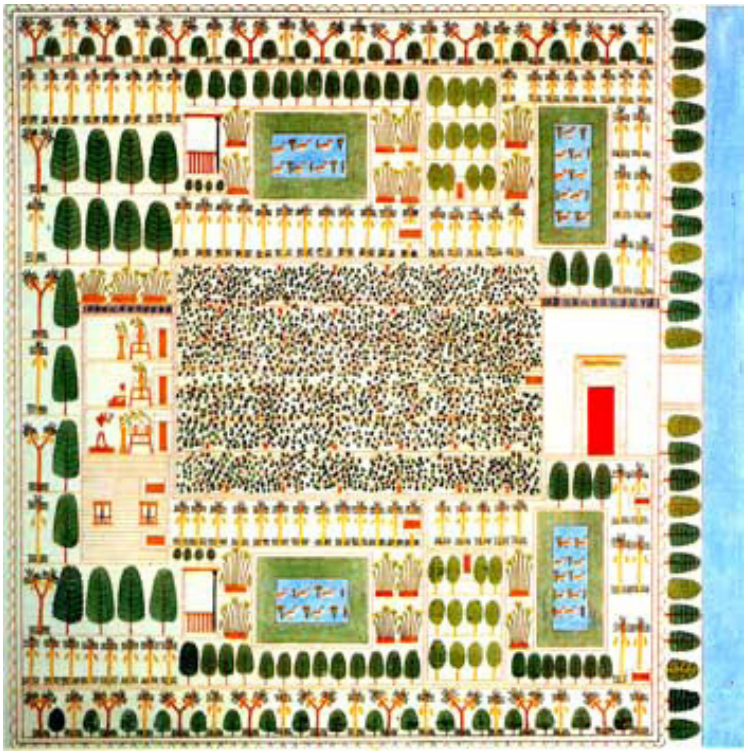




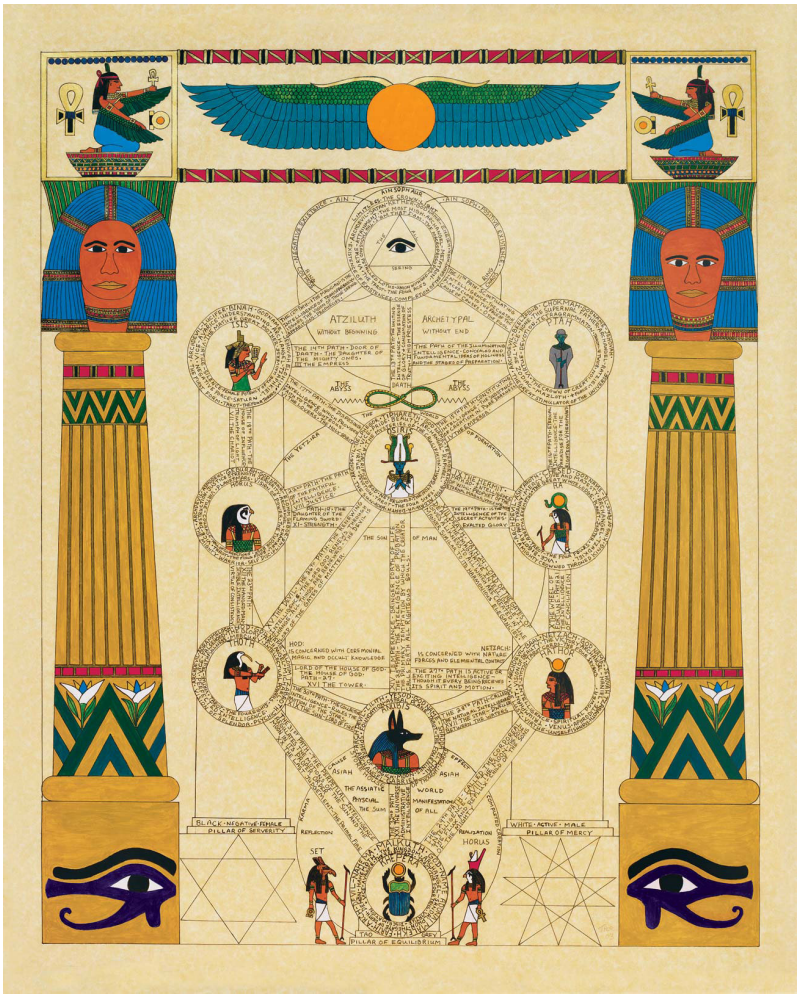


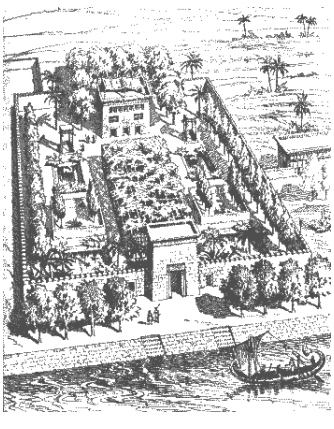









ATZILUTH
WITHOUT BEGINNING
ARCHETYPAL
WITHOUT END
ISIS
PTAH
THE ABYSS
THE ABYSS
ASIAH
THOTH
ATHOR
ASIAH
ASIAH
THE ASSIATIC
PHYSICAL
THE SUN
WORLD
MANIFESTATION
OF ALL
BLACK-NEGATIVE-FEMALE
PILLAR OF SERVERITY
WHITE-ACTIVE-MALE
PILLAR OF MERCY
SET
HORUS
PILLAR OF EQUILIBRIUM









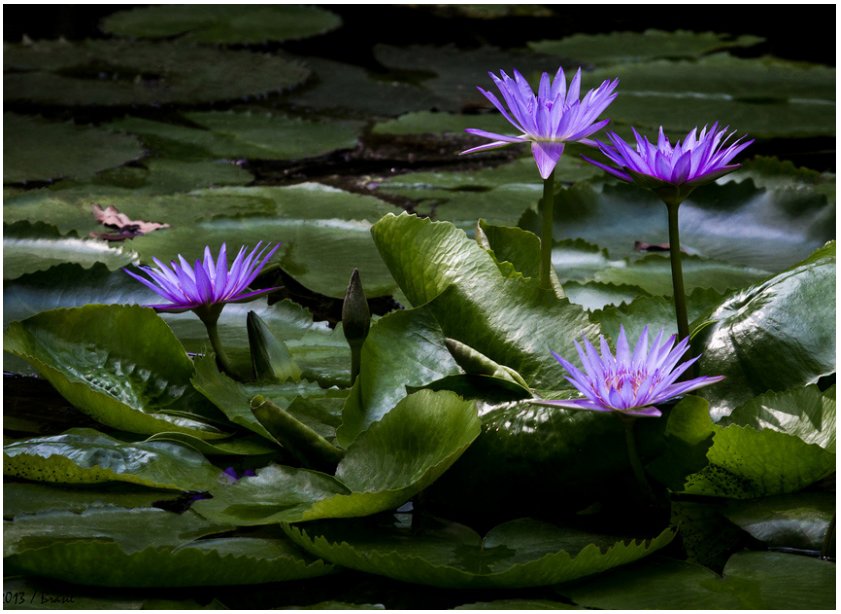








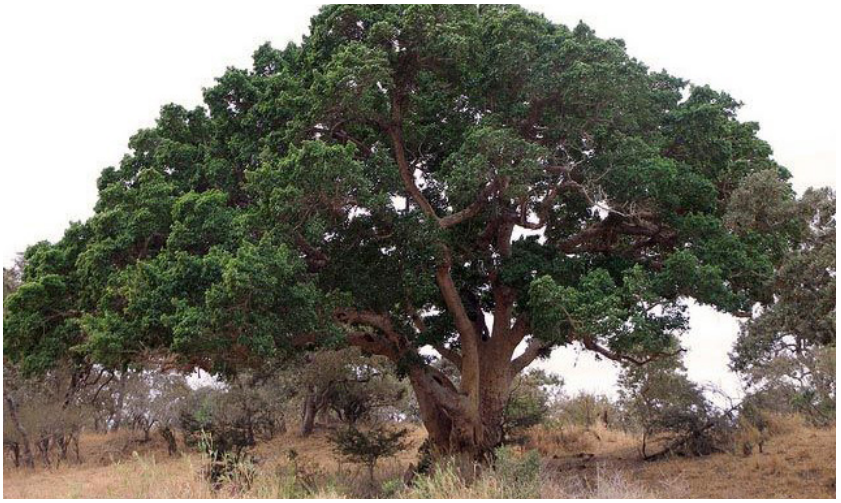


























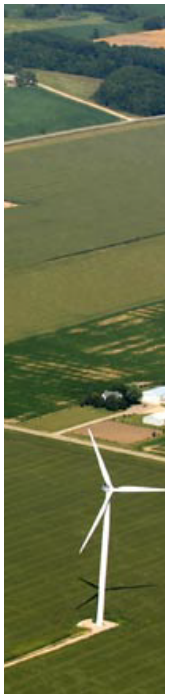












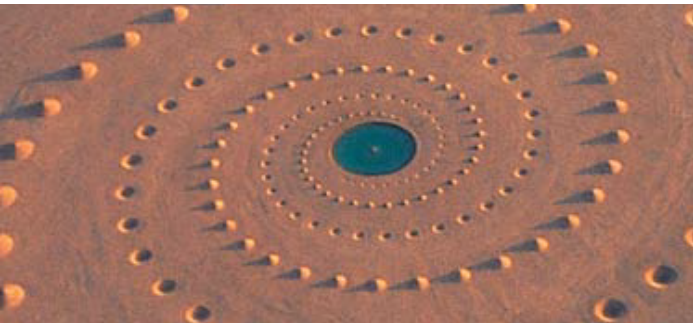


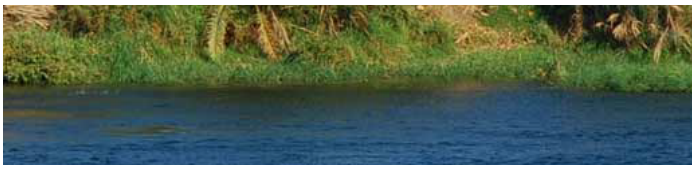




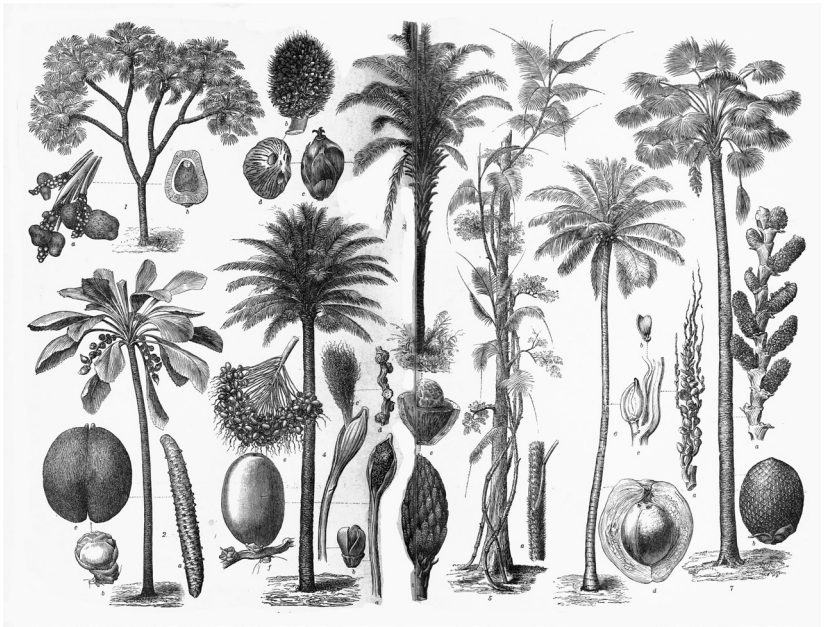


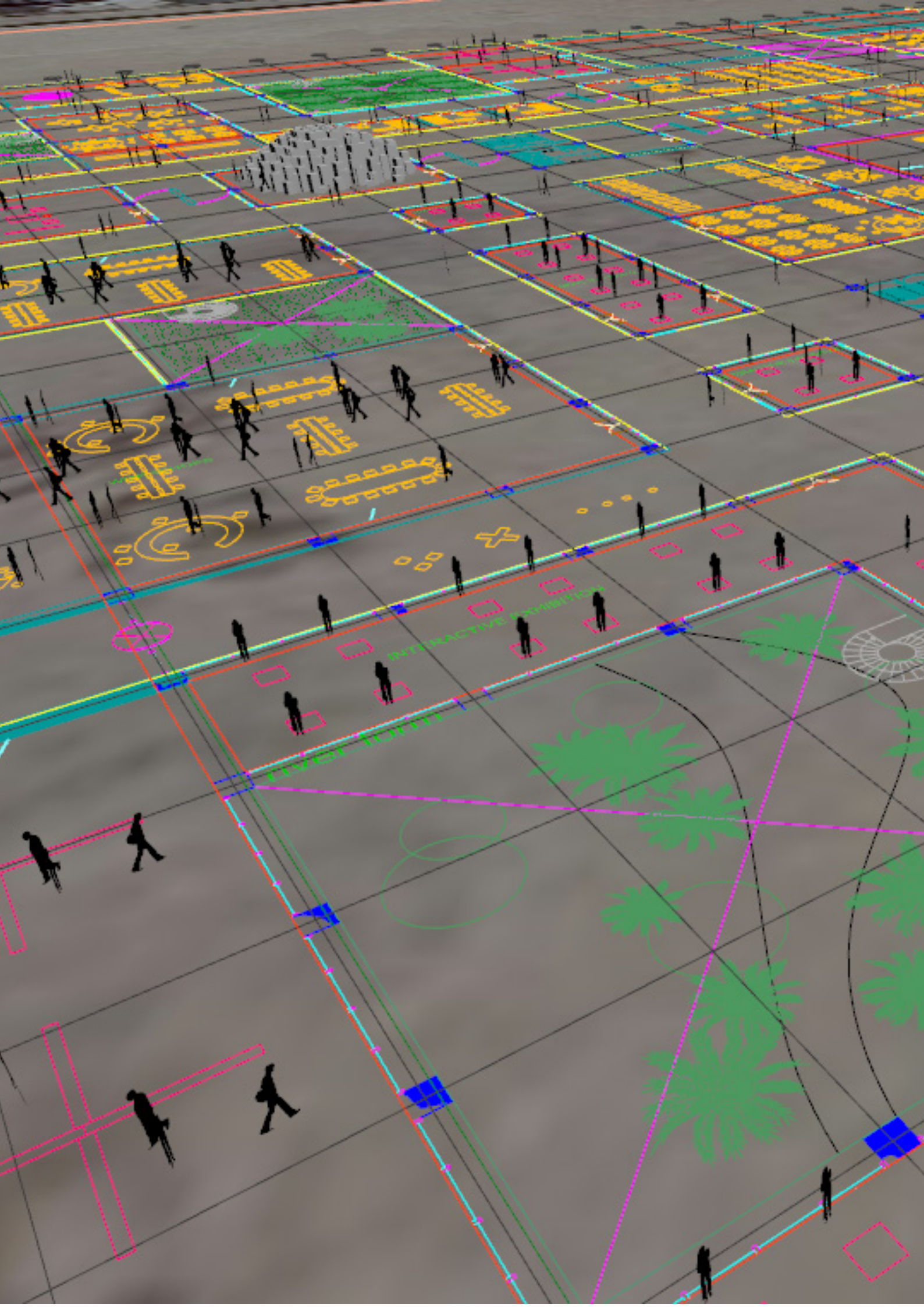

RITRATTO DEL MVSEO DI
FERRANTE IMPERATO

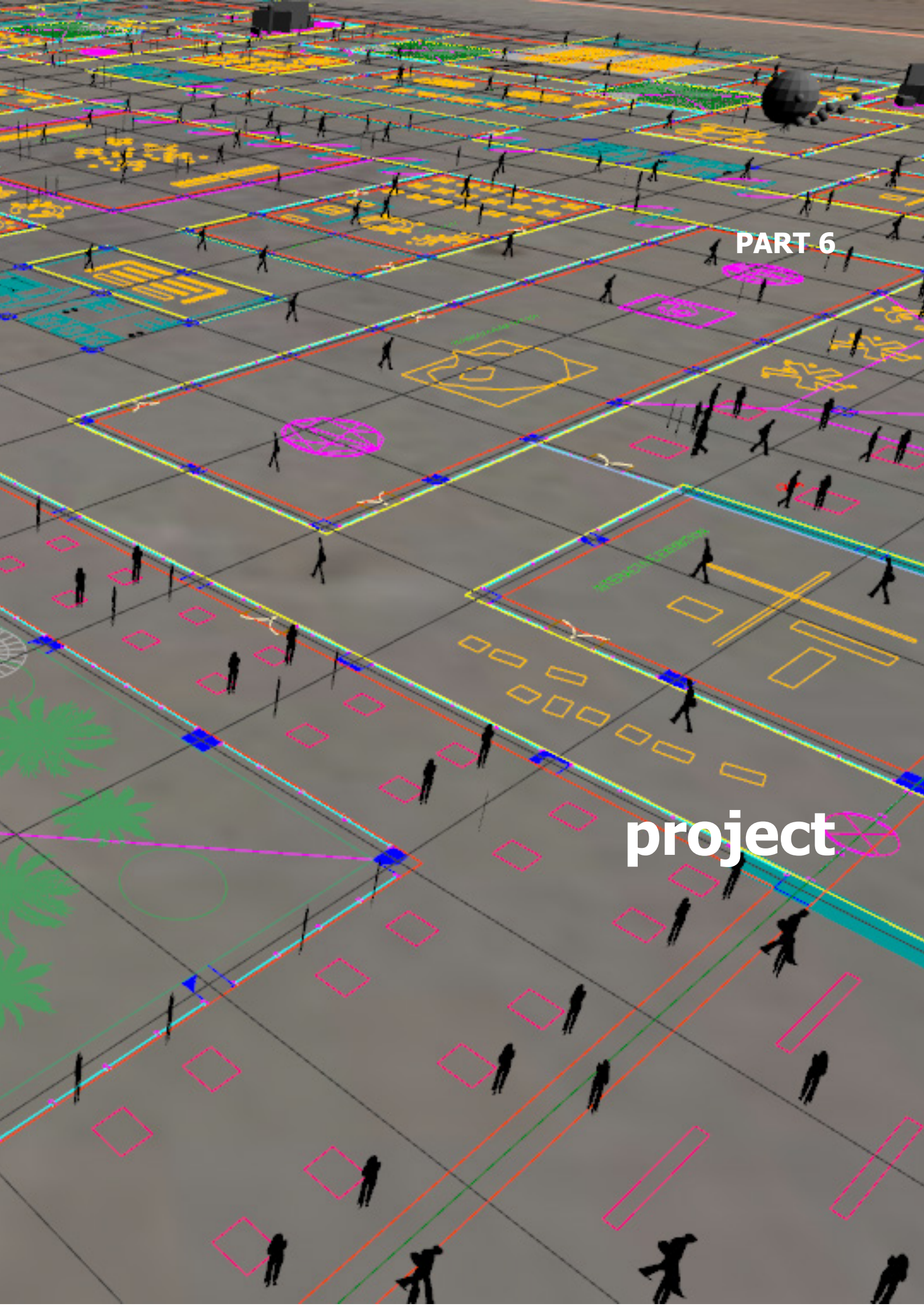


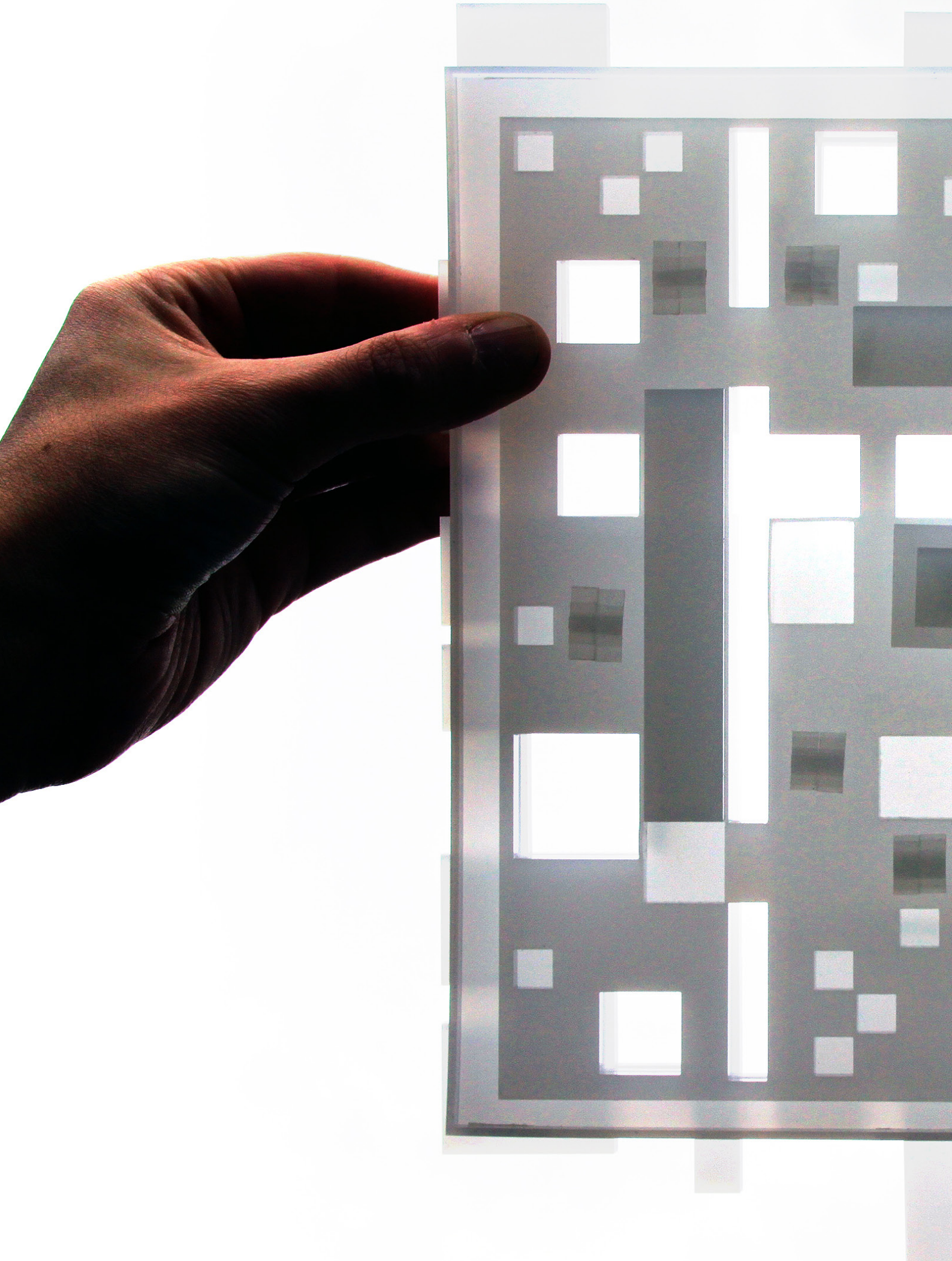


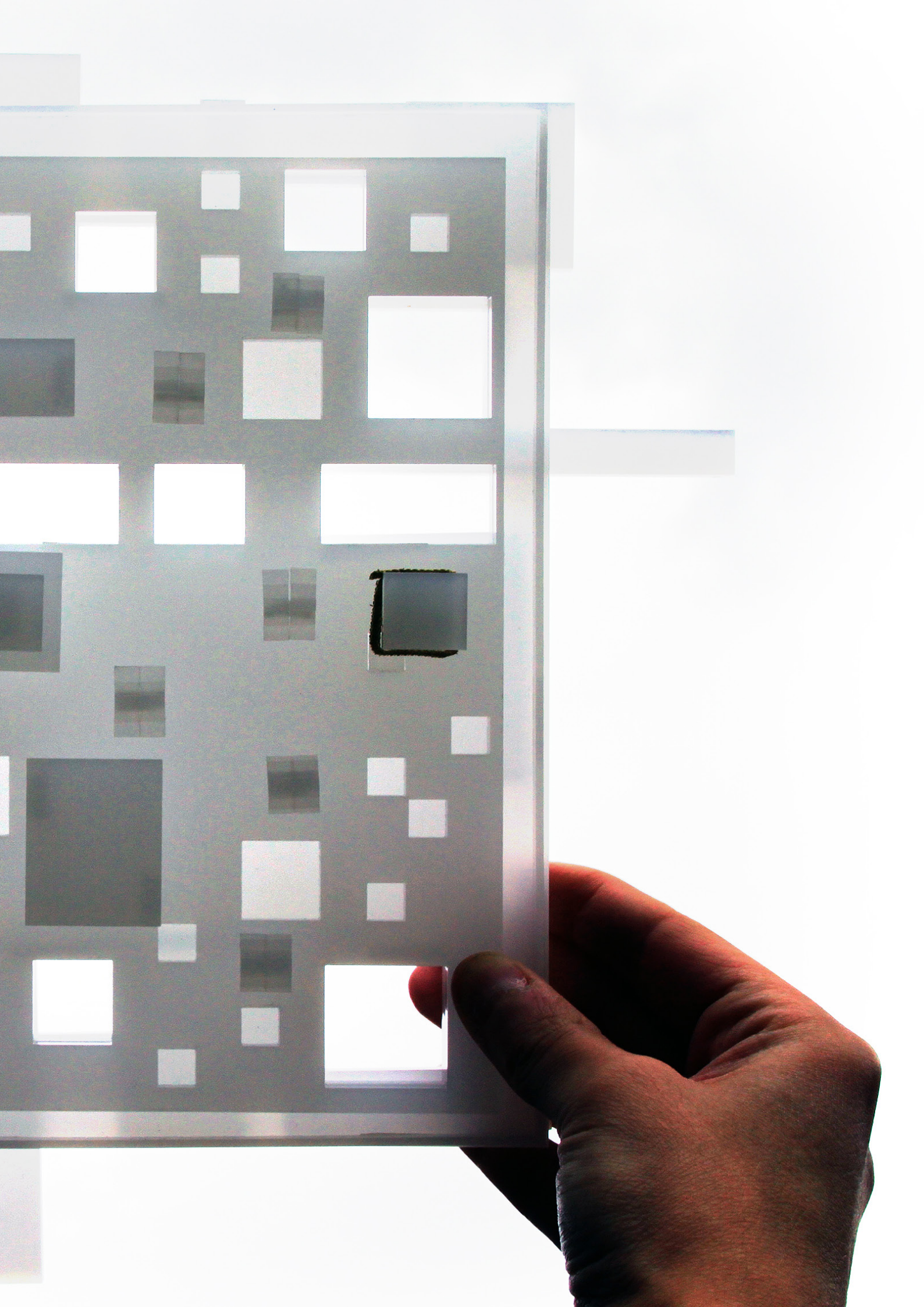





INTERACTIVE EXHIBITION
RIVER FRONT


PART 6
project





Urban realm

The 6th of October city is a satellite city that is built in 1979 in order to cover the housing demand of Cairo. It is located 17 km from the Great Pyramids of Giza and 32 km from the city of Cairo and it consists of a desert city. The cultural context and the site on the one hand impose challenges and difficulties, and on the other hand they offer large opportunities for intervention development.
Egypt has been since ancient times a country with a leading role in the development of sciences and production of intellect. There is therefore plenty of inspiration that could lead in the formation of an architectural project for the Science City. The urban realm is characterized by introvert residential complexes, private recreational and educational institutions and other local industries. The multifunctional character of the site creates a real challenge as it is not part of a specific historical context but it is a generic urban structure in process, aiming to cover needs of the continuously increasing size of the city. The site is exploited by private investments and lack of architectural harmony. The privatization of the land and the lack of public facilities decrease the urbanity of the wider context, namely the livingness of a city and continuous flow of people. The design of the master plan should aim to provide a new pubic democratic space that is flexible for future transformations, by being extrovert and promoting the potentials of a continuous and vivid landscape.
On this context, the Science City acts as a node and an incubator, by containing as its main ingredients the solid architecture expression and the diverse landscape.
Building Complex

Concept

The building follows the organization of a city based on a clear orthogonal grid that is prominent in the scheme

but not absolute, in order to create space for diversity in scale and function. The city is the result of the composition of different metropolitan and architectural elements such as the urban grid, the block, the street and the landmark. Follows such principles of composition, the Science City introduces the street as the connection between inside and outside. The accumulation of different volumes that contain different program and the interconnection of them with a path system that is expanded into the science park are the main elements that consists both the master-plan and the building circulations of the science city. The main path system is flexible and (re) defined by the three phases that the building will follow. Moreover the idea of the city is enhanced with the development of multifunctional floor plans that lead to a diversity of solutions and to the generation of unexpected situations for the visitors. Blending density, educational and recreational functions, exhibitions and landscape patterns, the ground floor is an open laboratory of life, science, art and curiosity.

Organization

The building is divided in three, the phase I containing the main core of services and the the orientation hall. The distribution of the functions is arranged in program rings, therefore the campus can contain 40% of all programmatic elements in Phase I, 30% in Phase II and 30% in Phase III. The element of the street is introducing the visitors to the orientation hall. The volume is perforated by courtyards, resulting to a stronger relationship with the science park.
The interactive temporary exhibition is located on the ground floor with direct connection to the science park and the open-air exhibition areas. Also on the ground floor the visitors can find the HD theater, the observatory tower base etc. Also most of the technical services are located

on the ground floor.
The first floor is defined by a programmatic ring of the research at the perimeter of the volume and a core of the permanent exhibition. Art and scientific research are in constant interaction.
The third and last floor is even more perforating than the other two leading to a dissolve of the city. The floor plan is structured by a ring of administration with a core of workshops and the conference center.

Science park- Concept

The science park is characterized by an interweaving pattern of paths and an accumulation of programmatic rooms reminding of the cabinet of curiosities- kunstkammer that appeared at 16th century with the establishment of the first collections of natural history and art. The kunstkammer is regarded as a theater of the world- a microcosm. The intention of the science park is to educate the visitors on different scientific fields and underline the unique landscape of Egypt. Fusing inside and outside by means of design and program continuity, the paths of the park enter into the exhibition spaces and fragment the building into several interconnected spaces, thus creating views and escapes into the landscape, at the same time proclaiming potentials for future expansions.

Science park- Structure

The pattern of the master plan is defined programmatically by two main themes- the dryness and the moisture- the desert and the water or in accordance with the Egyptian mythology Tefnut and Shu- that define the landscape of Egypt. The road of the desert and the road of the water are the main elements that split the building creating courtyards, patterns on the desert, escapes to the landscape and possibility for infinite future expansion.

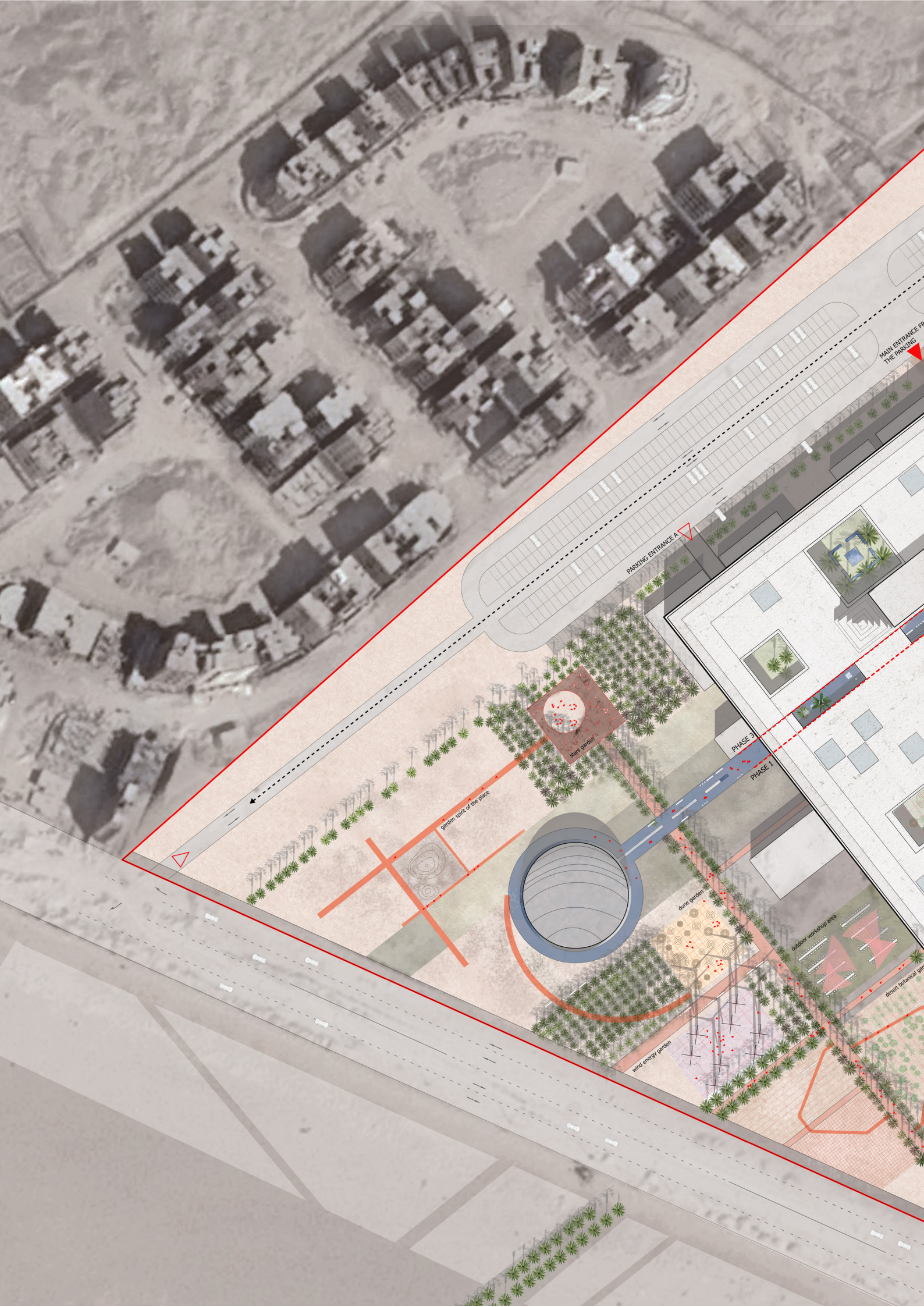
The two main axes serve a double role, on the one hand providing the main entrances to the building and on the other hand fragmenting it into three phases. The phasing character of the project is therefore based on the notion of continuity, namely three separate buildings that when put together form a unified and continuous entity. The repetition of intersecting corridors and the variation of the scale of the roads define different programmatic rooms both inside the building and outside in the Science Park. Consequently, the Science Park provides different experiences that are about both the immediate and the wider range of sciences, such as natural phenomena-elements and Egyptian landscapes, maths, the stars, wind, energy, the agriculture, the land formation, the gardening, the flora of Fiona of Egypt.

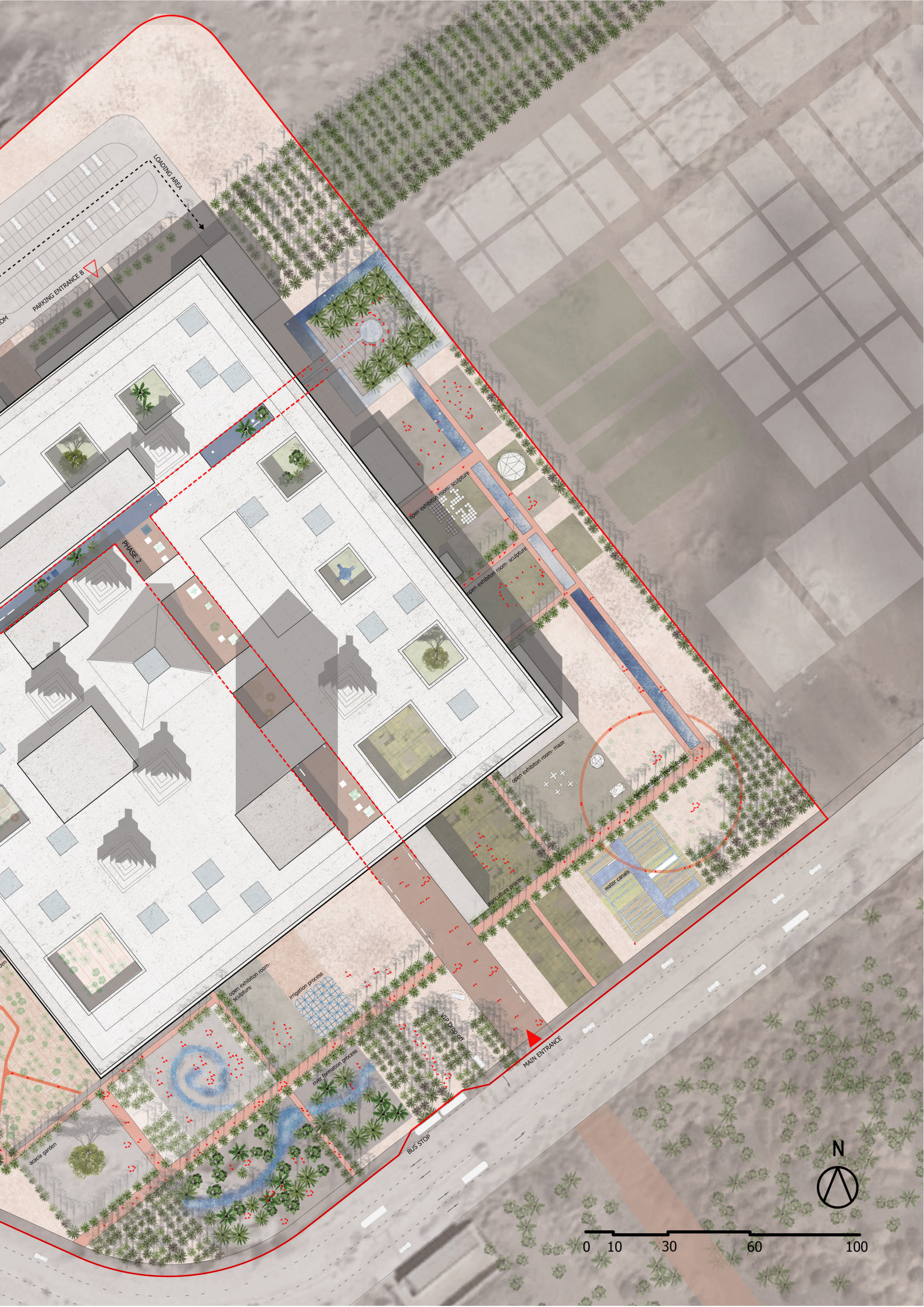
Hardscape

The path system is consisted by a mixture of Egyptian sandstone that is similar with the Tura stone used for the Pyramids. The selection is aiming to the harmonious integration of the Science Park in the landscape. The path system is enhanced with seating areas and art.

Softscape

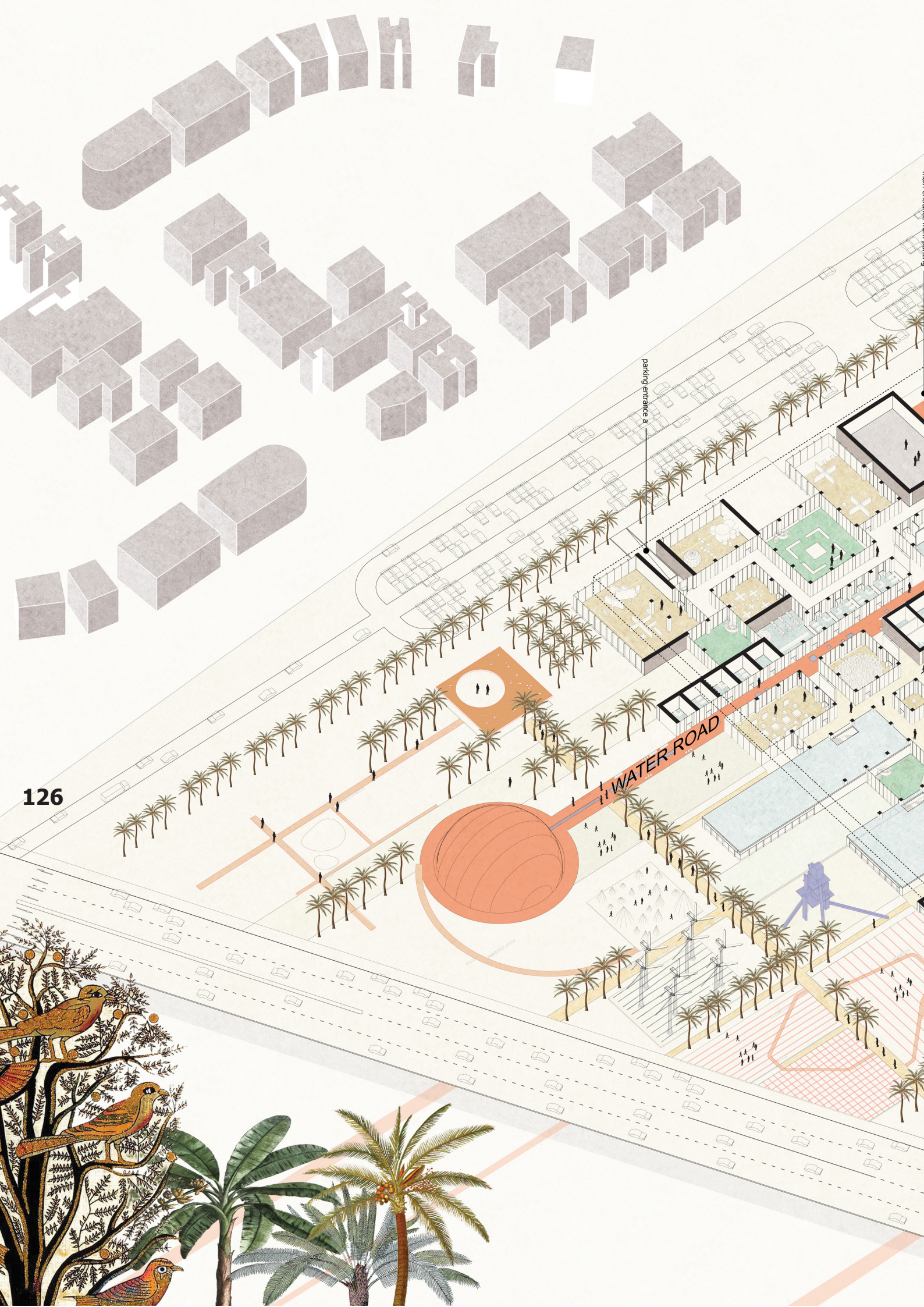
The main species that are dominant in the park are different indigenous palm trees such as date and doum palm that illustrates the path system and at the same time provide shade. Acacia, pomegranates and ficus sycomorus are other trees that are planted in the exhibition gardens and the courtyards. Water basins accumulate the water from the building creating water canals on the landscape and small oasis on the desert site. The planting that is suggested on that areas is palm and banana trees and shrubs like netumbo nucifera, nymphea caerulea, papyrus and persea indica. Final, indigenous desert species fulfill the planting of the science park.


MAIN ENTRANCE FR
THE PARKING
PARKING ENTRANCE A
stars garden
garden spirit of the place
PHASE 3
PHASE 1
dune garden
outdoor workshop area
desert botanical gar
wind energy garden

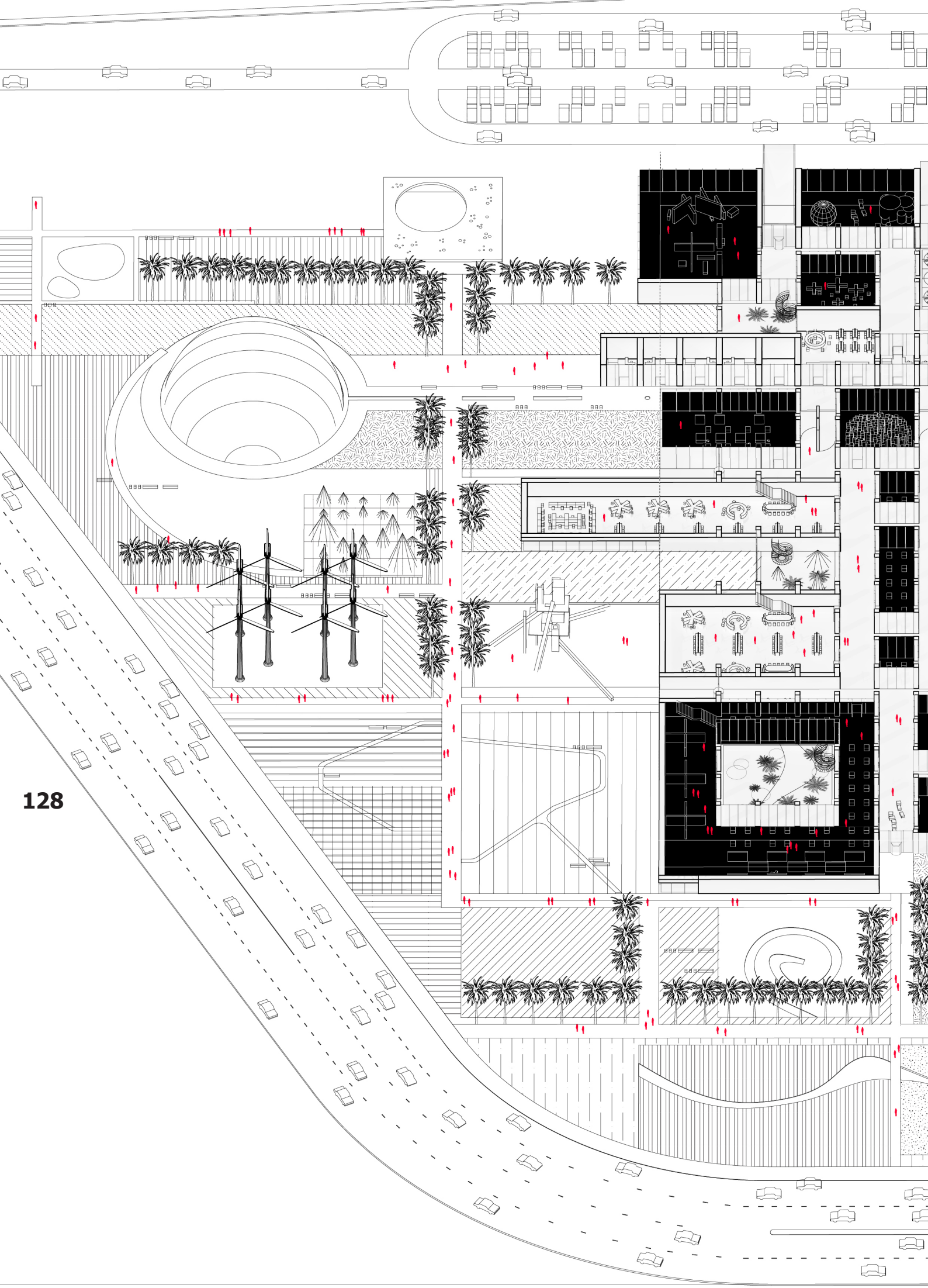

LOADING AREA
PARKING ENTRANCE B
PHASE 2
open exhibiton room- sculpture
open exhibiton room- sculpture
open exhibiton room- maze
water canals
agriculture process
open exhibiton room- sculpture
irrigation process
river formation process
VIP Drop off
MAIN ENTRANCE
BUS STOP
acacia garden
N
0
10
30
60
100

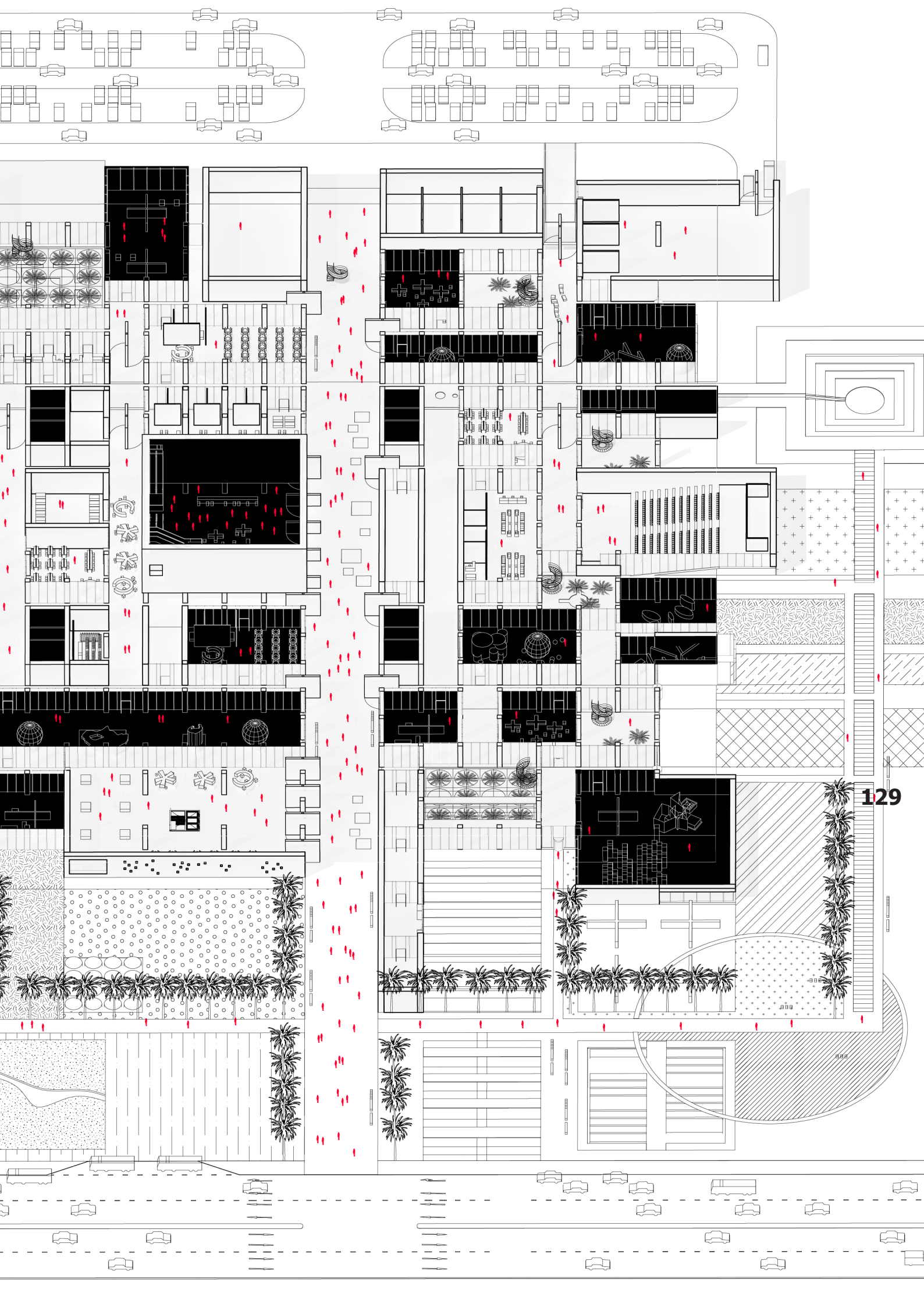


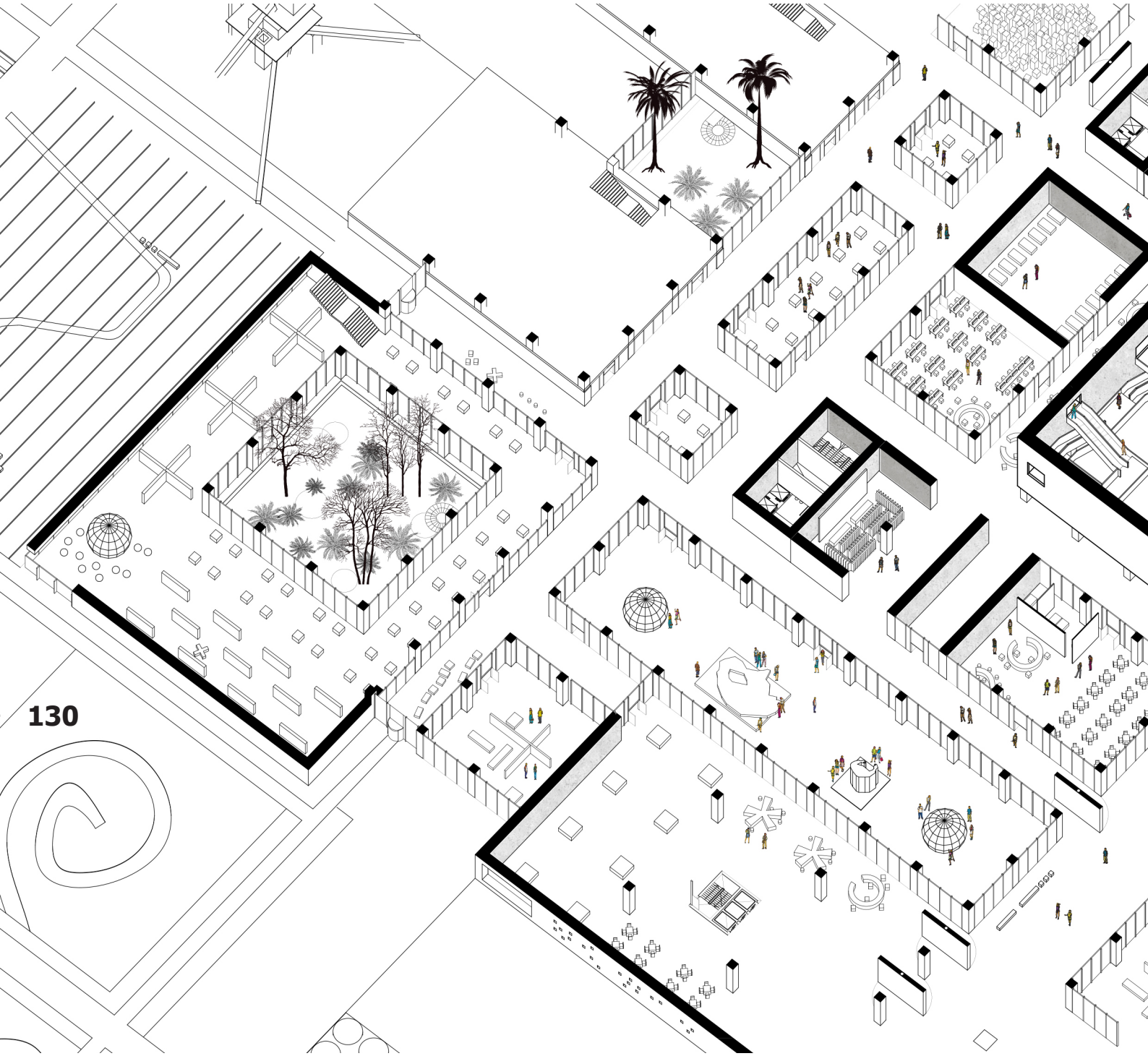
ENCE CITY

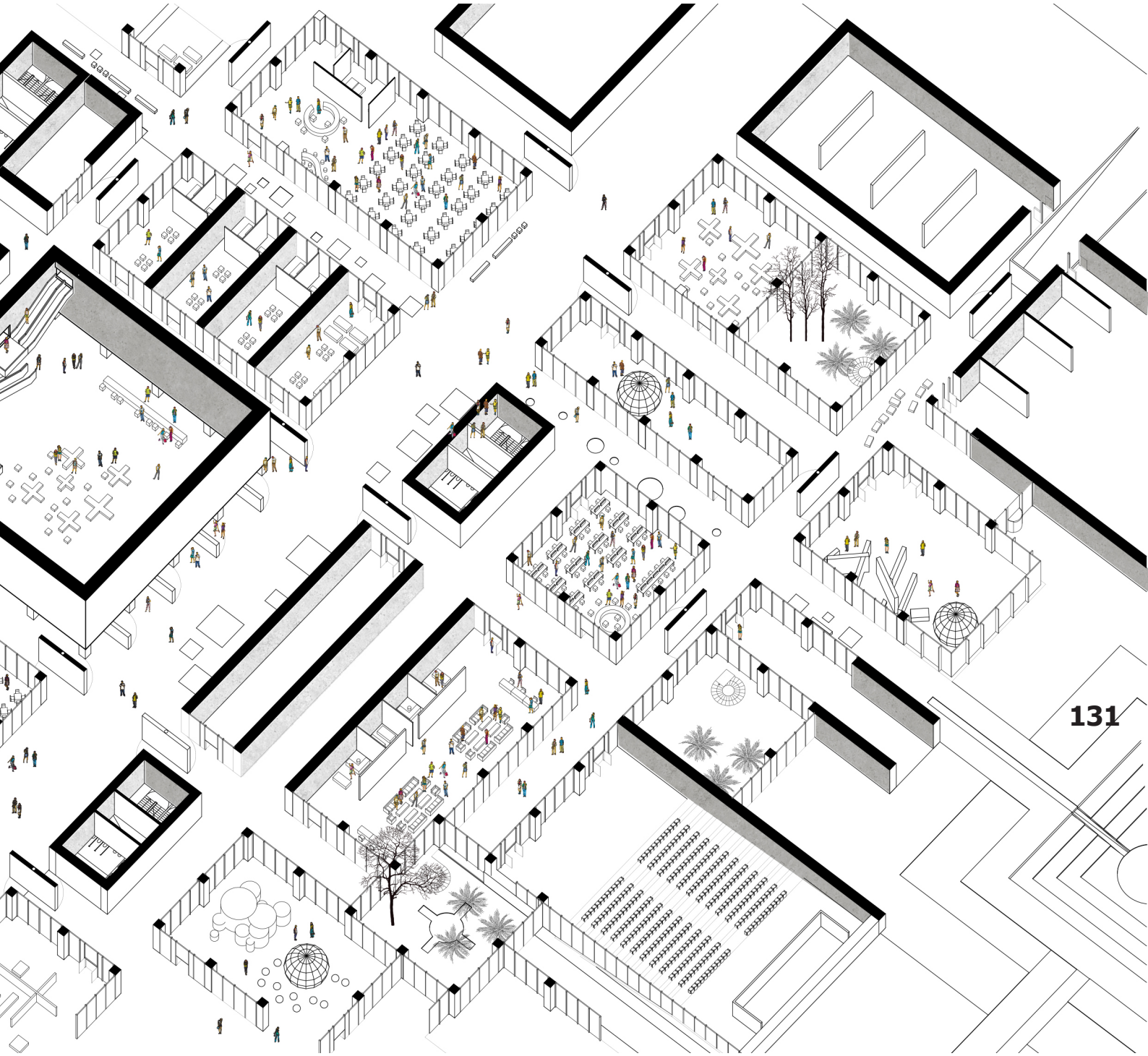

parking entrance a
WATER ROAD

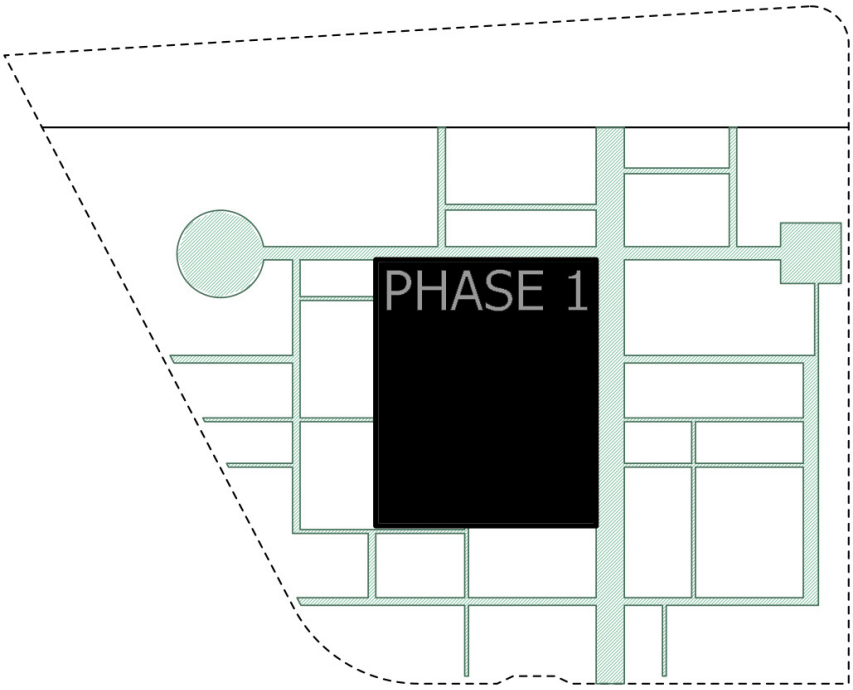

parking entrance b
main entrance from parking
SCIENCE CITY
DESERT ROAD
main pedestrian entrance







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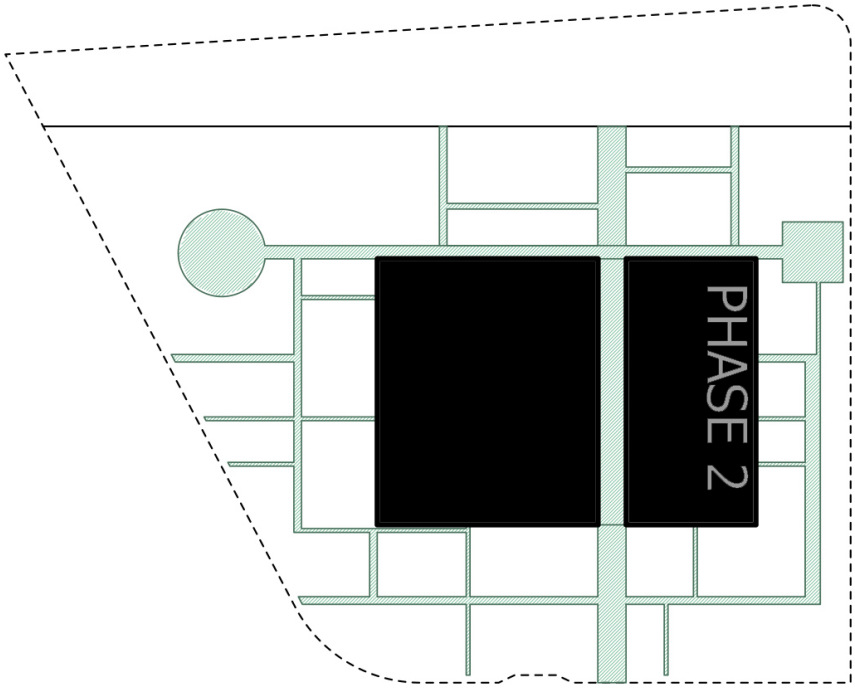
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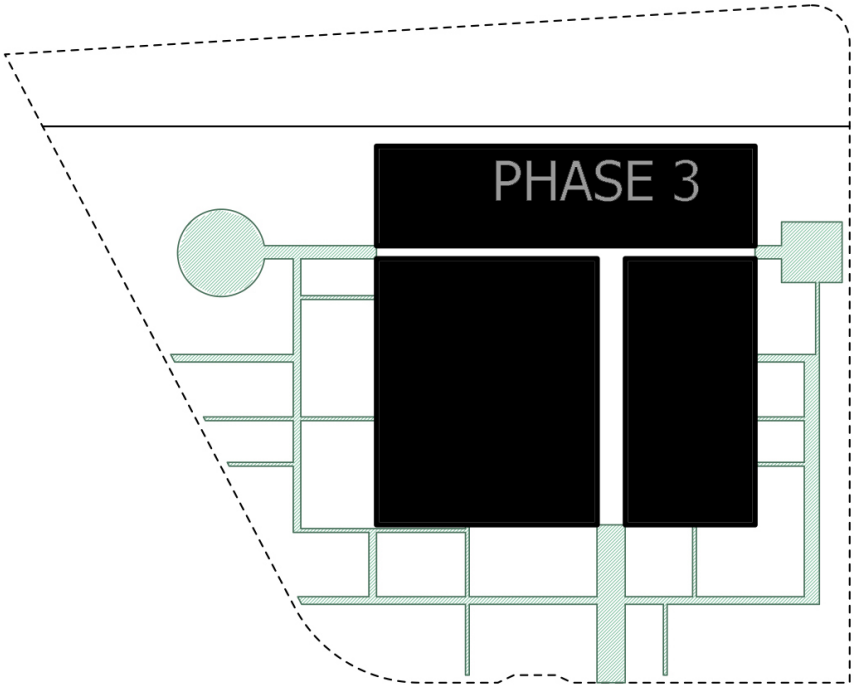
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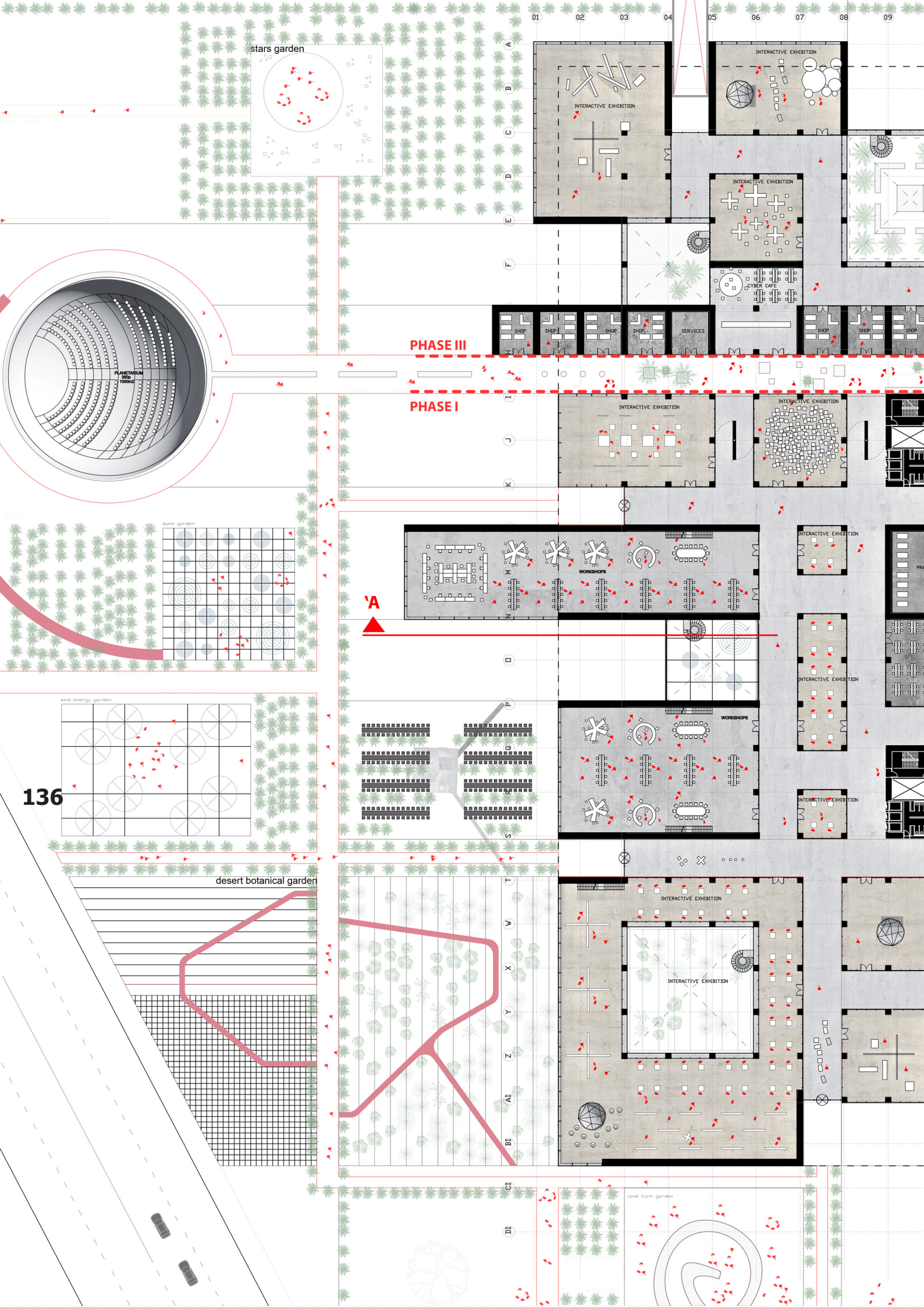
133




135


stars garden
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
CYBER CAFE
SHOP
SHOP
SHOP
SHOP
SERVICES
SHOP
SHOP
SHOP
PHASE III
PHASE I
PLANETARIUM
350p
1000m2
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
dune garden
WORKSHOPS
INTERACTIVE EXHIBITION
'A
INTERACTIVE EXHIBITION
wind energy garden
WORKSHOPS
INTERACTIVE EXHIBITION
136
desert botanical garden
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
land form garden
01
02
03
04
05
06
07
08
09
A
B
C
D
E
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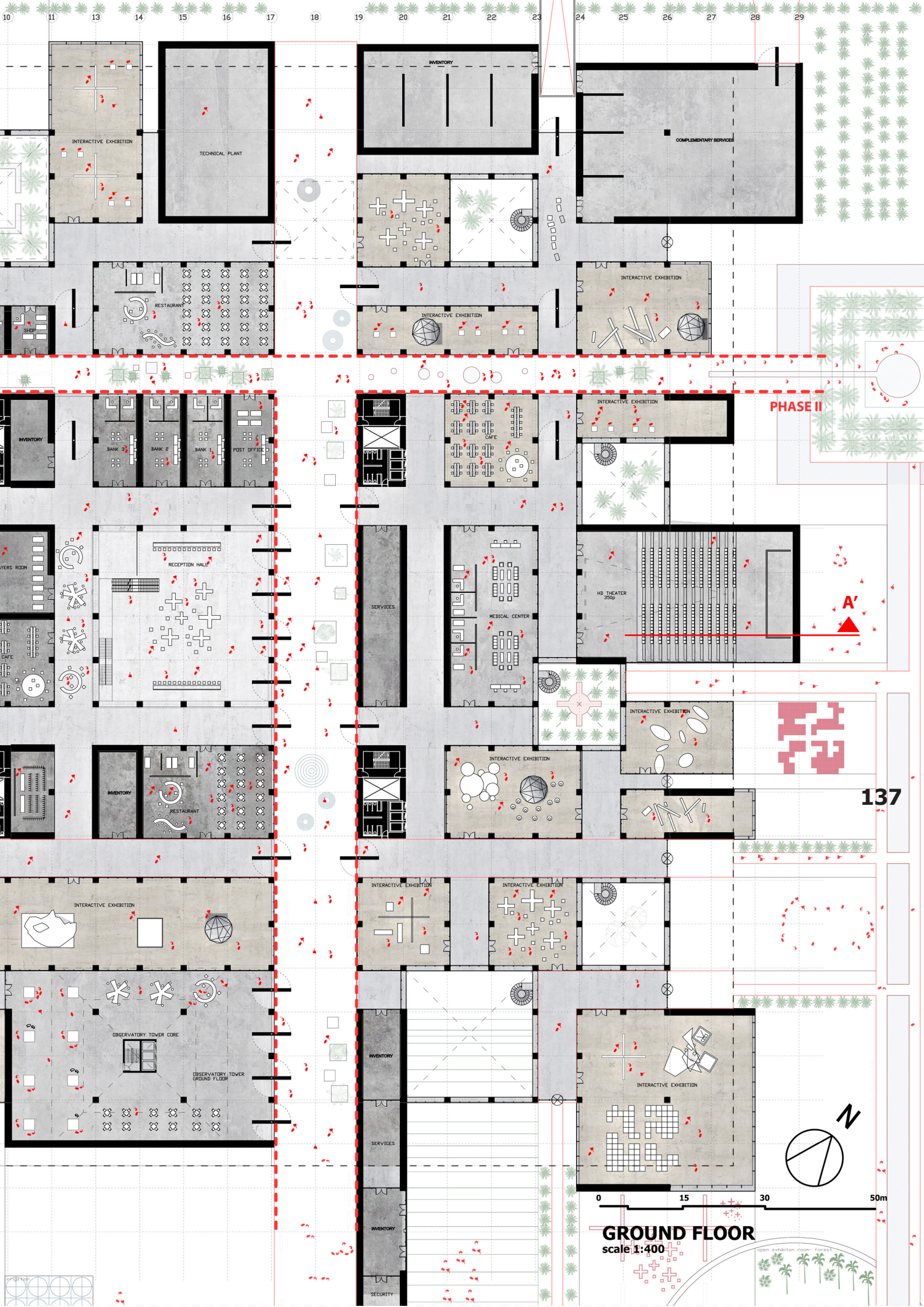
10
11
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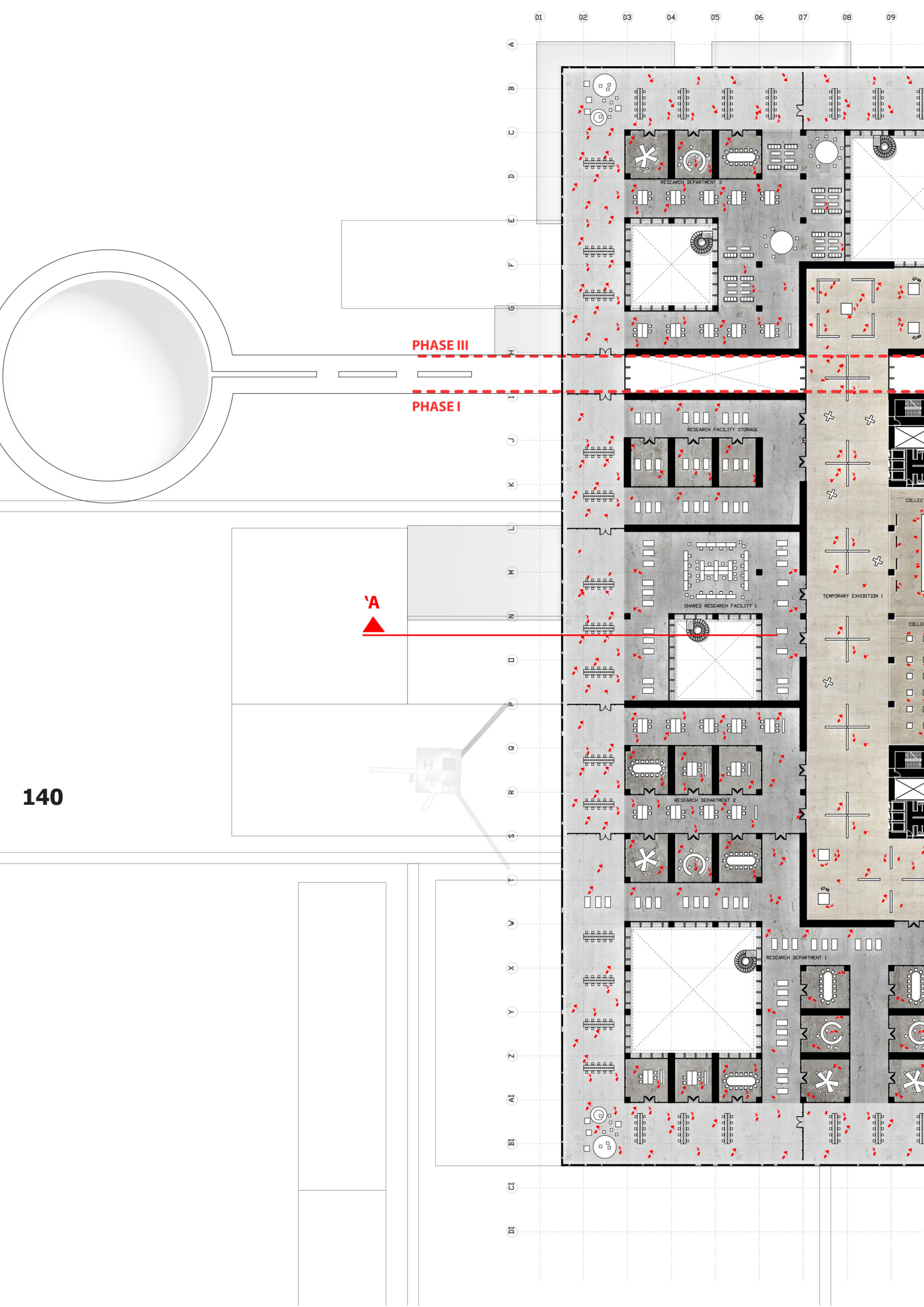
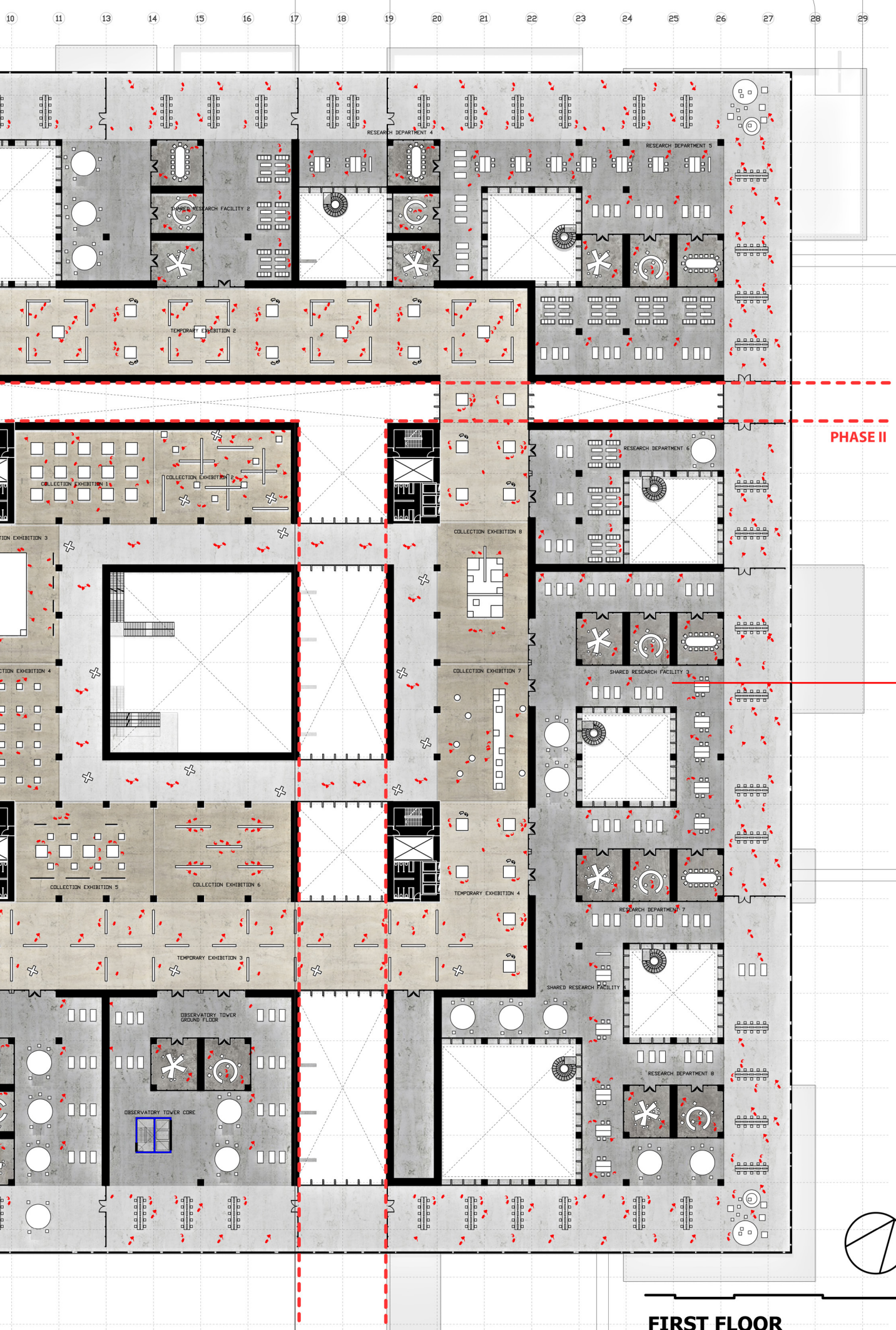
29
INVENTORY
INTERACTIVE EXHIBITION
TECHNICAL PLANT
COMPLEMENTARY SERVICES
RESTAURANT
SHOP
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
PHASE II
INVENTORY
BANK 3
BANK 2
BANK 1
POST OFFICE
CAFE
INTERACTIVE EXHIBITION
RECEPTION HALL
SERVICES
MEDICAL CENTER
HD THEATER
350p
A'
CAFE
INTERACTIVE EXHIBITION
INVENTORY
RESTAURANT
INTERACTIVE EXHIBITION
137
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
OBSERVATORY TOWER CORE
OBSERVATORY TOWER
GROUND FLOOR
INVENTORY
INTERACTIVE EXHIBITION
SERVICES
INVENTORY
SECURITY
N
0
15
30
50m
GROUND FLOOR
scale 1:400
open exhibition room- forest


DNA STRAND
GENETIC CODE
466907758
SKIN
MUSCLES
ORGANS
BONES
NERVES
CELLS




PHASE III
PHASE I
'A
RESEARCH DEPARTMENT 3
RESEARCH FACILITY STORAGE
SHARED RESEARCH FACILITY 1
TEMPORARY EXHIBITION 1
RESEARCH DEPARTMENT 2
RESEARCH DEPARTMENT 1

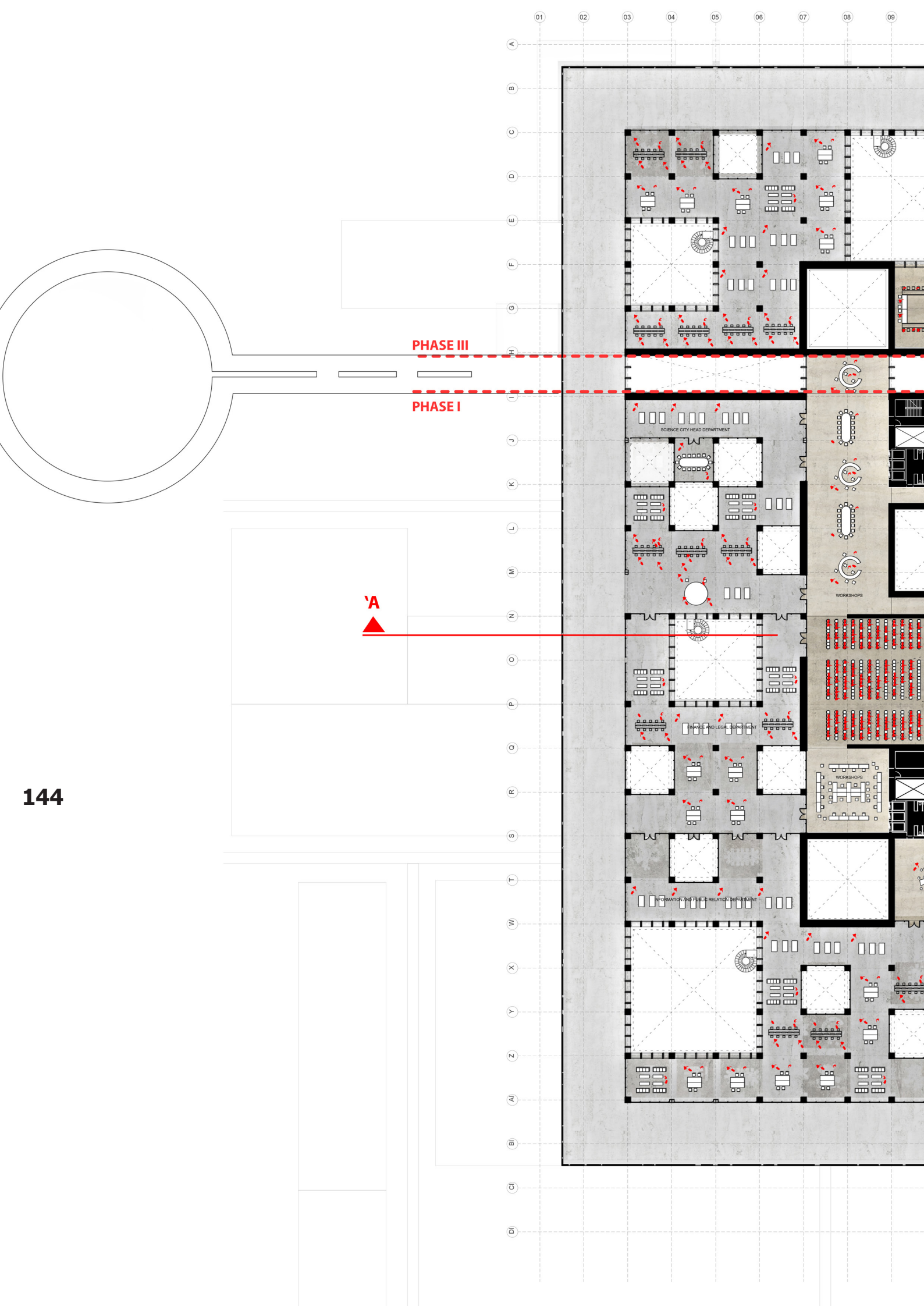


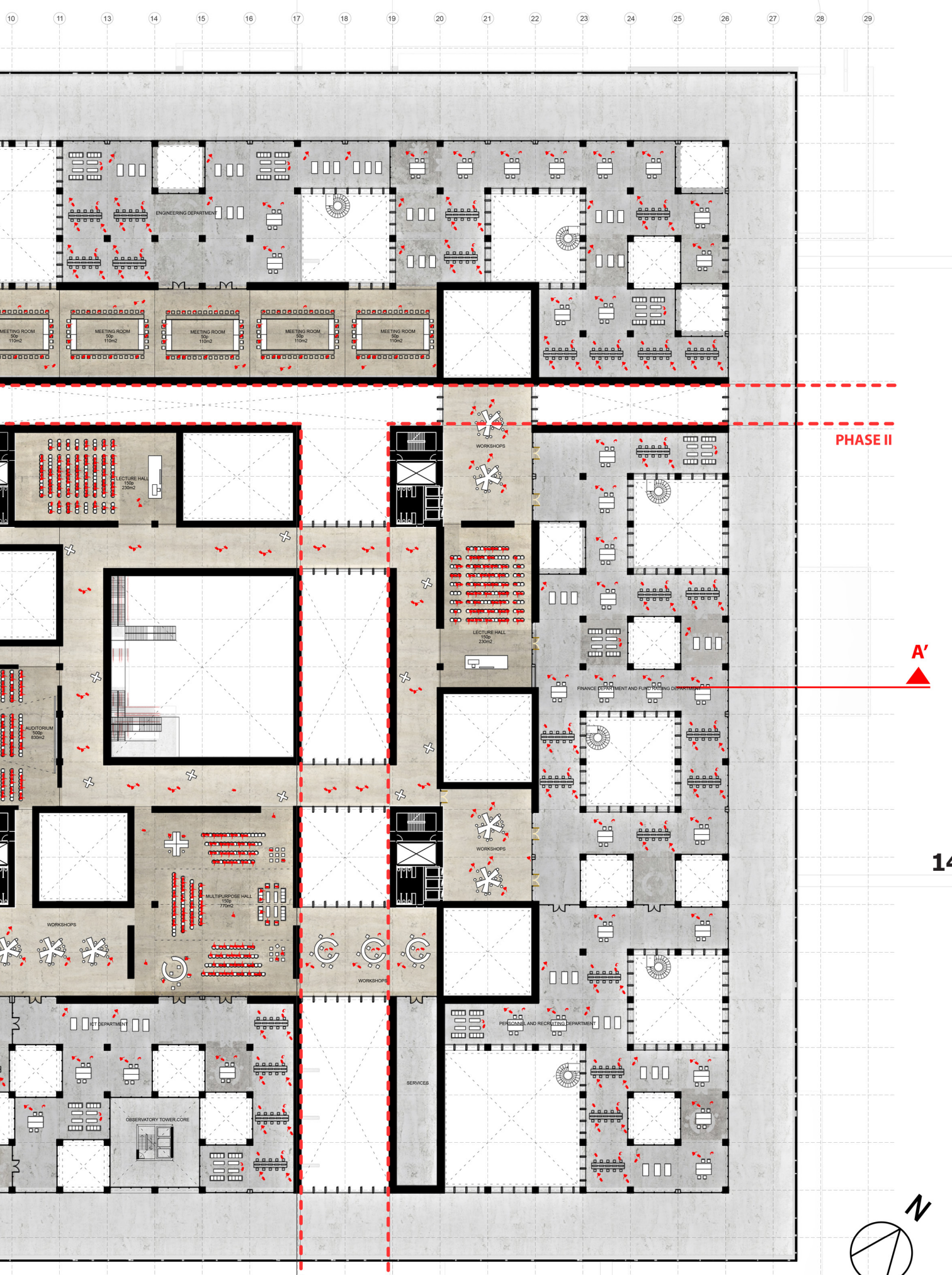
141

FIRST FLOOR
scale 1:400

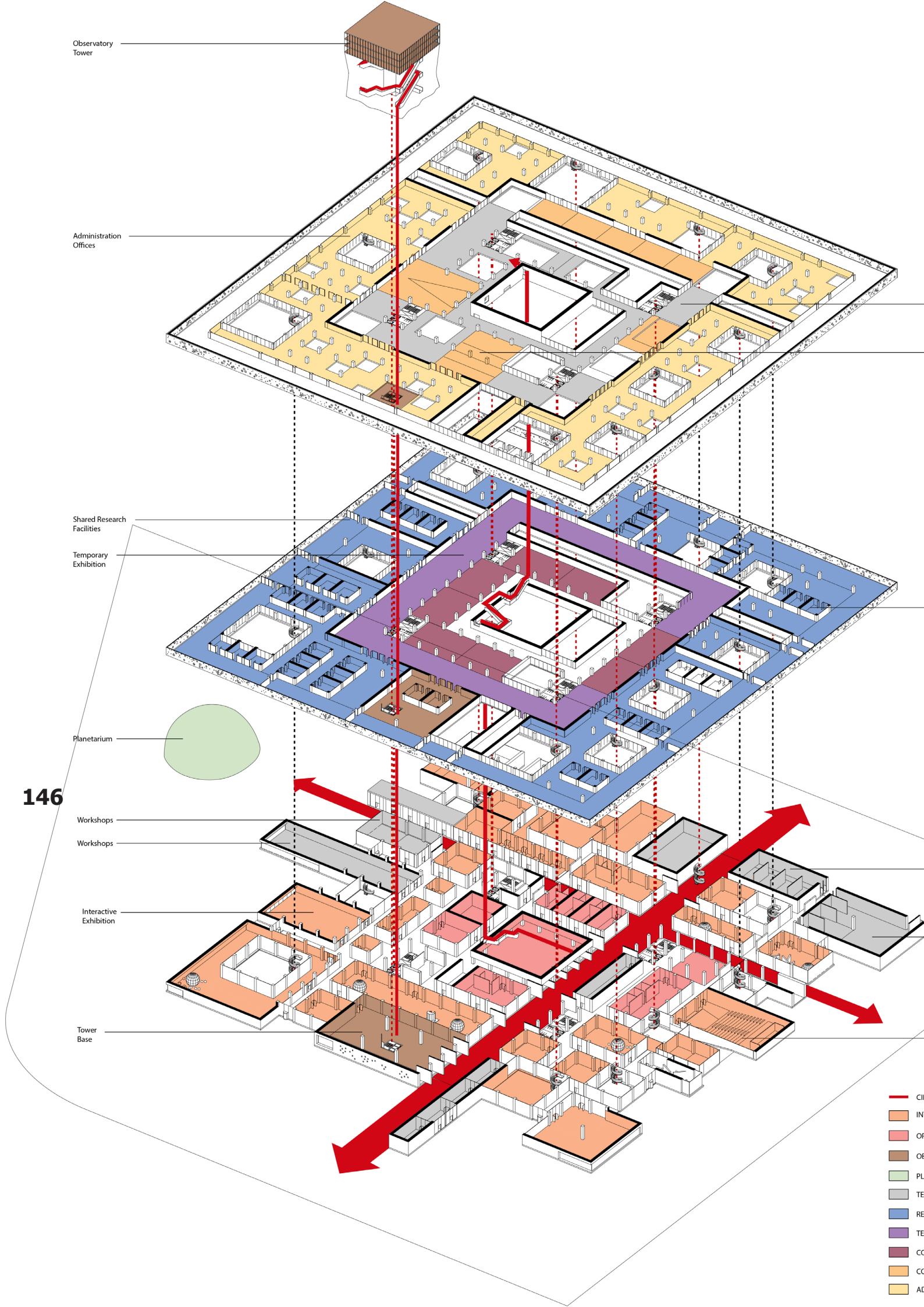

142


GALLERY 4
143


PHASE III
PHASE I
'A
SCIENCE CITY HEAD DEPARTMENT
WORKSHOPS
FINANCE AND LEGAL DEPARTMENT
WORKSHOPS
INFORMATION AND PUBLIC RELATION DEPARTMENT

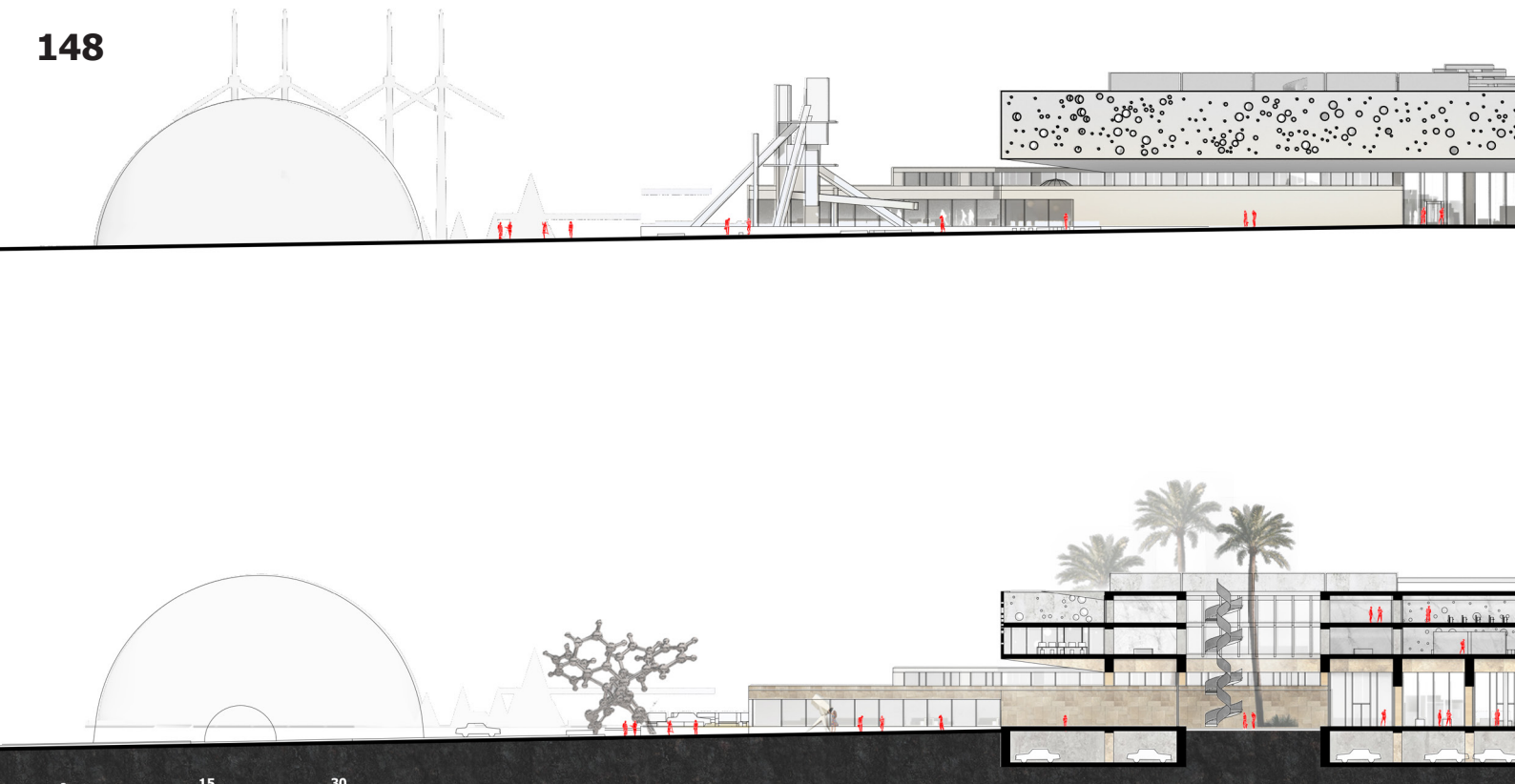


SECOND FLOOR
scale 1:400

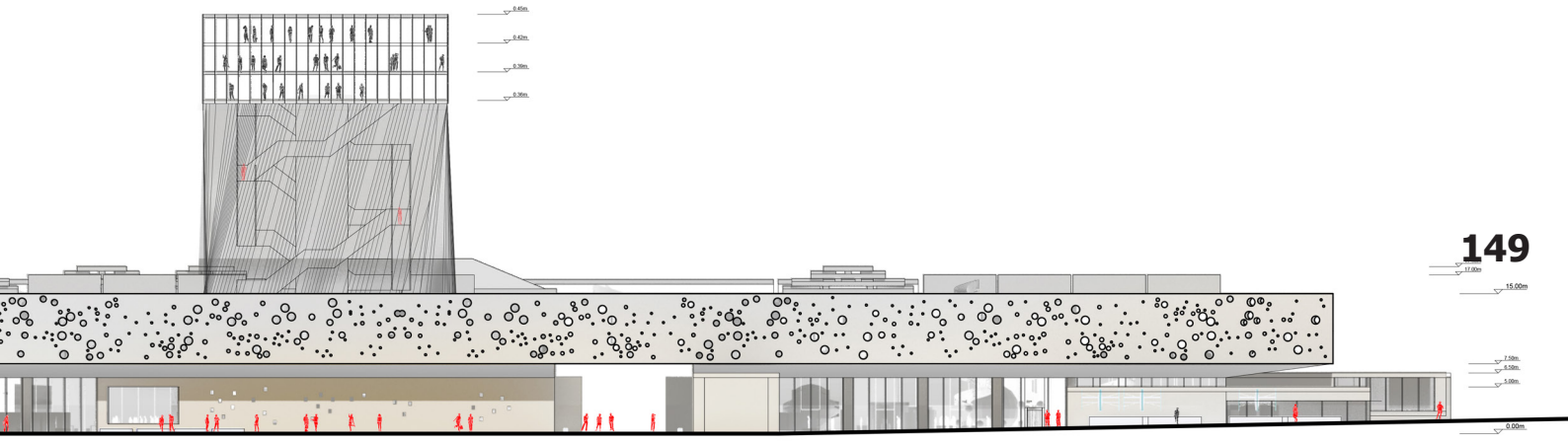

Observatory Tower
Administration Offices
Shared Research Facilities
Temporary Exhibition
Planetarium
Workshops
Workshops
Interactive Exhibition
Tower Base



RCULATION
TERACTIVE EXHIBITION
RIENTATION AND INFORMATION HALL
BSERVATORY TOWER
LANETARIUM
CHNICAL AND SERVICES
SEARCH CENTER
MPORARY EXHIBITION
OLLECTION EXHIBITION
ONFERENCE CENTER
OMINISTRATION



SECTION A-A'
scale 1:400

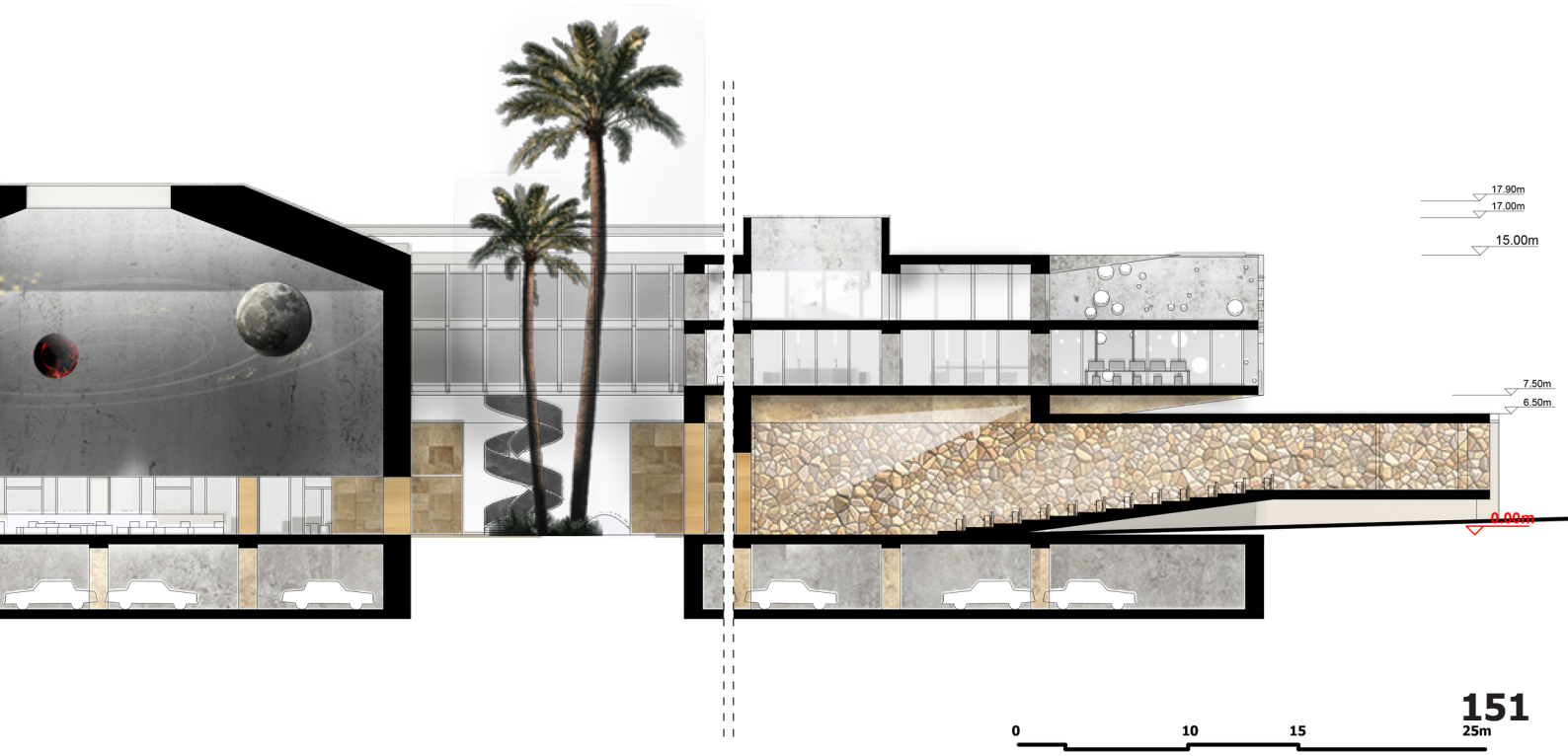


0 15 30 50m

SOUTH ELEVATION
scale 1:400





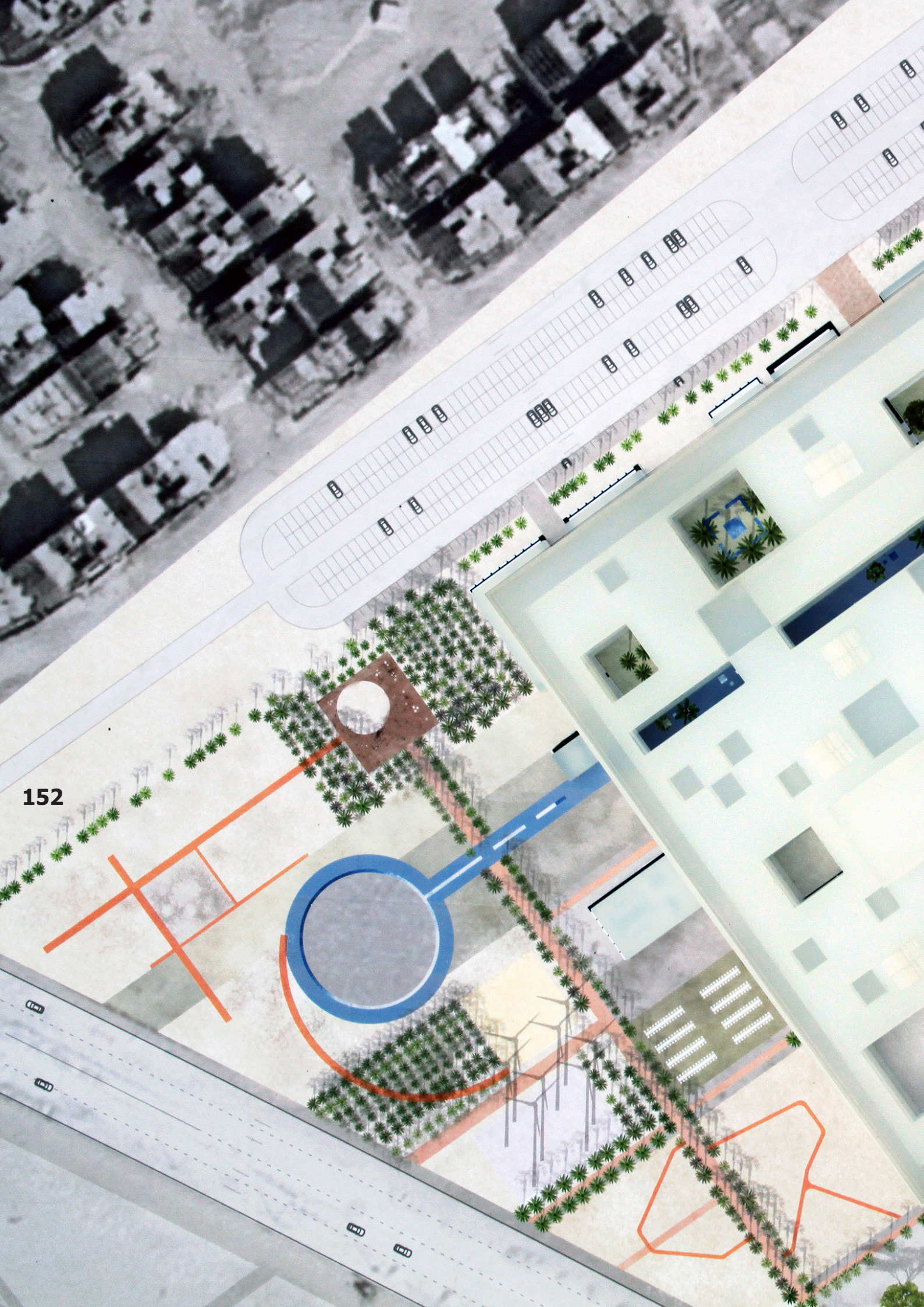


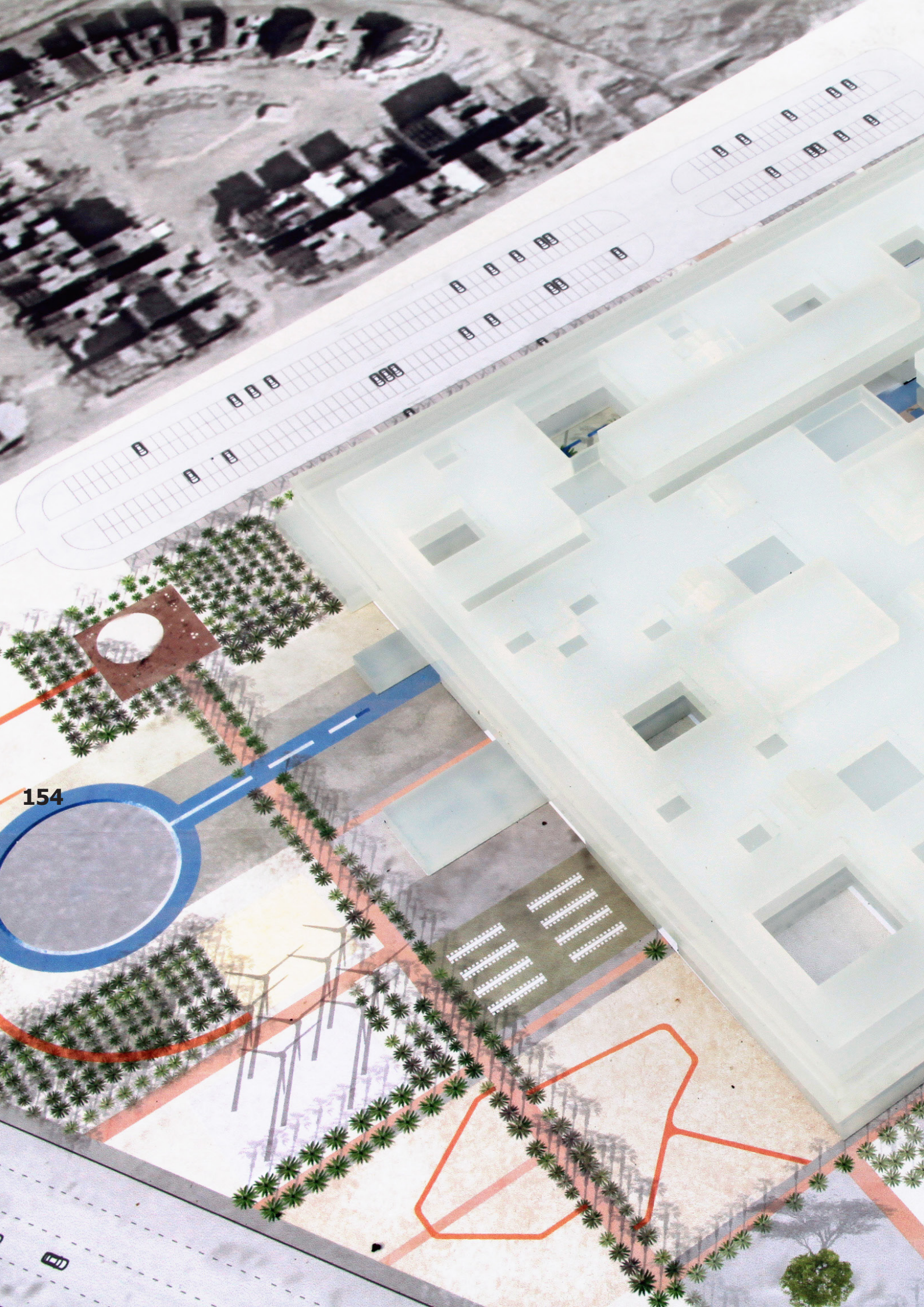
151

0 10 15 25m

SECTION A-A' DETAIL

scale 1:200

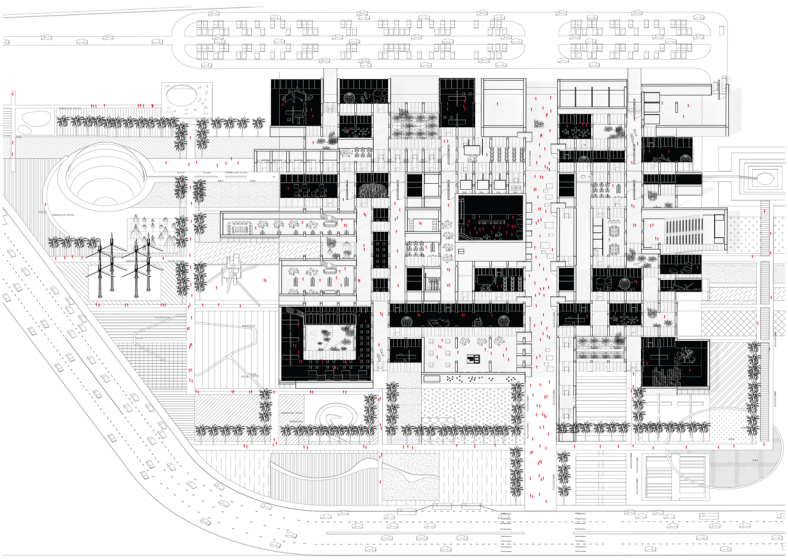


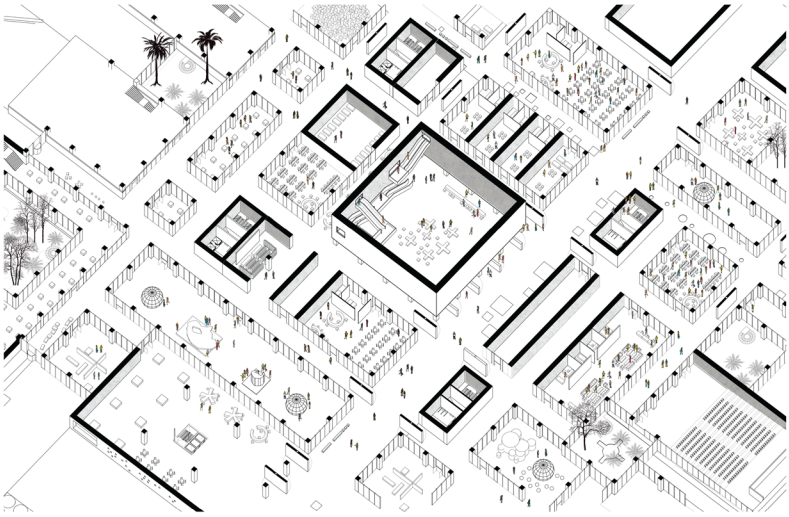




PART 7

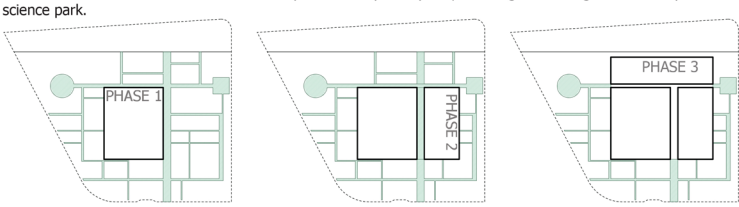
panels





Concept
The building follows the organization of a city based on a clear orthogonal grid that is prominent in the scheme but not absolute, in order to create space for diversity in scale and function. The city is the result of the composition of different metropolitan and architectural elements such as the urban grid, the block, the street and the landmark. Follows such principles of composition, the Science City introduces the street as the connection between inside and outside. The accumulation of different volumes that contain different program and the interconnection of them with a path system that is expanded into the science park are the main elements that consists both the master-plan and the building circulations of the science city. The main path system is flexible and (re) defined by the three phases that the building will follow. Moreover the idea of the city is enhanced with the development of multifunctional floor plans that lead to a diversity of solutions and to the generation of unexpected situations for the visitors. Blending density, educational and recreational functions, exhibitions and landscape patterns, the ground floor is an open laboratory of life, science, art and curiosity.

The building is divided in three, the phase I containing the main core of services and the the orientation hall. The distribution of the functions is arranged in program rings, therefore the campus can contain 40% of all programmatic elements in Phase I, 30% in Phase II and 30% in Phase III. The element of the street is introducing the visitors to the orientation hall. The volume is perforated by courtyards, resulting to a stronger relationship with the science park.

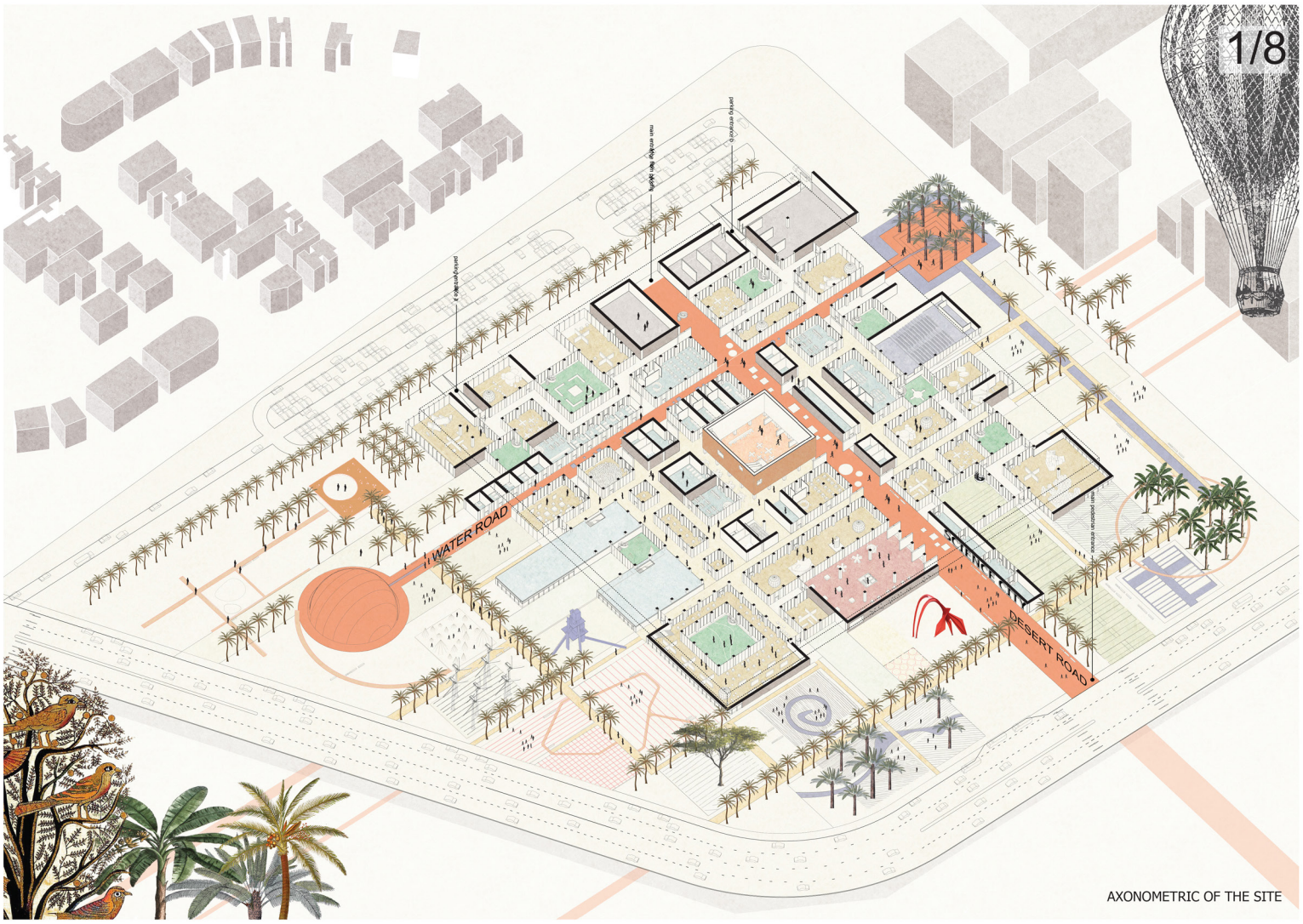


Urban realm
The urban realm of 6th of October City is characterized by introvert residential complexes, private recreational and educational institutions and other local industries. The multifunctional character of the site creates a real challenge as it is not part of a specific historical context but it is a generic urban structure in process, aiming to cover needs of the continuously increasing size of the city. The site is exploited by private investments and lack of architectural harmony. The privatization of the land and the lack of public facilities decrease the urbanity of the wider context, namely the livingness of a city and continuous flow of people. The design of the master plan should aim to provide a new pubic democratic space that is flexible for future transformations, by being extrovert and promoting the potentials of a continuous and vivid landscape.

Science park
On this context, the Science City acts as a node and an incubator, by containing as its main ingredients the solid architecture expression and the diverse landscape.
The science park is characterized by an interweaving pattern of paths and an accumulation of programmatic rooms reminding of the cabinet of curiosities- kunstkammer that appeared at 16th century with the establishment of the first collections of natural history and art. The kunstkammer is regarded as a theater of the world- a microcosm. The intention of the science park is to educate the visitors on different scientific fields and underline the unique landscape of Egypt. Fusing inside and outside by means of design and program continuity, the paths of the park enter into the exhibition spaces and fragment the building into several interconnected spaces, thus creating views and escapes into the landscape, at the same time proclaiming potentials for future expansions.
The pattern of the master plan is defined programmatically by two main themes- the dryness and the moisture- the desert and the water or in accordance with the Egyptian mythology Tefnut and Shu- that define the landscape of Egypt. The road of the desert and the road of the water are the main elements that split the building creating courtyards, patterns on the desert, escapes to the landscape and possibility for infinite future expansion. The two main axes serve a double role, on the one hand providing the main entrances to the building and on the other hand fragmenting it into three phases. The phasing character of the project is therefore based on the notion of continuity, namely three separate buildings that when put together form a unified and continuous entity. The repetition of intersecting corridors and the variation of the scale of the roads define different programmatic rooms both inside the building and outside in the Science Park. Consequently, the Science Park provides different experiences that are about both the immediate and the wider range of sciences, such as natural phenomena-elements and Egyptian landscapes, maths, the stars, wind, energy, the agriculture, the land formation, the gardening, the flora of Fiona of Egypt.

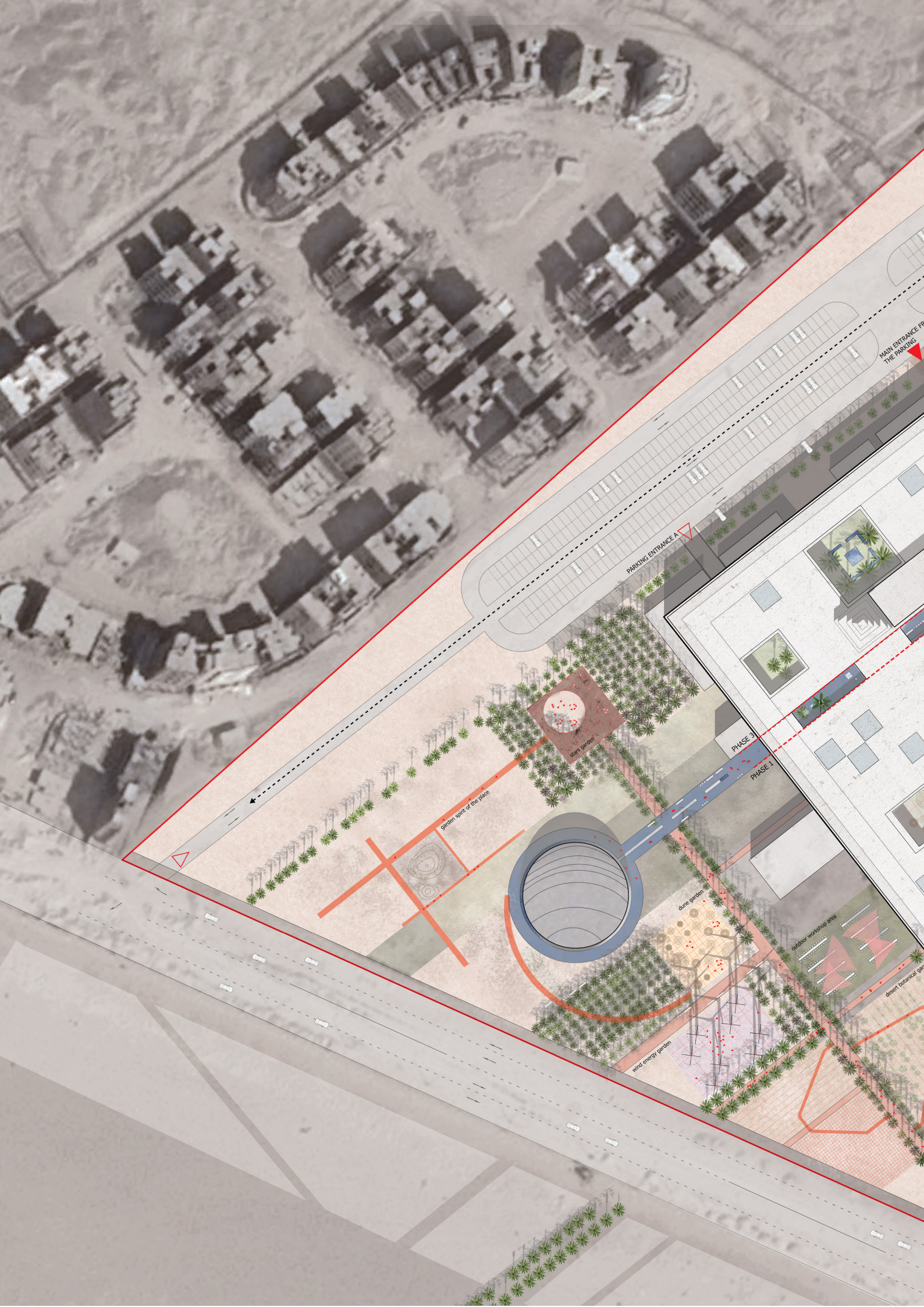

MAIN ENTRANCE VIEW

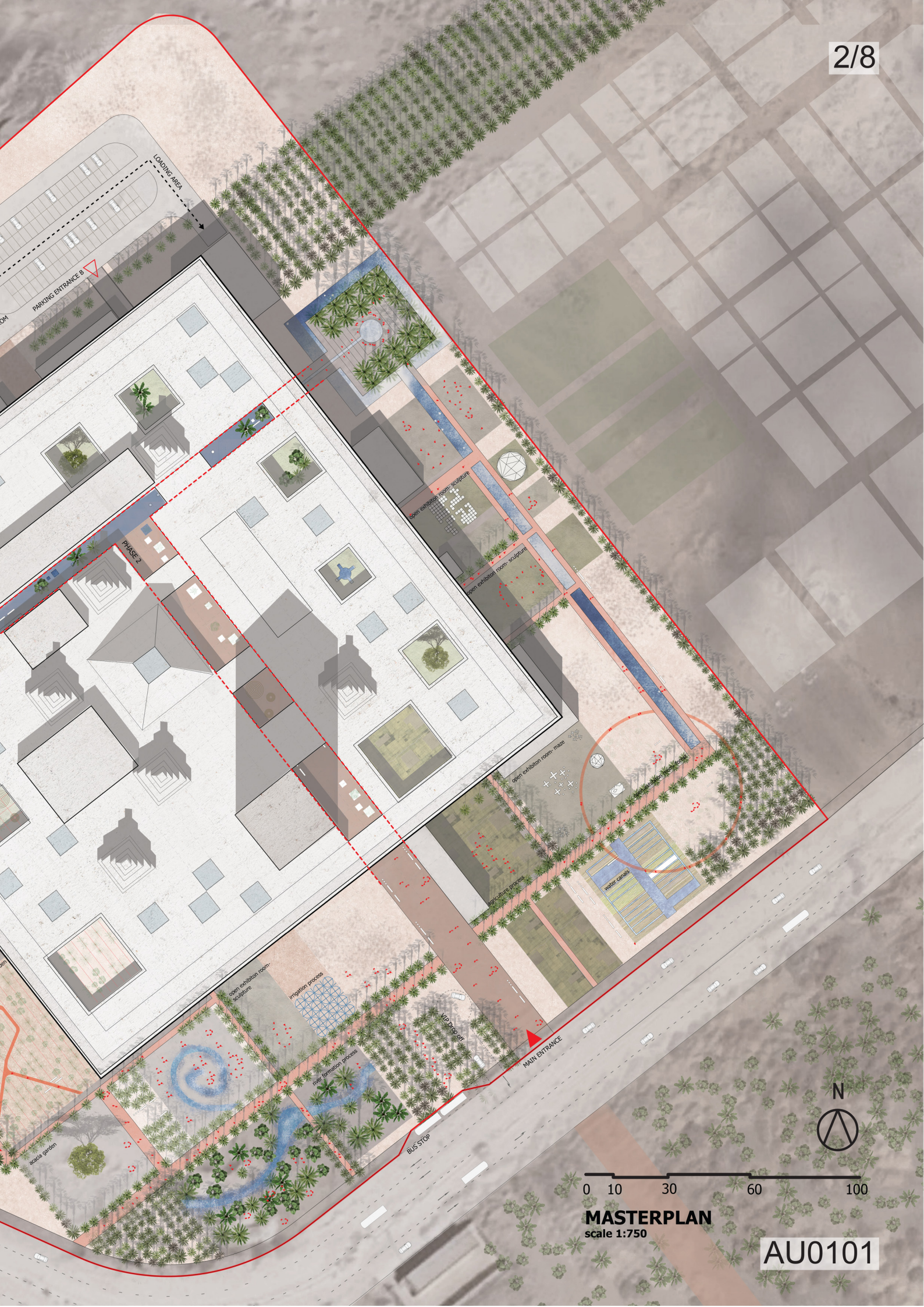

NIGHT VIEW SOUTH ELEVATION



AXONOMETRIC OF THE SITE




PARKING ENTRANCE A
MAIN ENTRANCE FR
THE PARKING
stars garden
garden spirit of the place
PHASE 3
PHASE 1
dune garden
outdoor workshop area
desert botanical gar
wind energy garden



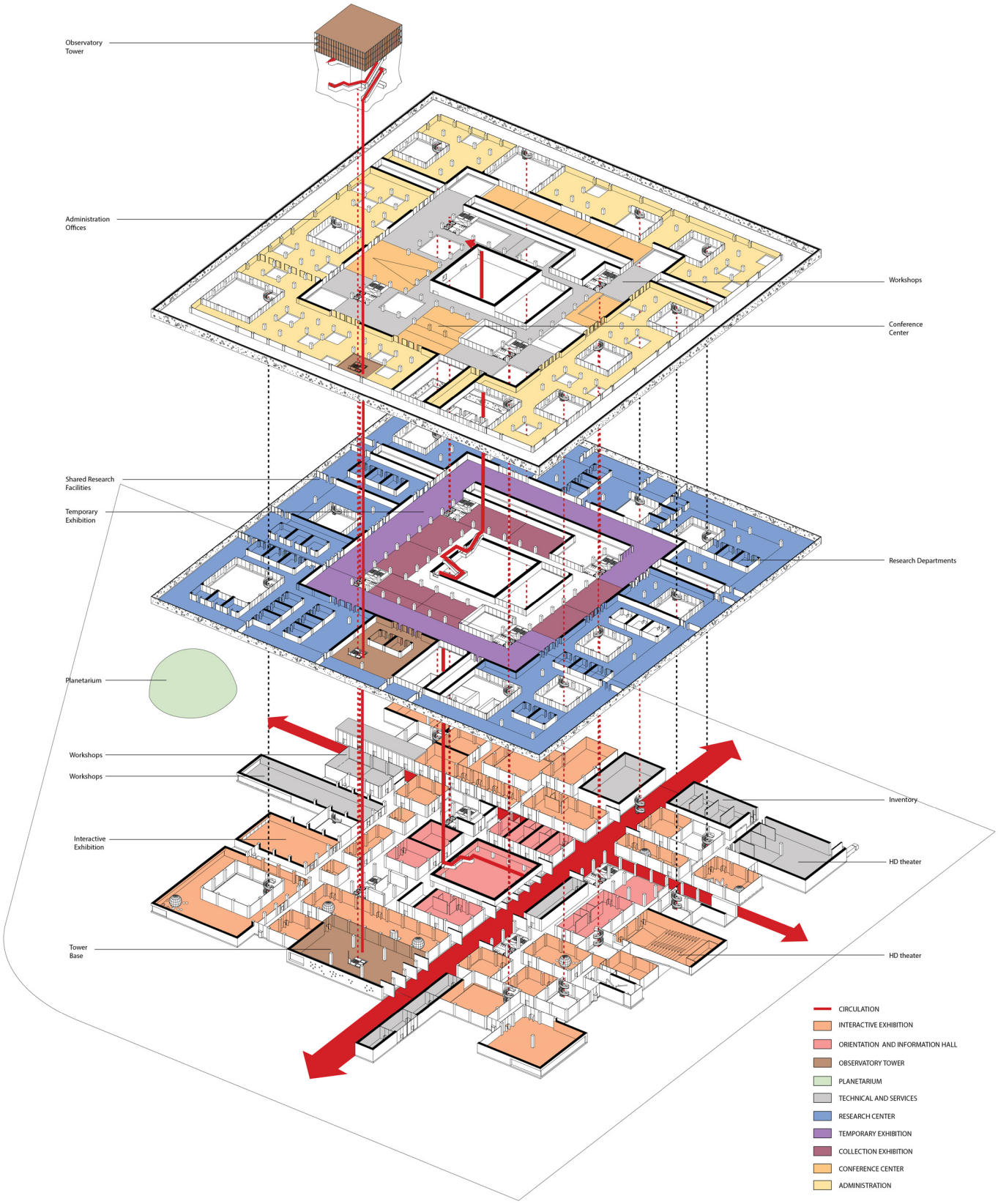
MASTERPLAN
scale 1:750

AU0101



INTERIOR VIEW OF THE ORIENTATION HALL




Observatory Tower
Administration Offices
Workshops
Conference Center
Shared Research Facilities
Temporary Exhibition
Research Departments
Planetarium
Workshops
Workshops
Inventory
Interactive Exhibition
HD theater
Tower Base
HD theater
CIRCULATION
INTERACTIVE EXHIBITION
ORIENTATION AND INFORMATION HALL
OBSERVATORY TOWER
PLANETARIUM
TECHNICAL AND SERVICES
RESEARCH CENTER
TEMPORARY EXHIBITION
COLLECTION EXHIBITION
CONFERENCE CENTER
ADMINISTRATION


COLLECTION EXH


INTERACTIVE EX

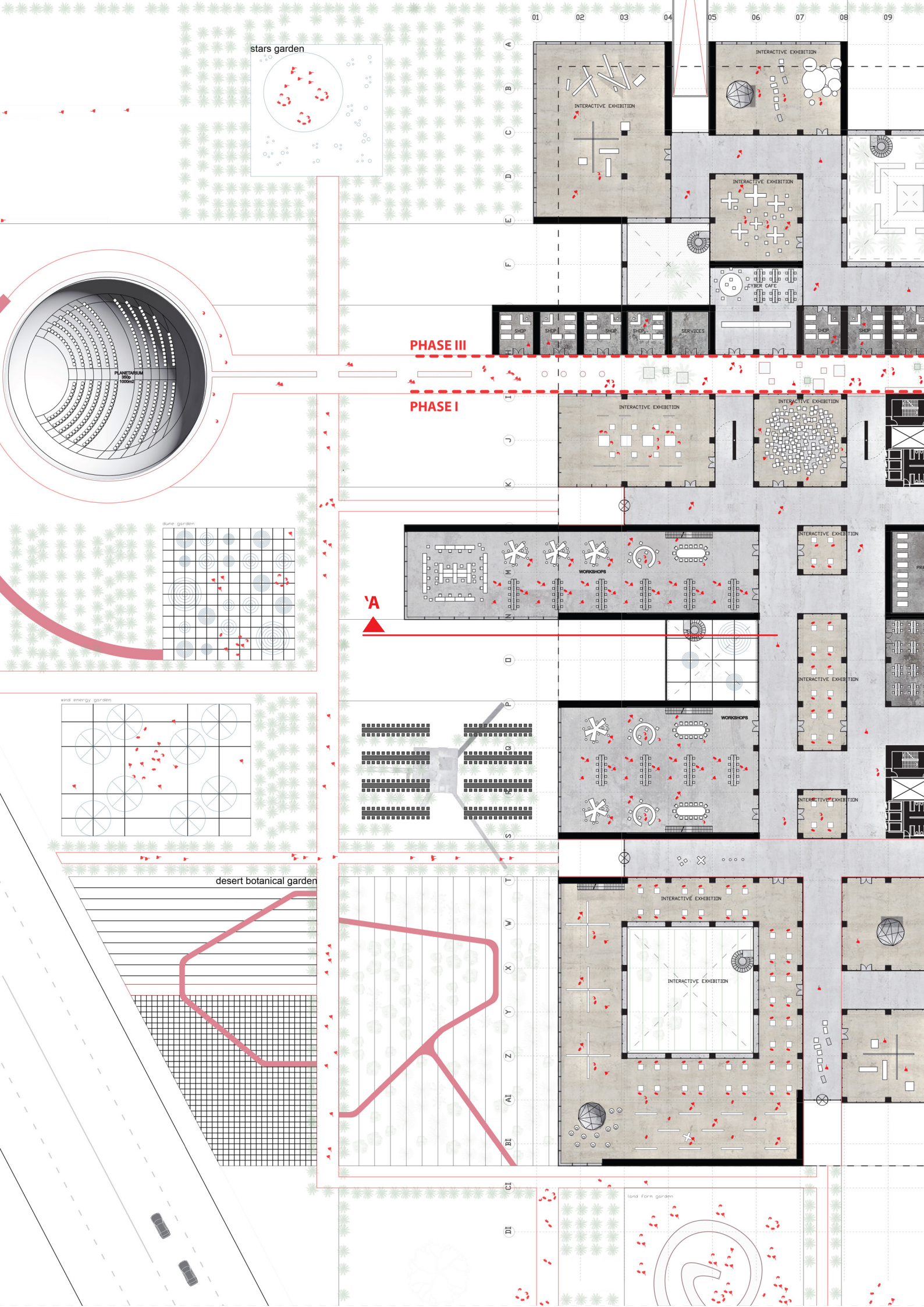


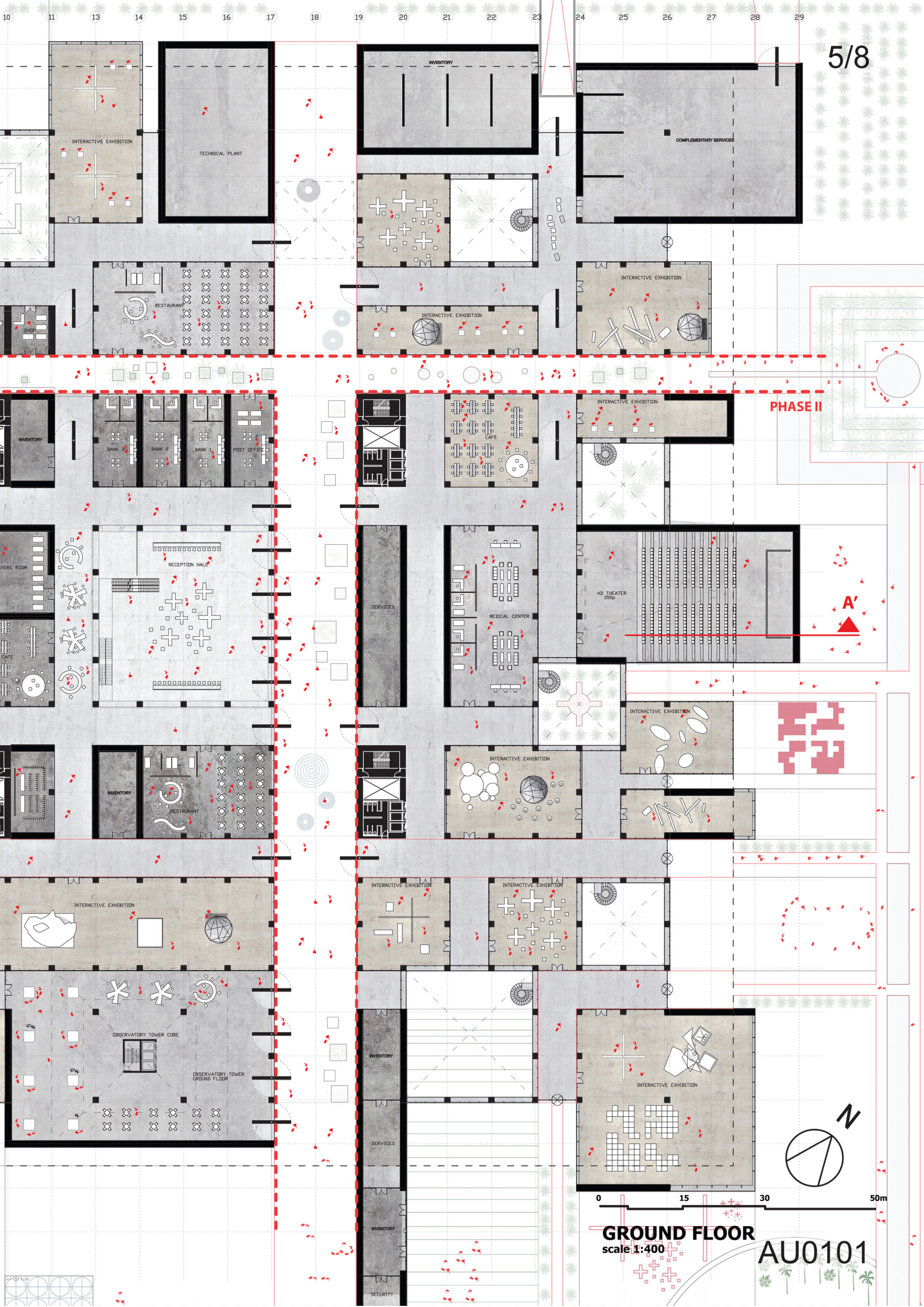
IBITION _ FIRST FLOOR



HIBITION _ GROUND FLOOR

AU0101

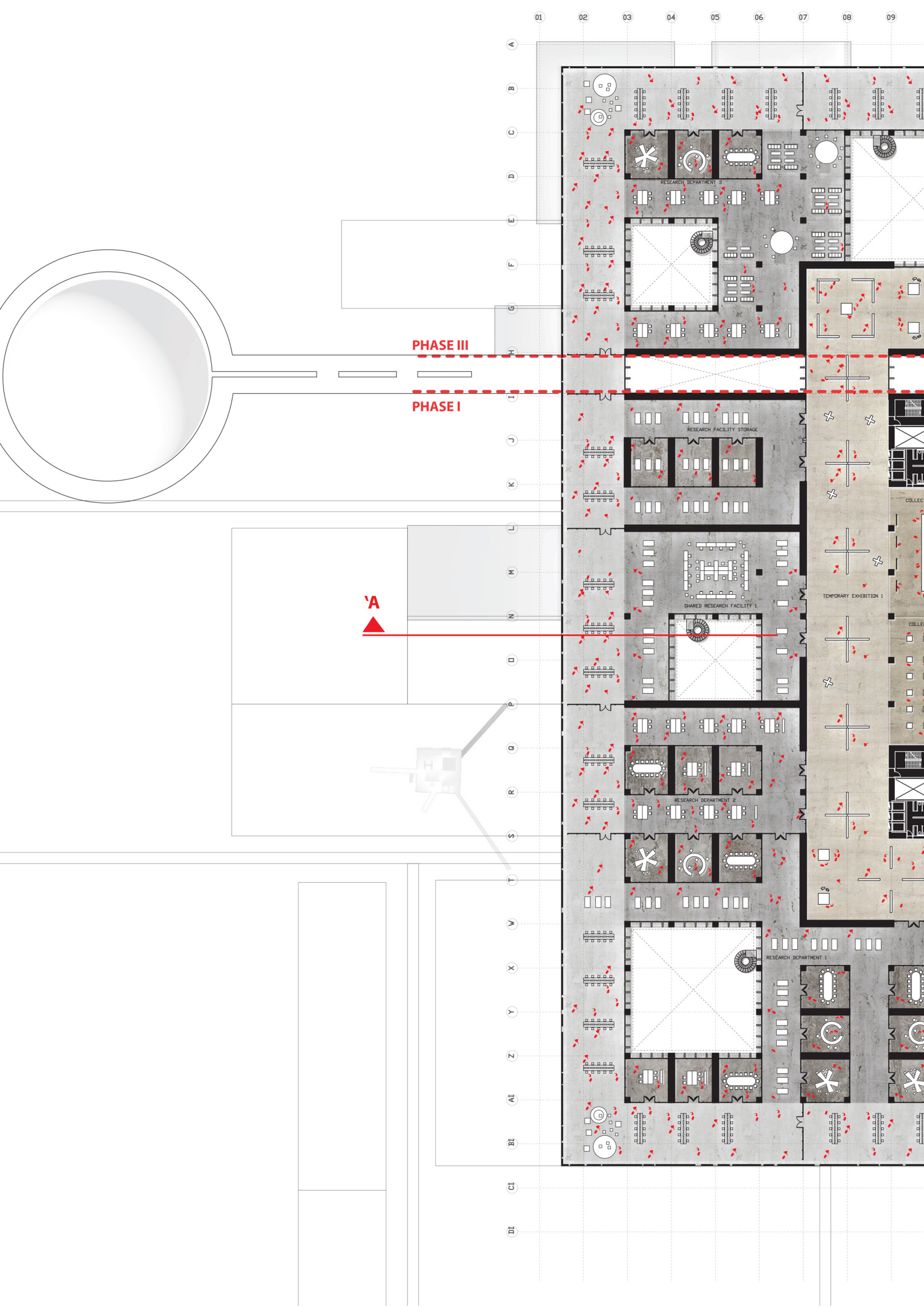

stars garden
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
CYBER CAFE
SHOP
SHOP
SHOP
SHOP
SERVICES
SHOP
SHOP
SHOP
PHASE III
PHASE I
PLANETARIUM
350p
1000m2
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
dune garden
WORKSHOPS
INTERACTIVE EXHIBITION
'A
wind energy garden
WORKSHOPS
INTERACTIVE EXHIBITION
desert botanical garden
INTERACTIVE EXHIBITION
INTERACTIVE EXHIBITION
land form garden



GROUND FLOOR

scale 1:400

AU0101


PHASE III
PHASE I
'A
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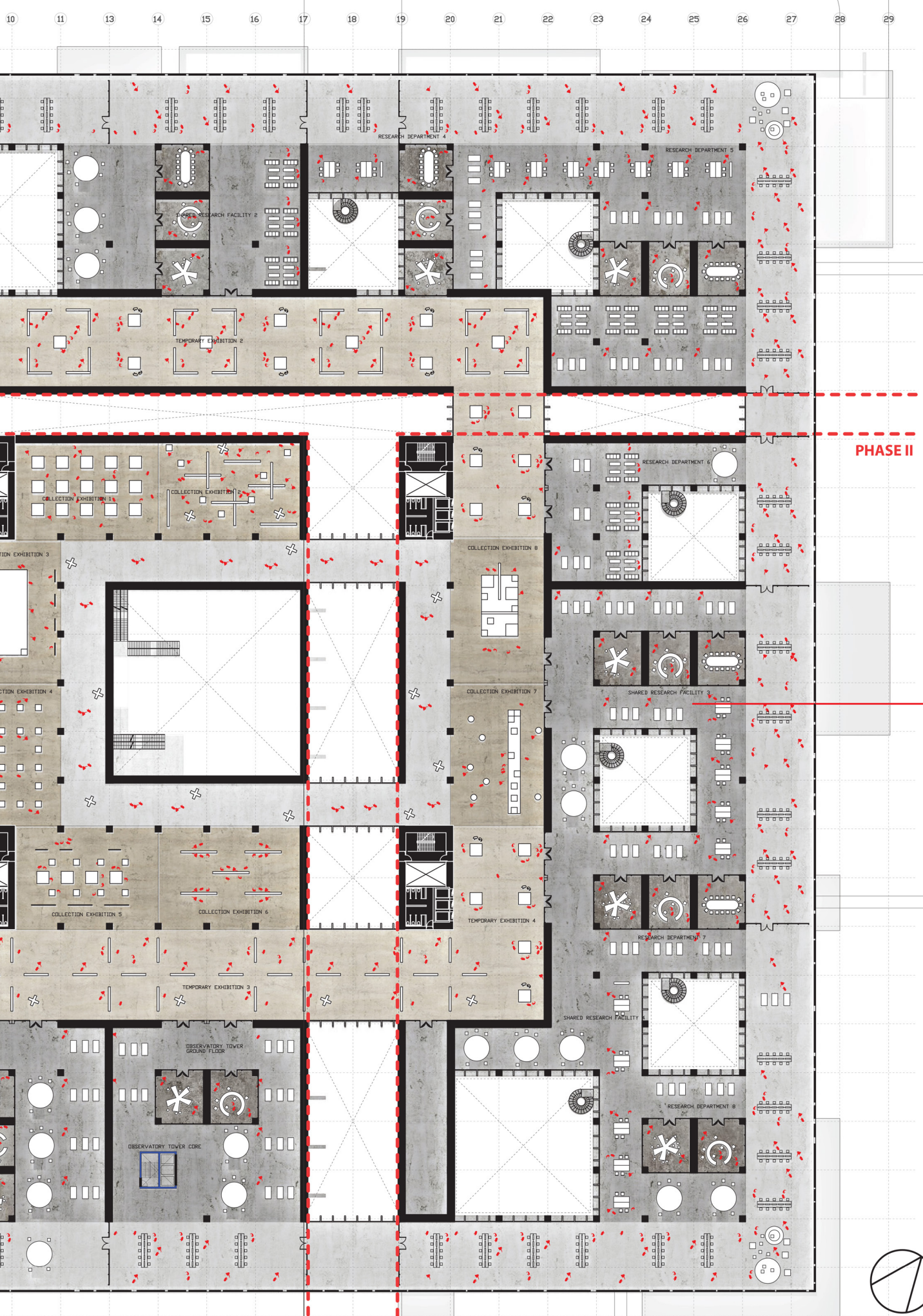
RESEARCH FACILITY STORAGE
SHARED RESEARCH FACILITY 1
TEMPORARY EXHIBITION 1
RESEARCH DEPARTMENT 2
RESEARCH DEPARTMENT 1



FIRST FLOOR
scale 1:400

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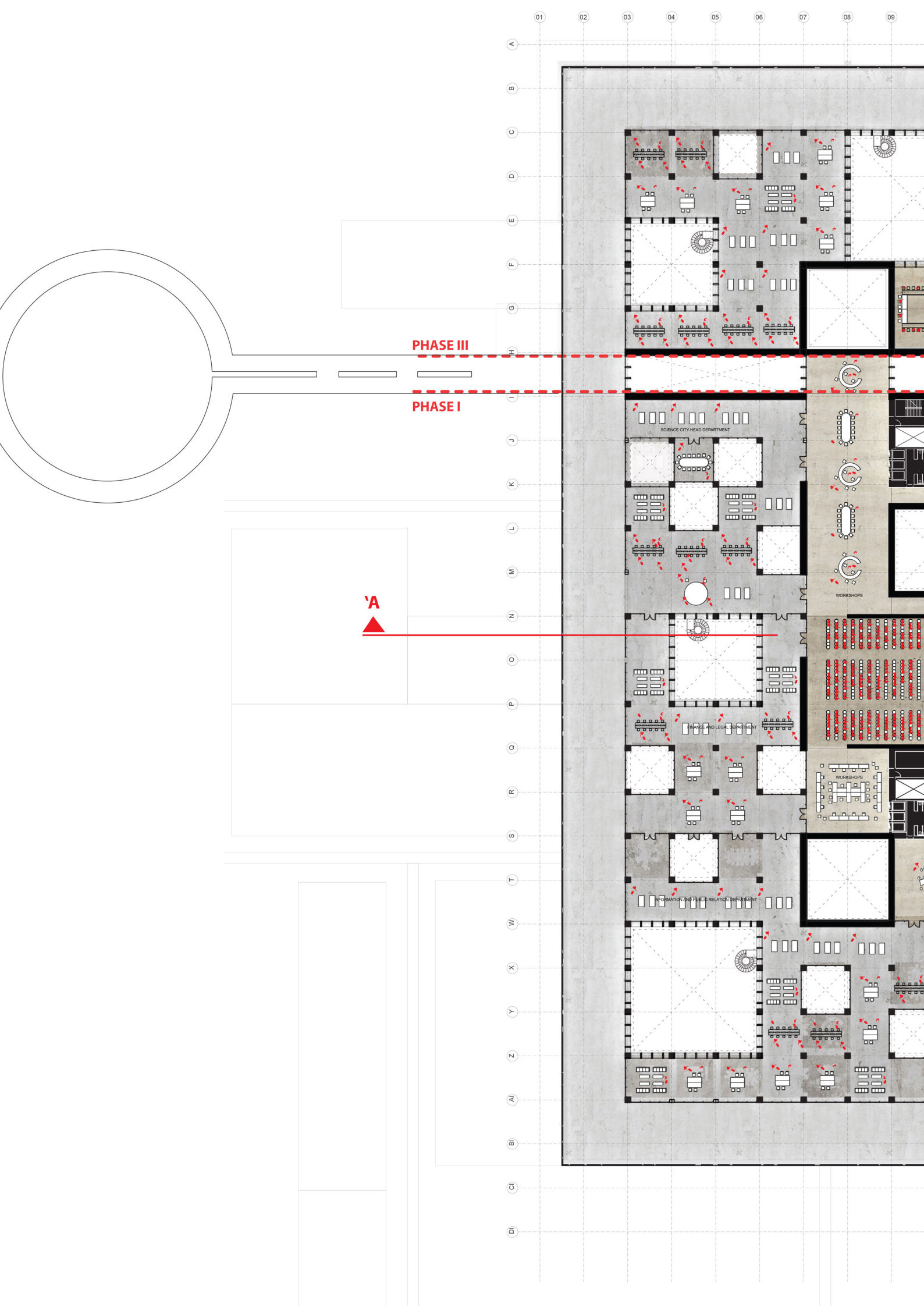
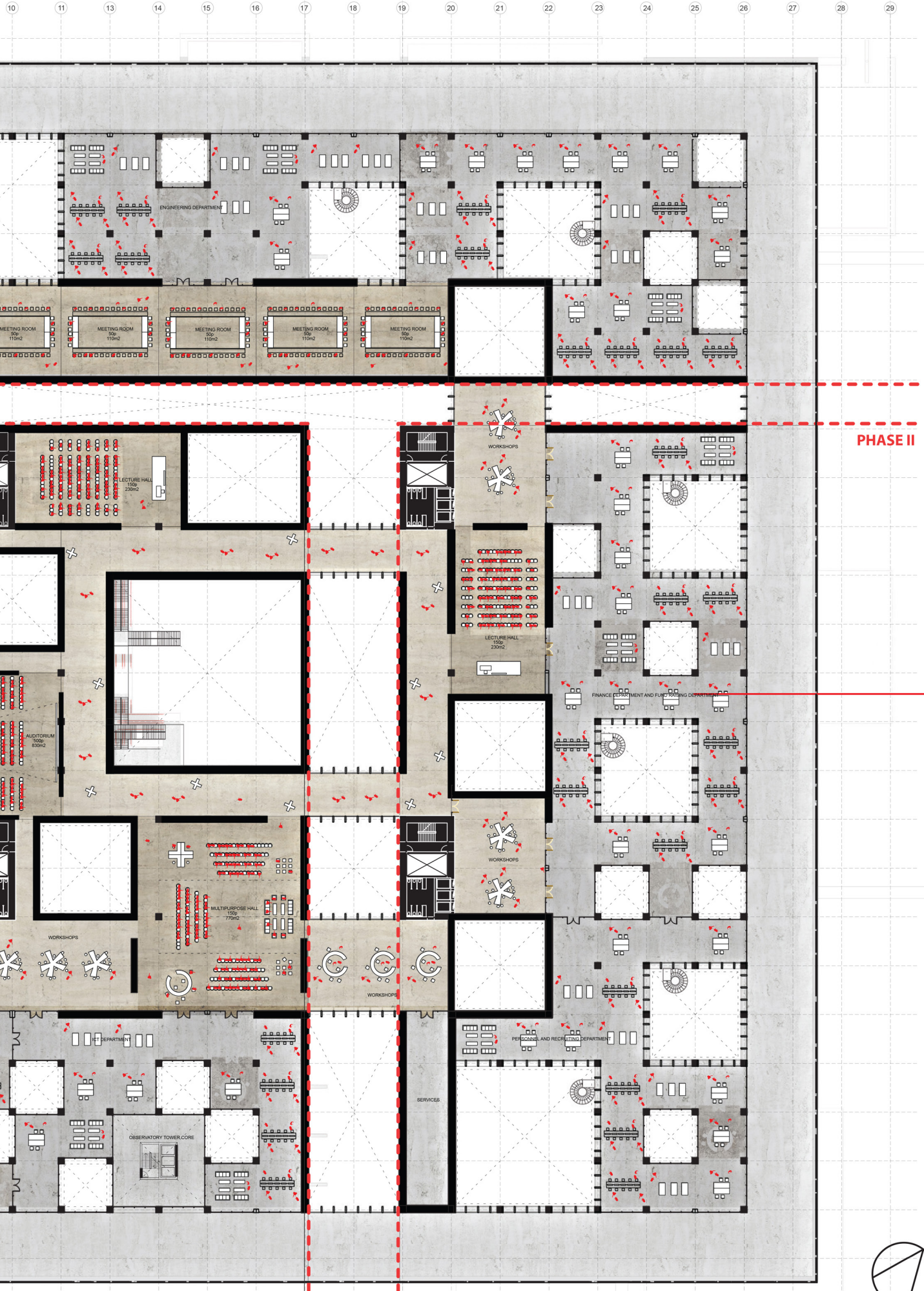

PHASE III
PHASE I
'A
SCIENCE CITY HEAD DEPARTMENT
WORKSHOPS
FINANCE AND LEGAL DEPARTMENT
WORKSHOPS
INFORMATION AND PUBLIC RELATION DEPARTMENT



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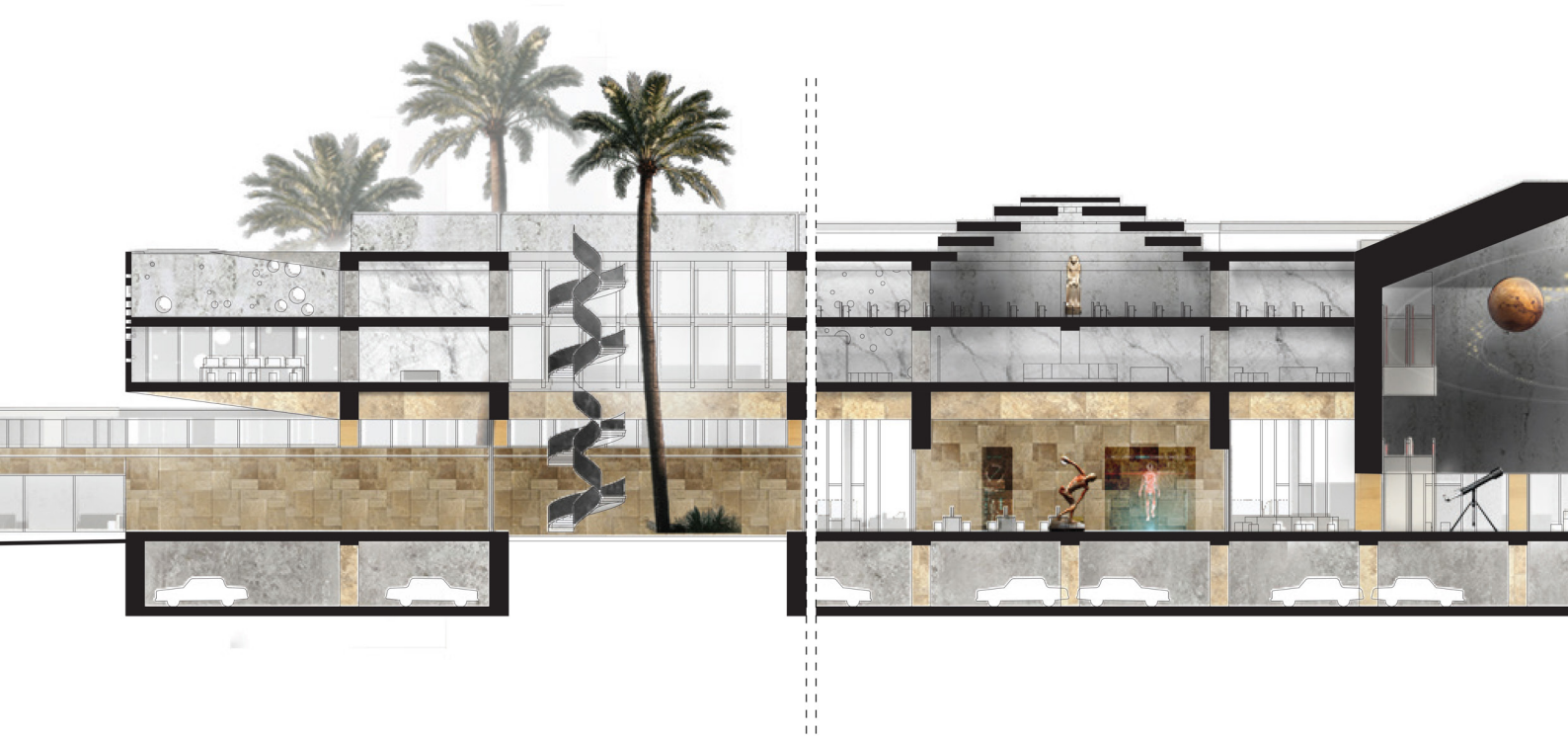
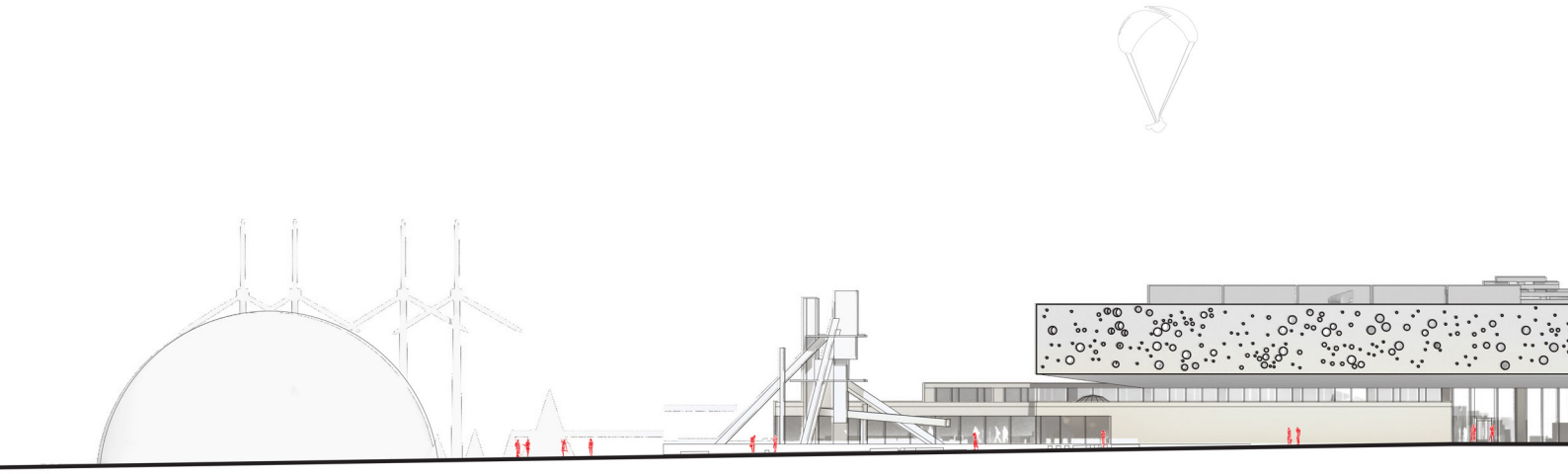
SECOND FLOOR
scale 1:400

AU0101



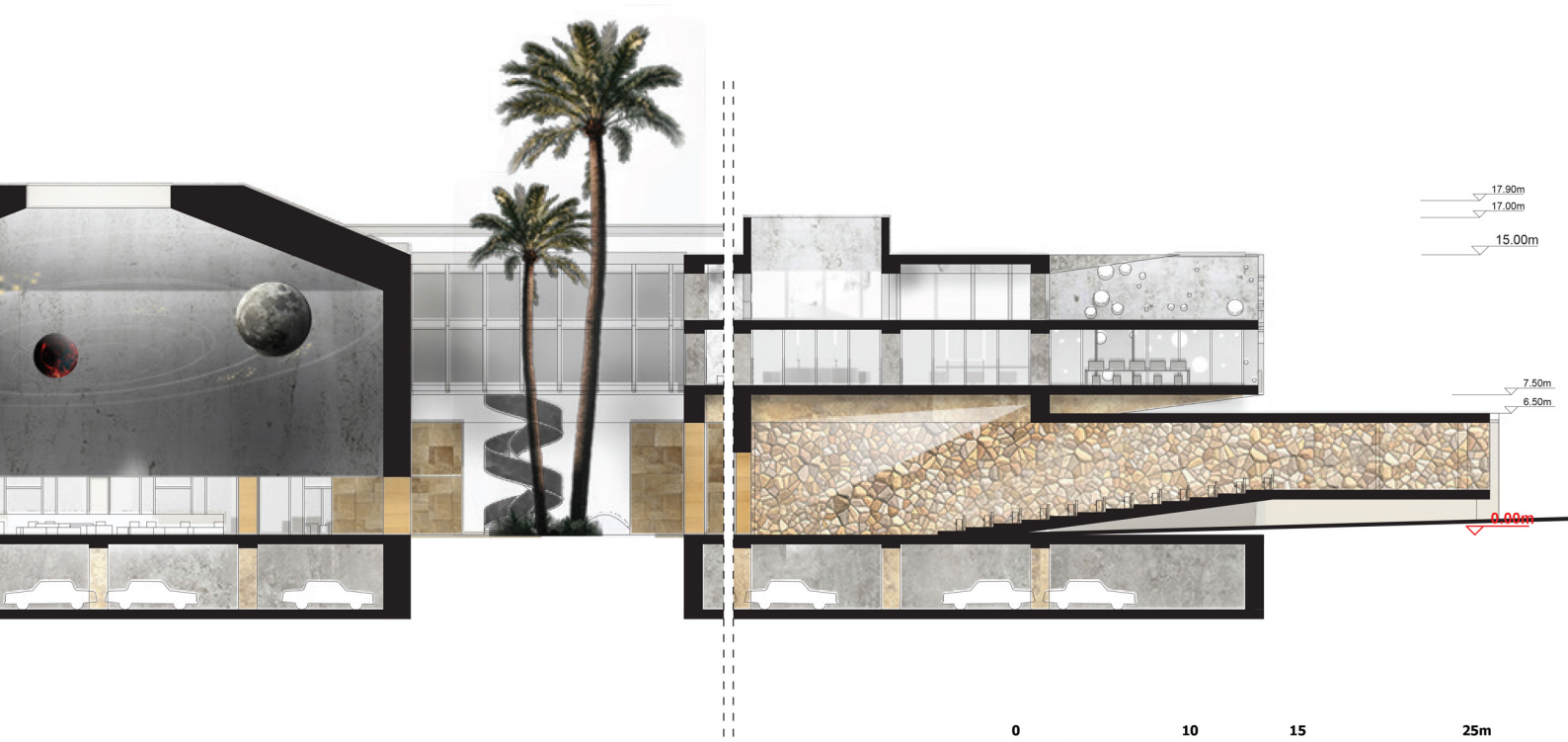




0 15 30 50m

SECTION A-A'

scale 1:400



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SECTION A-A' DETAIL
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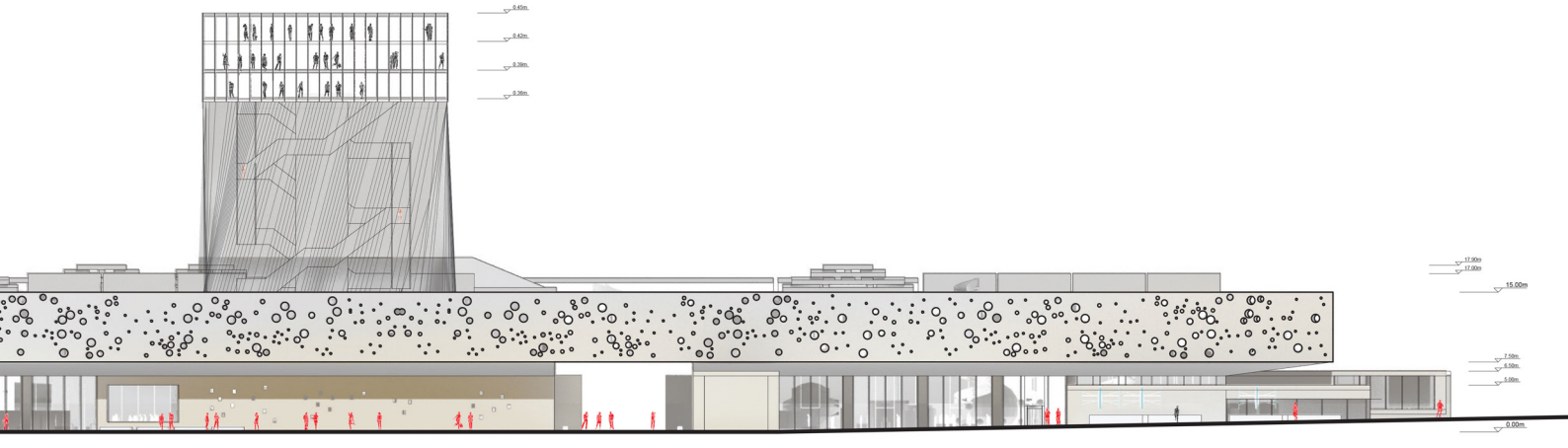
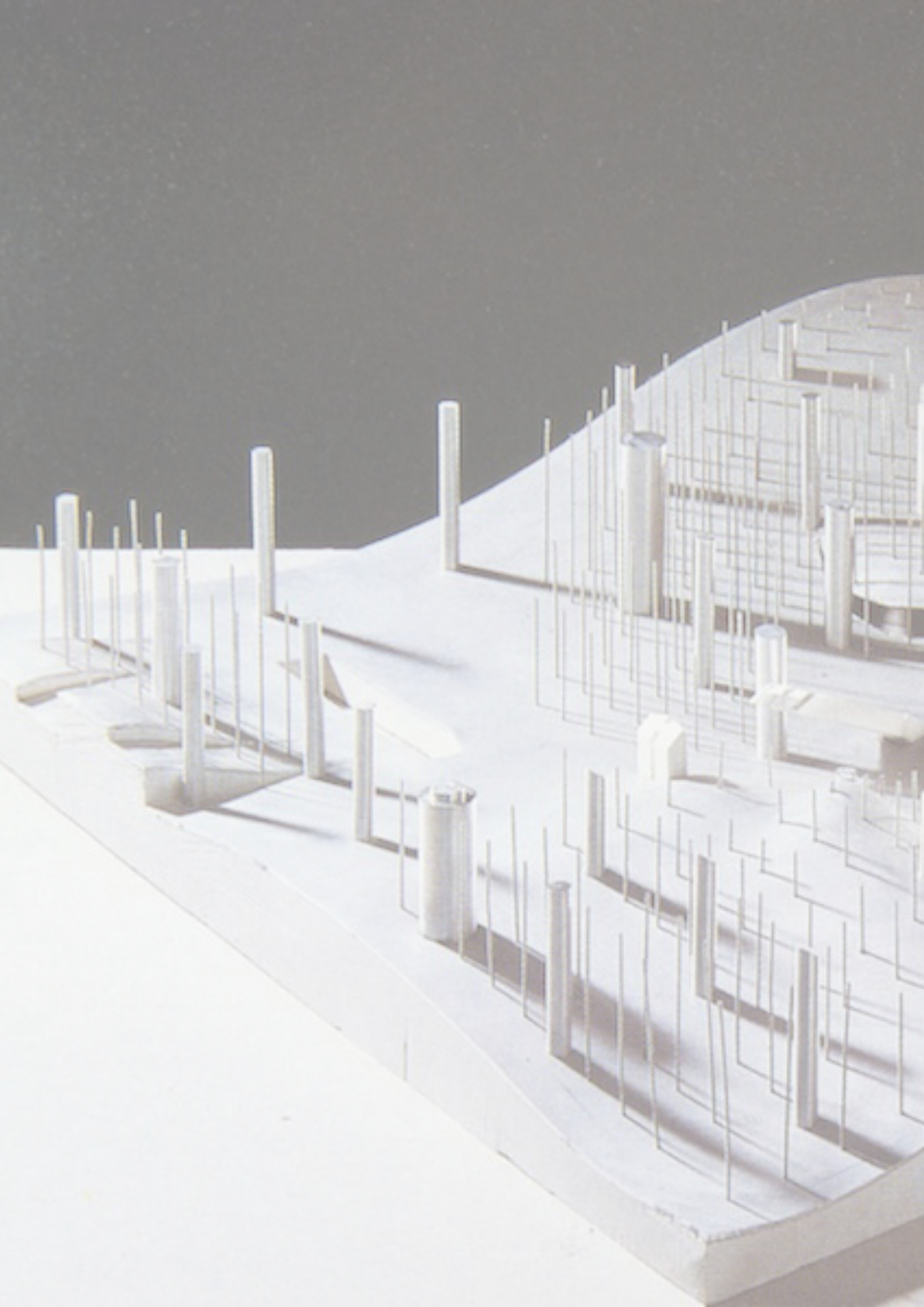
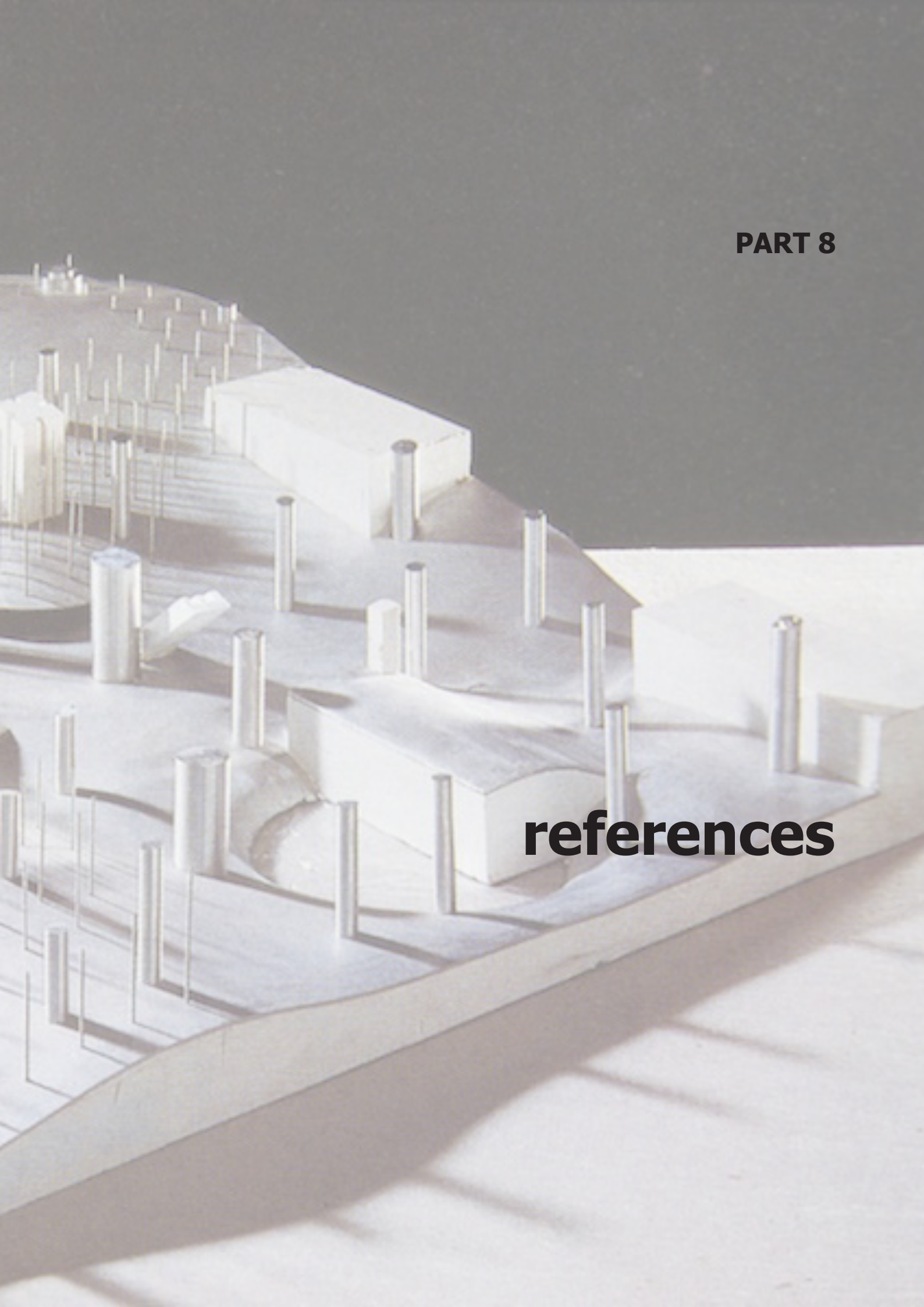


0 15 30 50m

SOUTH ELEVATION
scale 1:400







PART 8

references

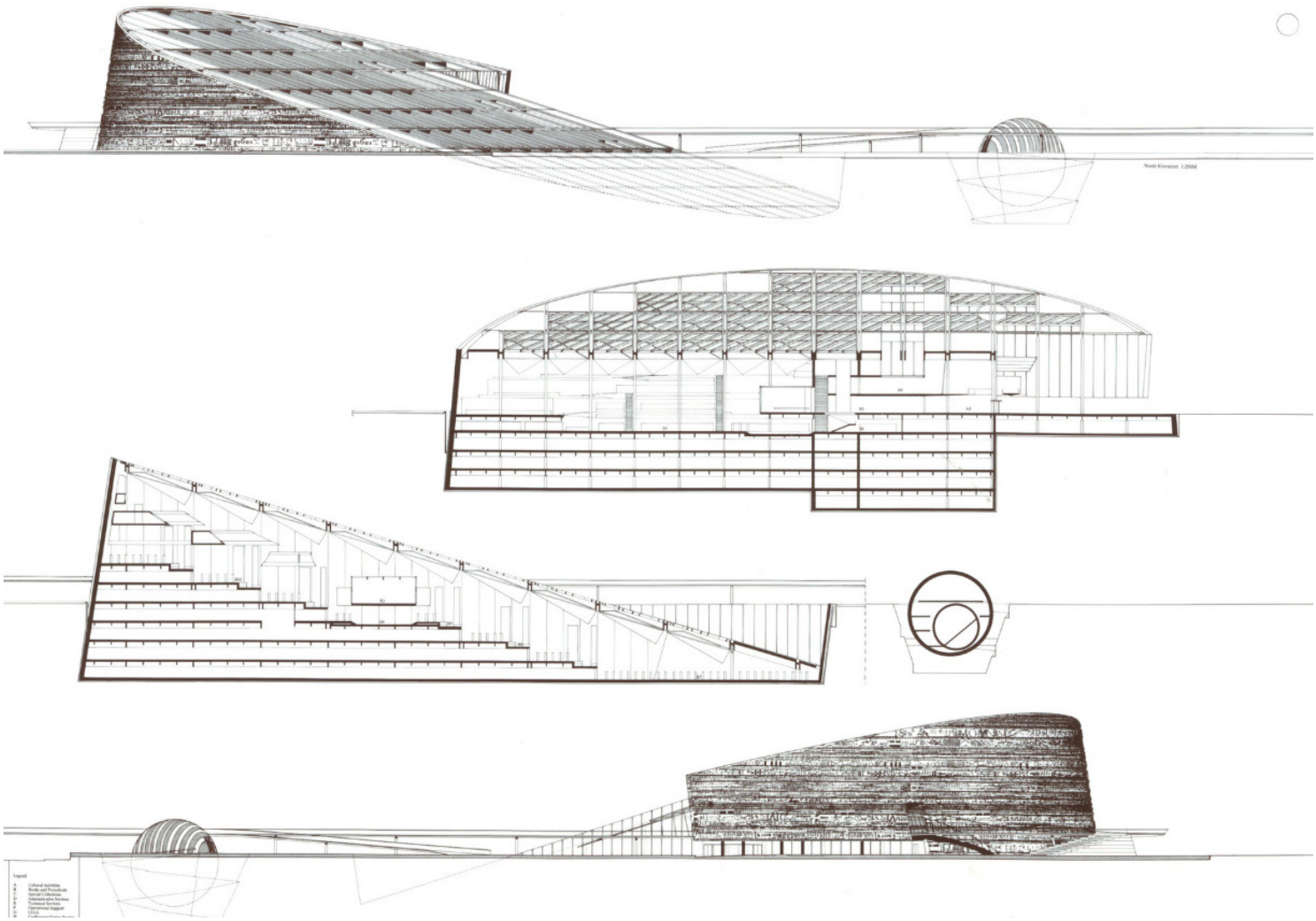
Snøhetta
Bibliotheca Alexandrina
1989-1995-2002











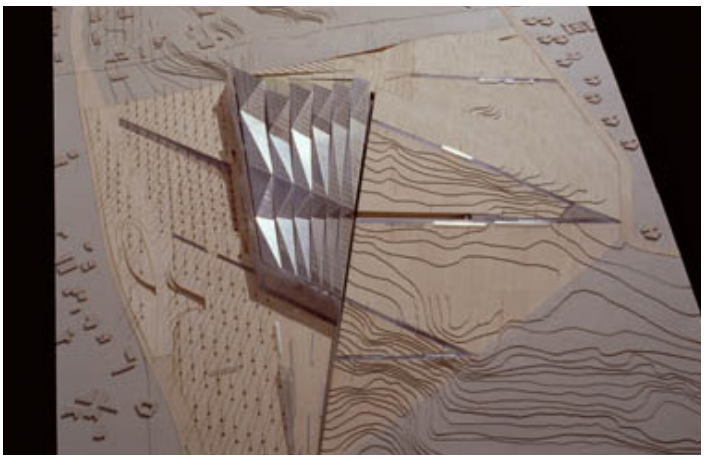


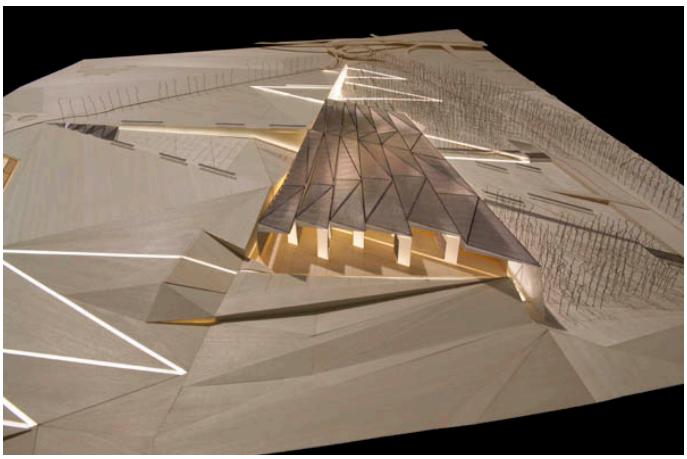


Heneghan Peng Architects
(GEM) Grand Egyptian Museum
1st prize, 2002
2012-2018

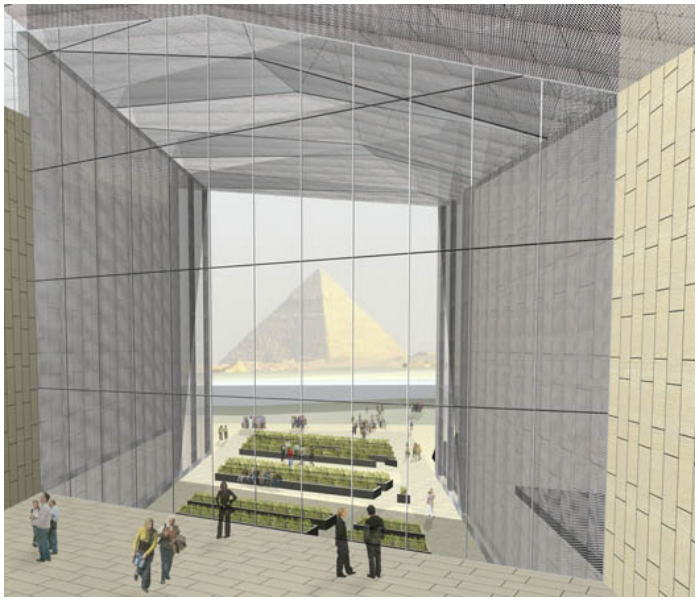




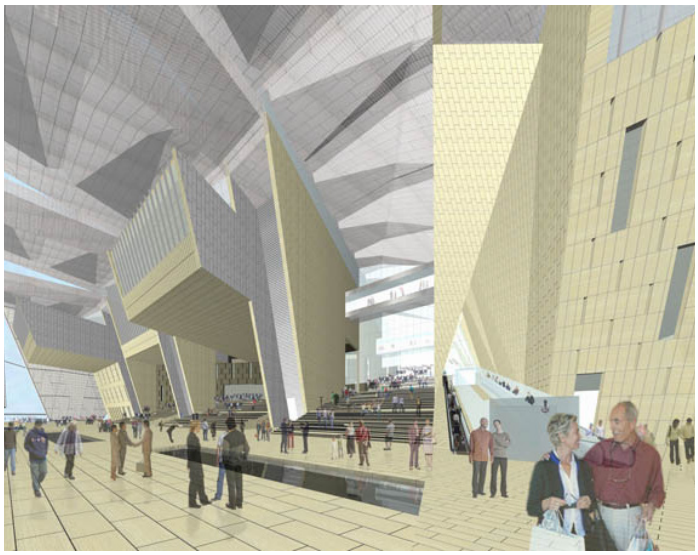


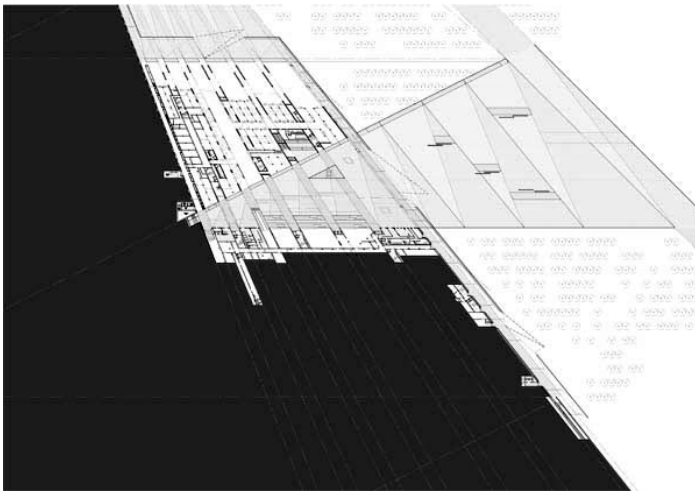


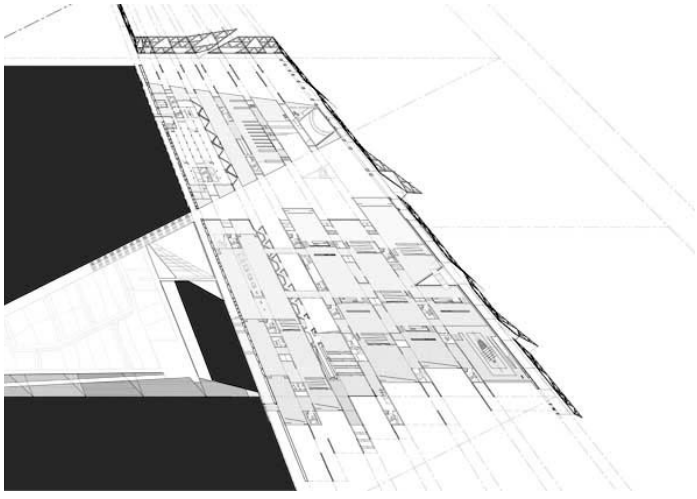


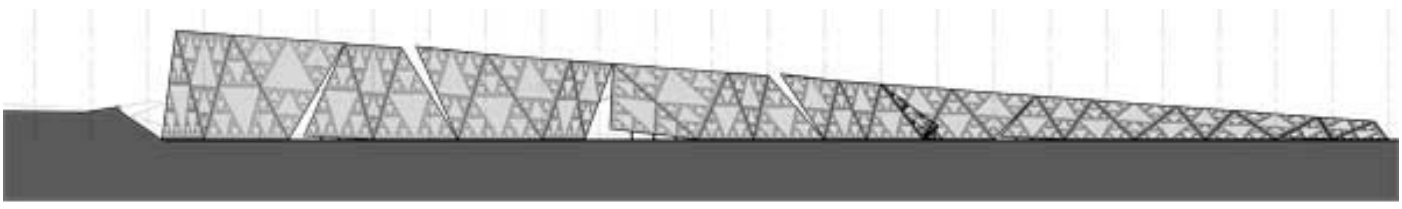












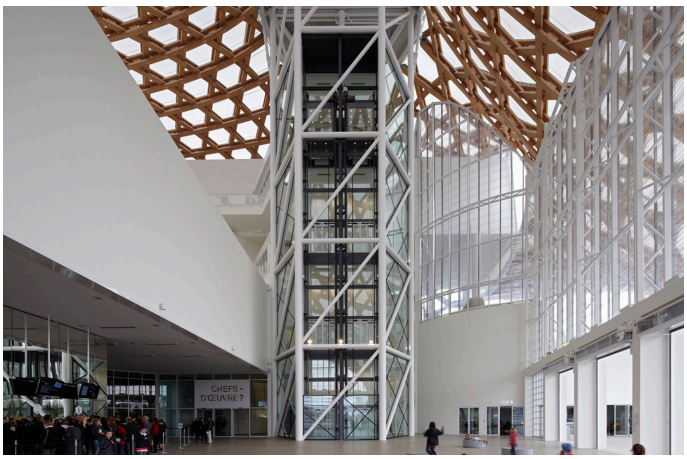


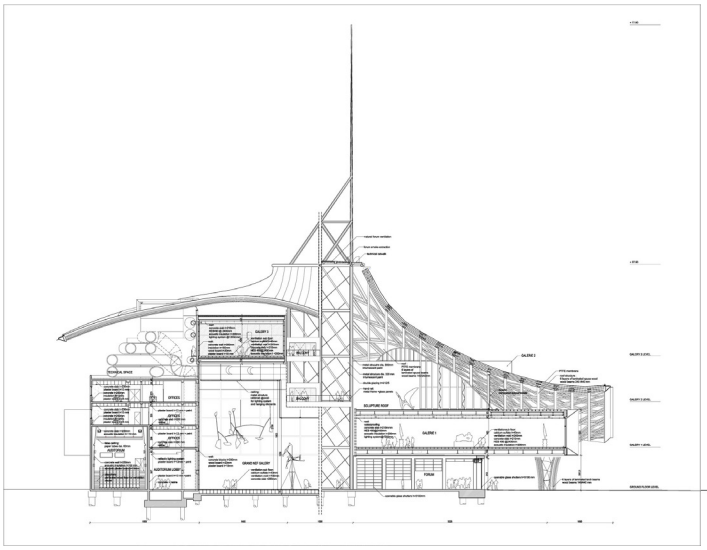
Shigeru Ban
Centre Pompidou-Metz
2010

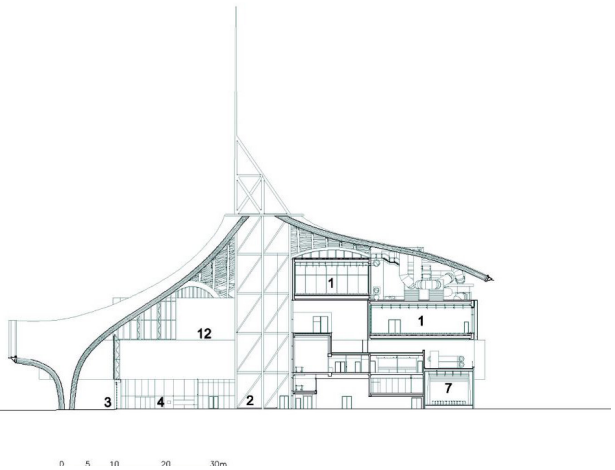








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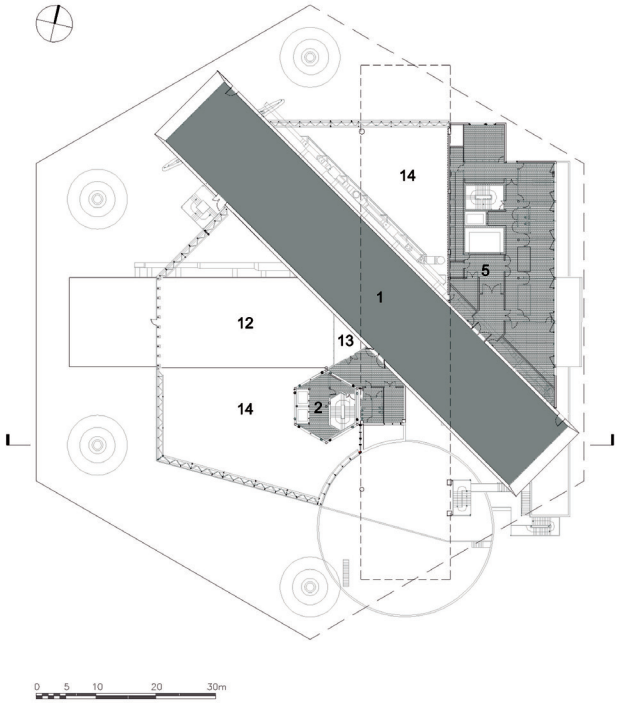
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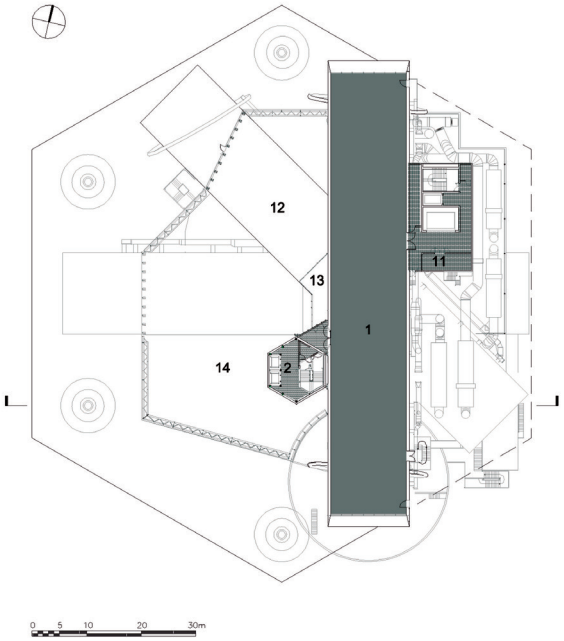
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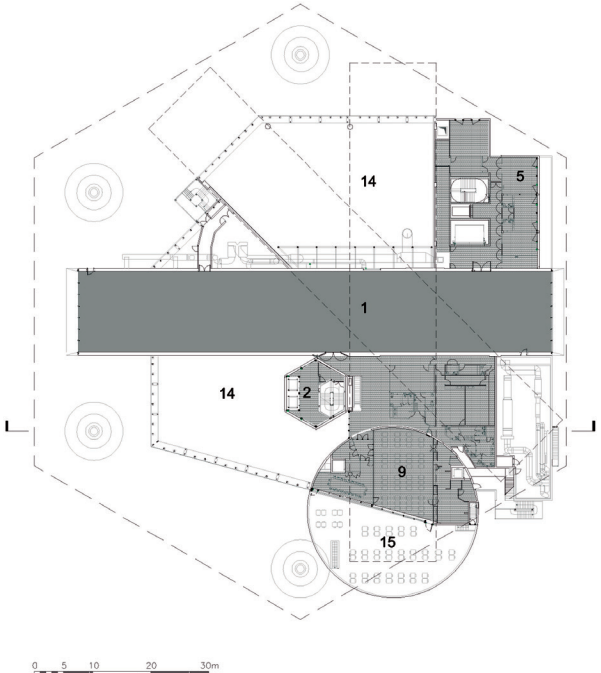
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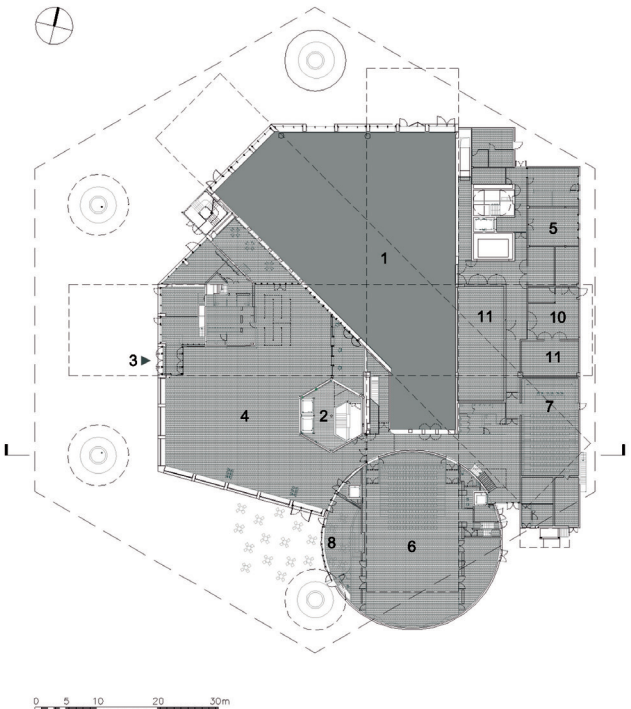
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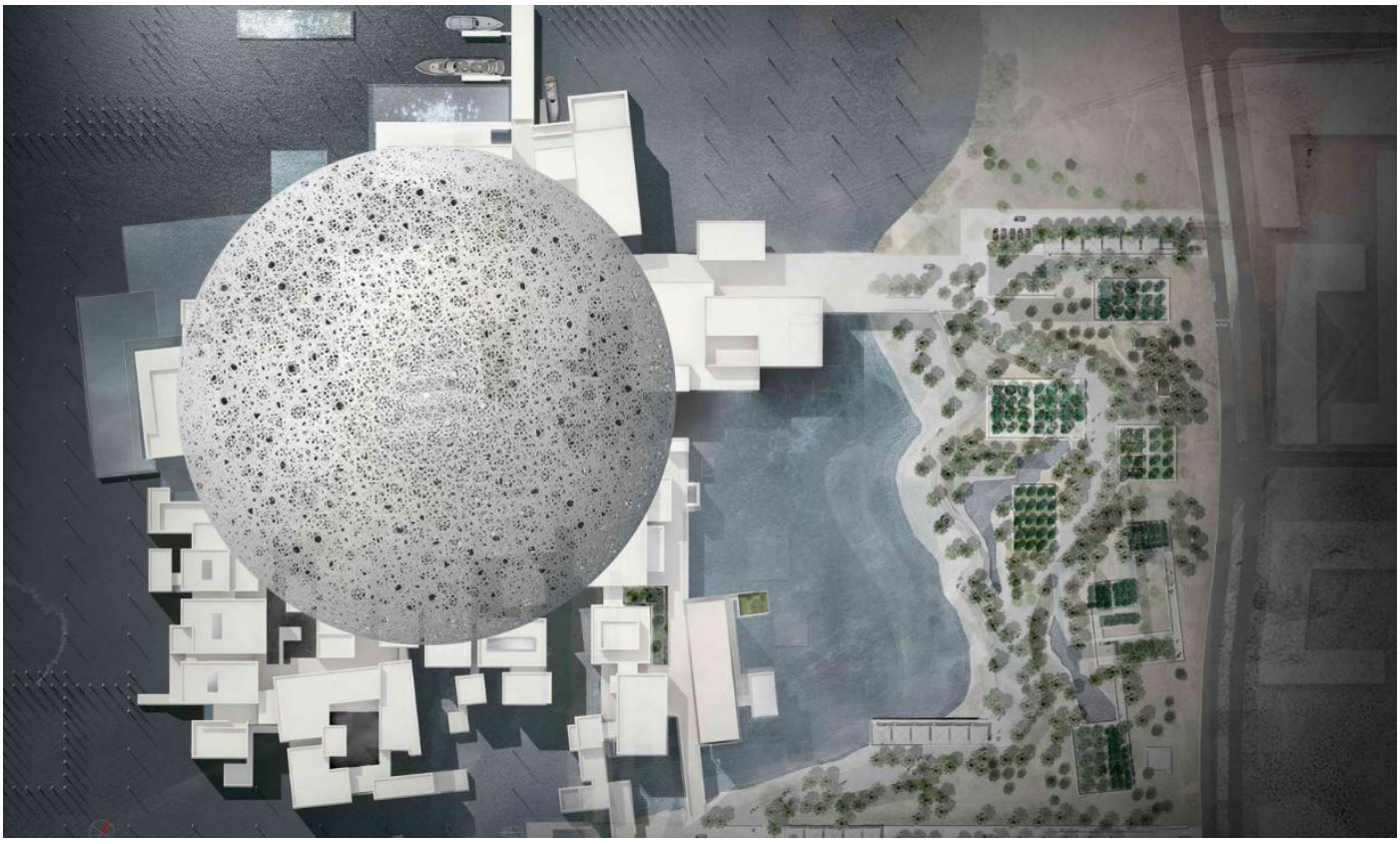
Jean Nouvel
Domed Louvre
Abu Dhabi
2016

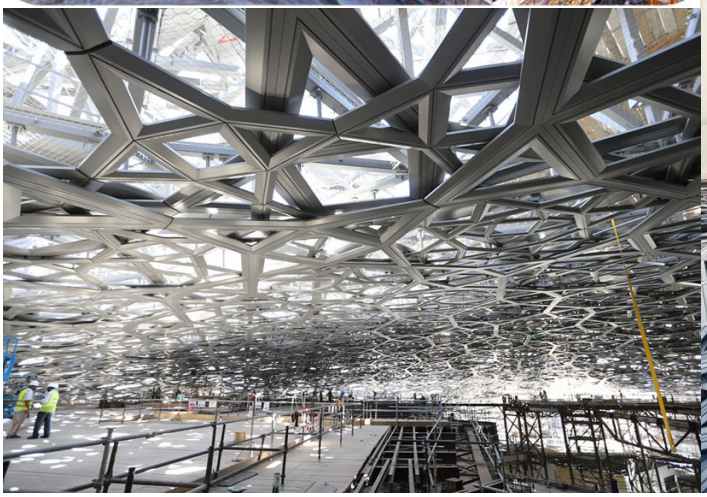




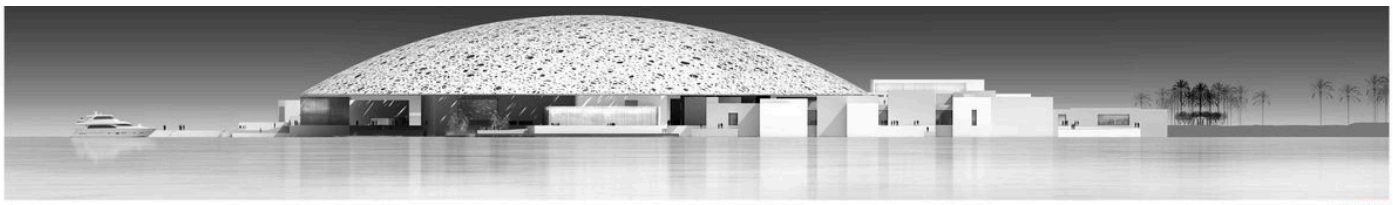












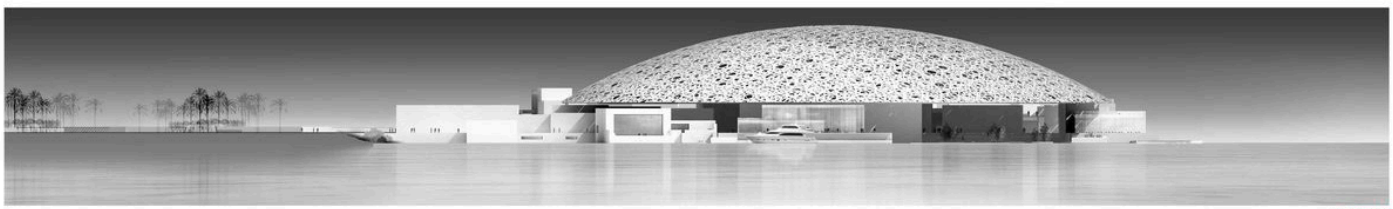
1/500- WEST ELEVATION



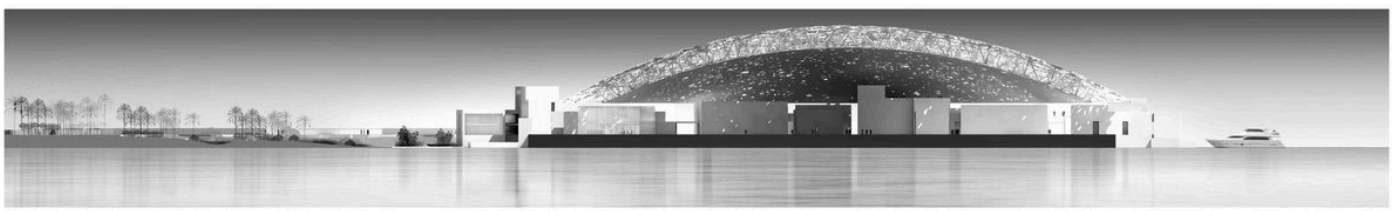
1/500- SOUTH ELEVATION



1/500- EAST ELEVATION



1/500- NORTH ELEVATION



Moreau Kusunoki Architectes
Guggenheim Museum
Helsinki
2015









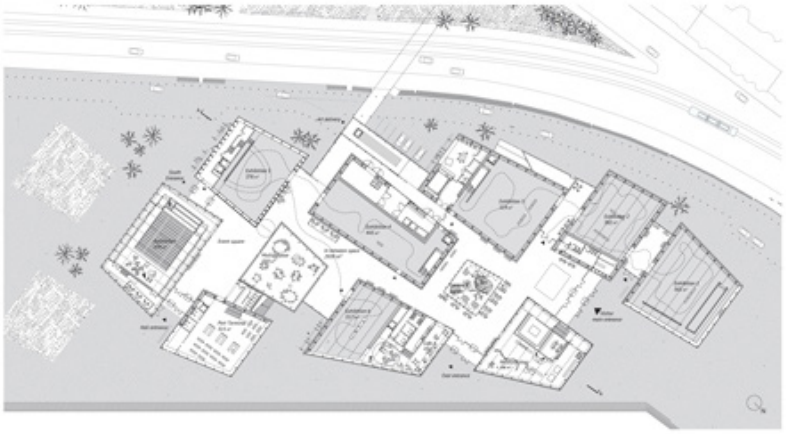




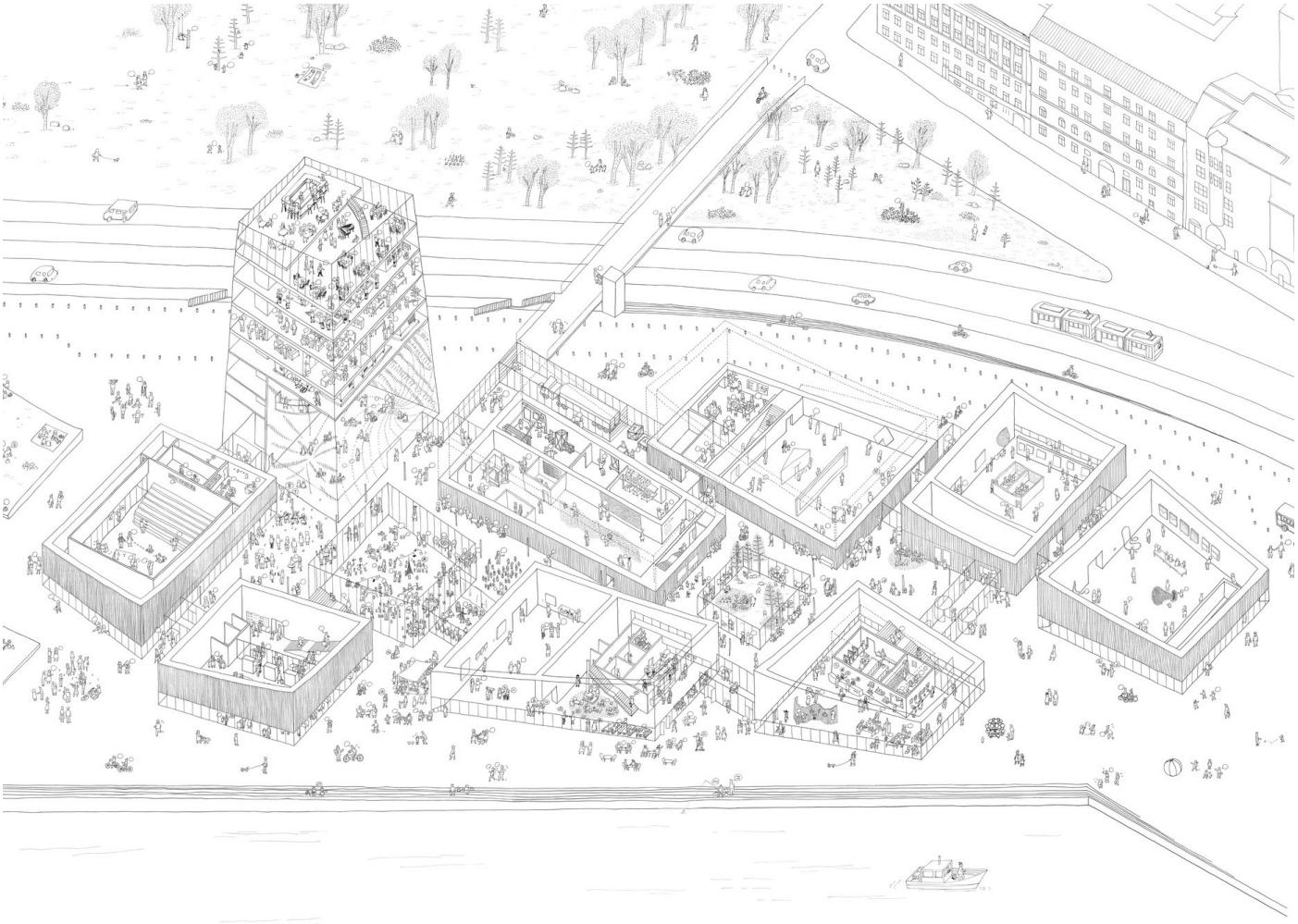
SECTION B-ELEVATION
1/500



MASTER PLAN
1/2000



GROUND FLOOR
1/500



A DAY AT GUGGENHEIM HELSINKI

Neues museum
David Chipperfield Architects
1997-2009





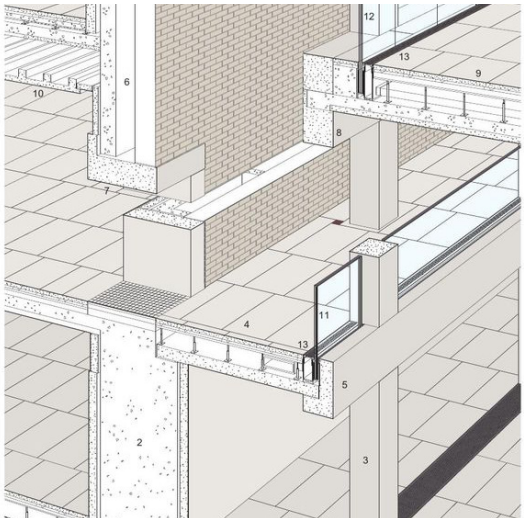








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RMJM
Zliten Al-Asmariya University for Islamic Sciences
Libya
2009









