SCIENCE BUSTER

Natural Science Museum in Berlin

Masterarbeit

SCIENCE BUSTER

Natural Science Museum Berlin

ausgeführt zum Zwecke der Erlangung des akademischen Grades
einer Diplom-Ingenieurin

unter der Leitung von
Manfred Berthold Prof. Arch. DI. Dr.
E253 Institut für Architektur und Entwerfen

eingereicht an der Technischen Universität Wien
Fakultät für Architektur und Raumplanung

von
Christin Kurze
Matr.nr.: 0727436
Kölblgasse 32/22, A-1030 Wien

Wien, am 02-06-2014

SCIENCE BUSTER

NATURAL SCIENCE MUSEUM BERLIN

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Diese Diplomarbeit beschäftigt sich mit dem Entwurf eines neuen naturwissenschaftlichen Museums in Berlin, basierend auf dem Raumprogramm des im Oktober 2013 von AWR-Award ausgelobten internationalen Ideenwettbewerbs, sowie meiner Teilnahme als Grundlage für die weitere Entwurfsausarbeitung.

Inspiriert durch natürliche Strukturen, biologische Ansiedlungen und maritime Mikroorganismen, soll durch die entwickelte organische Skyline ein unverwechselbares Museum entstehen, das durch die Überschneidung unterschiedlicher Funktionen verschiedenste Nutzergruppen erreichen soll, um so das öffentliche Interesse, die Neugier und das Bewusstsein für Naturwissenschaften zu steigern.

Das Entwurfsgrundstück befindet sich in Berlin Charlottenburg, im Westen der Stadt, in unmittelbarer Nähe des bekannten Berliner Tiergartens, dem Zoologischen Garten sowie der Technischen Universität - also ein optimaler Ausgangspunkt um Naturund Forschung räumlich, funktional und thematisch miteinander zu verknüpfen.

Die unmittelbar im Westen anschließende Station „Bahnhof-Zoo“ verbindet das Grundstück mit dem naheliegenden Stadtzentrum und reiht es somit in die Kette der Hauptattraktionen Berlins ein und bietet Vorbeifahrenden eine außergewöhnliche Aussicht auf das neue Naturwissenschaftliche Museum und den umgebenden botanischen Landschaftspark.

Bei meinem Projekt ‚Science Buster‘ war es mir wichtig ein lebendiges, interessantes und vielfältiges Museum zu entwerfen, das nicht nur Ausstellungsfläche für bereits vorhandene Exponate bieten soll sondern vielmehr durch die Überschneidung unterschiedlicher interdisziplinärer Funktionen, Wissenschaftlern und Lehrenden einen qualitativen Raum zum Forschen und Experimentieren zur Verfügung zu stellen und gleichzeitig neugierigen Besuchern und Entdeckern die Möglichkeit zum wissenschaftlichen Interagieren und Austauschen zu bieten.

1. PREAMBLE *
INTRODUCTION / ABSTRACT

This diploma thesis investigates the design of a new natural science museum in Berlin, using the international ideas competition run by AWR-Award in October 2013 as the functional brief and my submission as a basis for further development.

Inspired by natural geometries, biological settlements and maritime micro-organisms the building's complex design results in an organic skyline, defining the landmark character of the new museum and establishing its very own unmistakable identity. As in many micro-organic systems of one biological species, individual appearances vary slightly, yet remain clearly recognizable; in this instance no architectural priority is given to any of the three key functions, a certain ambiguity shall be interpreted as a sign of equality.

The crossing-over of functional boundaries and blending of different groups of users as well as the museum's distinctive architectural expression are intended to create the public's interest and raise their awareness and appreciation of natural science.

The proposed site is located in the Berlin Charlottenburg district west of the city centre and is bordering on the grounds of the well-known Berlin Tiergarten, the zoo and the Technical University, suggesting itself to become a focus point to interlink nature and scientific research spacially, functionally and thematically. Located to the west within the site's immediate vicinity, the train station Bahnhof Zoo connects the site with the close-by city centre, ranking the new museum campus among the city's main landmark buildings and visitor attractions. Traveling along the adjacent elevated railway line passers-by and commuters are being offered an exceptional view over the new museum complex and the surrounding landscaped areas.

The ‚Science Buster' project focuses on creating a vivid and diverse place of interest, a museum that not restricts itself to a mere exhibition area for existing artefacts, but strives to offer a high quality interdisciplinary space for scientists as well as students and their teachers to research, study and experiment, while simultaneously providing interested visitors and curious discoverers with the facilities for social interaction and science-inspired exchange.

AWR Competitions
Architectural Workshop in Rome

BERLIN NATURAL SCIENCE MUSEUM
INTERNATIONAL IDEAS COMPETITION

Project submission deadline: 11-03-2014
Participation Number: 24arc-u-1694
http://www.awrcompetitions.com/
competition/24/natural-city

2. TOPIC *
IDEAS COMPETITION

NATURAL SCIENCE MUSEUM

fig. 1. *

COMPETITON BRIEF

„Berlin - Natural City“

... is an international ideas competition for a new natural science museum in Berlin announced in october 2013 by AWR-Award. Students, architects and engineers have been invited to design a natural history museum that documents historical and current patterns of biological diversity, facilitates both research and education and will generally be able to raise public awareness of natural science.

fig. 2. *

HARDFACTS:

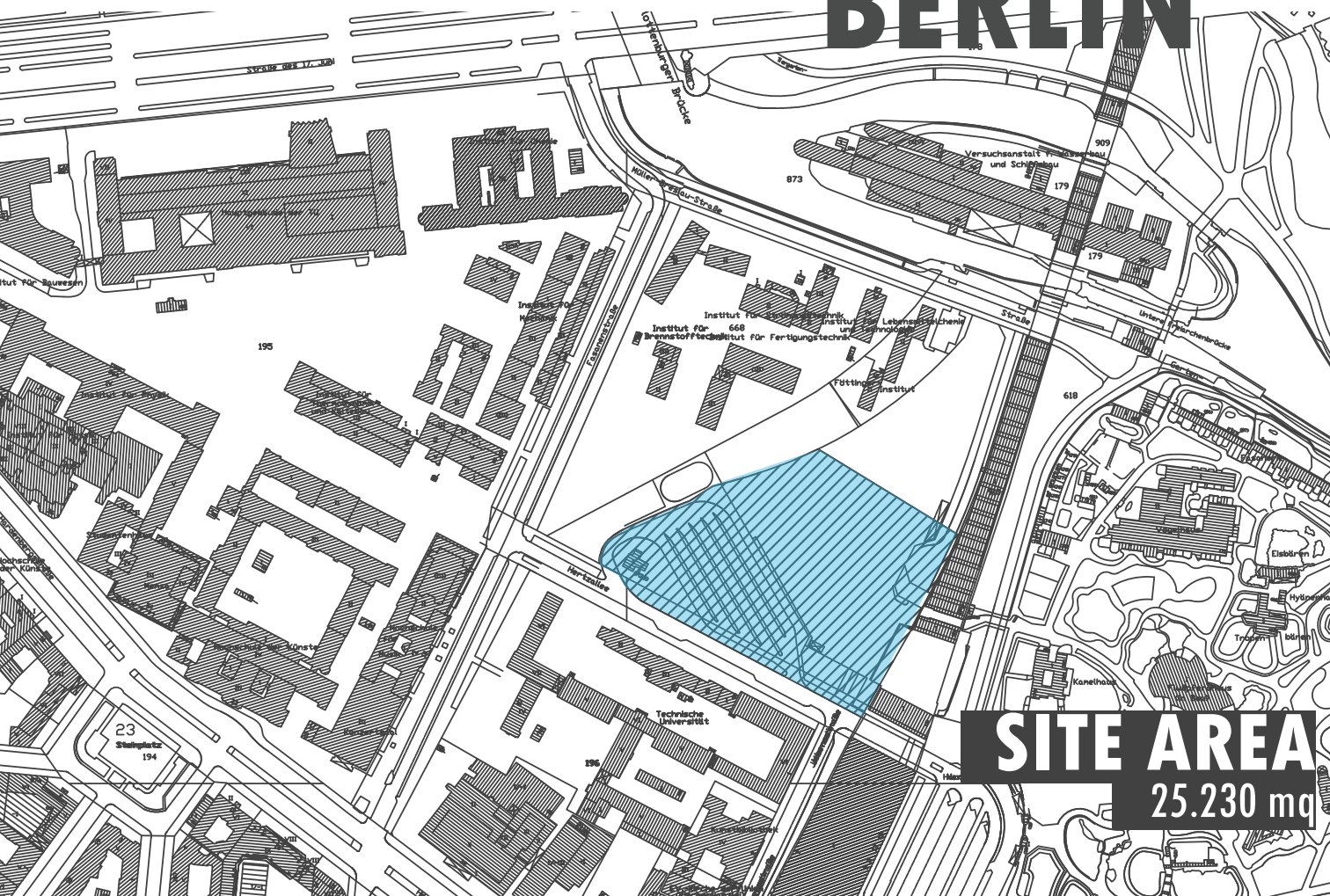
SITE AREA 25.230 m2

30% OF THE SITE ARE INTENDED AS GREEN AREAS

SPATIAL PROGRAM 23.700 m2

MINUS 30% CIRCULATION

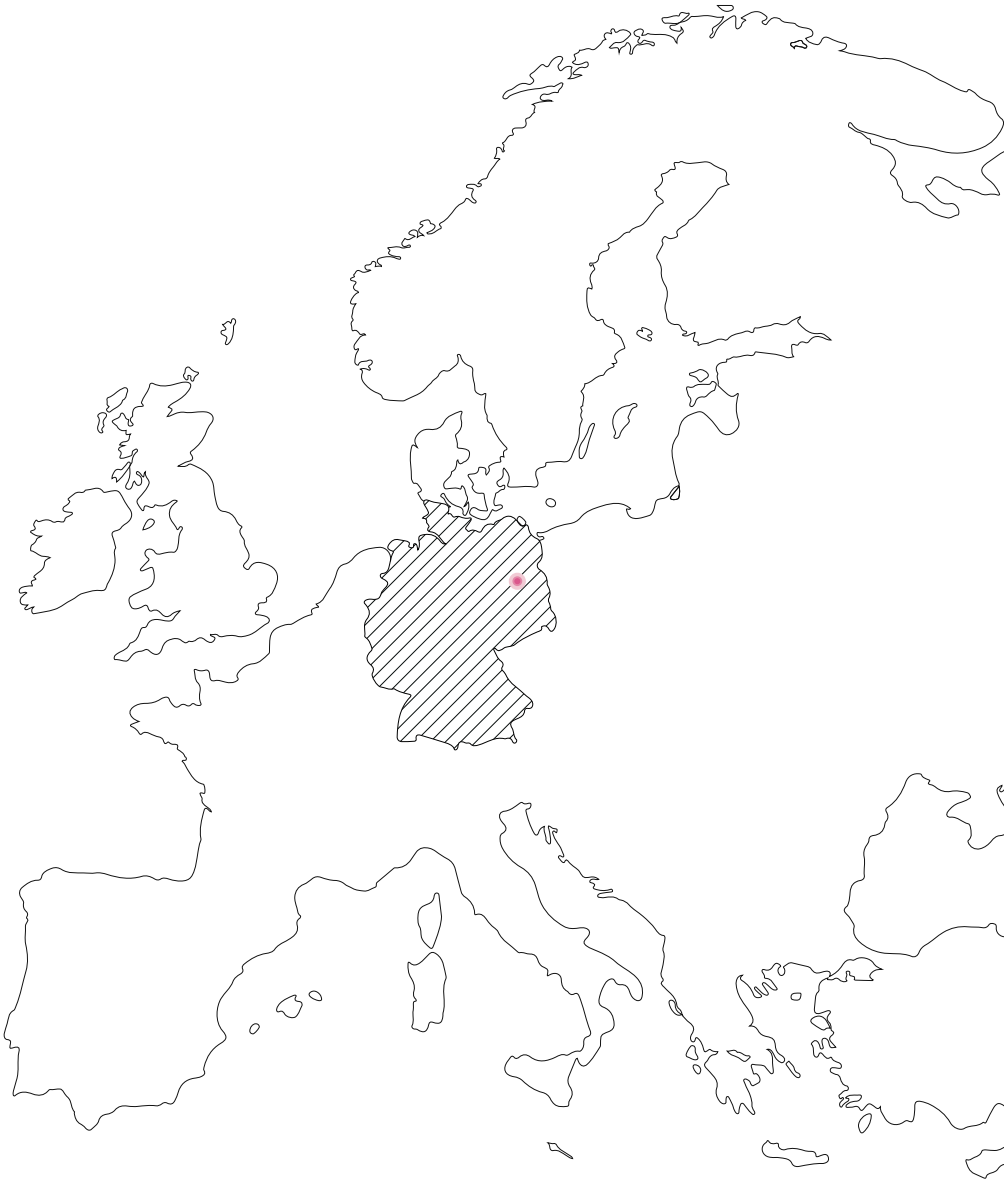
BERLIN



SITE AREA

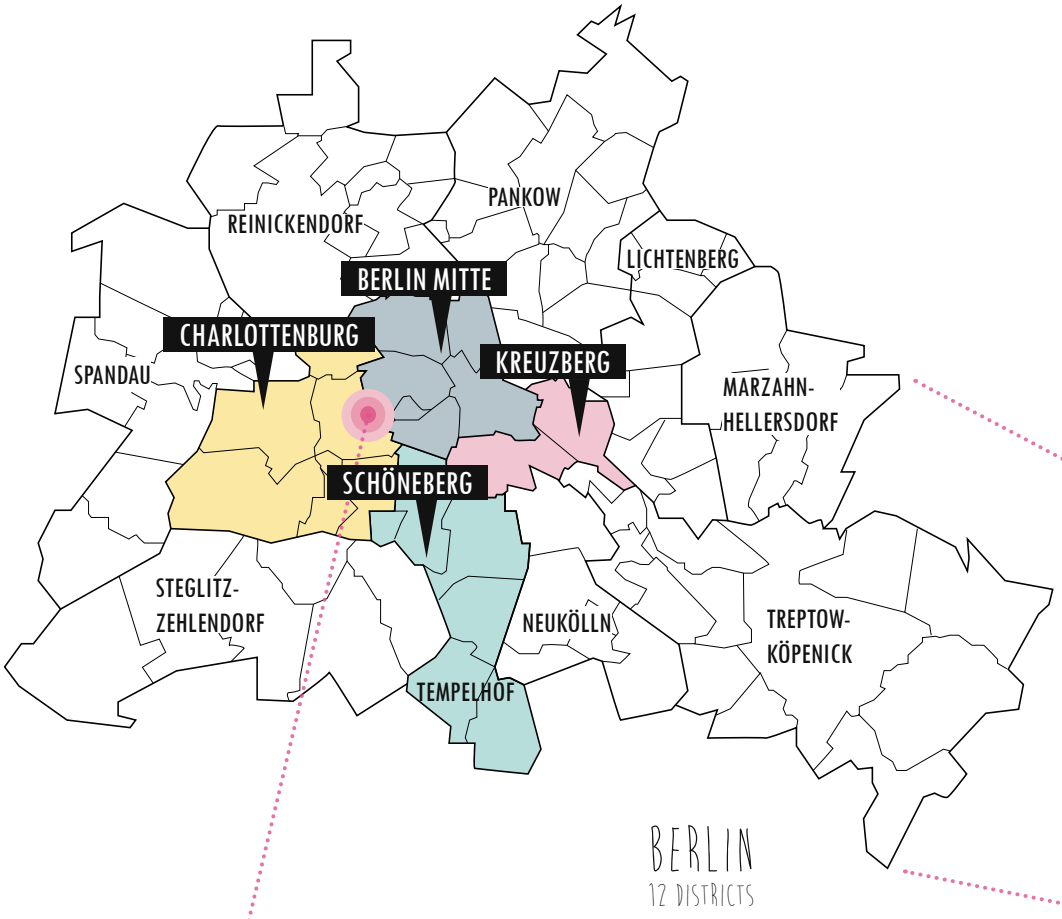
25.230 mq

3. ANALYSIS *
THE SITE



GERMANY :: BERLIN :: 52° 51´ N, 13° 33´ O

fig. 3. *



SITE:

Natural Science Museum

Population: 3.292.400
Urban area: 892 km²
Elevation: +34 bis +60 m
Administrative Structure: 12 districts, 96 sub areas
Visitors: 11.325.000
Overnight stays: 26.942.000

Berlin

...founded in the 13th century, has had an eventful history. Almost no other metropolis has experienced such frequent, radical change transforming the face of the city. Although Berlin saw steady growth in its importance, dazzling epochs alternated with darker eras. Berlin has regarded itself as a city of knowledge and culture since the days of Friedrich the Great in the 18th century. The political and cultural developments of the 19th and 20th century are visible throughout Berlin's cityscape, reflecting both the history of architecture, various approaches to dealing with the consequences of war and destruction as well as developing new present day structures. Nevertheless, the formerly divided city has succeeded in becoming a vibrant metropolis in the heart of Europe. .

fig. 4. *

Berlin

...has more than 170 museums, 22 of which belong to the Prussian Cultural Heritage Foundation financed jointly by Germany's federal and state governments. One historical location is Museum Island, on the UNESCO World Heritage list since 1999. The Pergamon Museum and the Old Museum, two places especially popular with the public, are also located here. Other state-owned museums are clustered around Charlottenburg Palace, additional locations include the museum complex in Dahlem and the Kulturforum in Berlin's Tiergarten district.

Schloss Charlottenburg

is today's largest and most prominent residence of the Hohenzollern dynasty in berlin, accommodating one of the largest art collections of French 18th century painting outside of France.

Zoologischer Garten

has been opened to the public as early as 1844, at the time having been located on the former city boundary to Charlottenburg, and constitutes the oldest zoo in Germany as well as the species-richest in the world (approx. 15,000 animals of 1,500 species).

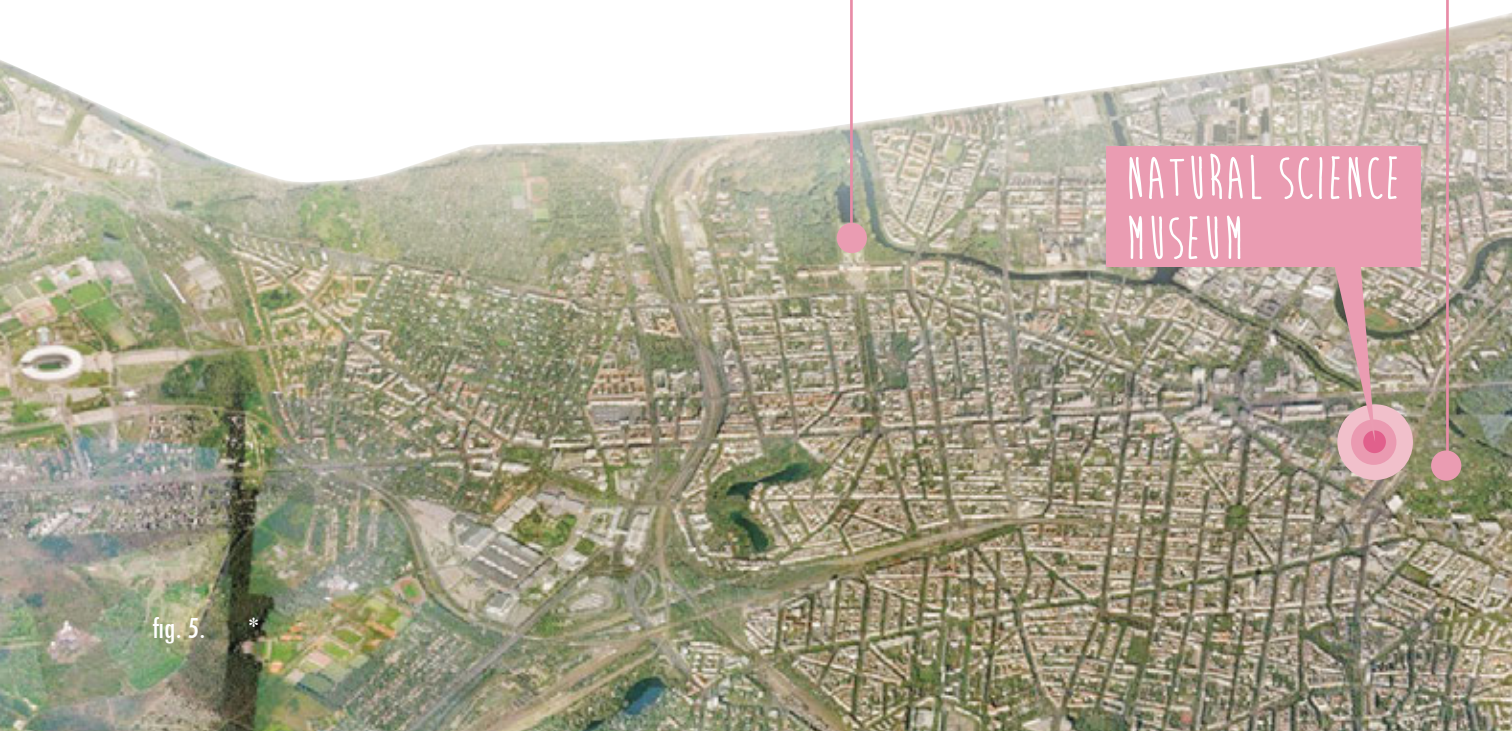


fig. 5. *

Museumsinsel

is included in UNESCO's World Heritage List since 1999. Its collections cover a spectrum from prehistorical times over ancient civilizations up to 19th century art. More than 3 million visitors per year enjoy the island's fascination; the complex includes the Pergamon Museum, Altes und Neues Museum, the Bode-Museum, the Alte Nationalgalerie as well as the James-Simon Galerie.

Holocaust Memorial

designed by Peter Eisenman has been opened in 2005. Over 3.5 million visitors came to see it during the 1st year of its opening.

Natural History Museum

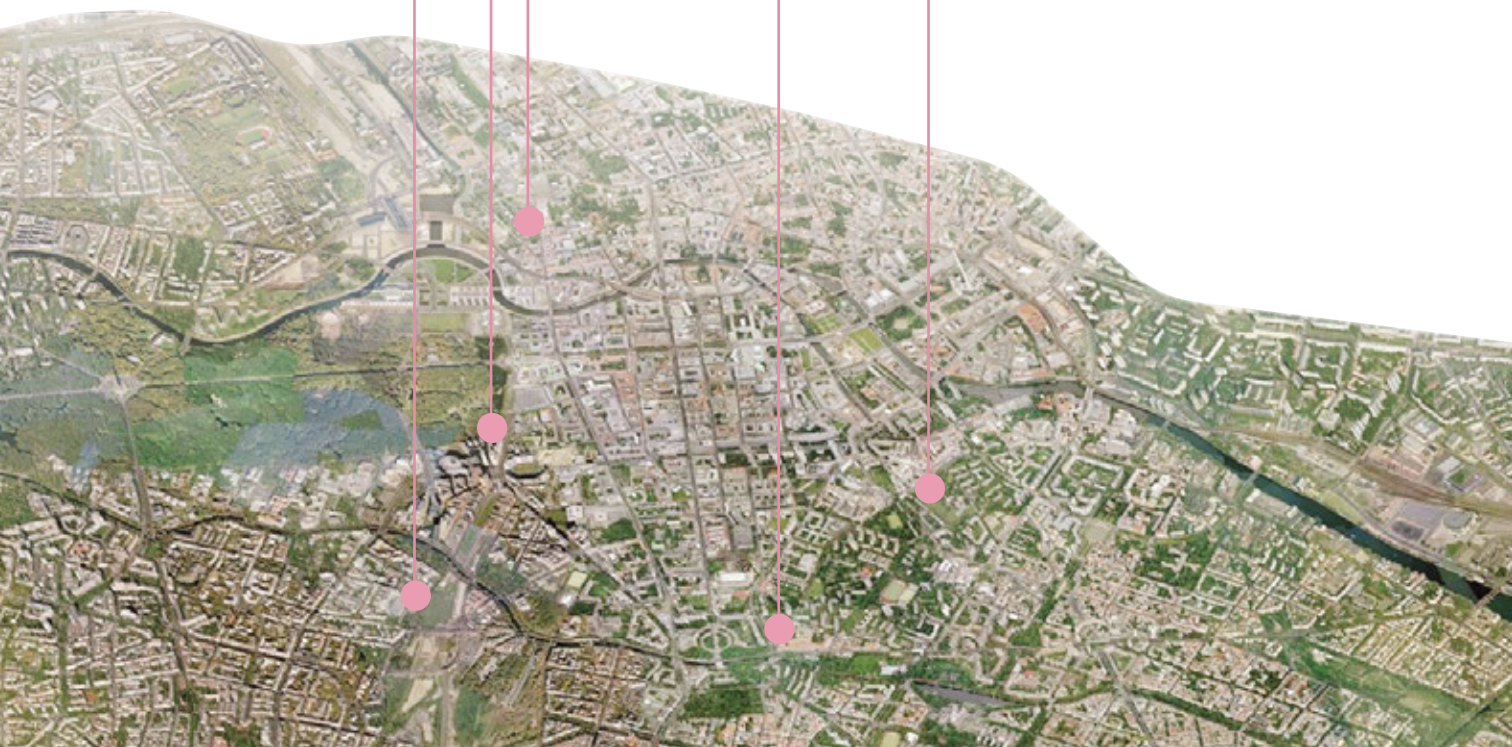
is one of the globally most significant natural science museums, featuring over 30 million artefacts.

Kulturforum

at Potsdamer Platz is a cultural complex comprising of various prominent landmark buildings such as the Neue Nationalgalerie, the Gemäldegalerie or the Philharmonie by architect Hans Scharoun.

Jüdische Museum

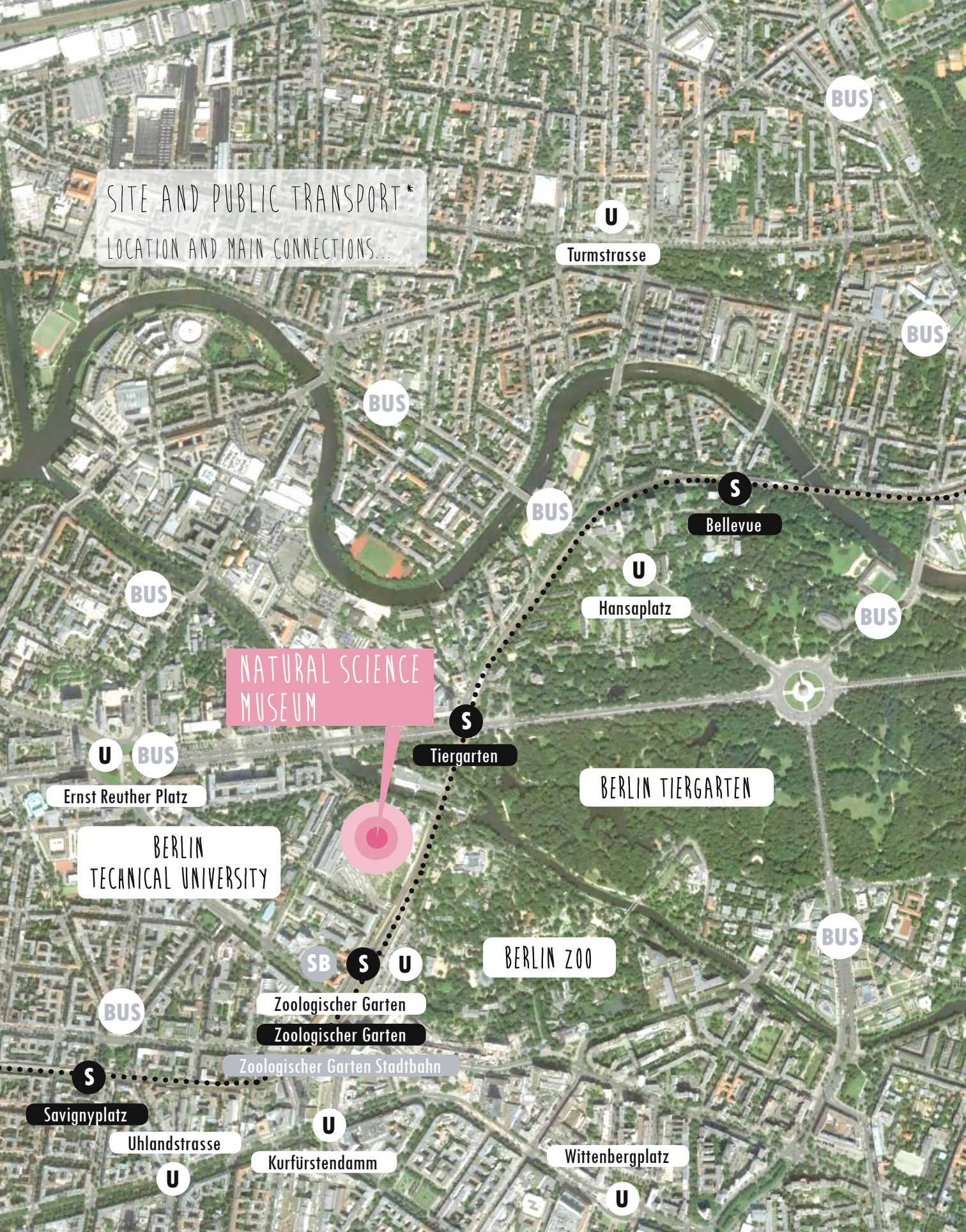
...by architect Daniel Libeskind is the largest jewish museum in Europe, having recorded more than 8 million visitors since its opening in 2001 up to the end of 2012. With approximately 720,000 vistors for the year 2012 it ranks among Berlin's most visited museums.




SITE AND SIGHTS*
LOCATION AND MAIN ATTRACTIONS...
Kunstakademie
Hansaviertel
Schloss Bellevue
Siegessäule
NATURAL SCIENCE MUSEUM
TU Berlin
Univ. d. Künste
Landwehrkanal
Zoo
Theater des Westens
Kaiser Wilhelm Gedächniskirche
Ku'damm

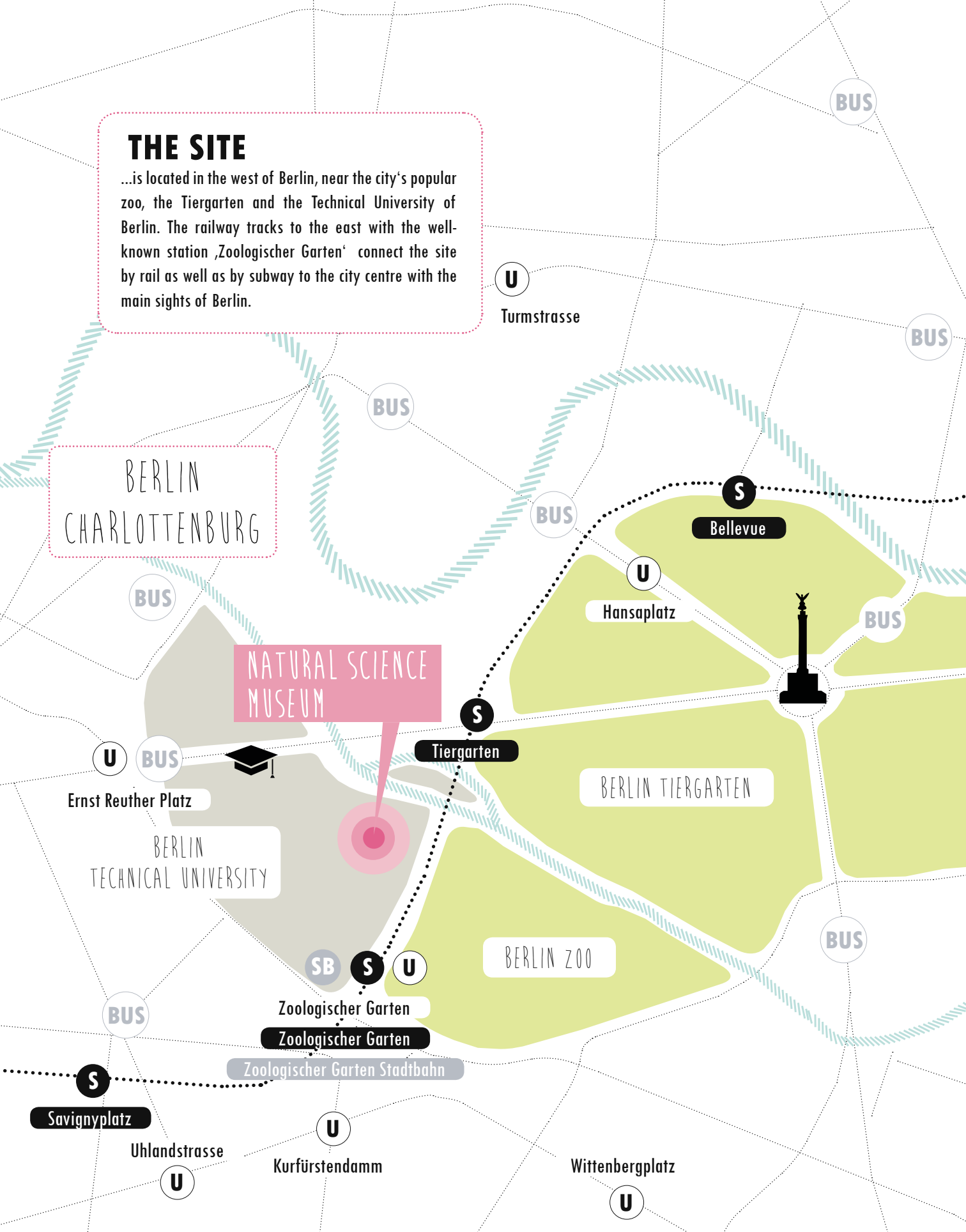
fig. 6. *


Poststadion
Naturkundemuseum
Museumsinsel
Bundeskanzleramt
Spree
Reichstag
Brandenburger Tor
Unter den Linden
Holocaust Mahnmal
Tiergarten
Potsdamer Platz
Philharmonie
Kunstbibliothek
Staatsbibliothek


SITE AND PUBLIC TRANSPORT*
LOCATION AND MAIN CONNECTIONS...
BUS
U
Turmstrasse
BUS
BUS
BUS
S
Bellevue
U
Hansaplatz
BUS
BUS
NATURAL SCIENCE MUSEUM
S
Tiergarten
U
BUS
Ernst Reuther Platz
BERLIN TIERGARTEN
BERLIN TECHNICAL UNIVERSITY
BUS
SB
S
U
BERLIN ZOO
Zoologischer Garten
Zoologischer Garten
Zoologischer Garten Stadtbahn
S
Savignyplatz
U
Uhlandstrasse
U
Kurfürstendamm
U
Wittenbergplatz


S
Nordbahnhof
U
Naturkundemuseum
Berlin HBf
Berlin HBf
S
SB
Oranienbuger Tor
U
S
U
SB
Friedrichstrasse
Friedrichstrasse
Friedrichstrasse
S
Brandenburger Tor
U
Französische Strasse
BERLIN TIERGARTEN
Mohrenstrasse
U
Stadtmitte
U
U
S
Potsdamerplatz
Potsdamerplatz
Kochstrasse
U
Anhalter Bhf
S
U
Mendelson Bartholdy Park

fig. 7.


THE SITE
...is located in the west of Berlin, near the city's popular zoo, the Tiergarten and the Technical University of Berlin. The railway tracks to the east with the well-known station ‚Zoologischer Garten' connect the site by rail as well as by subway to the city centre with the main sights of Berlin.
BUS
U
Turmstrasse
BUS
BUS
BERLIN CHARLOTTENBURG
BUS
S
Bellevue
U
Hansaplatz
BUS
NATURAL SCIENCE MUSEUM
S
Tiergarten
U
BUS
Ernst Reuther Platz
BERLIN TECHNICAL UNIVERSITY
BERLIN TIERGARTEN
BERLIN ZOO
BUS
SB
S
U
Zoologischer Garten
Zoologischer Garten
Zoologischer Garten Stadtbahn
BUS
S
Savignyplatz
U
Uhlandstrasse
U
Kurfürstendamm
Wittenbergplatz
U

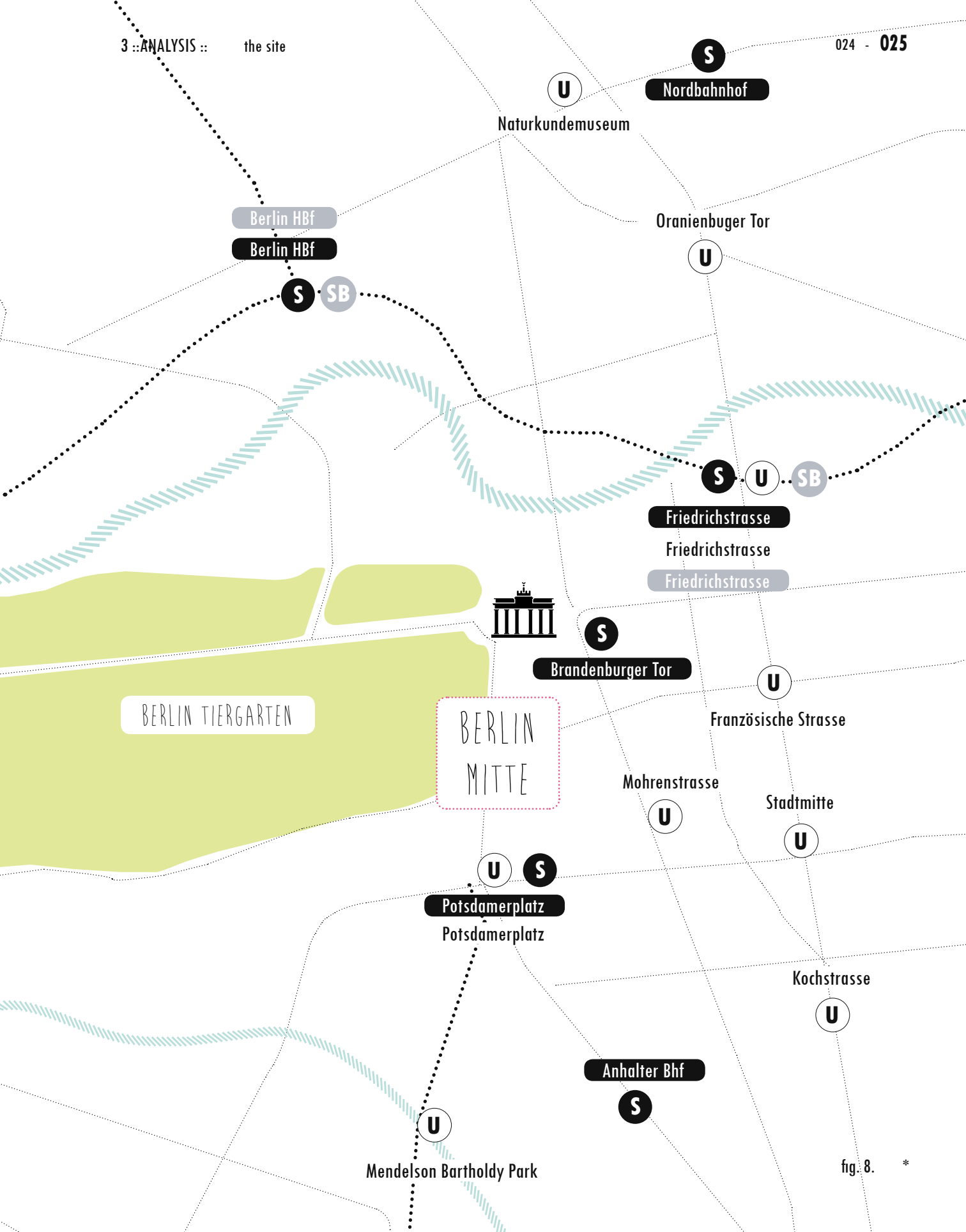
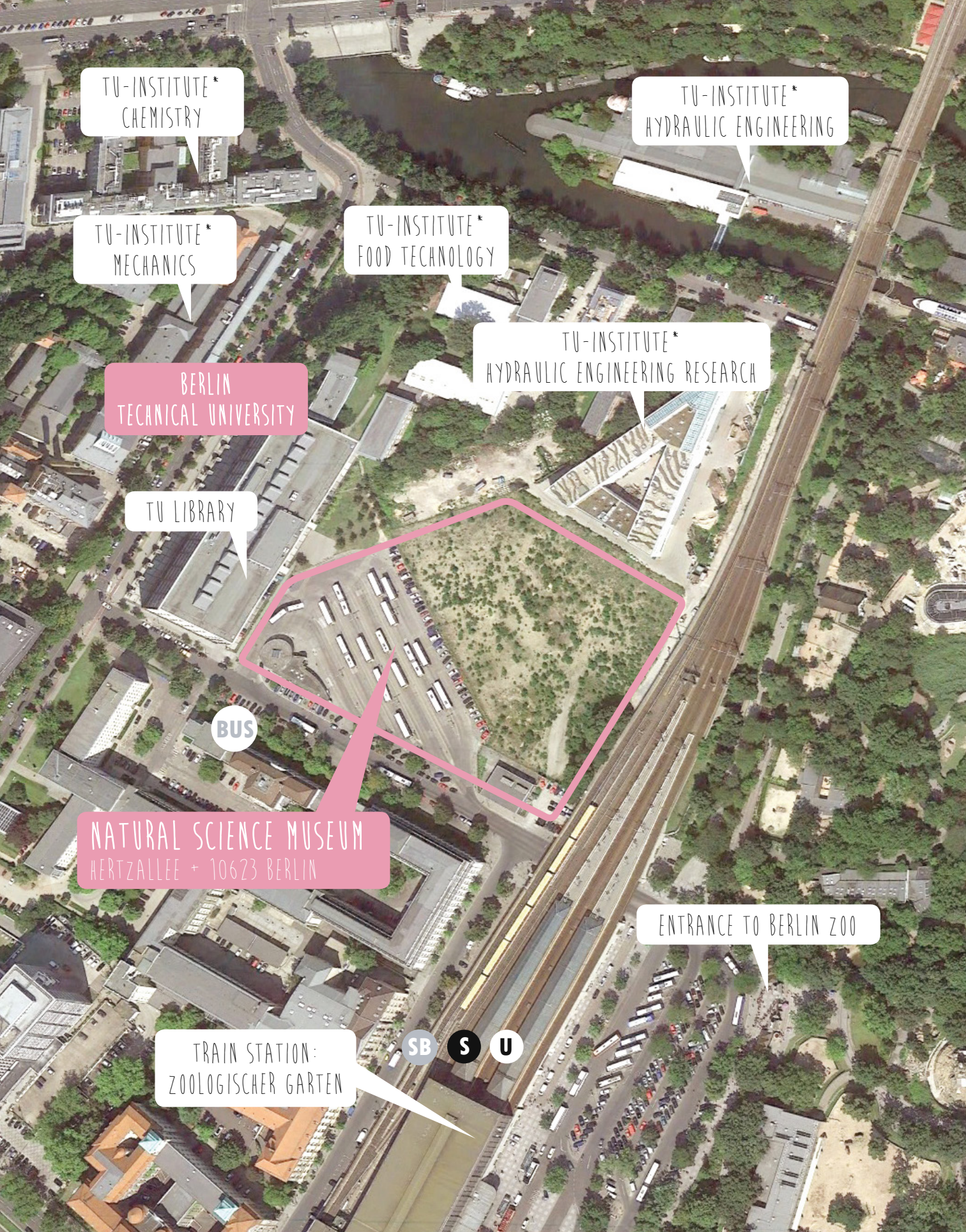

S
Nordbahnhof
U
Naturkundemuseum
Berlin HBf
Berlin HBf
S
SB
Oranienbuger Tor
U
S
U
SB
Friedrichstrasse
Friedrichstrasse
Friedrichstrasse
S
Brandenburger Tor
U
Französische Strasse
BERLIN TIERGARTEN
BERLIN MITTE
Mohrenstrasse
U
Stadtmitte
U
U
S
Potsdamerplatz
Potsdamerplatz
Kochstrasse
U
Anhalter Bhf
S
U
Mendelson Bartholdy Park

fig. 8. *


SITE*
ZOOM IN...
Tiergarten S46, S5, S7, S75
S
Strasse des 17. Juni
BUS
NATURAL SCIENCE MUSEUM
HERTZALLEE + 10623 BERLIN
BERLIN
TECHNICAL UNIVERSITY
BUS
BUS
SB
S
U
Zoologischer Garten U2,U9
Zoologischer Garten S46, S5, S7, S75
Zoologischer Garten Stadtbahn


Strasse des 17. Juni
BERLIN TIERGARTEN
Landwehrkanal
BERLIN ZOO

fig. 9


TU-INSTITUTE* CHEMISTRY
TU-INSTITUTE* HYDRAULIC ENGINEERING
TU-INSTITUTE* MECHANICS
TU-INSTITUTE* FOOD TECHNOLOGY
TU-INSTITUTE* HYDRAULIC ENGINEERING RESEARCH
BERLIN TECHNICAL UNIVERSITY
TU LIBRARY
BUS
NATURAL SCIENCE MUSEUM
HERTZALLEE + 10623 BERLIN
ENTRANCE TO BERLIN ZOO
TRAIN STATION: ZOOLOGISCHER GARTEN
SB
S
U

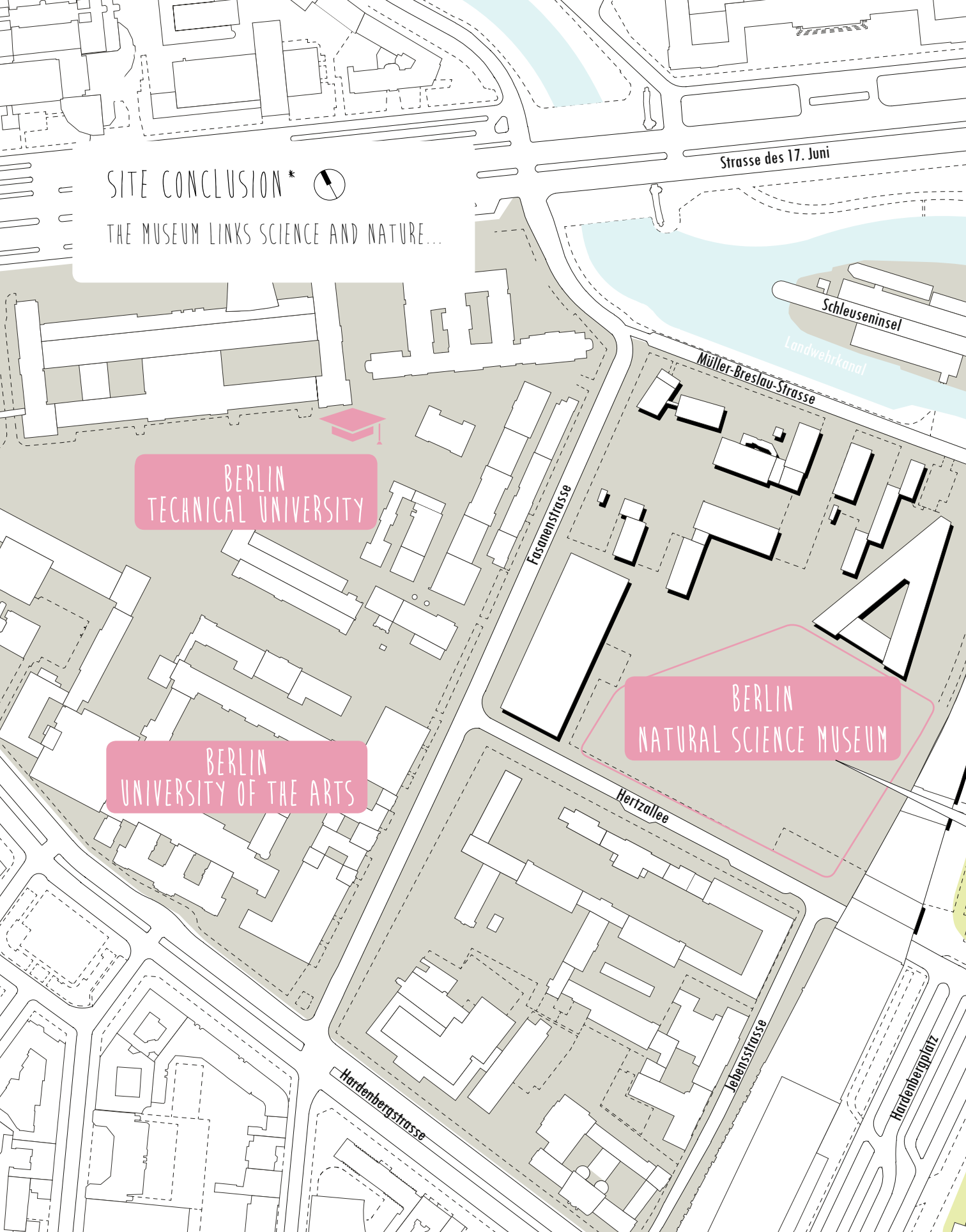
SITE HARDFACTS:

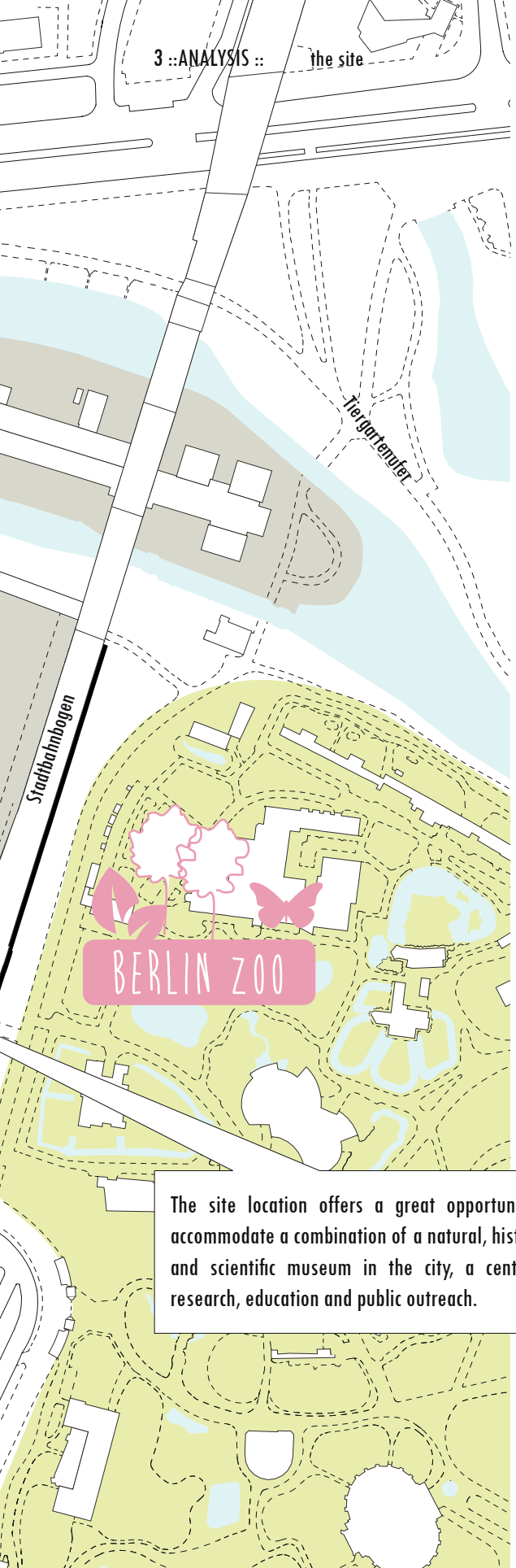
TOTAL SITE AREA: 25.230 m2

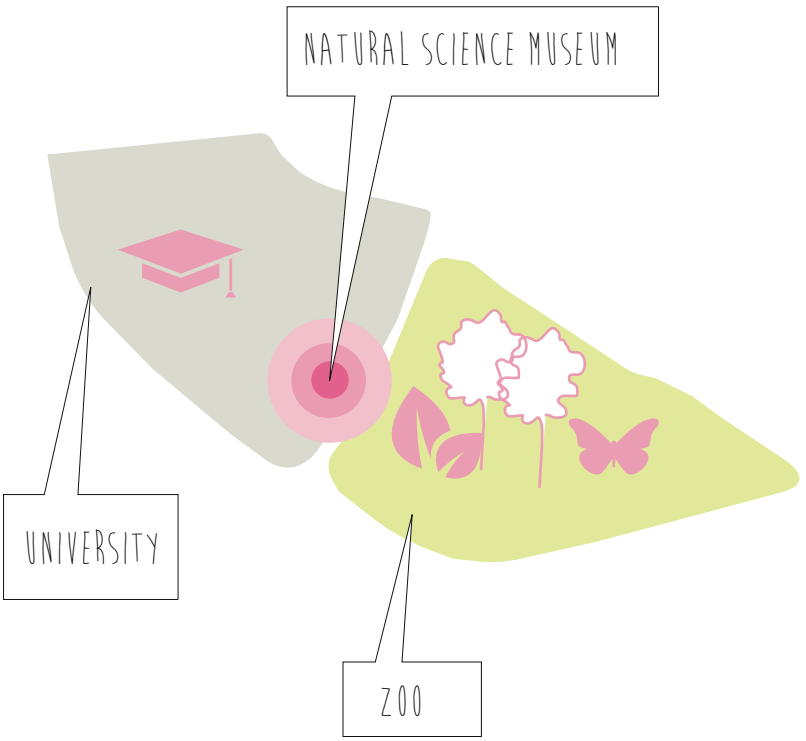
30% OF THE SITE
ARE INTENDED AS GREEN AREAS: 7.569 m2

MAX. FOOTPRINT: 17.661 m2

fig. 10. *


SITE CONCLUSION*
THE MUSEUM LINKS SCIENCE AND NATURE...
Strasse des 17. Juni
Schleuseninsel
Landwehrkanal
Müller-Breslau-Strasse
Fasanenstrasse
BERLIN
TECHNICAL UNIVERSITY
BERLIN
NATURAL SCIENCE MUSEUM
BERLIN
UNIVERSITY OF THE ARTS
Hertzallee
Jebensstrasse
Hardenbergstrasse
Hardenbergplatz





The site location offers a great opportunity to accommodate a combination of a natural, historical and scientific museum in the city, a center of research, education and public outreach.

fig. 11. *

3. ANALYSIS *
NATURE'S GEOMETRIES

fig. 12. *

HUMAN GEOMETRIES

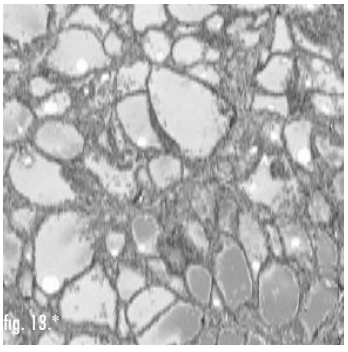


fig. 13.*

HUMAN CELL FORMATION

fig. 14.*

HUMAN SWARM

fig. 15.*

FINGERPRINT

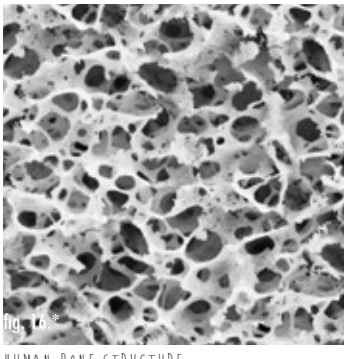


fig. 16.*

HUMAN BONE STRUCTURE

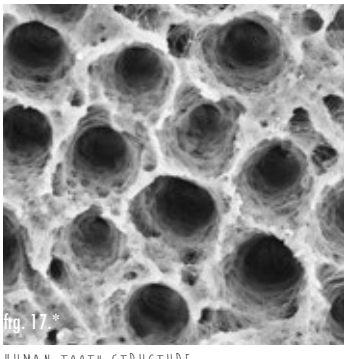


fig. 17.*

HUMAN TOOTH STRUCTURE

fig. 18.*

CEREBRAL CORTEX

GEOLOGICAL GEOMETRIES

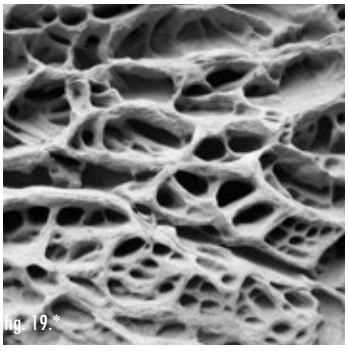


fig. 19.*
TAFONE STONE


fig. 20.*
BALSAT STONE

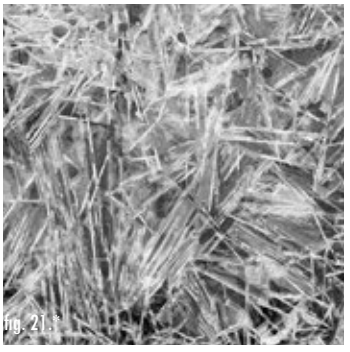


fig. 21.*
ICE CRYSTAL


fig. 22.*
DESCINATED GROUND

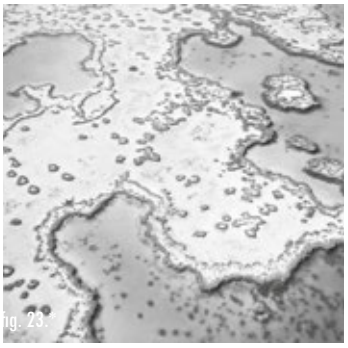


fig. 23.*
CORAL REEF

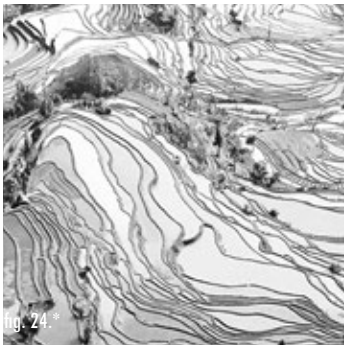


fig. 24.*
TERRACED RICE FIELDS

zoological geometries

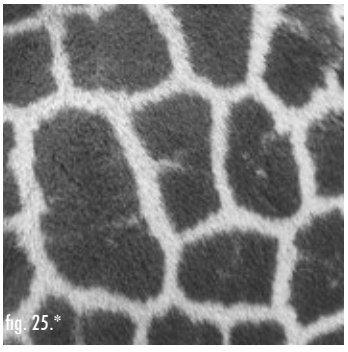


fig. 25.*

giraffe

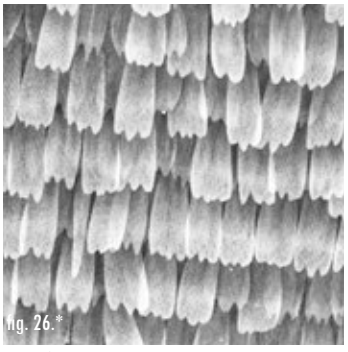


fig. 26.*

butterfly wing

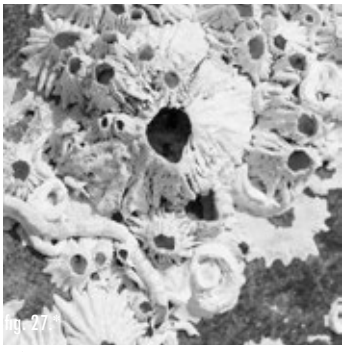


fig. 27.*

barnacle

fig. 28.*

tropical fish

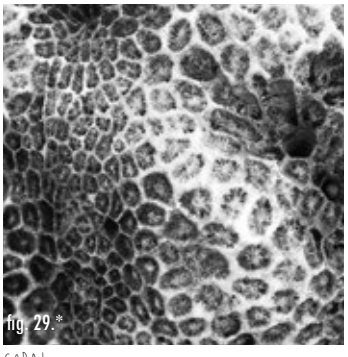


fig. 29.*

coral

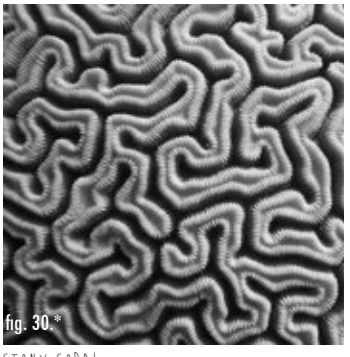


fig. 30.*

stony coral

Botanical geometries

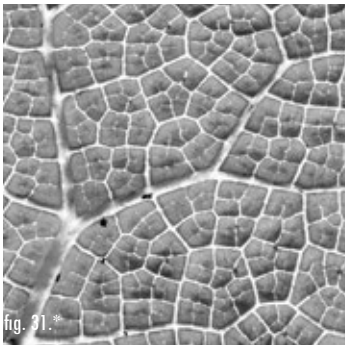


fig. 31.*
LEAF CELLS

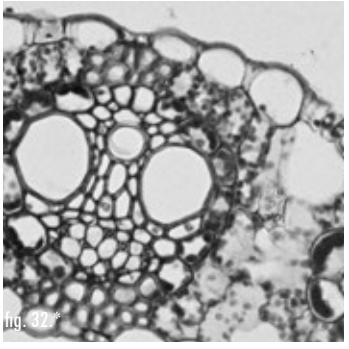


fig. 32.*
LEAF CELLS

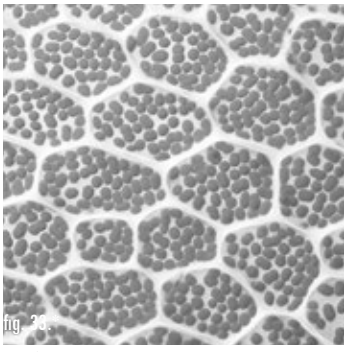


fig. 33.*
CHLOROPLASTS

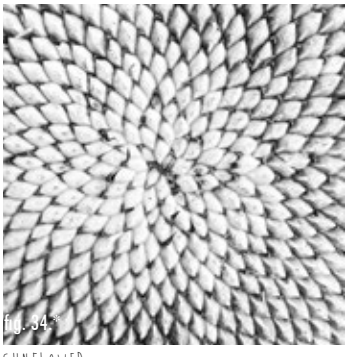


fig. 34.*
SUNFLOWER

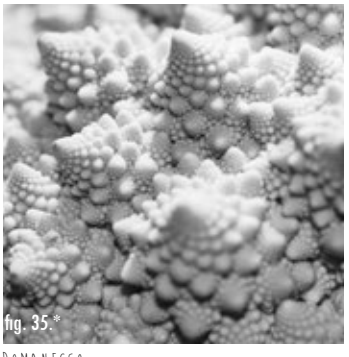


fig. 35.*
ROMANESCO

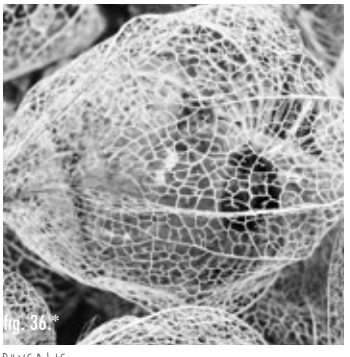


fig. 36.*
PHYSALIS

3. ANALYSIS *
SPATIAL PROGRAM

THE BUILDING'S PROGRAM IS GROUPED INTO 7 MAJOR FUNCTIONS...

TOTAL MAX. 23.700 SQM

-30% MAX. CIRCULATION 7.110 SQM

FLOOR SPACE 16.590 SQM

ENTRANCE - FOYER

CAFE - RESTAURANT

EXHIBITION SPACE

RESEARCH AREA

EDUCATION AREA

AUDITORIUM

ADMINISTRATION

Entrance hall, ticket counter, information, visitors orientation, audio guides, coat room, lockers, security office, guard room, offices, museum shop, toilets, elevator

Restaurant, kitchen, storage, staff room, toilets

Exhibition space, audio-visual zone, workshop space, exhibition preparation & design, storage, collection delivery area

Library area, lecture and conference room, research rooms, lab rooms, photographic studio, offices, storage, toilets

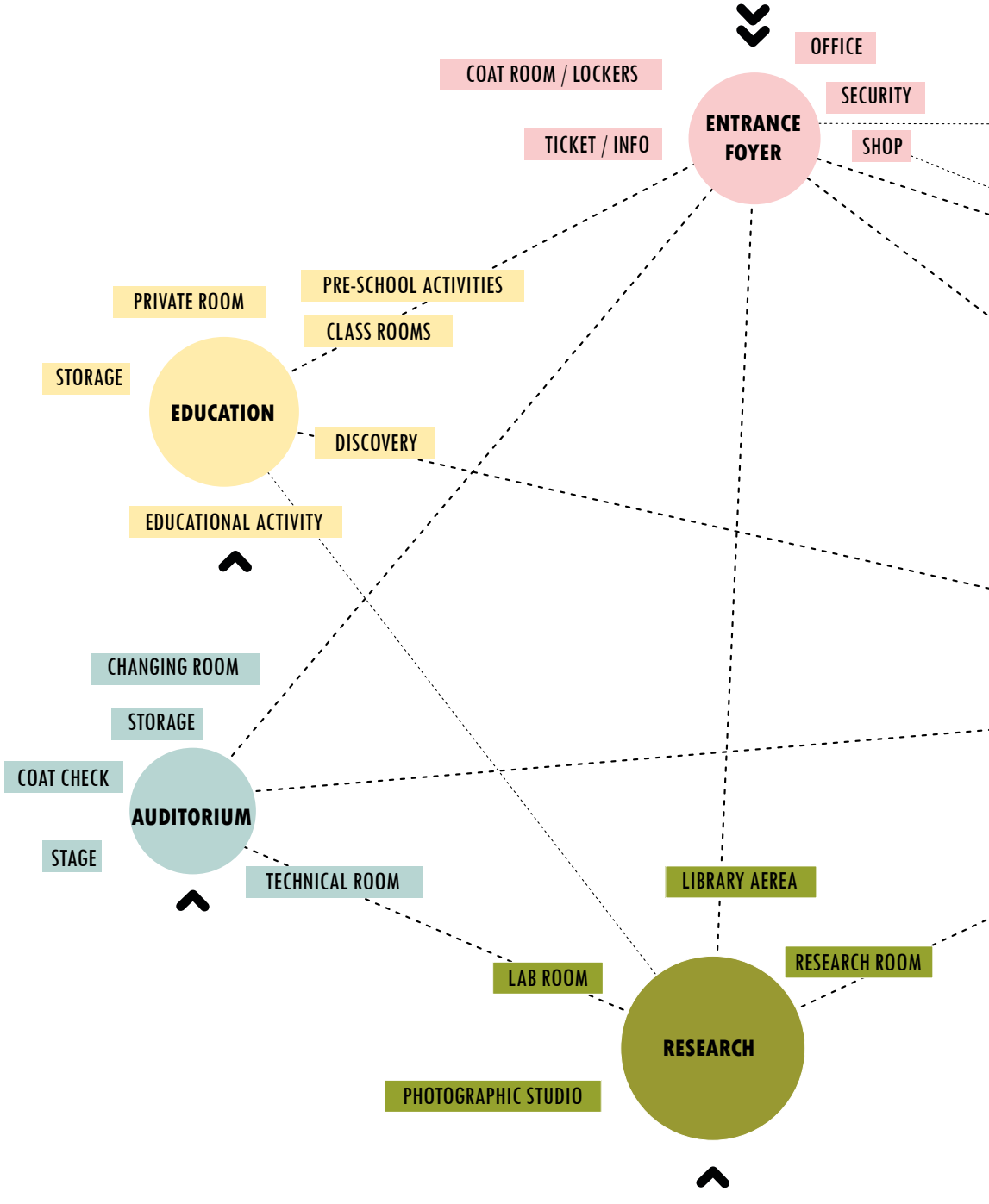
Pre-School activity, class rooms, discovery space, educational activity, storage, private room, coat room, toilets

Auditorium, foyer, stage, seats, storage, technical room, changing room

Administration offices, conference room, storage, toilets

FUNCTIONAL PROGRAM

CONNECTIONS...



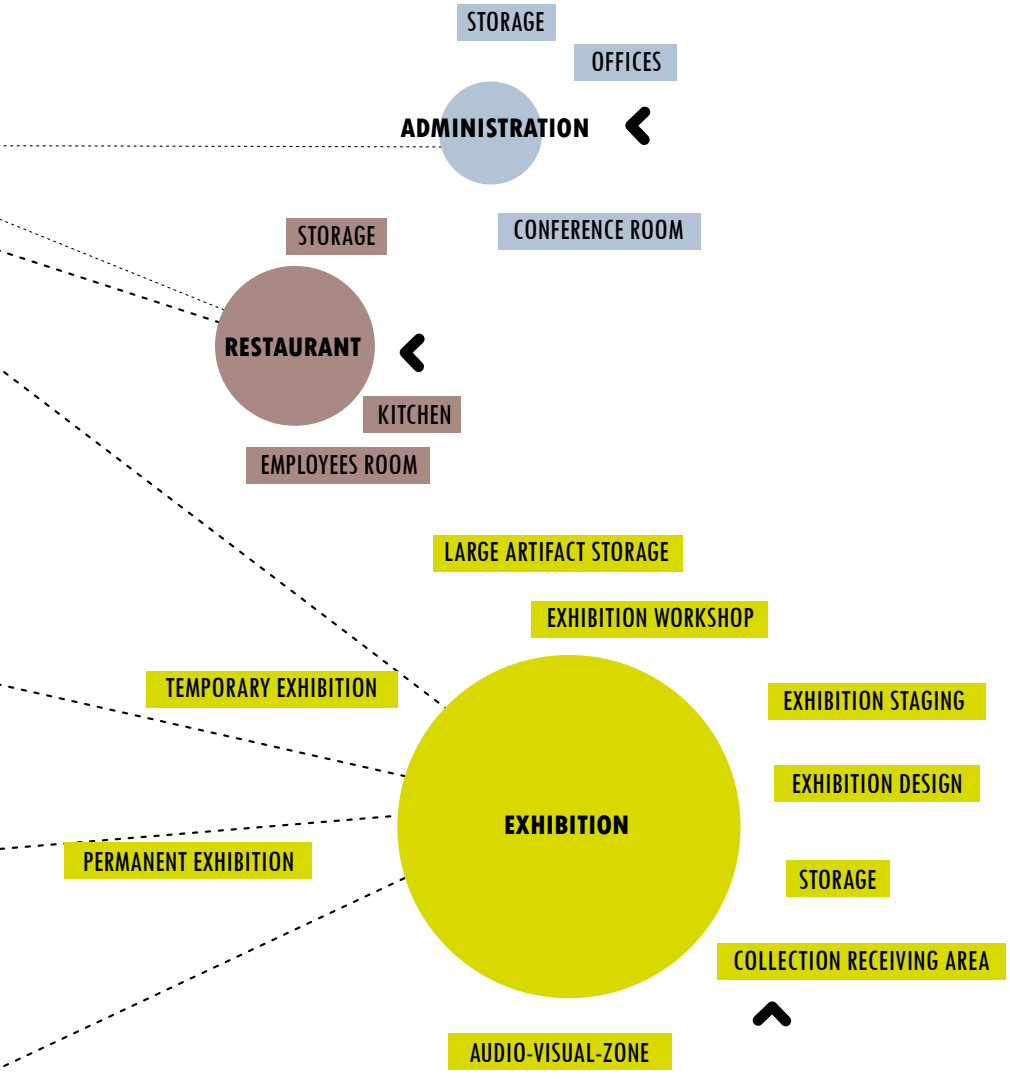

STORAGE
OFFICES
ADMINISTRATION
CONFERENCE ROOM
STORAGE
RESTAURANT
KITCHEN
EMPLOYEES ROOM
LARGE ARTIFACT STORAGE
EXHIBITION WORKSHOP
TEMPORARY EXHIBITION
EXHIBITION STAGING
EXHIBITION DESIGN
EXHIBITION
PERMANENT EXHIBITION
STORAGE
COLLECTION RECEIVING AREA
AUDIO-VISUAL-ZONE

fig. 37. *

4. CONCEPT *
SPATIAL PROGRAM

THE BUILDING´S PROGRAM*

ORGANISATION OF FUNCTIONS...

- Main Entrance / Foyer
- Exhibition (permanent and temporary)
- Research
- Education
- Auditorium
- Restaurant
- Administration

The building‘s program is grouped into 7 major functions:

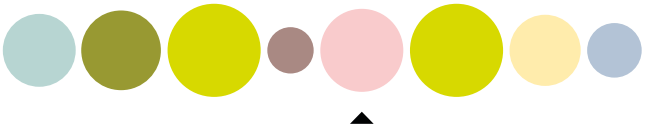
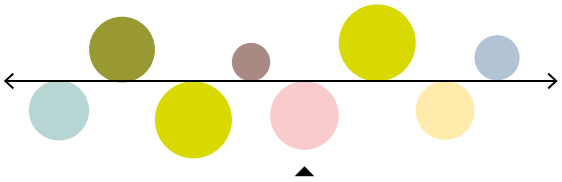


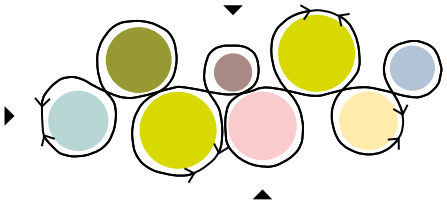
fig. 38. *



Linear Organisation

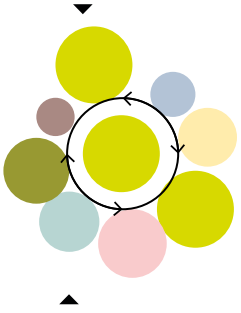
All functions are organized along a main axis

> the buildung is linked with its surroundings, access to daylight, internal and external views.

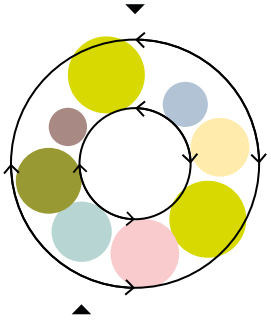


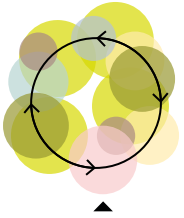
Linear Organisation - compressed

A circulating path incorporating niches, courtyards and connections to the adjacent landscape encircles all major functions.

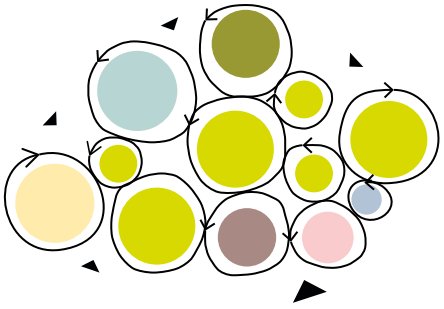


Circulating Organisation





Circulating Organisation - compressed

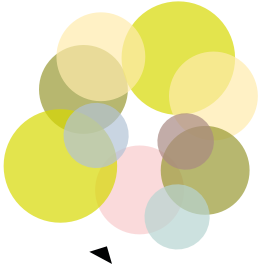


Fluid Organisation

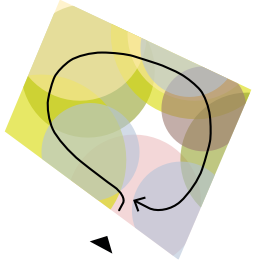
ORGANISATION OF FUNCTIONS*

STEP 1: VERTICAL ORGANISATION

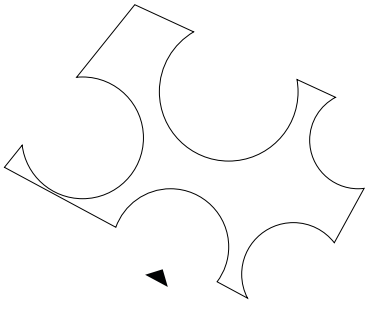
- Main Entrance / Foyer
- Exhibition (permanent and temporary)
- Research
- Education
- Auditorium
- Restaurant
- Administration



The main functions are compressed and arranged around a courtyard...



...a circulating path connects the various functions and rises vertically to connect all levels...like a helix.



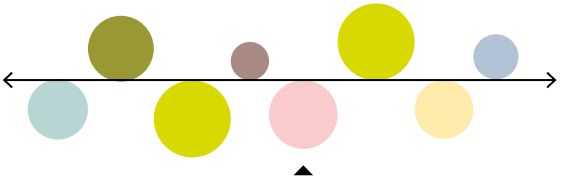
The inverse collective footprint of the major functions' volumes offers enough free space to accommodate transit traffic as well as a ramped connection of the public pathway level with the first floor.

fig. 39. *

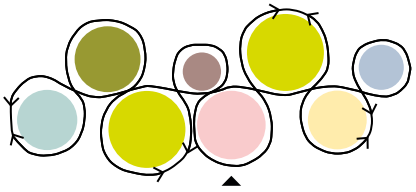
ORGANISATION OF FUNCTIONS*

STEP 2: CIRCULATING ORGANISATION

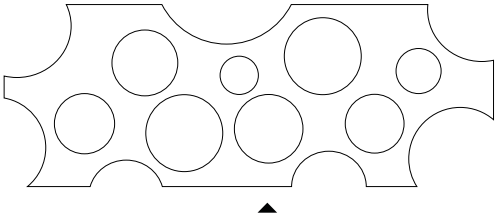
- Main Entrance / Foyer
- Exhibition
- Research
- Education
- Auditorium
- Restaurant
- Administration



Arranging all major functions along a main axis works as the primary principle of order, doubling up as the fastest and most immediate way through the complex.



A circulating path incorporating niches, courtyards and connections to the adjacent landscape encircles all major functions.



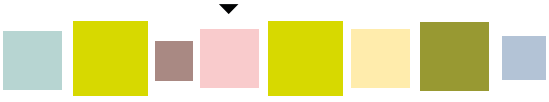
Similar to the organization of the in-between space inside the building, the external roof area is sculpted by the protruding main function volumes, thus creating a public green zone with designated areas for exhibition.

fig. 40. *

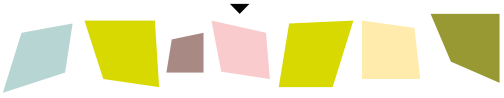
ORGANISATION OF FUNCTIONS*

STEP 3: CLUSTERED ORGANISATION

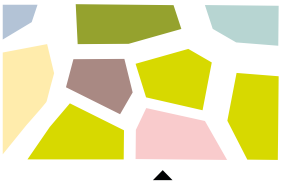
- Main Entrance / Foyer
- Exhibition
- Research
- Education
- Auditorium
- Restaurant
- Administration



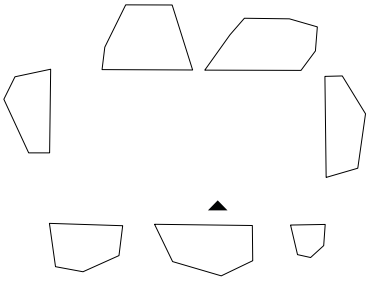
The main program is divided into its major functions ...



...and shaped in accordance with concept and design principles...



...to be arranged to fit the site layout. The various qualities of the space between the main function volumes facilitate multi-functional usages.



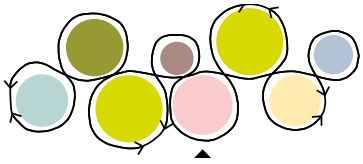
In accordance to the museum's design principles, the adjacent science park reflects the shaped indoor volumes.

fig. 41. *

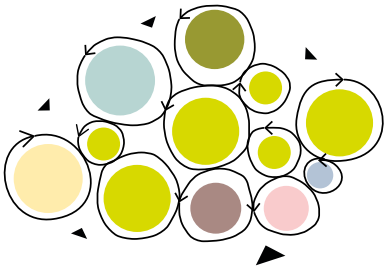
ORGANISATION OF FUNCTIONS*

STEP 4: MIXING: CLUSTERED & CIRCULATING ORGANISATION

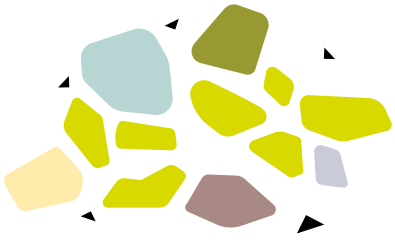
- Main Entrance / Foyer
- Exhibition
- Research
- Education
- Auditorium
- Restaurant
- Administration



The main program is divided into its major functions.



A circulating path incorporating niches, courtyards and connections to the adjacent landscape encircles all major functions...



...and is shaped in accordance with concept and design principles. The various qualities of the fluid space between the main function volumes facilitate multi-functional usages.

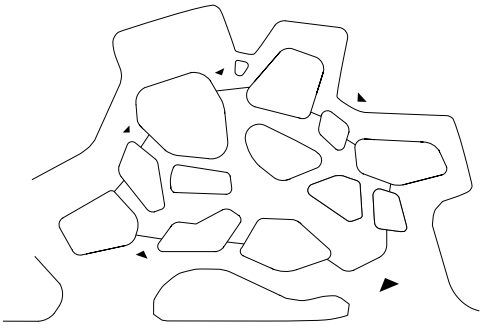
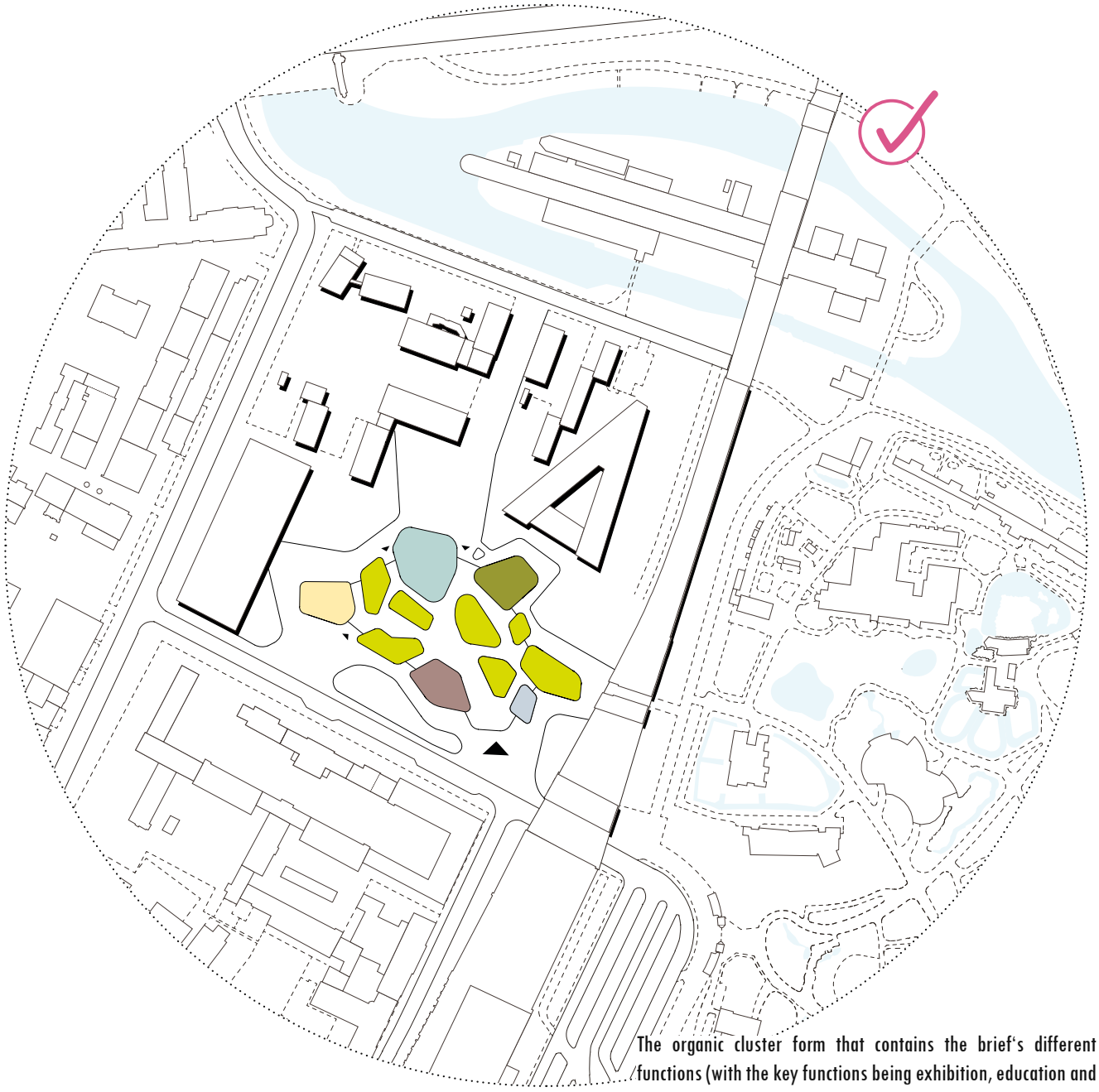


fig. 42. *



The organic cluster form that contains the brief's different functions (with the key functions being exhibition, education and research) and subfunctions is arranged around a compressed circular organization pattern which is connected by ample two-level paths and walkways that are again encased by an extensive green roof area at a slightly lower level.

4. CONCEPT *
WHAT ABOUT...?

DESIGN CONCEPT*

WHAT ABOUT GREEN AREAS...?

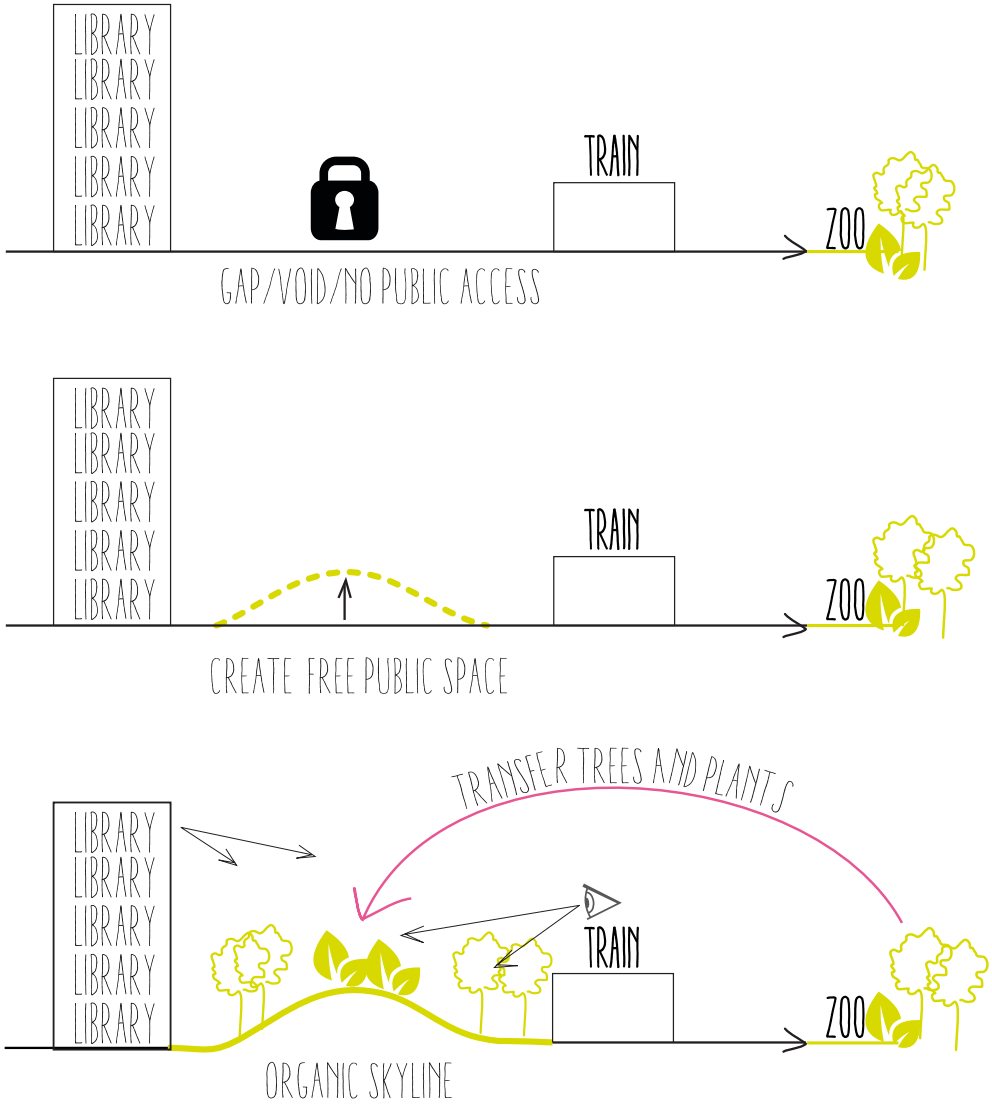
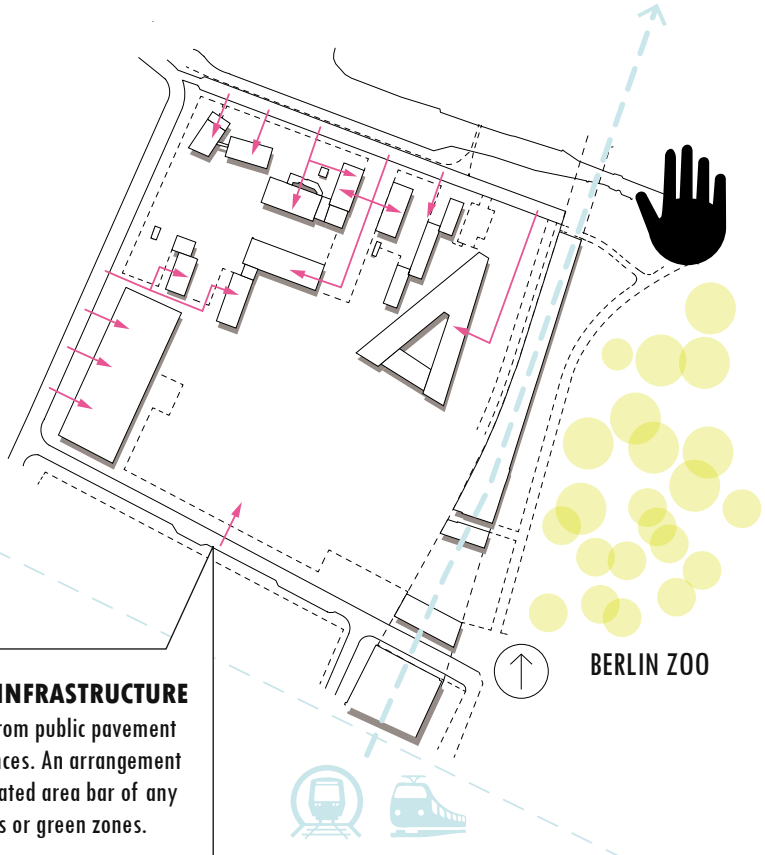


fig. 43. *

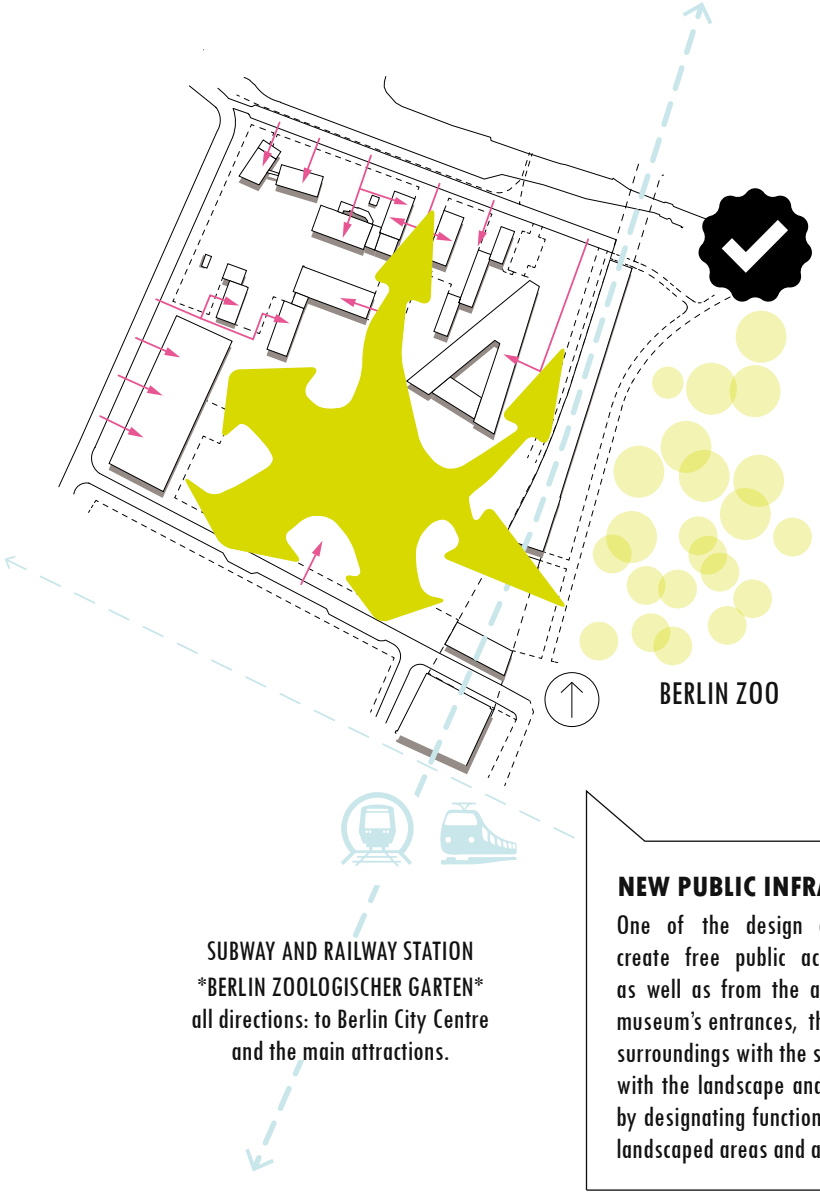
DESIGN CONCEPT*

WHAT ABOUT THE ACCESS...?



EXISTING PUBLIC INFRASTRUCTURE
Short distance access from public pavement to the building's entrances. An arrangement of cul-de-sacs form a gated area bar of any public landscaped areas or green zones.

SUBWAY AND RAILWAY STATION
BERLIN ZOOLOGISCHER GARTEN
all directions: to Berlin City Centre and the main attractions.



SUBWAY AND RAILWAY STATION
BERLIN ZOOLOGISCHER GARTEN
all directions: to Berlin City Centre
and the main attractions.

NEW PUBLIC INFRASTRUCTURE

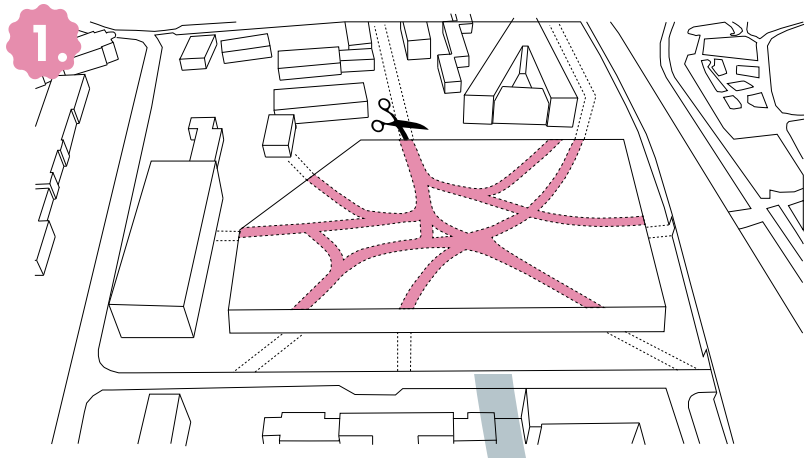
One of the design concept's priorities is to create free public access from the pavement as well as from the adjoining properties to the museum's entrances, thus interweaving the urban surroundings with the site, connecting the building with the landscape and enhancing spatial quality by designating functions and green zones such as landscaped areas and a rooftop botanical garden.

fig. 44. *

DESIGN CONCEPT*

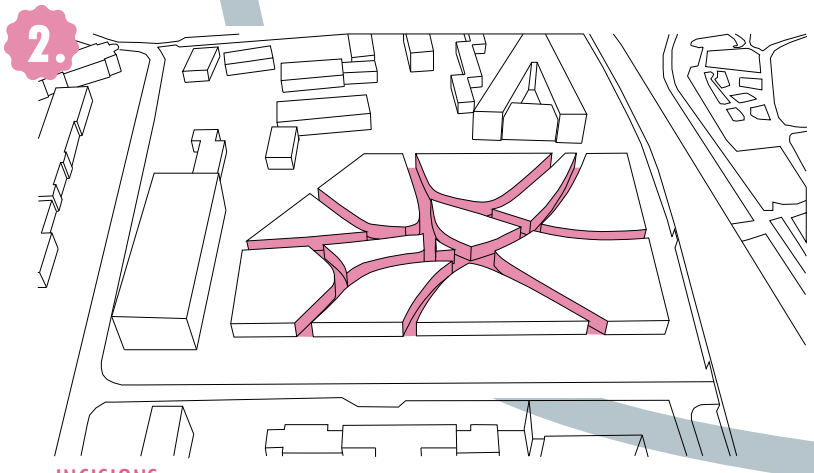
WHAT ABOUT THE PASSAGES...?

In addition to the main entrance that is located on the site's south-east corner to face the two main public traffic routes, each key function is allocated its own separate entrance, making a total of four different ways to access the building complex, with a special focus being given to the connection with the adjacent university library. Together with the publically accessible roofscape the building is hereby closely interwoven with the adjoining urban structures as well as with the surrounding landscape.



CONNECTIONS

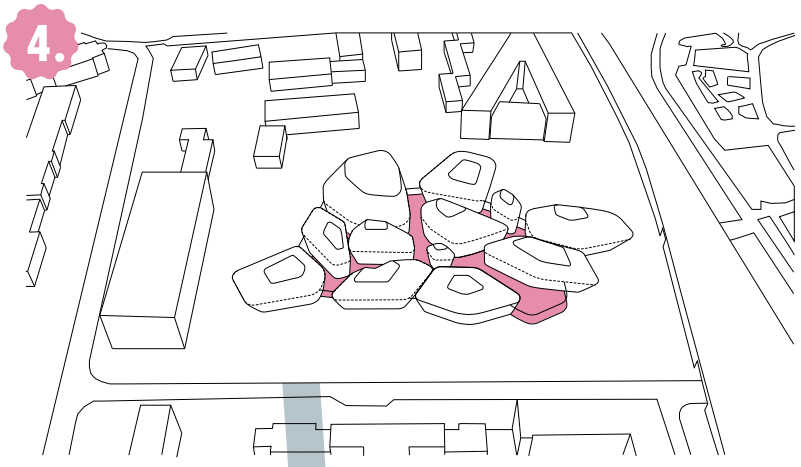
Analysis of infrastructure within, through and around the site; curved passages cross the compound.



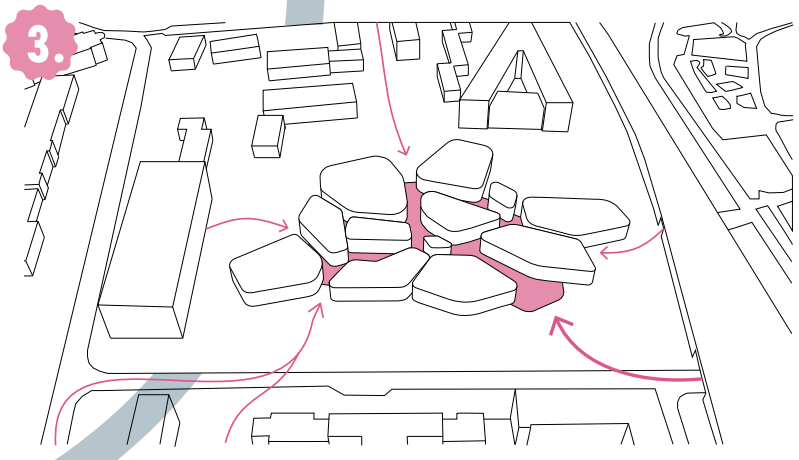
INCISIONS

Connecting routes are being carved into the site's mass to join the building complex with the existing surroundings.

fig. 45. *



„ORGANIC SKYLINE“
Differentiated adjustment of levels and absolute heights of the organically-shaped ‚exhibition cones‘. The cones’ different sizes and orientations follow each specific function and its natural lighting requirements.



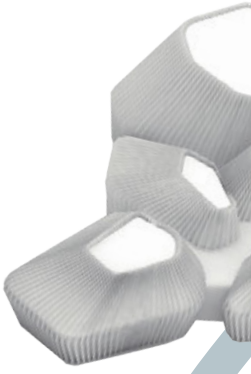
„FLUID SPACE“
Optimization of the fluid in-between space.

DESIGN CONCEPT*

WHAT ABOUT NATURE'S GEOMETRY...?

NATURAL SCIENSE MUSEUM

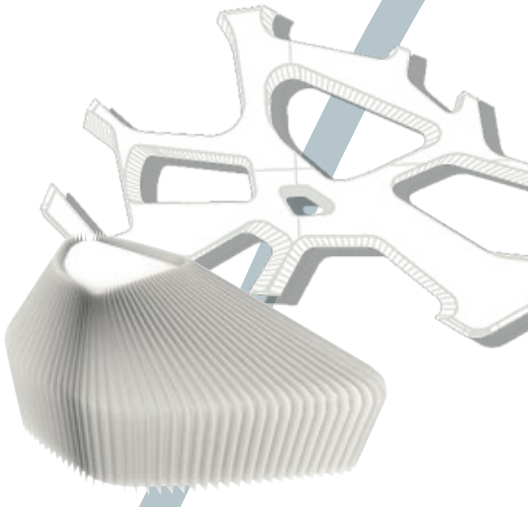
Desireable is a distinctive landmark – a museum with a high recognition factor that grabs public attention in the name of natural science and related fields of research.



FUNCTION ADJUSTMENT

METAPHORIC IDEAL

Overall form and facade have been inspired by natural geometries, particularly by different marine species of barnacles. Though related to crabs, the barnacles are sessile and attach their cone-shaped shell permanently to firm ground, sharing their habitat. On top of the shell a cover lid seals its opening, protecting the barnacle from drying out.



FORM FINDING PROCESS

SCULPTURAL APPROXIMATION

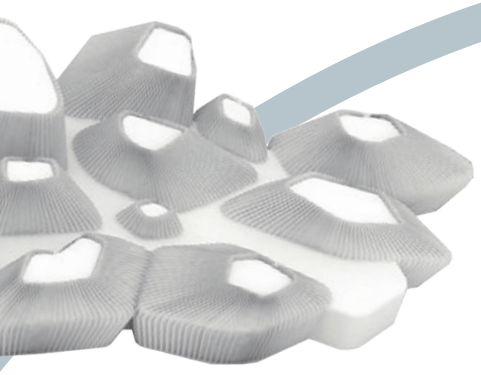
PARAMETER: LOCATION & INFRASTRUCTURE

Connecting to the existing infrastructure (traffic, passages and adjacent buildings);
creating high quality external areas and smooth transitions between internal and external spaces.

fig. 46. *

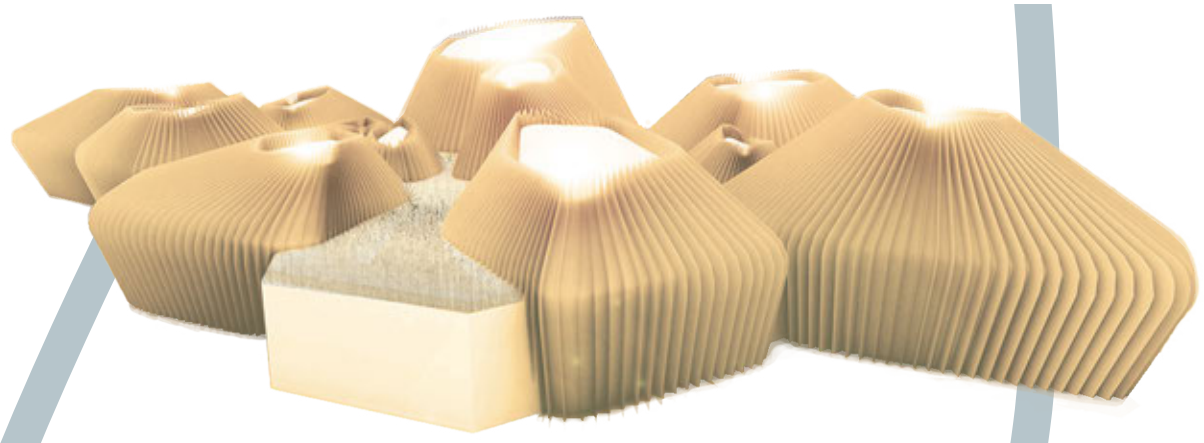
ORGANIZATION OF THE OUTER SKIN

Adjustment and orientation of the roof's skylights and the facade's fins; controlled development of levels and absolute heights according to functional and lighting requirements.



PARAMETER: HUMAN SCALE, SENSORY PERCEPTIONS, USAGE

Dimensioning and positioning of perforations and openings; creating physical and visual connections between internal and external spaces. Alternating insights and outlooks.



PARAMETER: CONSTRUCTION, MATERIAL, REGULATIONS

The ‚barnacle shell' is designed to bear the building's structural load; the external fins are fixed to the shell, yet remain moveable. Central circulation cores accommodating escape stairwells subdivide the building. The choice of main materials characterizes both, internal and external appearance. The shiny aluminium facade reflects the sky's different moods and lights as well as the exhibition landscape and its visitors.

DESIGNING AND SHAPING THE INNER SPACES

Detaching main volumes from the internal multi-usage areas by morphing the latter into one fluid exhibition- and circulation space that surrounds yet not connects to the main functions' volumes. The fluid space narrows down to form niches and sheltered areas and opens up to yards and courtyards, offering differentiated views and insights from different perspectives and levels.

5. DESIGN PROCESS *

The design of the distinctive organic shapes and volumes and their dynamic arrangement has been inspired by biological settlements and natural clusters that can be found for instance amongst the marine wildlife or certain bacterial cultures. As in many micro-organic systems of one biological species, individual appearances vary slightly, yet remain clearly recognizable; in this instance no special priority is given to any of the three key functions.

The blending of different user and visitor groups is promoted and welcome; a concept thematically related to the cultural mix and diversity of global cities such as Berlin.

Due to its dense yet manifold layout the design combines a high degree of functionality with a maximum of diversity achieved by creating a multitude of different spaces, niches, paths, lookouts and views from various angles and different levels, a loose system of entwined yards/courtyards and buildings.

The green roof area is accessible from different directions and can be seen as a raised dynamic landscape featuring botanical and mineral surfaces, outdoor exhibition areas and places for rest and recreation. Visitors or passer-bys are given the opportunity to explore the relationship between built and natural landscape as well as enjoy the views, the landscaped areas or outdoor museum artefacts, interactive or not.

The individual buildings' cone ends pierce or tower above the roofscape. In combination the raised landscape and the distinctive protruding rooftops form an organic skyline that will be visible and clearly recognizable for citizens, commuters and tourists from the elevated railway tracks to the east of the site, creating public awareness for natural science.

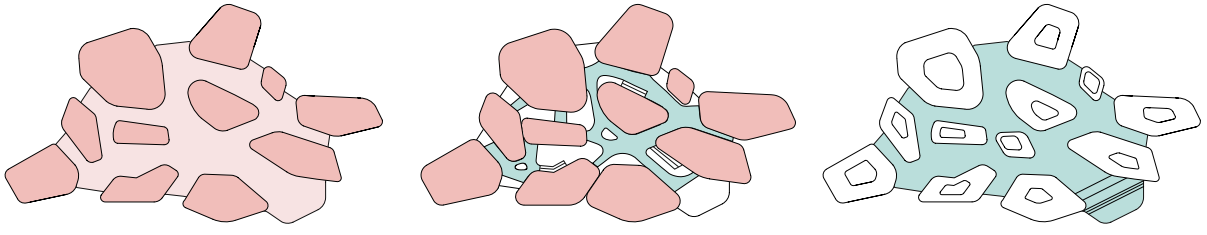


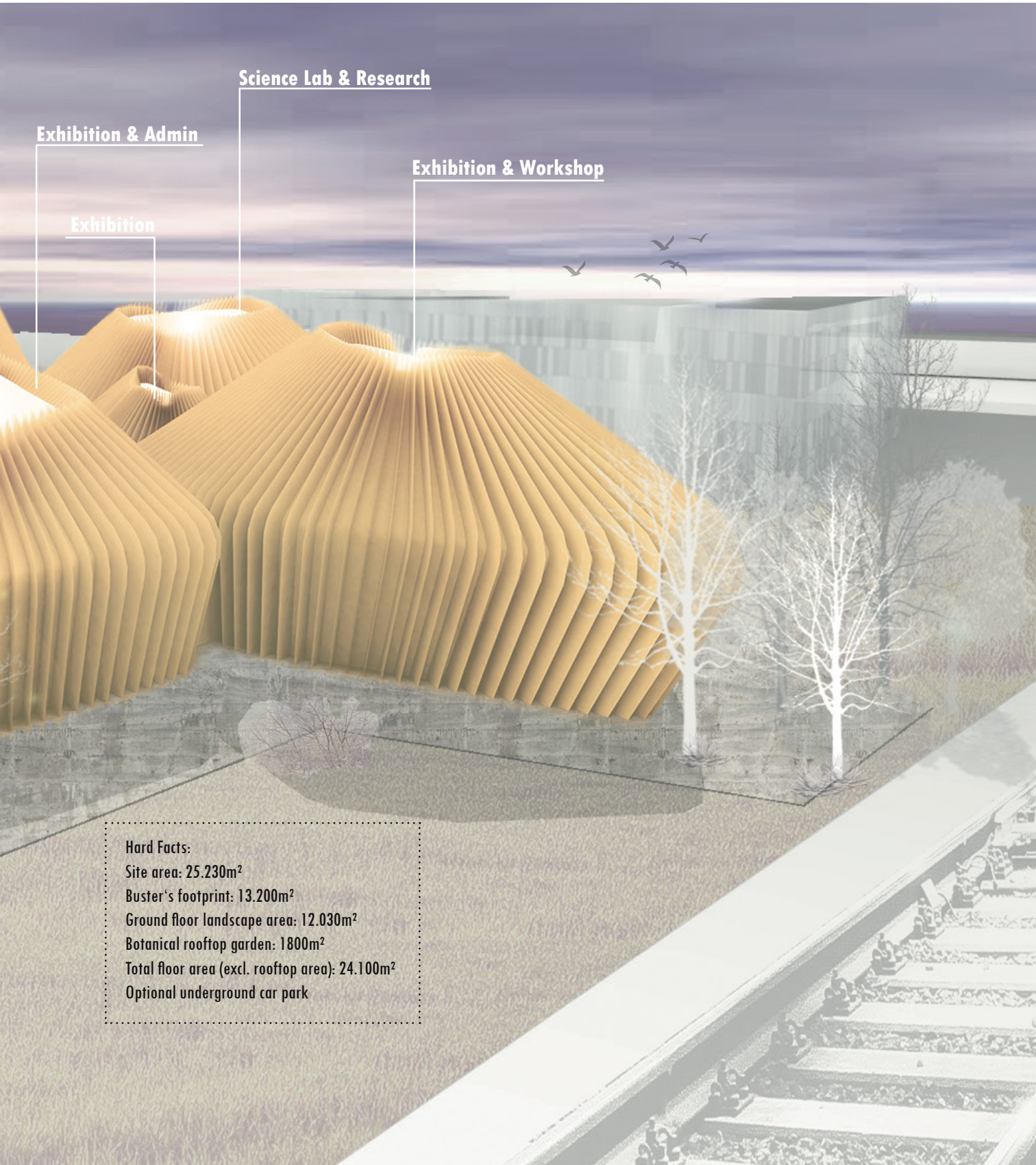
fig. 47. *

5. DESIGN PROCESS * COMPETITION ENTRY


SCIENCE BUSTER
THE! NATURAL SCIENCE MUSEUM IN BERLIN


SCIENCE BUSTER
THE! NATURAL SCIENCE MUSEUM IN BERLIN
Library & Media Research
Restaurant & Shop
Exhibition
Education
Conference
Rooftop Garden
Education Workshop
Auditorium
Large Exhibition Hall
COMPETITION BOARD*
NO1/2: IMAGE AND FACTS
Science Buster

fig. 48. *

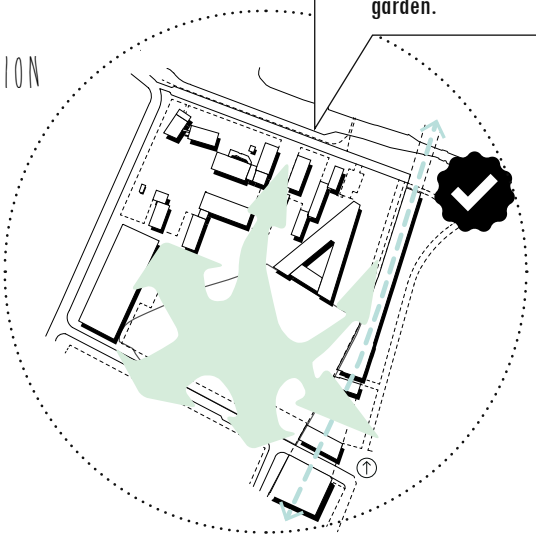


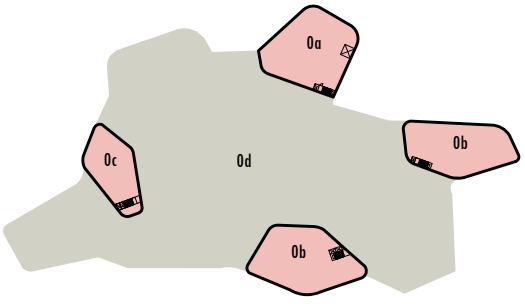
Hard Facts:
Site area: 25.230m²
Buster's footprint: 13.200m²
Ground floor landscape area: 12.030m²
Botanical rooftop garden: 1800m²
Total floor area (excl. rooftop area): 24.100m²
Optional underground car park

COMPETITION BOARD*

NO2/2: FLOOR PLANS AND SECTION

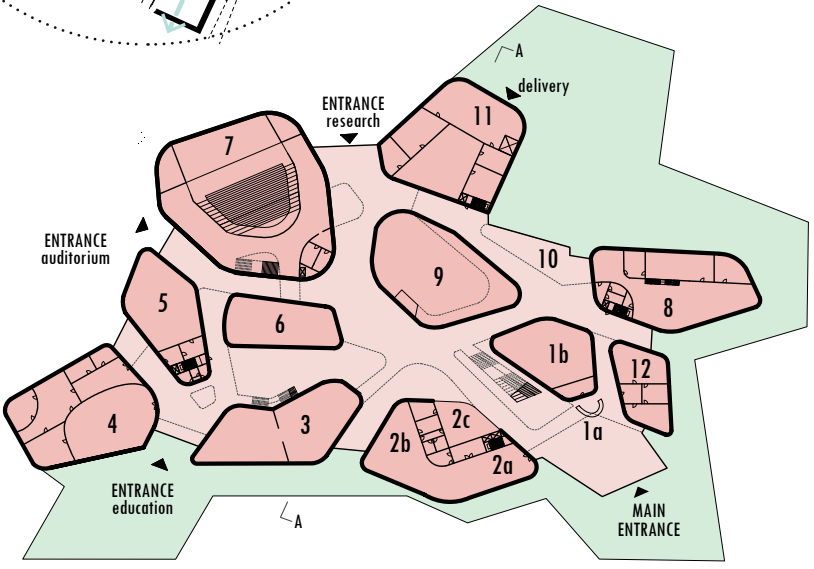
...interweaving the urban surroundings with the site, connecting the building with the landscape and enhancing spatial quality by designating functions and green zones such as landscaped areas and a rooftop botanical garden.





-1.F -3.50m

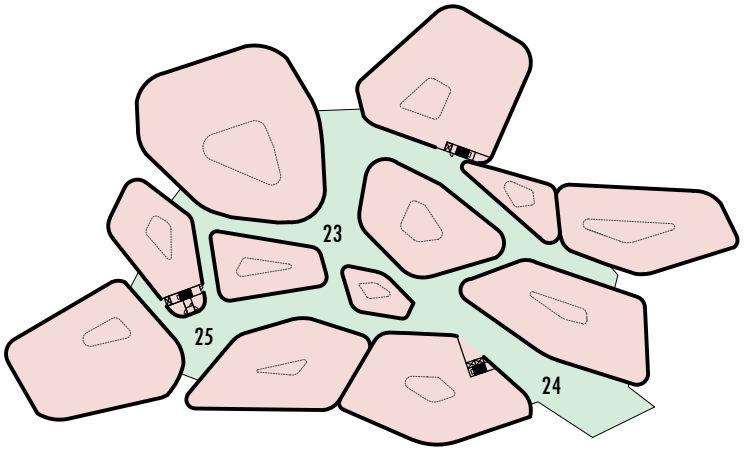
0a: Exhibition Storage
0b: Collection Storage
0c: M&E Room
0d: Storage & Delivery



G.F ±0.00m

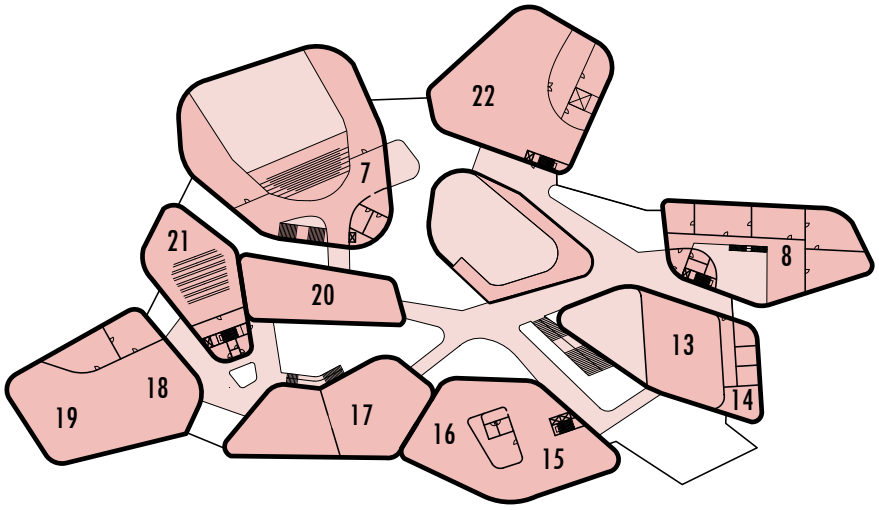
1a: Ticket & Info
1b: Temporary Exhibition
2a: Cafe
2b: Museumshop / Bookshop
2c: Lockers & Coat Check
3: Exhibition
4: Education: Class Rooms
5: Education: Research Exploratorium
6: Audio-Visual Room
7: Auditorium: 500 persons
8: Research & Science Labs
9: Large Exhibition Hall
10: Exhibition: Audio & Discovery Area
11: Exhibit Design & Workshop
12: Guard Room & Security Offices
13: Exhibition
14: Administration & Offices
15: Restaurant
16: Media Lab
17: Exhibition
18: Reading Area
19: Library
20: Exhibition
21: Conference Room
22: Exhibition

fig. 49. *

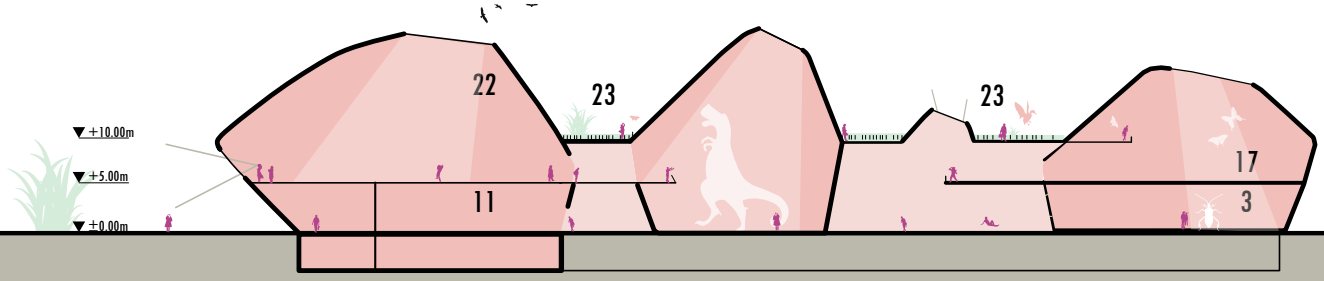


2.F +10.00m

23: Botanical Garden
24: Rooftop Terrace Restaurant
25: Rooftop Terrace Library



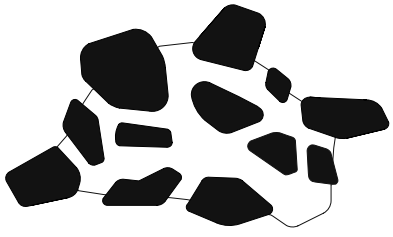
1.F +5.00m



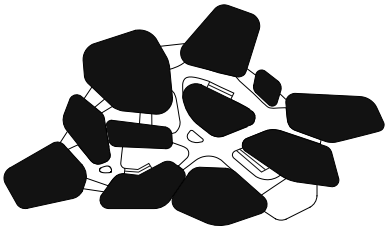
A-A

MINI FLOOR PLANS*

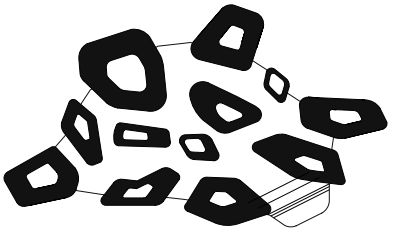
DIAGRAMS: FUNCTION DISTRIBUTION



GROUND FLOOR

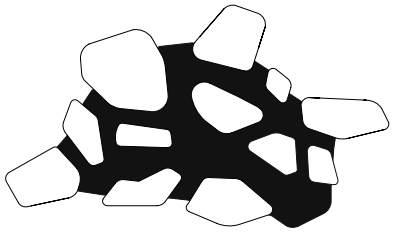


1ST FLOOR

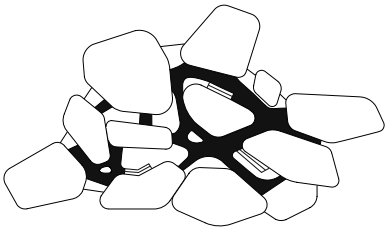


ROOFTOP GARDEN

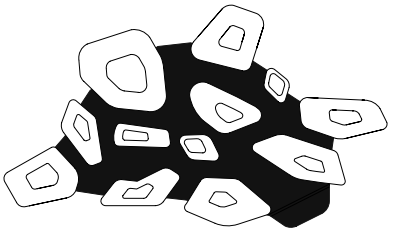
INTERNAL FUNCTIONAL SPACE



GROUND FLOOR



1ST FLOOR

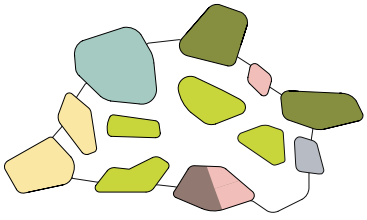


ROOFTOP GARDEN

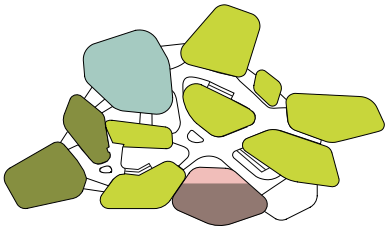
FLUID SPACE

fig. 50. *

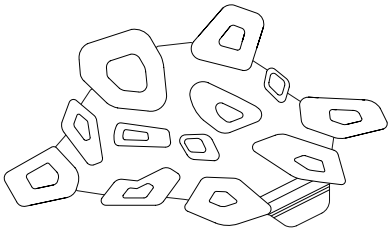
EXHIBITION
RESEARCH
EDUCATION
AUDITORIUM
RESTAURANT
ADMINISTRATION
BOTANICAL ROOFTOP GARDEN
CIRCULATION AND FLUID EXHIBITION SPACE



GROUND FLOOR

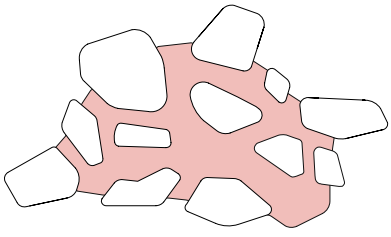


1ST FLOOR

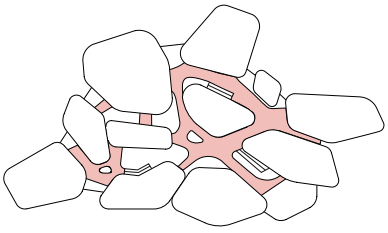


ROOFTOP GARDEN

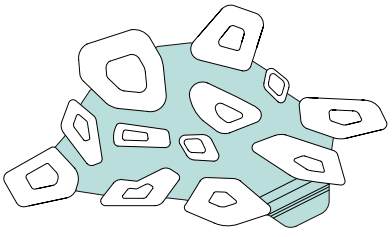
INTERNAL FUNCTIONAL SPACE



GROUND FLOOR

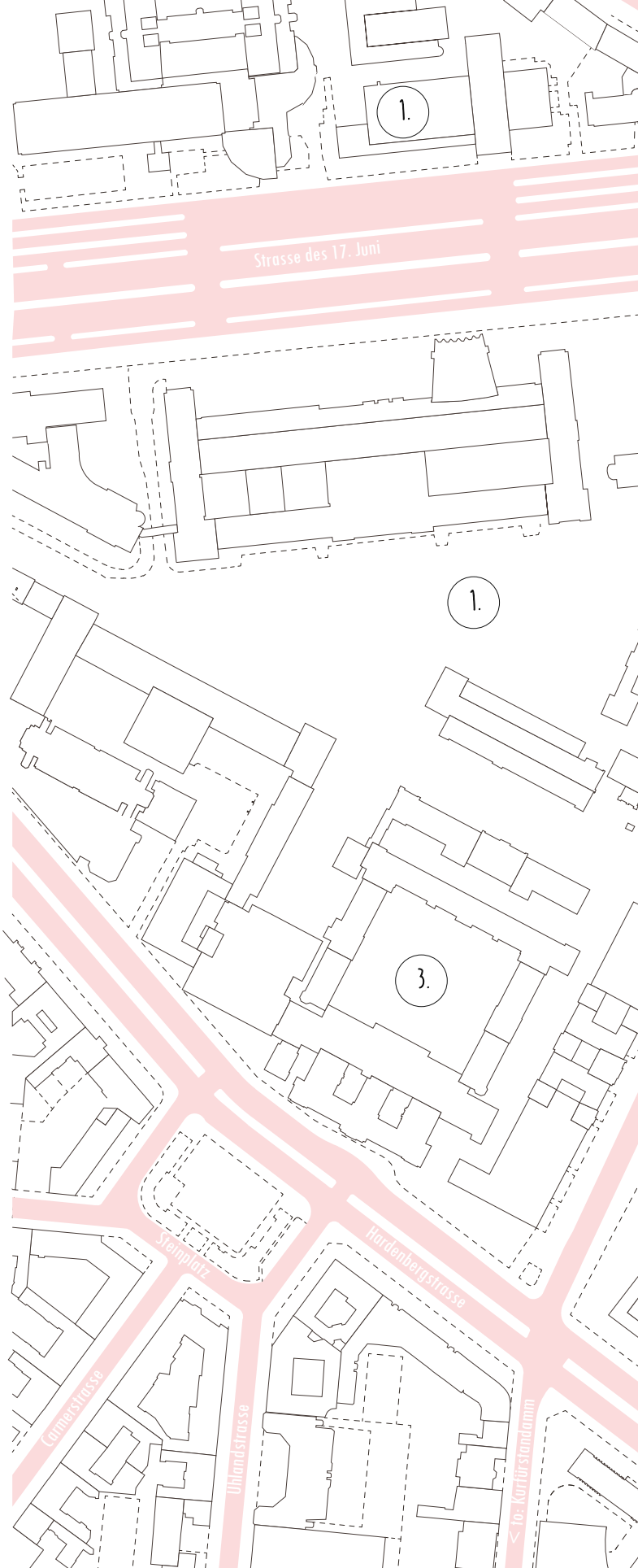


1ST FLOOR



ROOFTOP GARDEN

FLUID SPACE

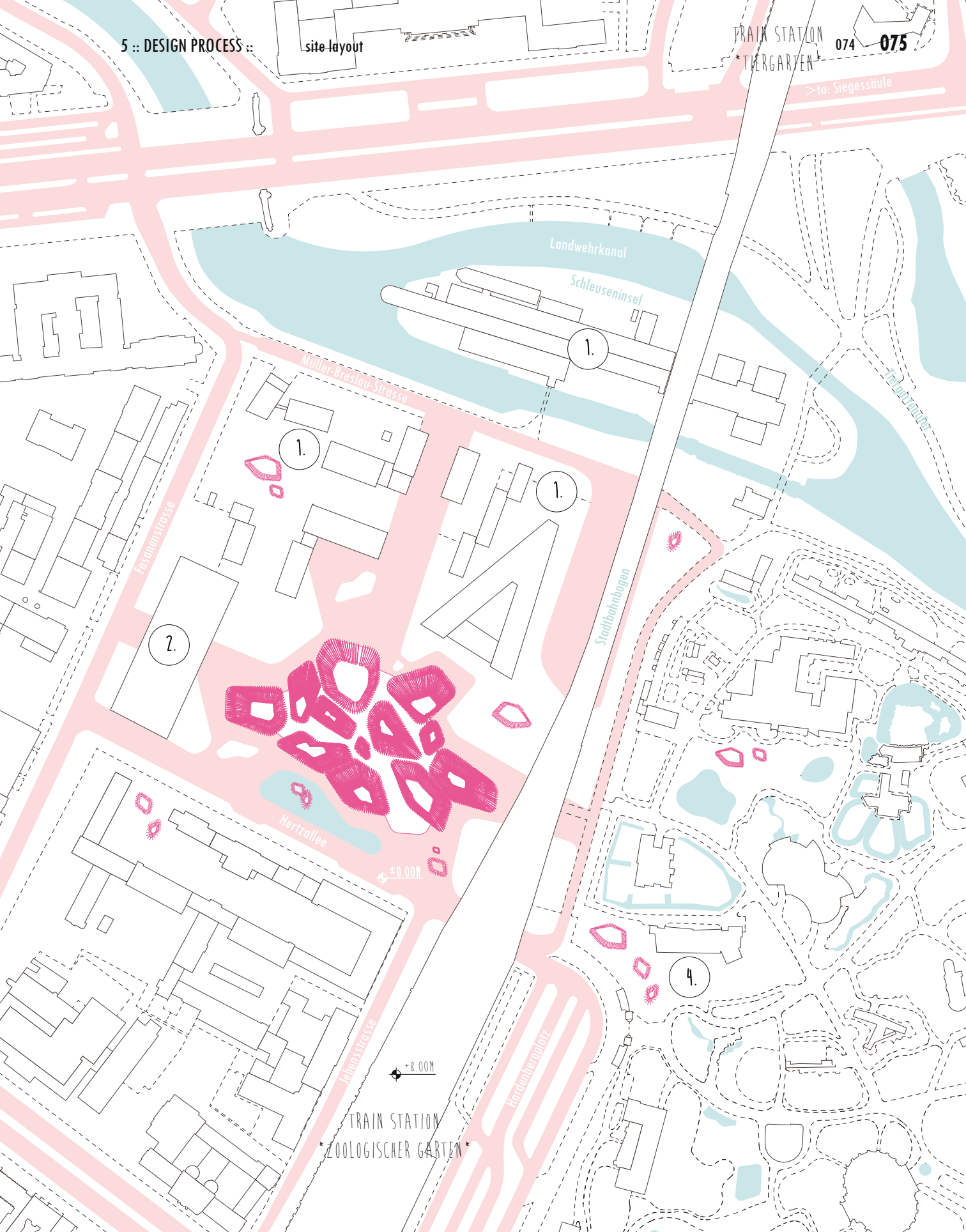


1. TECHNICAL UNIVERSITY
2. UNIVERSITY LIBRARY
3. UNIVERSITY OF THE ARTS
4. ZOOLOGICAL GARDEN

SITE PLAN

0 20 50 100

fig. 51. *


TRAIN STATION
TIERGARTEN
>to: Siegessäule
Landwehrkanal
Schleuseninsel
Müller-Breslau-Strasse
Fasanenstrasse
Stadtbahnbogen
Tiergartenufer
Hertzallee
±0.00M
Jebensstrasse
Hardenbergplatz
+8.00M
TRAIN STATION
ZOOLOGISCHER GARTEN
1.
2.
4.

FLUID SPACE
EXHIBITION & CIRCULATION
4.020 m²

CONE SPACE:
7.110 m²

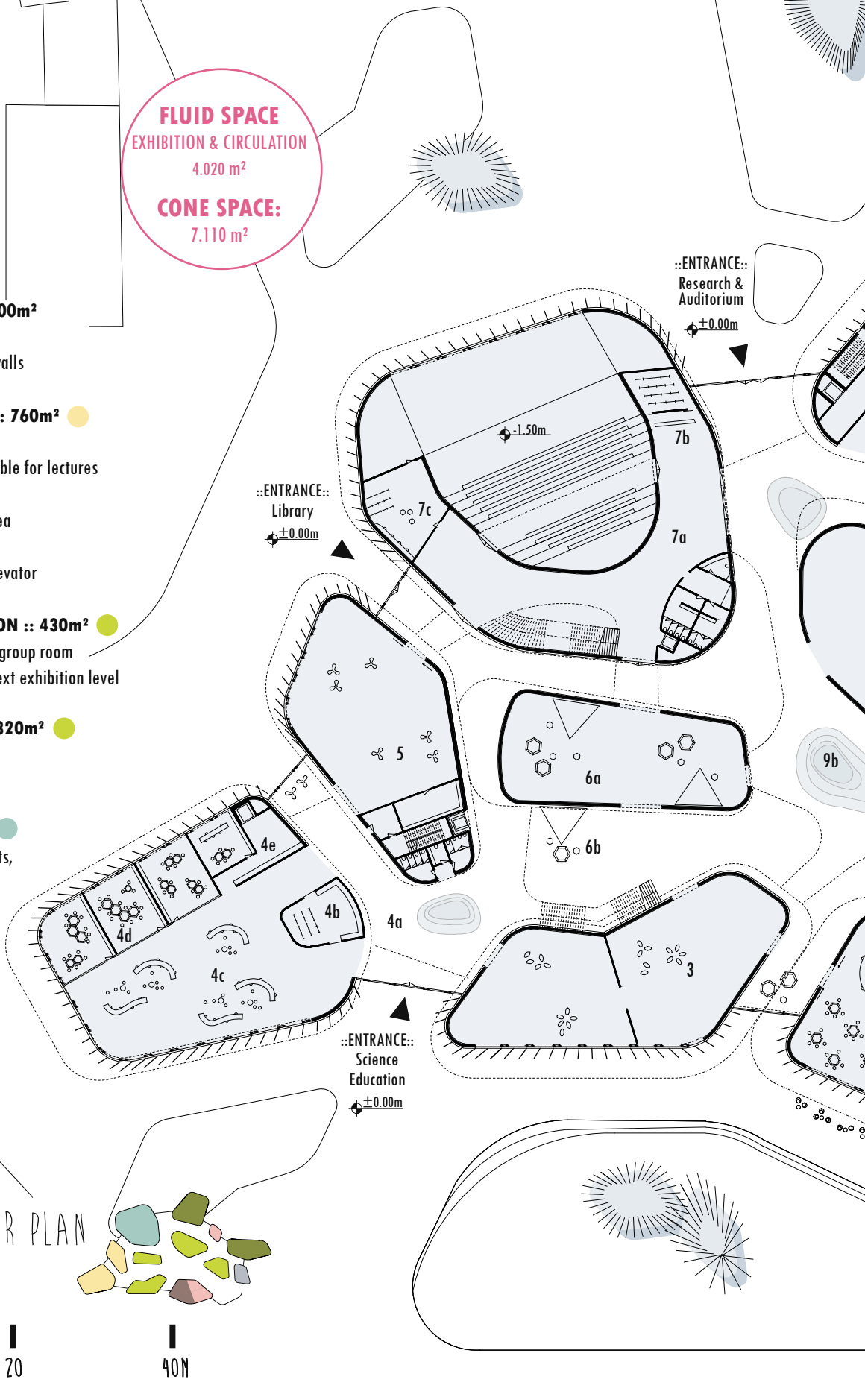
EXHIBITION
::HISTORY OF PLANTS:: 500m²
3 exhibition area
with movable partition walls

EDUCATIONAL SCIENCES :: 760m²
4a education entrance
landscaped furniture usable for lectures
4b kids coat check
4c lab and experimental area
4d class rooms
4e office, storage, freight elevator

EXPERIMENTAL EXHIBITION :: 430m²
5 experimental exhibition group room
toilets, elevator to the next exhibition level

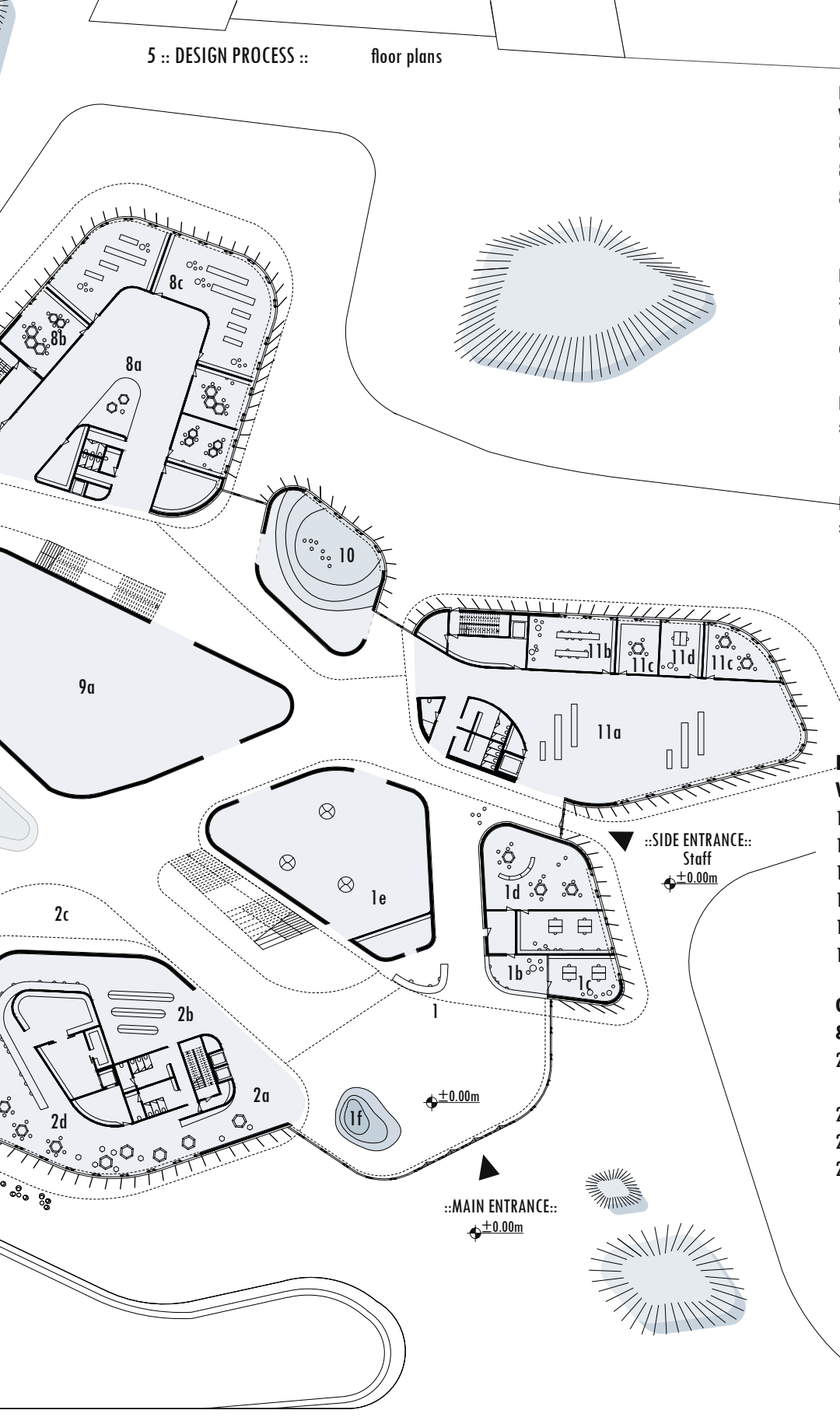
AUDIO-VISUAL-ROOM :: 320m²
6a audio-visual-exhibition
6b exhibition projection

AUDITORIUM :: 1380m²
auditorium with 380 seats,
panorama stage
7a foyer with snackbar
7b coat check
7c changing room, storage
toilets, elevator



GROUND FLOOR PLAN
+ - 0.00M

0 5 10 20 40M



RESEARCH AREA :: 830m²
WITH SCIENCE LABS ::
8a exhibition area
8b workshop & meeting rooms
8c lab rooms
storage, freight elevator, toilets

EXHIBITION ::660m²
::THE WORLD OF DINOSAURS::
9a exhibition area
9b outdoor exhibition area

EXHIBITION :: 170m²
::AUDIO HEADPHONES::
10 exhibition space

EXHIBITION :: 740m²
::PREPARATION TECHNIQUES::
11a exhibition space and workshop
11b exhibition staging
11c offices and meeting area
11d exhibition design
storage, freight elevator, toilets

ENTRANCE FOYER :: 580
WITH EXHIBITION
1a infopoint, audioguides, storage
1b tickets
1c security guard
1d administration offices
1e temporary exhibition
1f media info furniture

ORGANIC SNACKBAR :: 740m²
& SCIENCE SHOP
2a science and museum shop
storage office
2b lockers and coat check
2c exhibition projection
2d organic snackbar with
take away snacks
(picnic areas at the rooftop
garden and science park)
kitchen, staff room,
storage, cold storage,
freight elevator, toilets,
elevator to the next exhibition level

fig. 52. *

FLUID SPACE
EXHIBITION & CIRCULATION
1.810 m²

CONE SPACE:
7.460 m²

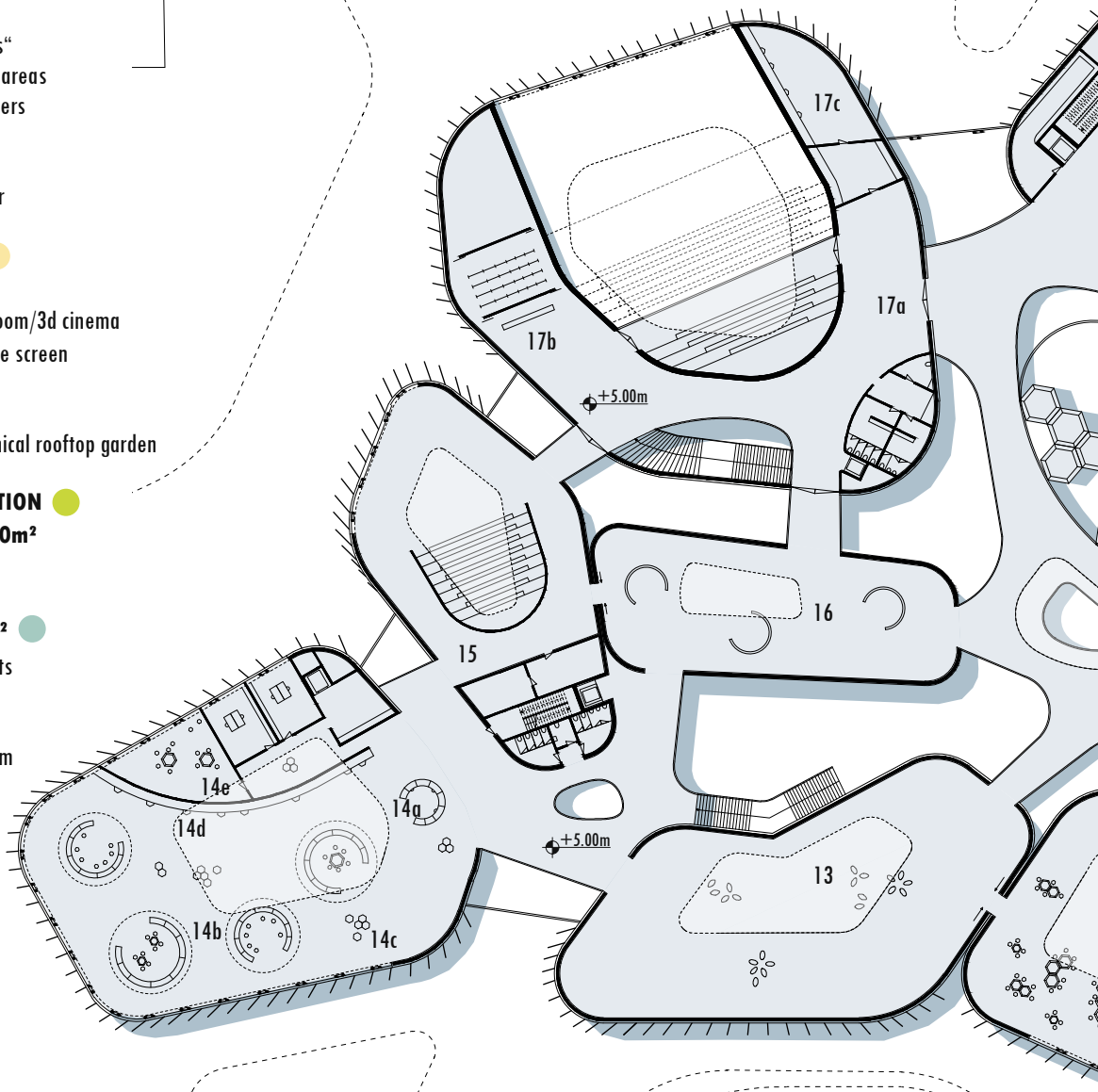
EXHIBITION :: 710m²
::MINERALS::
13 exhibition area
with movable partition walls

LIBRARY & MEDIA LAB :: 980m²
14a information counter
14b „bookshelve-bubbles“
with private reading areas
14c flexible reading clusters
14d media lab counter
14e staff room, offices,
storage with elevator

MULTIFUNCTIONAL EVENTSPACE :: 530m²
15 lecture/conference room/3d cinema
stage with retractable screen
140 seats
storage, toilets
elevator to the botanical rooftop garden

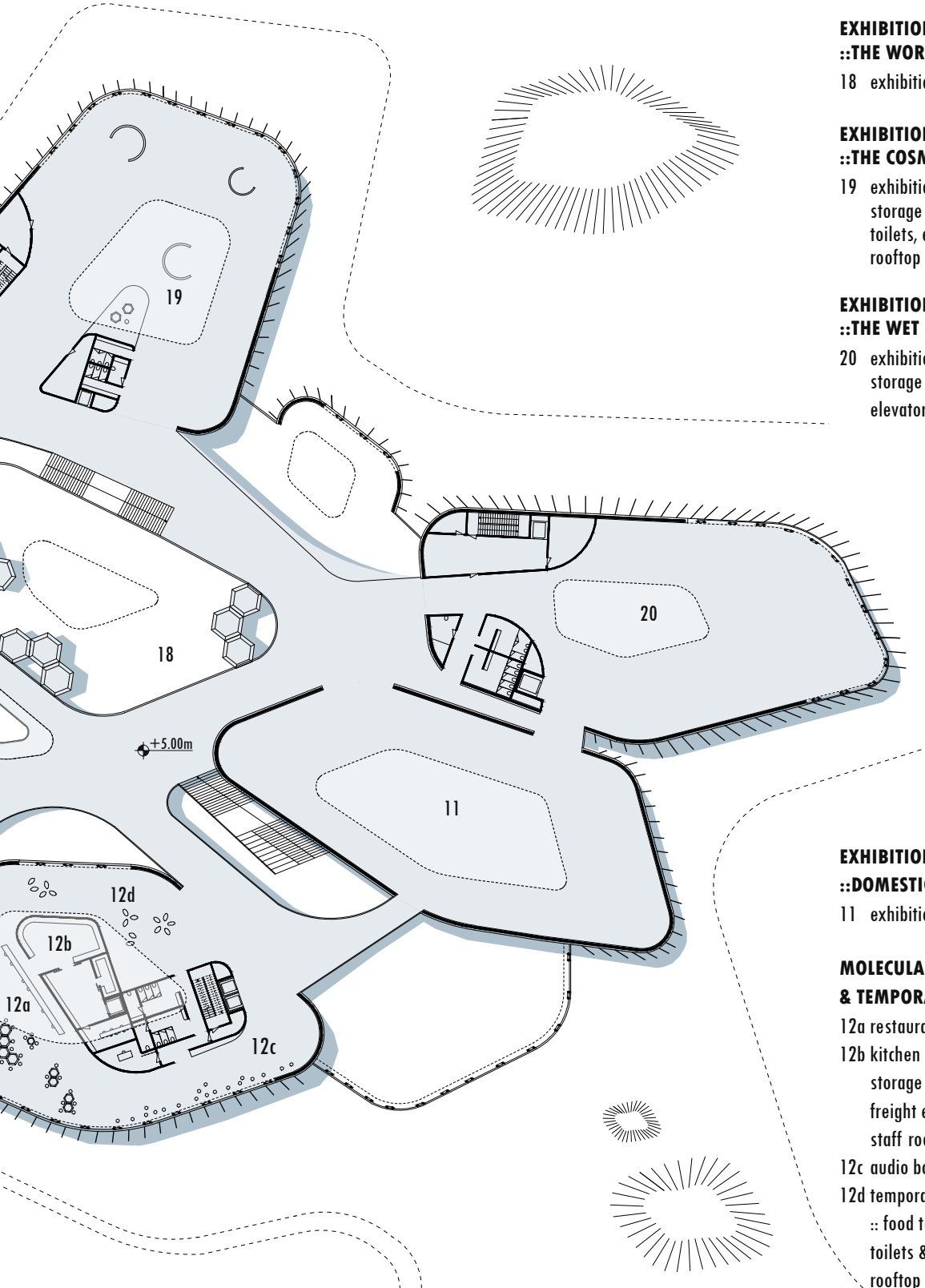
TEPMPORARY EXHIBITION
:::HUMAN BODY::: 390m²
16 exhibition space

AUDITORIUM :: 880m²
gallery with 120 seats
17a foyer with snackbar
17b coat check
17c technical service room
storage
toilets, elevator



1ST FLOOR PLAN
+5.00M

0 5 10 20 40M



EXHIBITION :: 120m²
::THE WORLD OF DINOSAURS::

18 exhibition area

EXHIBITION :: 1010m²
::THE COSMOS AND SOLAR SYSTEM::

19 exhibition space
storage with freight elevator
toilets, elevator to the botanical rooftop garden

EXHIBITION :: 980 m²
::THE WET COLLECTIONS::

20 exhibition area
storage with freight elevator, toilets
elevator to the botanical rooftop garden

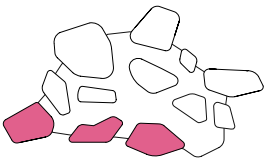
EXHIBITION :: 900m²
::DOMESTIC ANIMALS::

11 exhibition area

MOLECULAR RESTAURANT :: 960m²
& TEMPORARY EXHIBITION

12a restaurant & bar
12b kitchen
storage & cold storage
freight elevator
staff room & office
12c audio books area
12d temporary exhibition
:: food technology::
toilets & elevators to the botanical rooftop garden

fig. 53. *



GROUND FLOOR PLAN SECTION

0 5 10 20

4a 4b 4c 4d 4e 4f

::ENTRANCE::
Science
Education
±0.00m

4. Educational Sciences

8. Research

8a 8b 8c 8d 8e 8f

RESEARCH AREA :: 750m²
WITH SCIENCE LABS ::

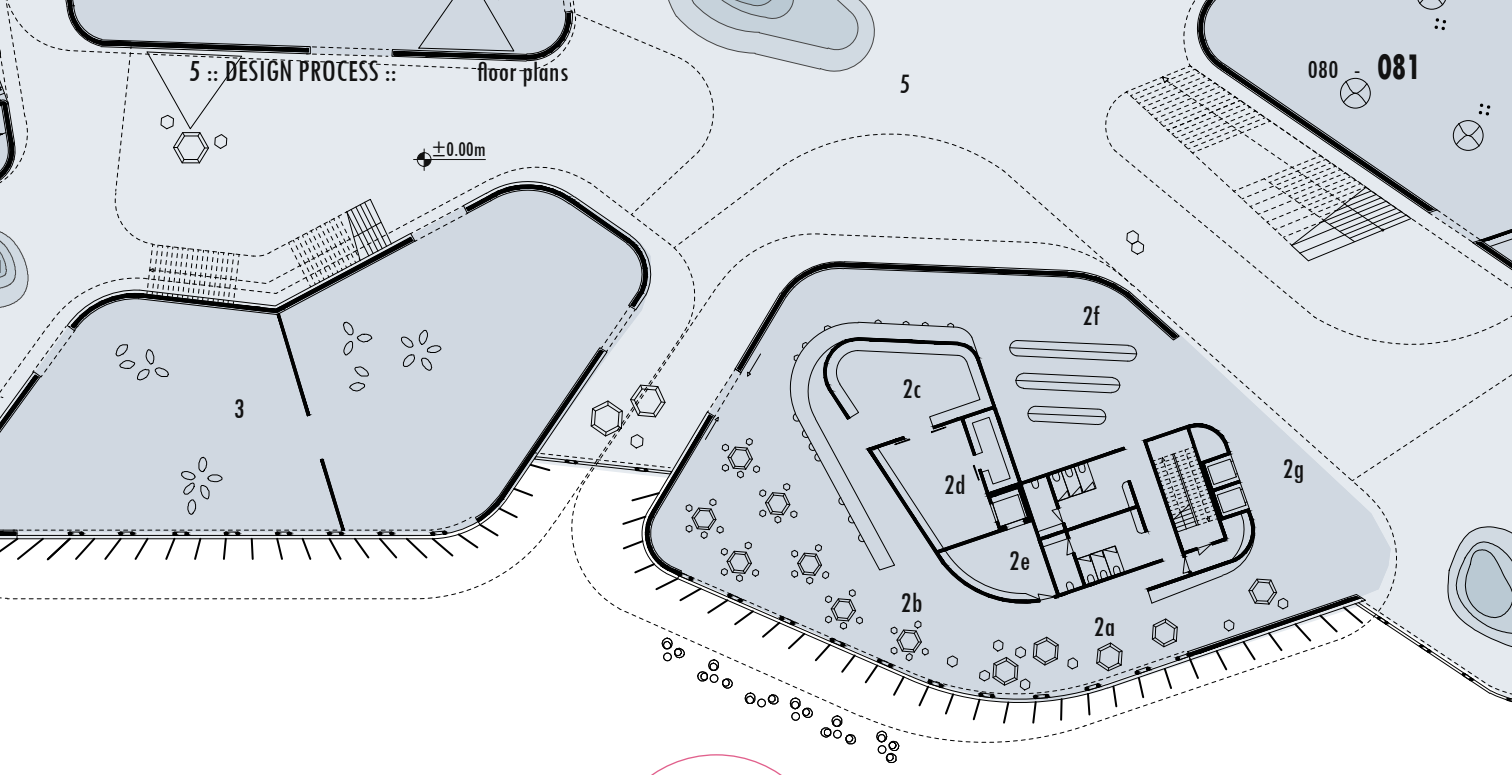
8a exhibition area
8b information area
8c storage, freight elevator
8d workshop rooms
8e lab rooms
8f photographic studio

EXHIBITION ::640m²
::THE WORLD OF DINOSAURS::

9a exhibition area
9b landscaped furniture

9a 9b 10 11a 11b 11c 11e

±0.00m



EXHIBITION :: 170m²
::AUDIO HEADPHONES::
10 exhibition space

EXHIBITION :: 670m²
::PREPARATION TECHNIQUES::
11a exhibition space and workshop area
11b exhibition staging
11c offices
11d exhibition design
11e storage, freight elevator, toilets

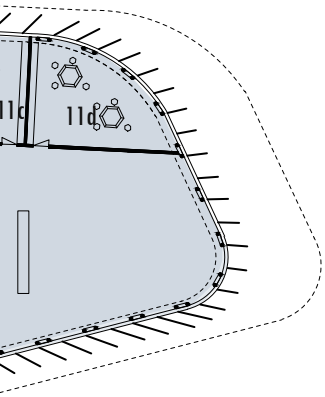
2. Organic Snackbar & Shop

ORGANIC SNACKBAR :: 660m²
& SCIENCE SHOP
2a science and museum shop
2b organic snackbar with take away snacks (picnic areas at the rooftop garden and science park)
2c kitchen
2d storage, cold storage, freight elevator
2e staff room
2f lockers and coat check
2g elevator to the next exhibition level, toilets

EXHIBITION
::HISTORY OF PLANTS:: 450m²
3 exhibition area with movable partition walls

EDUCATIONAL SCIENCES :: 690m²
4a education entrance with landscaped furniture usable for lectures
4b coat check
4c lab and experimental area
4d class rooms
4e office
4f storage, freight elevator

11. Preparation Techniques



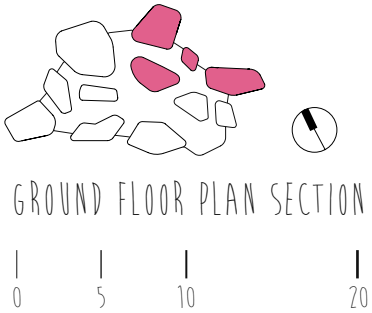
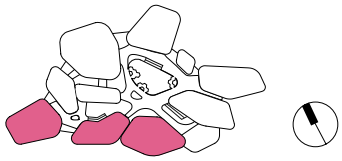


fig. 54. *



1ST FLOOR PLAN SECTION

0 5 10 20

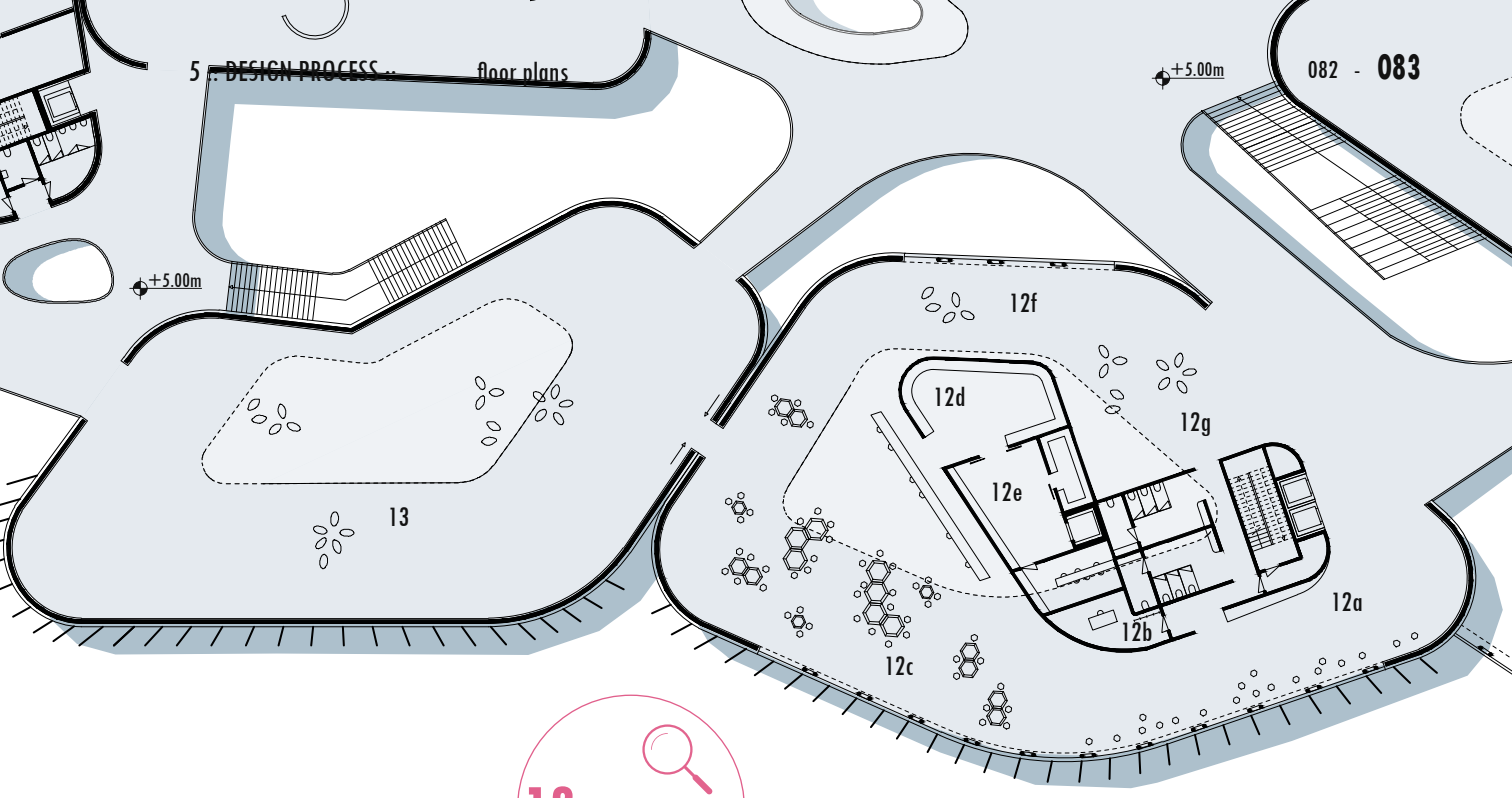
19. Exhibition

14. Library

20. Exhibition

14g
14e
14f
14a
14d
14c
14b
19a
19c
19b
+5.00m
18
20b
20a
20c

fig. 55.



12. Molecular Restaurant

EXHIBITION :: 120m²
::THE WORLD OF DINOSAURS::

18 flying exhibition area

EXHIBITION :: 910m²
::THE COSMOS AND SOLAR SYSTEM::

19a exhibition space
19b storage with freight elevator
19c toilets, elevator to the botanical rooftop garden

EXHIBITION :: 870 m²
::THE WET COLLECTIONS::

20a exhibition area
20b storage with freight elevator
20c elevator to the botanical rooftop garden, toilets

MOLECULAR RESTAURANT :: 880m²
& TEMPORARY EXHIBITION

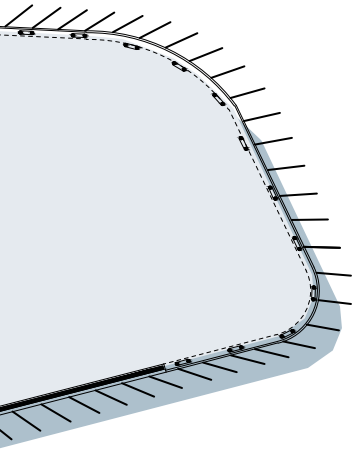
12a audio exhibition and digital books
12b office
12c restaurant and bar area
12d kitchen
12e storage & cold storage, freight elevator, staff room
12f temporary exhibition :: food technology::
12g toilets & elevators to the botanical rooftop garden

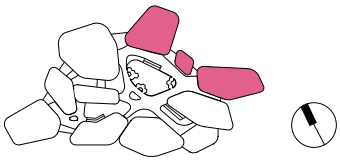
EXHIBITION :: 770m²
::MINERALS::

13 exhibition area
with movable partition walls

LIBRARY & MEDIA LAB :: 880m²

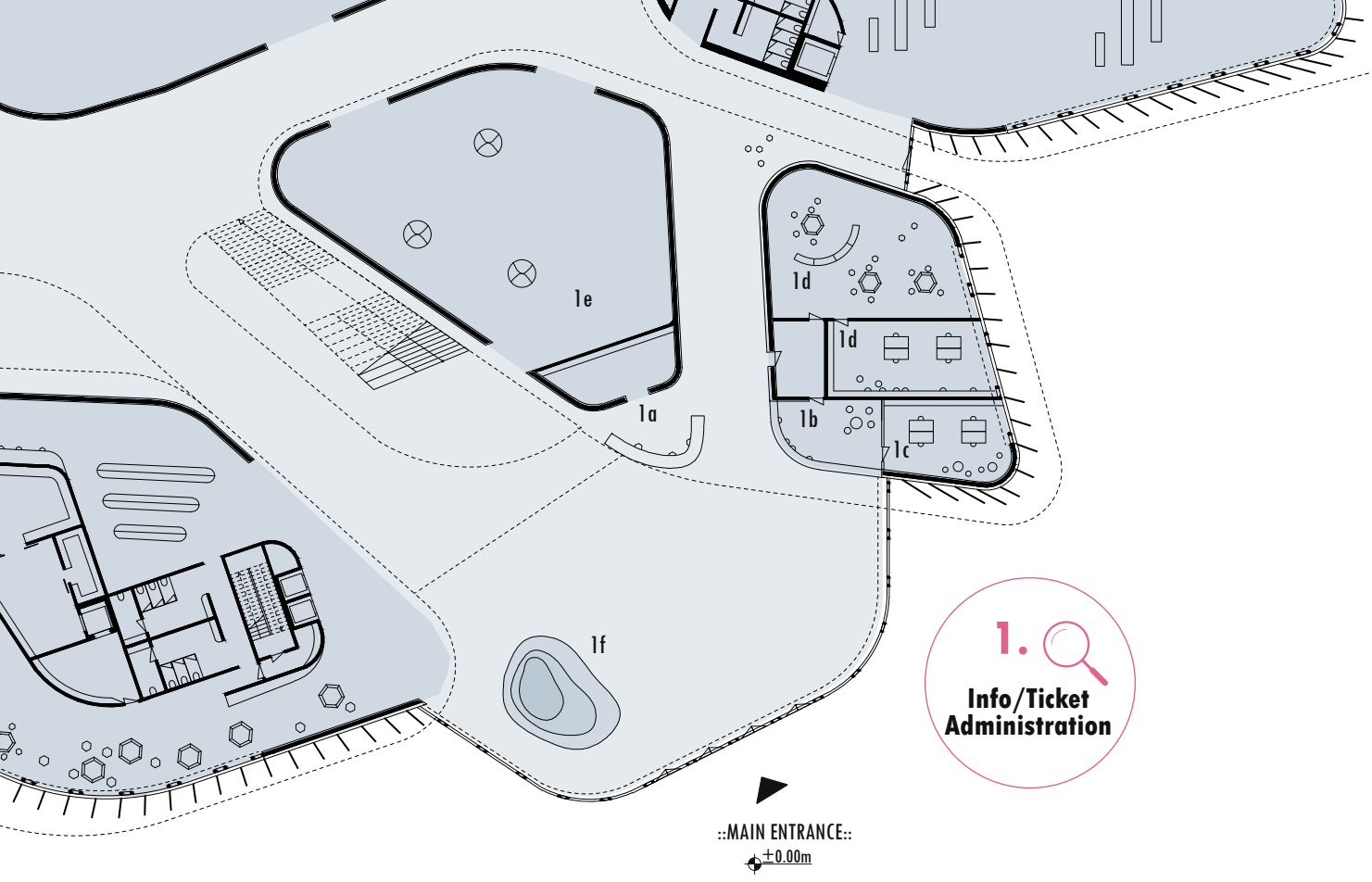
14a information counter
14b „bookshelve-bubbles“
with private reading areas
14c flexible reading clusters
14d media lab counter
14e staff room
14f offices
14g storage with elevator

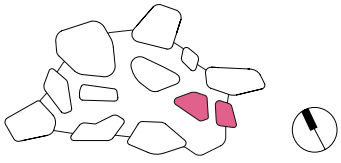




1ST FLOOR PLAN SECTION

0 5 10 20





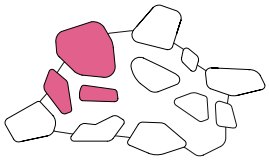
GROUND FLOOR PLAN SECTION

0 5 10 20

ENTRANCE FOYER :: 530m²
WITH EXHIBITION

1a infopoint, audioguides, storage
1b tickets
1c security guard
1d administration offices
1e temporary exhibition
1f media info furniture

fig. 56. *



GROUND FLOOR PLAN SECTION

0 5 10 20

EXPERIMENTAL EXHIBITION :: 390m²

5 experimental exhibition group room

AUDIO-VISUAL-ROOM :: 320m²

6a audio-visual-exhibition

6b exhibition projection

AUDITORIUM :: 1250m²

7a foyer with snackbar

7b changing room

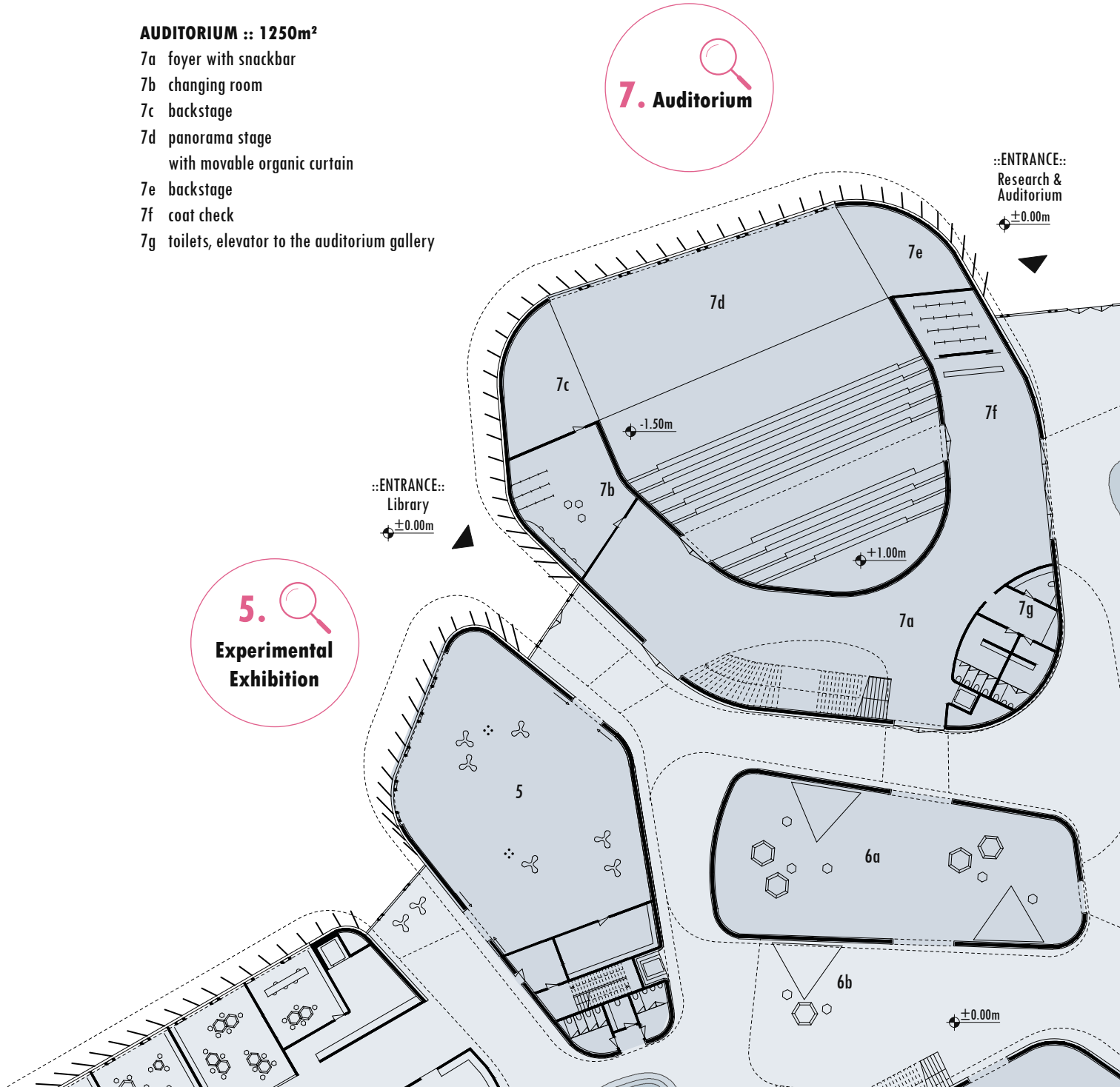
7c backstage

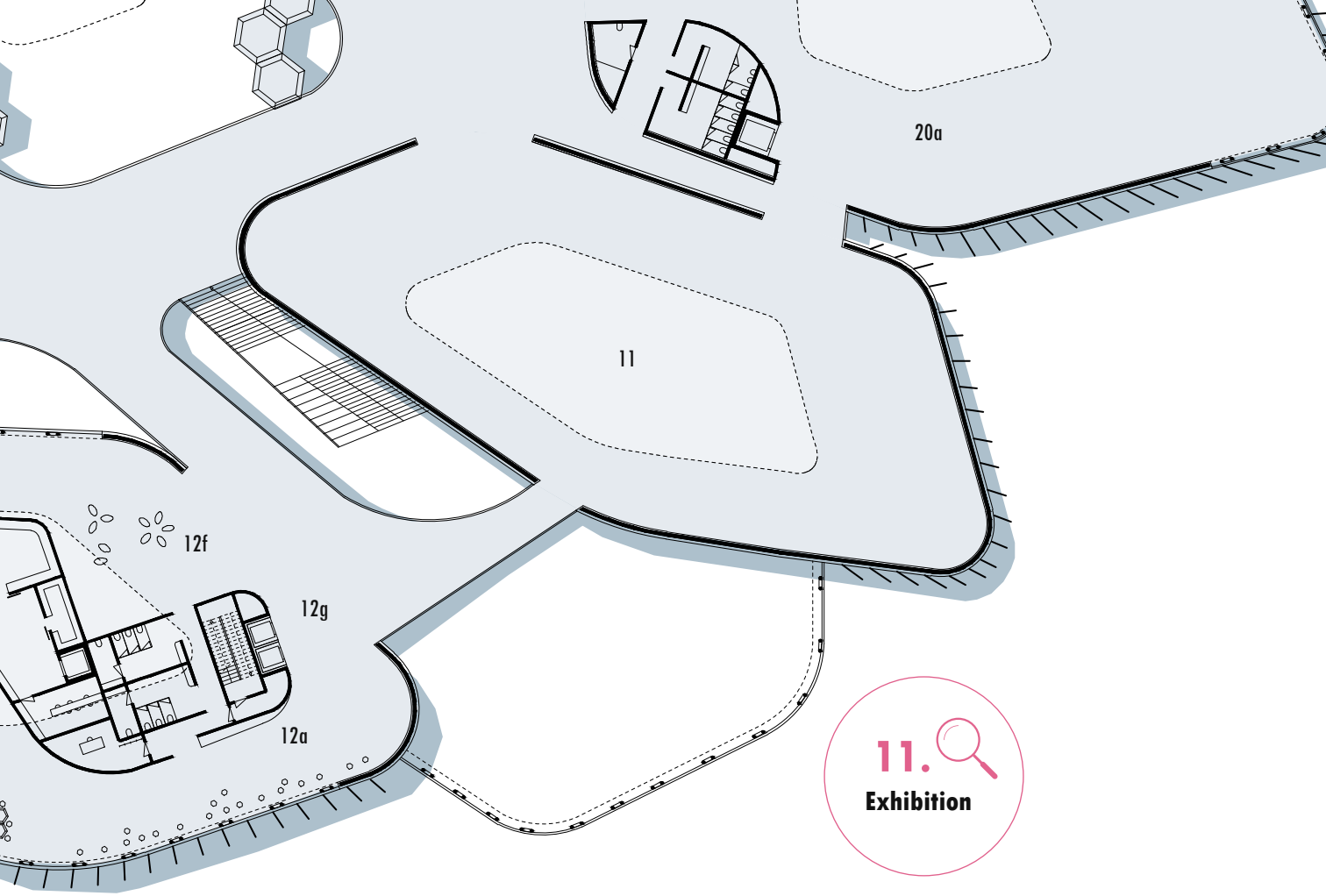
7d panorama stage
with movable organic curtain

7e backstage

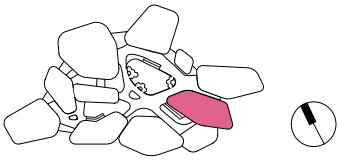
7f coat check

7g toilets, elevator to the auditorium gallery





11.
Exhibition



1ST FLOOR PLAN SECTION

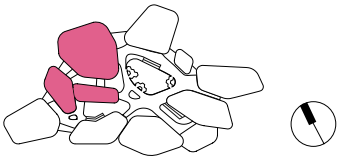
0 5 10 20

EXHIBITION :: 1100m²
::DOMESTIC ANIMALS::
11 exhibition area

MOLECULAR RESTAURANT :: 880m²
& TEMPORARY EXHIBITION
12a audio exhibition and digital books
12f temporary exhibition :: food technology::
12g toilets & elevators to the botanical rooftop garden

EXHIBITION :: 870 m²
::THE WET COLLECTIONS::
20a exhibition area

fig. 57. *



1ST FLOOR PLAN SECTION

0 5 10 20

AUDITORIUM :: 850m²

17a foyer with flexible snackbar
17b gallery with 120 seats
17c coat check
17d backstage
17e technical service room
17f storage, toilets, elevator

MULTIFUNCTIONAL EVENTSPACE :: 480m²

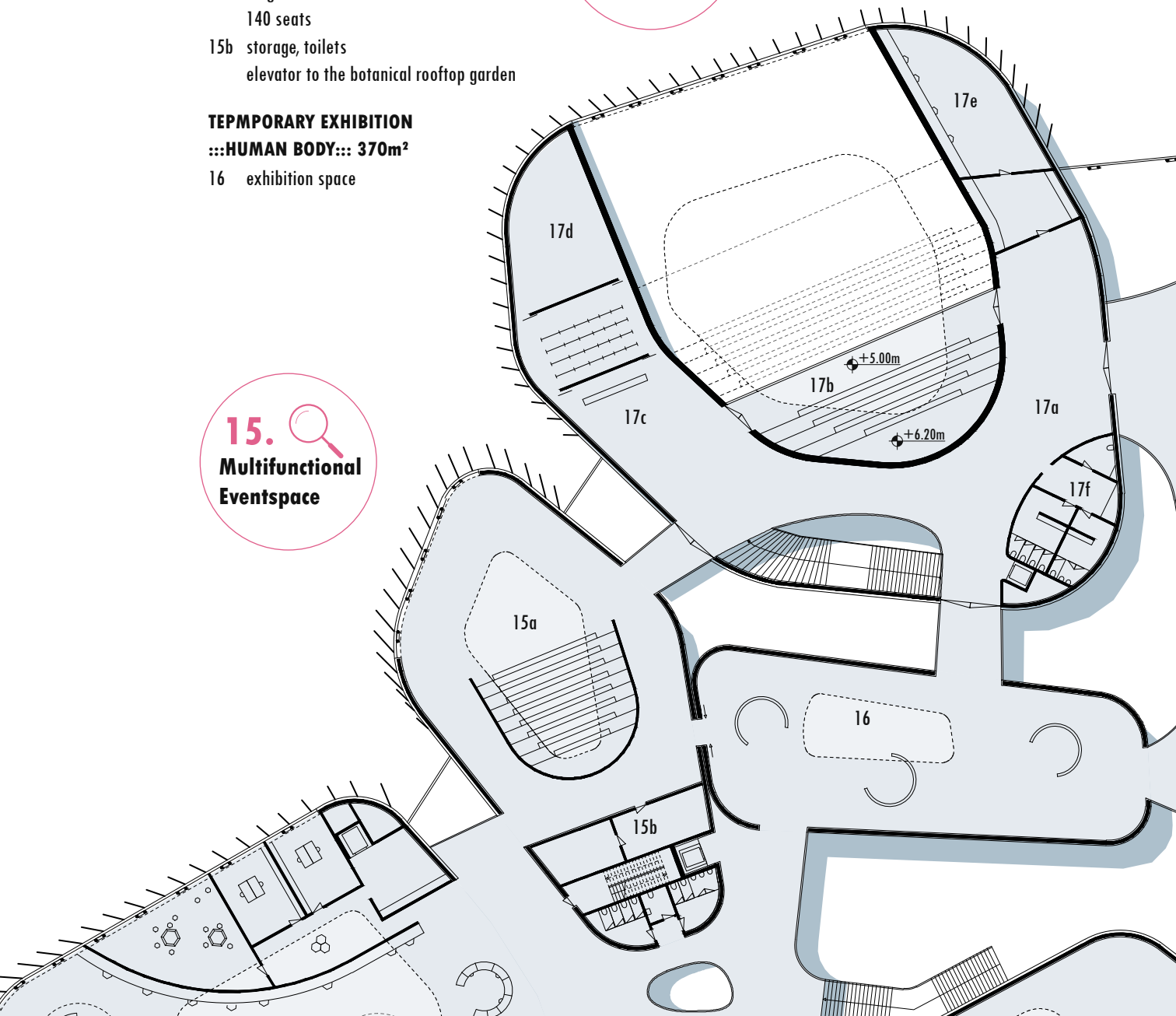
15a lecture/conference room/3d cinema
stage with retractable screen
140 seats
15b storage, toilets
elevator to the botanical rooftop garden

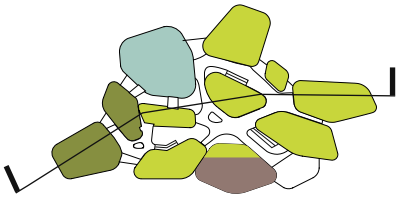
TEPMPORARY EXHIBITION :::HUMAN BODY::: 370m²

16 exhibition space

17. Auditorium

15. Multifunctional Eventspace





1ST. FLOOR

- Main Entrance / Foyer
- Exhibition (permanent and temporary)
- Research
- Education
- Auditorium
- Restaurant
- Administration

MULTIFUNCTIONAL EVENTSPACE

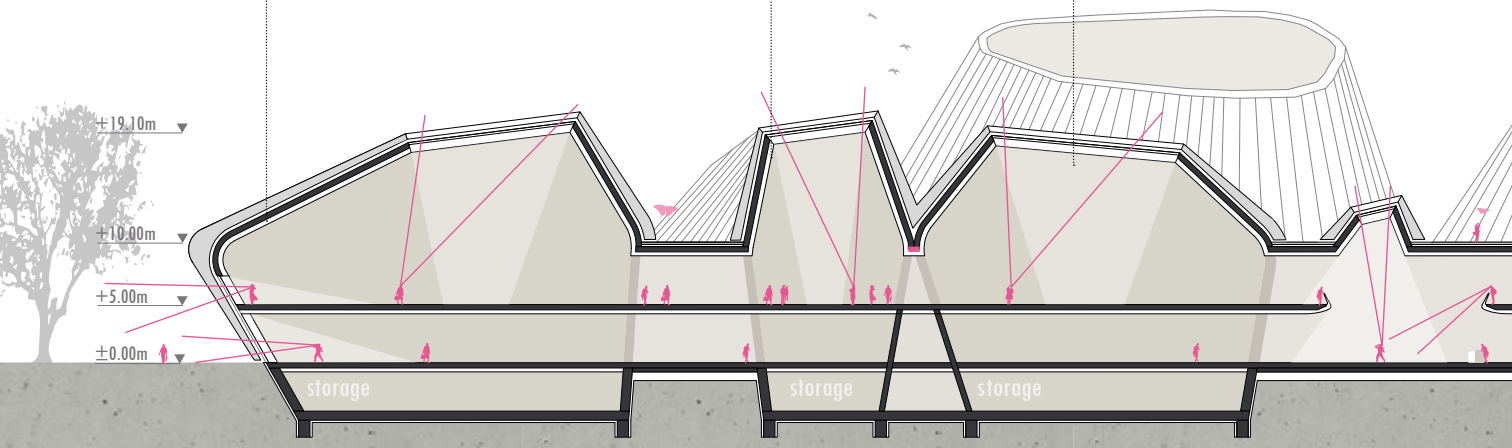
lecture/conference room/3d cinema
stage with retractable screen
140 seats
storage, toilets
elevator to the botanical rooftop garden

TEPMPORARY EXHIBITION
:::HUMAN BODY:::

exhibition space

LIBRARY & MEDIA LAB

information counter
„bookshelve-bubbles“ with private reading areas
and flexible reading clusters
media lab counter
staff room, offices, storage with elevator



LONGITUDINAL SECTION

0 5 10 20 40M

EXHIBITION
::THE WORLD OF DINOSAURS::
exhibition space

EXHIBITION
::AUDIO HEADPHONES::
exhibition space

EXHIBITION
::THE WET COLLECTIONS::
exhibition area
storage with freight elevator, toilets
elevator to the botanical rooftop garden

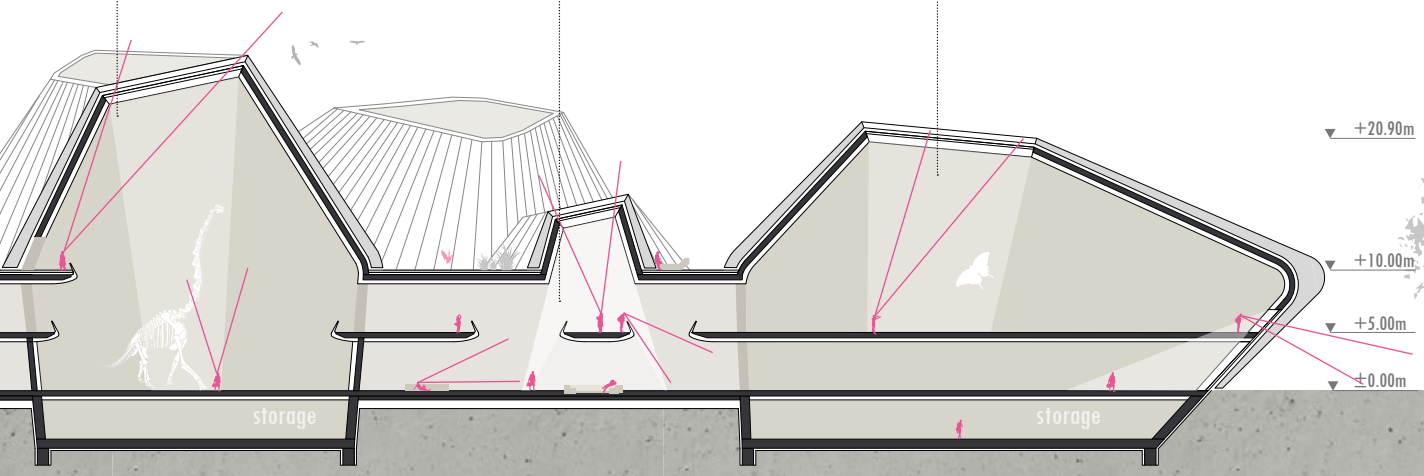
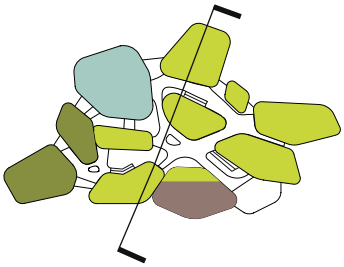


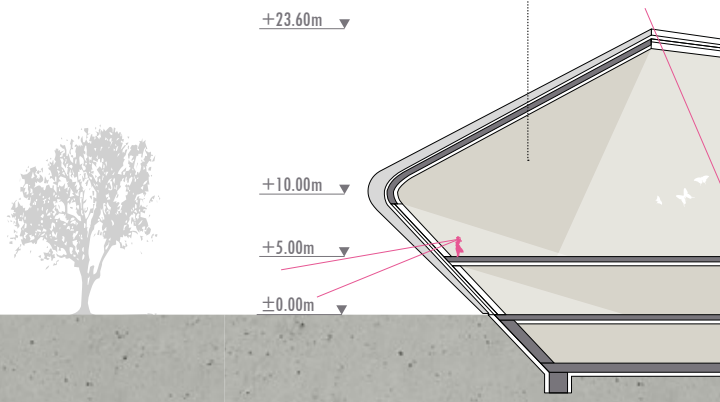
fig. 58. *



- Main Entrance / Foyer
- Exhibition (permanent and temporary)
- Research
- Education
- Auditorium
- Restaurant
- Administration

EXHIBITION
::THE COSMOS AND SOLAR SYSTEM::

exhibition space
storage with freight elevator
toilets, elevator to the botanical rooftop garden



CROSS SECTION

0 5 10 20 40M

EXHIBITION
::THE WORLD OF DINOSAURS::
exhibition area

EXHIBITION
::FLUID SPACE::
exhibition area
with furnitures to rest and
gather information via tablets

EXHIBITION
::HISTORY OF PLANTS::
exhibition area
with movable partition walls

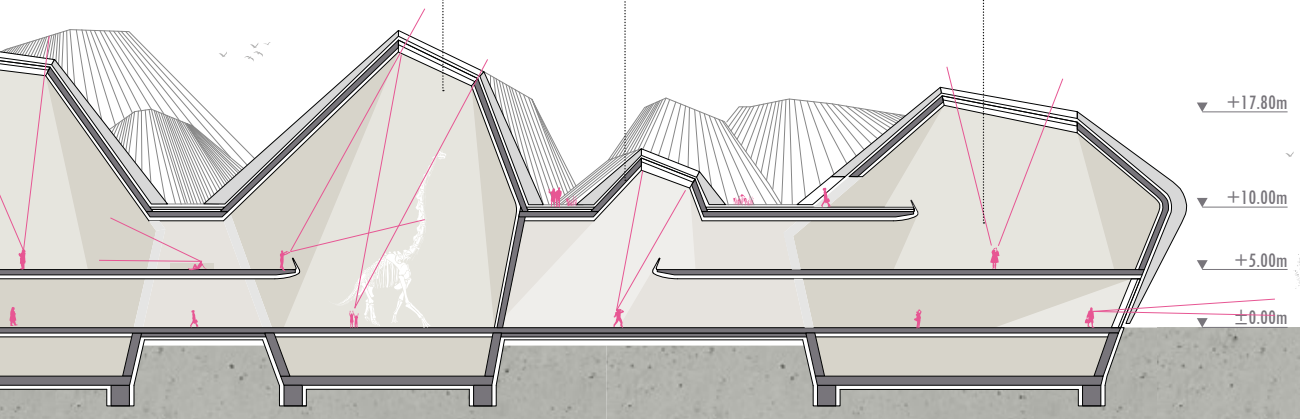
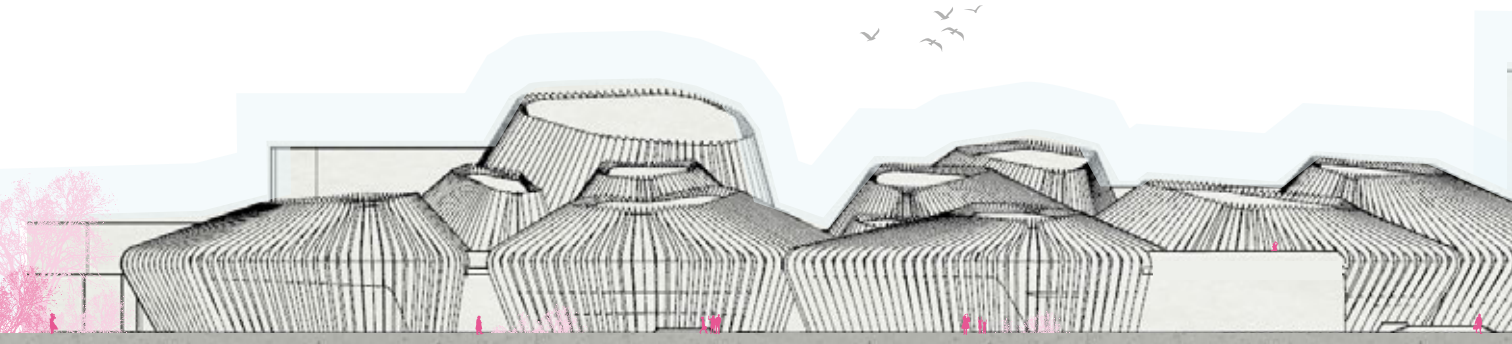


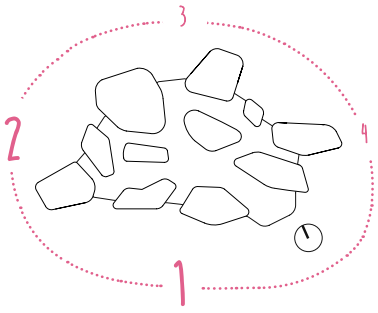
fig. 59. *

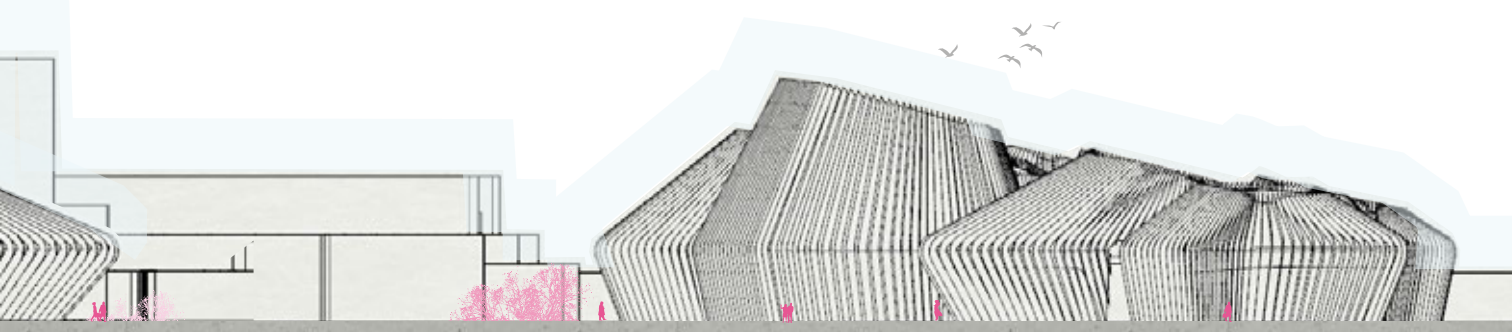


1. ELEVATION

*MAIN ENTRANCE

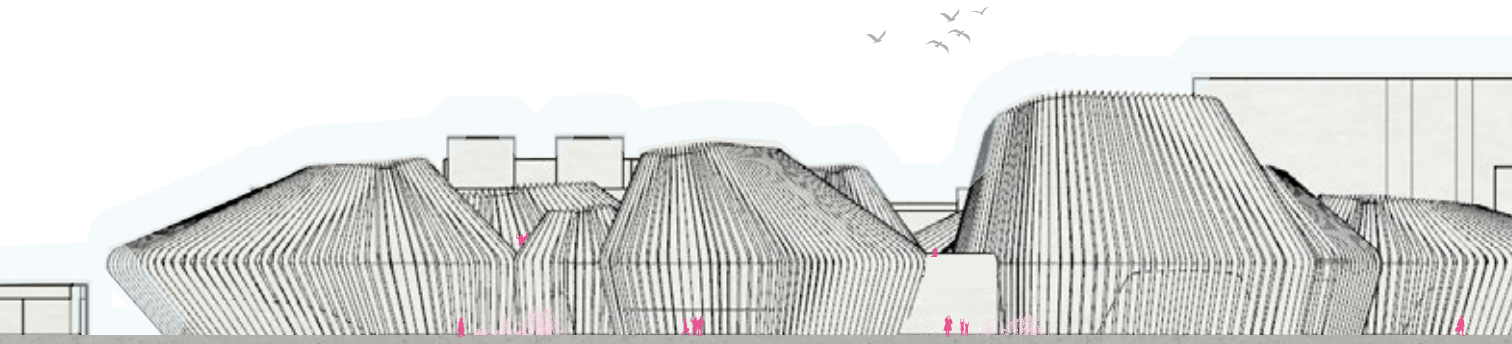
0 5 10 20 40M





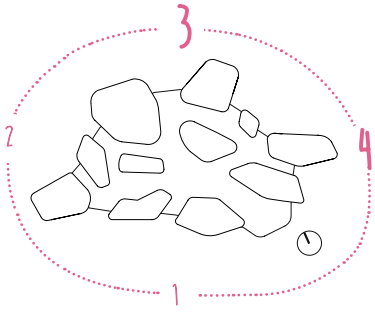
2. ELEVATION
*LIBRARY ENTRANCE

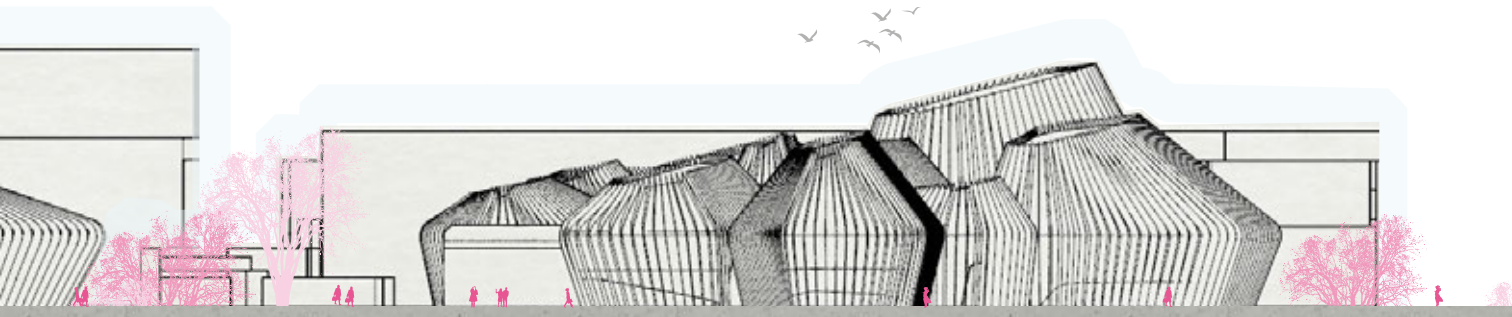
fig. 60. *



3. ELEVATION

*AUDITORIUM &
RESEARCH ENTRANCE





4. ELEVATION
*SIDE ENTRANCE

0 5 10 20 40M

fig. 61. *

5. DESIGN PROCESS*
FURNITURE

Furniture Concept • Analogies

single-cell organisms / micro organisms / viruses / bacteria / worms / parasites/ paramecium

seating / tables / counters / ticket counters / exhibition

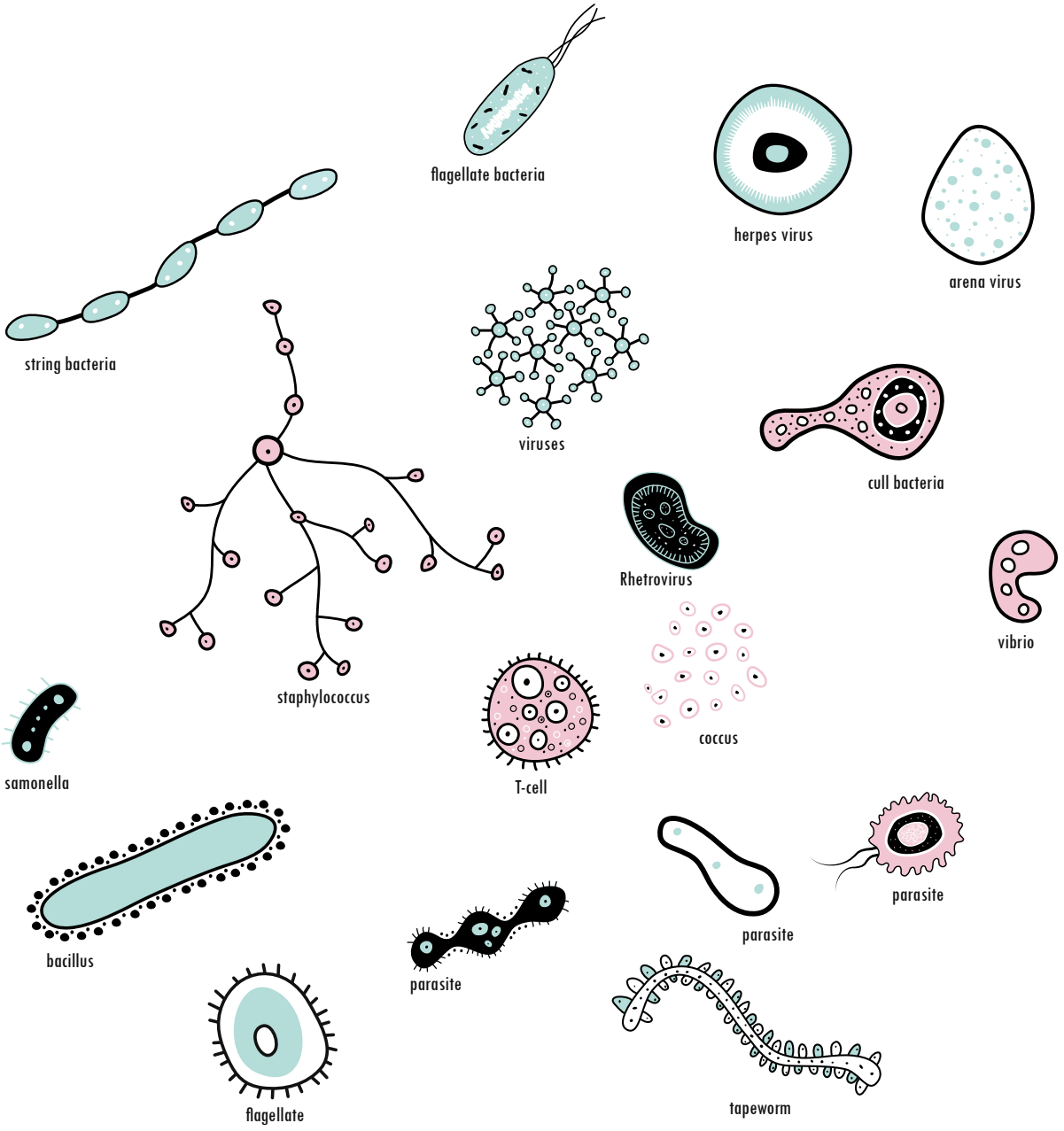
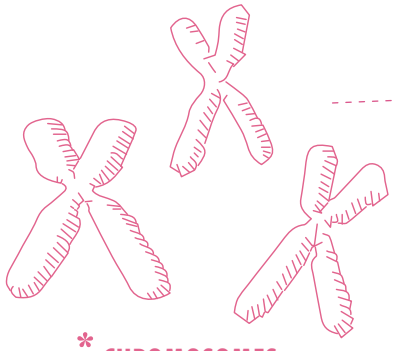
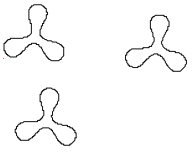


fig. 62. *

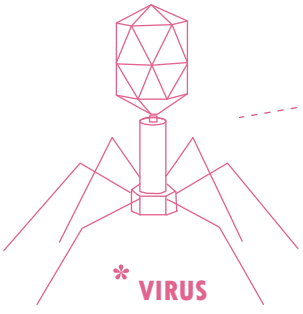




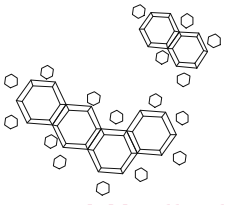
* **CHROMOSOMES**

FURNITURE*

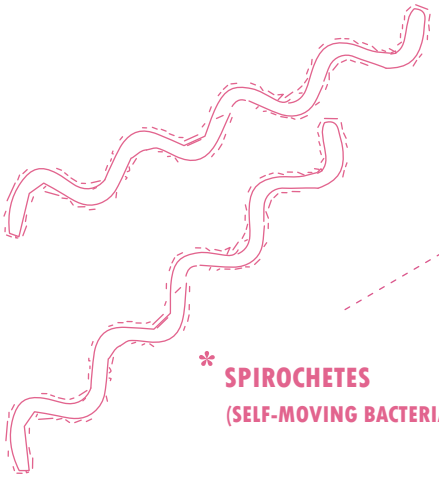
WHAT ABOUT VIRUSES, BACTERIA AND CELL STRUCTURES ...?



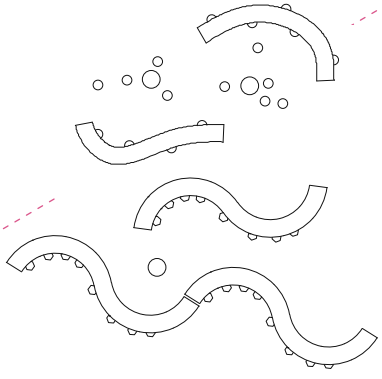
* **VIRUS**



expandable office furniture
furniture clusters
freely movable and re-combinable to individual spatial combinations
adoptable to different requirements:
group work, individual work, office work



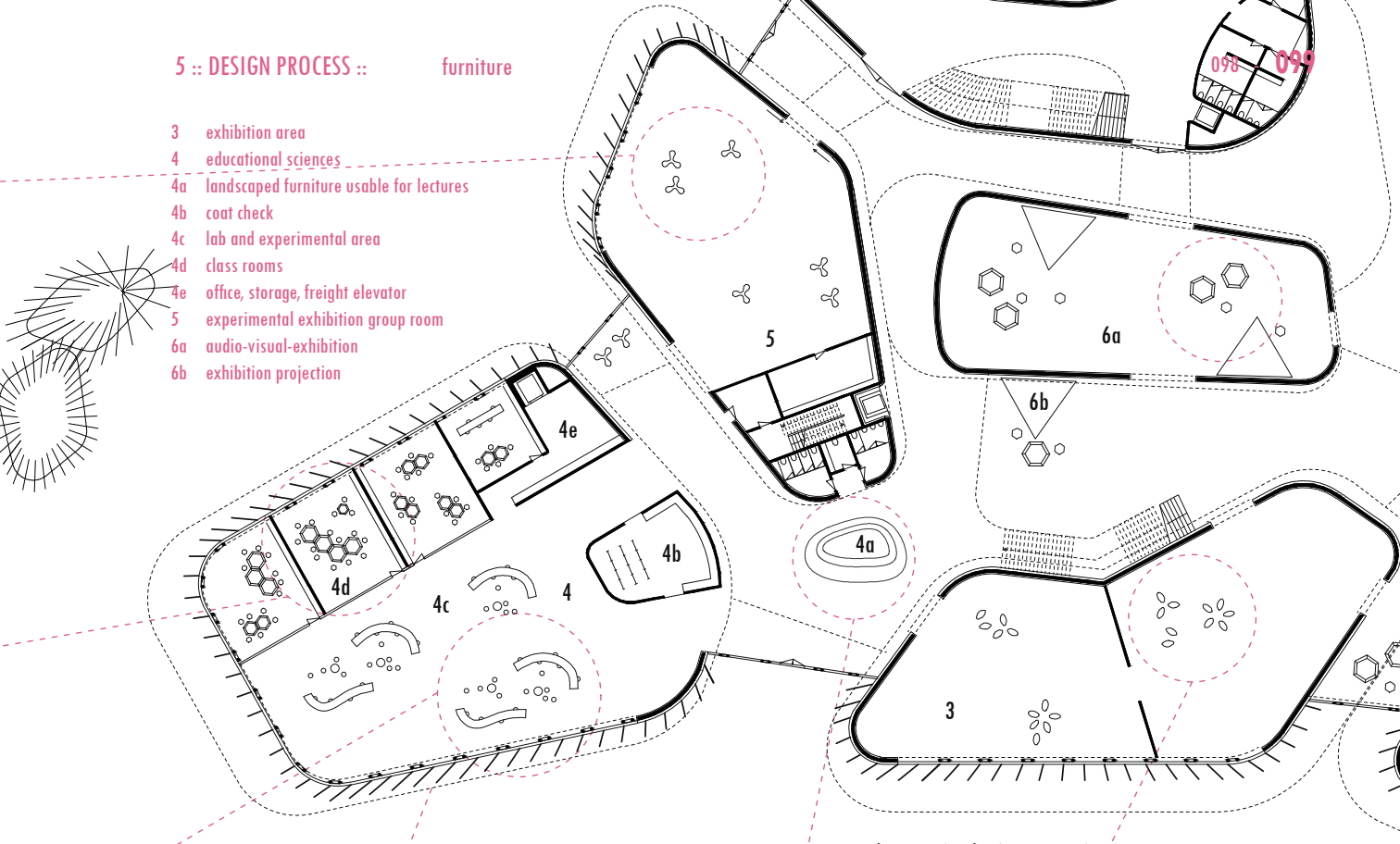
* **SPIROCHETES**
(SELF-MOVING BACTERIA)



expandable lab furniture
furniture clusters
freely movable and re-combinable to individual spatial combinations
adoptable to different requirements:
group work, individual work

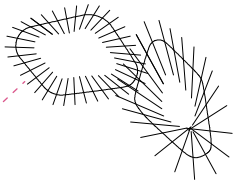
fig. 63. *

3 exhibition area
4 educational sciences
4a landscaped furniture usable for lectures
4b coat check
4c lab and experimental area
4d class rooms
4e office, storage, freight elevator
5 experimental exhibition group room
6a audio-visual-exhibition
6b exhibition projection



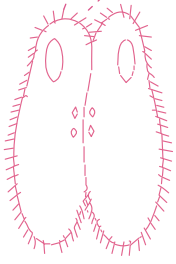
GROUND FLOOR PLAN DETAIL

0 5 10 20



landscape furniture
outdoor furniture suitable for planting and/or seating

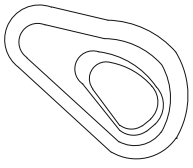
adoptable seating
upholstered stool type seating, arranged in clusters, freely movable and re-combinable to individual spatial combinations



* **CELL FUSION**
external fins
organically shaped design element, doubling up as sun protection

* **PARAMECIUM**

landscape furniture
outdoor furniture suitable for planting and/or seating



6. STRUCTURE *

INSPIRATION BARNACLE...

Barnacles

Barnacles (Balanidae) are sessile crustaceans, permanently united with their chosen subsoil. Their **cone-shaped shell** consists of lime structures that in some cases are directly grown onto the underground substrate. On top of the shell two cover lids seal the openings, protecting the barnacle from drying out.

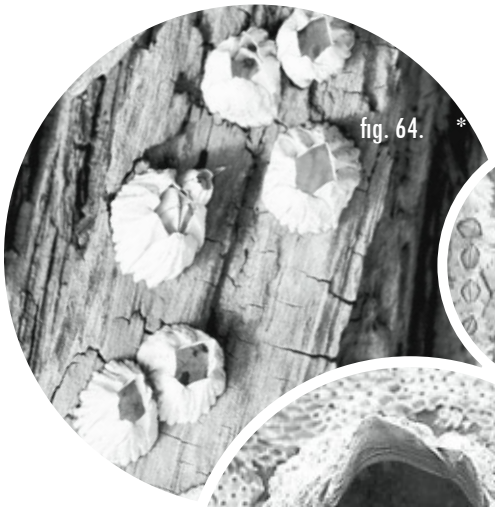


fig. 64. *

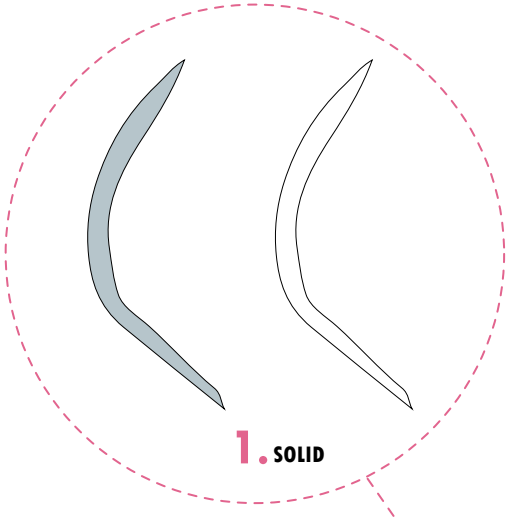
fig. 65. *

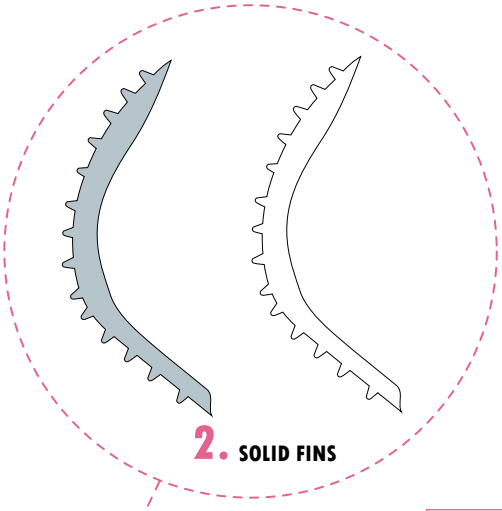
fig. 66. *

Barnacles posess **a cone-shaped exosceleton** (external skeleton), a supporting structure to form a **stable external shell** around the soft inner core. The shell comprises of a **flexible high performance compound material** based on chitin fibres and calcium carbonate (lime). Chitin accounts for the shell's flexibility and its pliability; it prevents the shell from breaking. Together with the structural protein sclerotin that **consolidates anatomic structures** and encased lime the outer shell becomes hard and stable.

CONSTRUCTION*

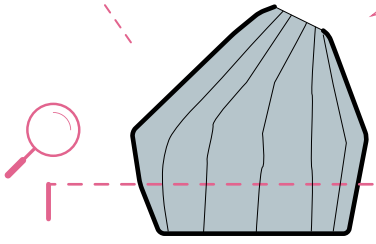
WHAT ABOUT THE MATERIAL...?





hence...

* DIFFERENTATION OF CONE TYPES ACCORDING TO MAKE UP STRUCTURE



horizontal sections

Hard facts:
Make up and structure

+ **Chitin** (flexibility and pliability)
+ **Sclerotin** (consolidating the organic matrix)
+ **Lime** (additional durability and stability)

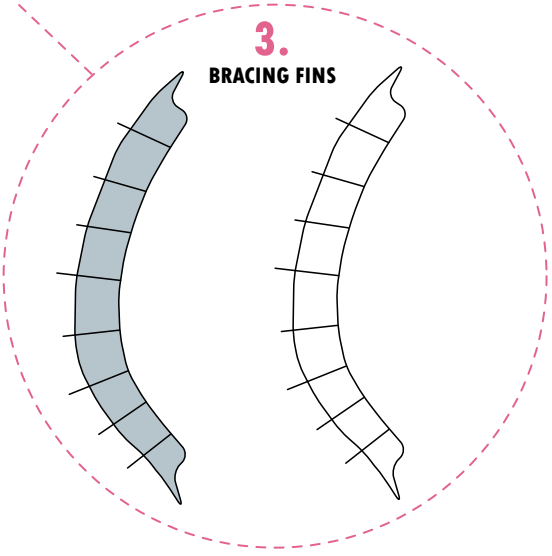
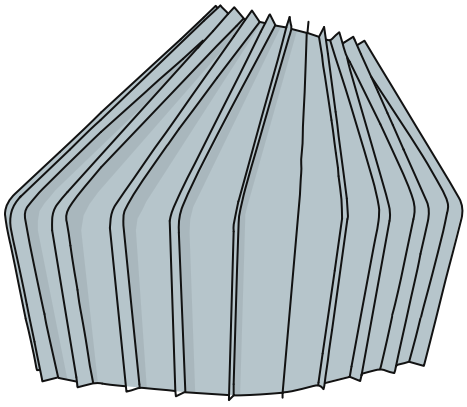


fig. 67. *

...everything is possible...

...construction?
...metarial?

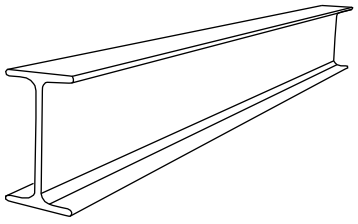


vertical facade composition

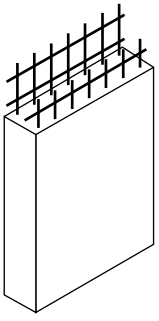
+ **minimized member sections**
+ **industrially prefabricated parts**
+ **even load response, irrespective** (of direction or type of load)

- **high thermal conductivity** (cold bridging)
- **costs** (unique shape/section for each individual member)
- **in-situ adaptions difficult to carry out**

1. STEEL

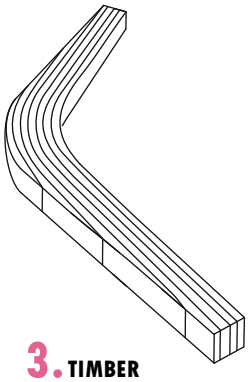


2. REINFORCED CONCRETE



+ **minimized member sections**
+ **in-situ production possible**
+ **good load response**

- **high expenses for shuttering** (unique shape/section for each individual member)
- **high thermal conductivity** (cold bridging)
- **in-situ adaptions impossible to carry out**



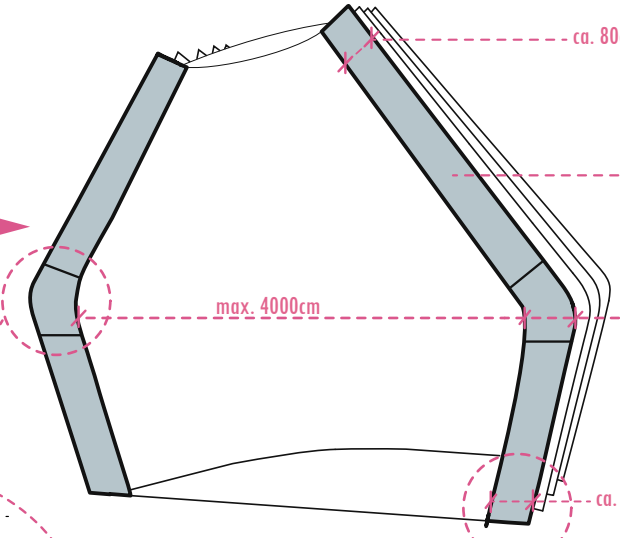
3. TIMBER

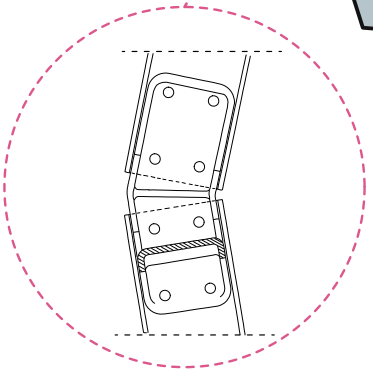
+ **low thermal conductivity** (avoiding cold bridging)
+ **easy processing** (in-situ possible)
+ **industrially prefabricated members** (= short period of constructiont)
+ **in-situ adaptions possible**

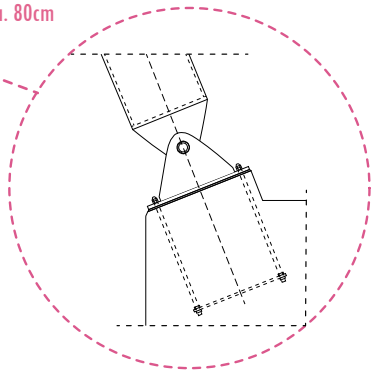
- **„larger member sections“**
- **uneven load response, depending on direction or type of load** (tensile/compression load)

fig. 68. *

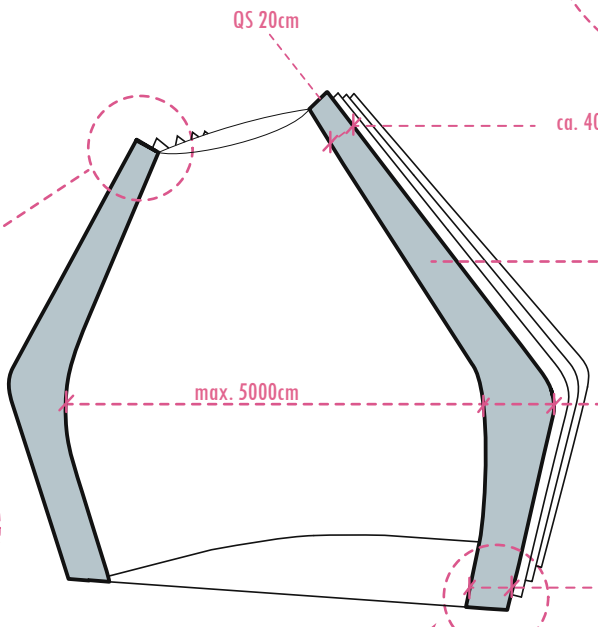
1. STEEL

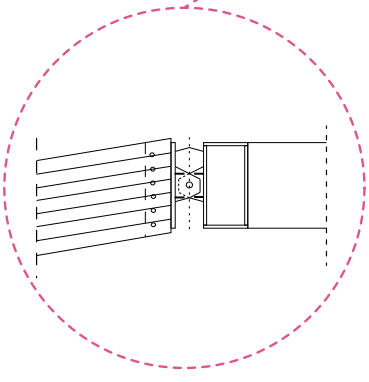




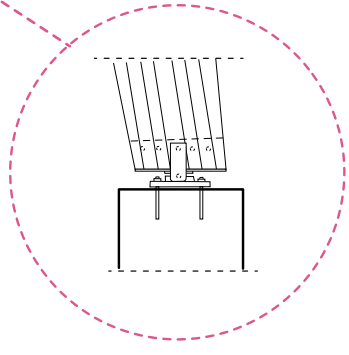


STRUCTURAL FIN





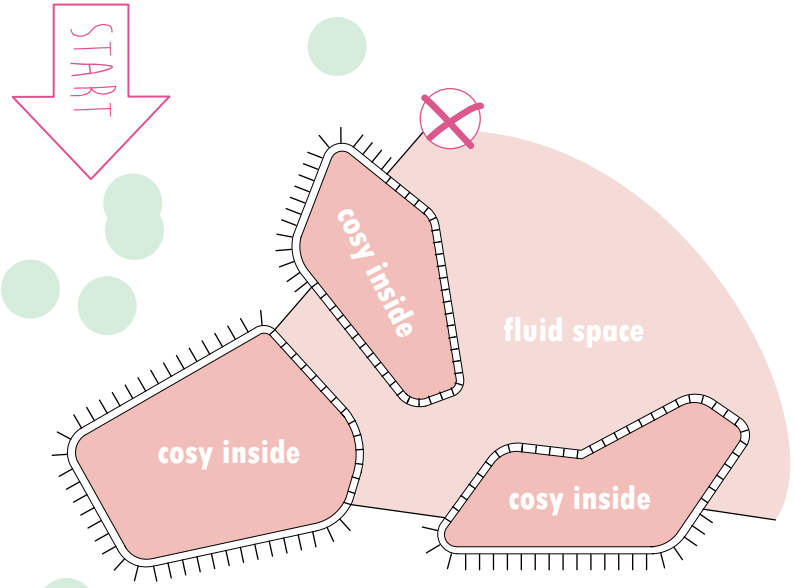
3. TIMBER

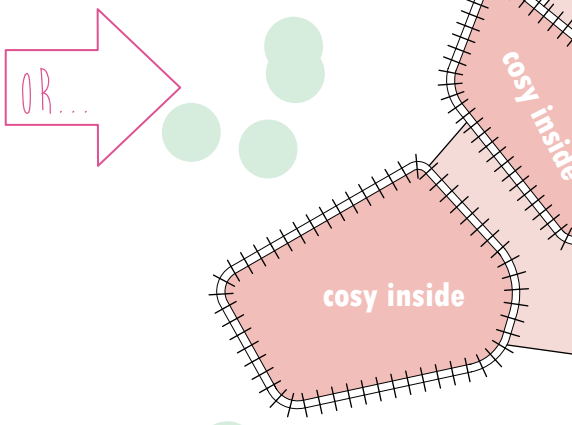


CONCLUSION:

⊕ **the fins gain an additional function i.e. double up as structural members**

⊖ **the fins will remain unflexible with relatively large average member sections**





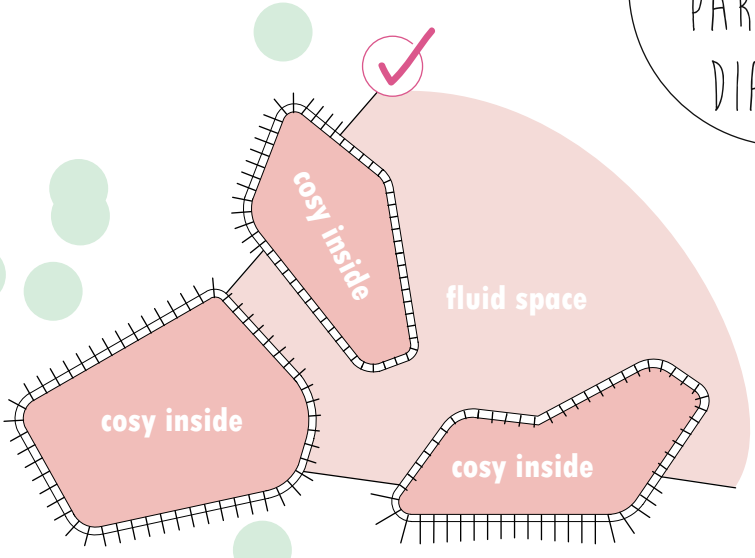
1. Starting point design process:

Fins only visible on the outside

Fins to be developed as structural members

Structural issue: Offset load-bearing parts > construction details

ORGANISATION PARAMETER DIAGRAM



5. Internal structural system – differentiated and flexible:

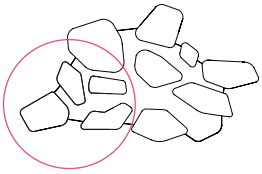
Internally visible fins optional according to desired ambience.

Advantage: designated barrier/shell seperates the inside from the outside (high protective function),
delicate structure for the interior Fluid Space (low protective function).

Characteristic: Non-load-bearing curtain-type facade behind structural system, homogenous external & internal façade surface.

Spatial ambience: Smooth wall surfaces for cone interiors, textured wall surfaces towards Fluid Space.

fig. 69. *

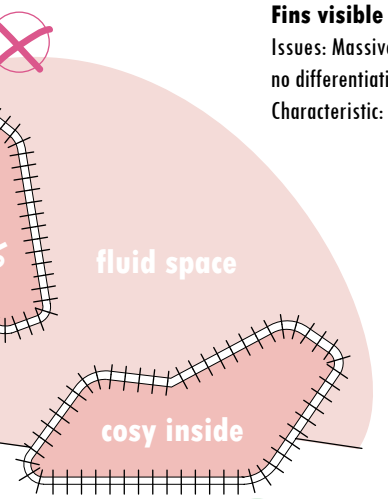


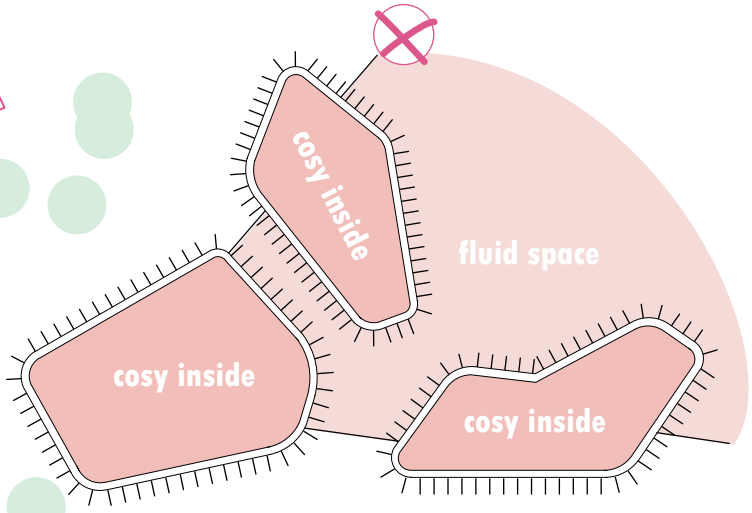
2. Extension of structural fin system into the inside:

Fins visible outside, inside and within the Fluid Space.

Issues: Massive fin sections, wastage of space/area, no differentiaton of structural systems, no differentiation of surfaces/materials.

Characteristic: Wall openings and glazed wall areas limited to between structural fins.



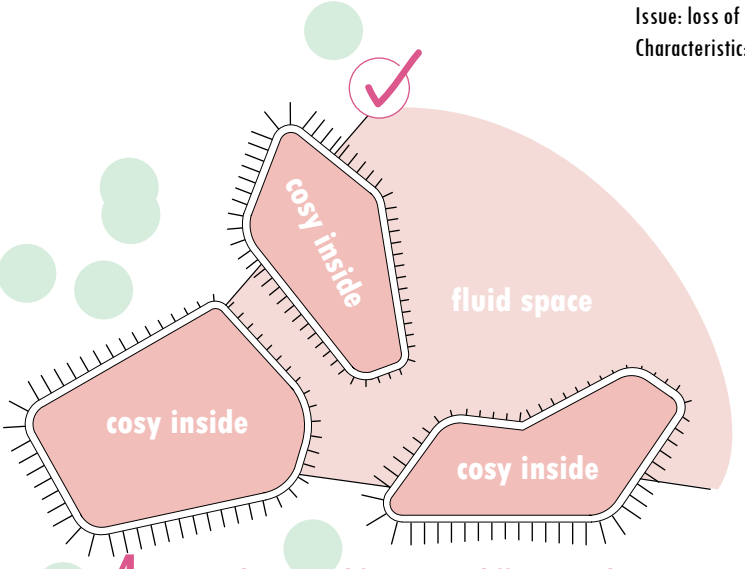


3. External structural fin system:

Fins visible on the outside and within the fluid space.

Issue: loss of floor area in Fluid Space, only marginal differentiaton of structural systems,

Characteristic: Non-load-bearing curtain-type facade behind external structural system.



4. External structural fin system, differentiated

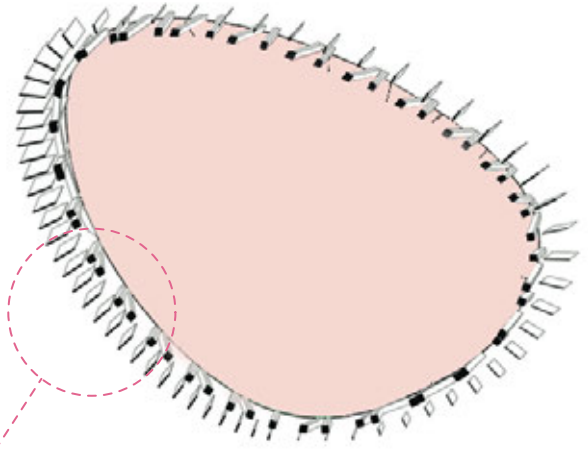
Large external fins and slender fins for the Fluid Space.

Advantage: designated barrier/shell seperates the inside from the outside (high protective function), delicate structure for the interior Fluid Space (low protective function).

Characteristic: Non-load-bearing curtain-type facade behind structural system, homogenous external & internal façade surface.

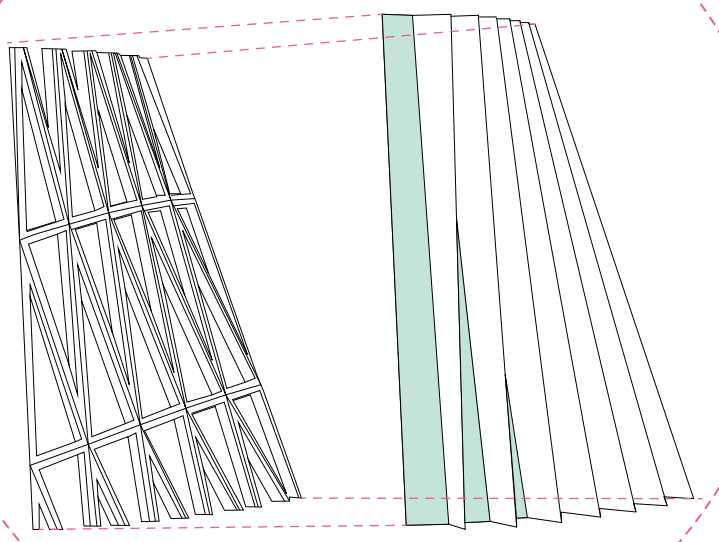
Spatial ambience: Smooth wall surfaces for cone interiors, textured wall surfaces towards Fluid Space.

LOAD-BEARING WALL
ADD-ON FINS



3d - schematic floor plan

EXPLODED AXO



CONCLUSION:

⊕ **The fins stay flexible with reduced member sections.**

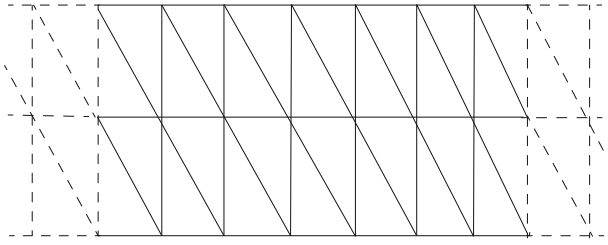
⊖ **The fins become mainly decorative;**
sun protection function solely required when serving naturally lit spaces:
orgaic snackbar, molecular restaurant, library, research areas, offices, workshops...

fig. 70. *

1. FACADE

Steel Framework

⊕ > high aesthetic standard, high durability together with relatively low weight, even load response, cost efficient in connection with industrial prefabrication, recyclable.



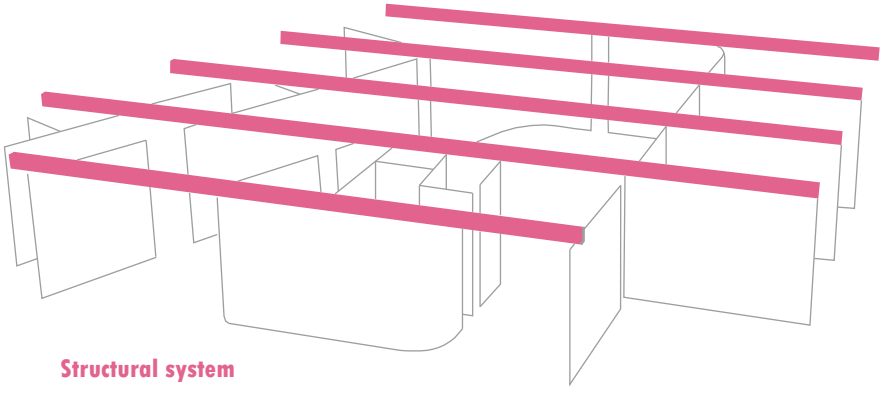
Structural system

STRUCTURAL SYSTEM
1: FACADE
2: CEILINGS

2. CEILING

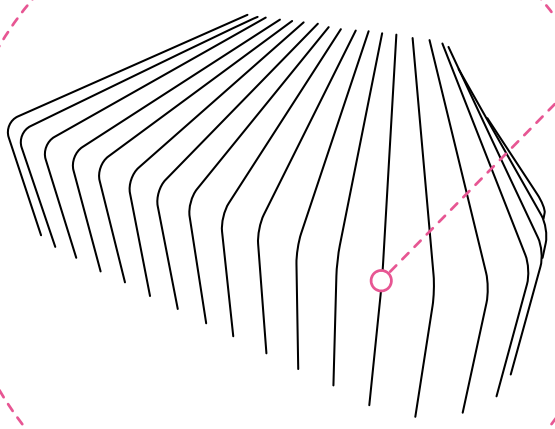
Ceiling Beams

> beams for the first floor ceiling will be supported by the walls below (columns -Ø 15cm- will be added if necessary)



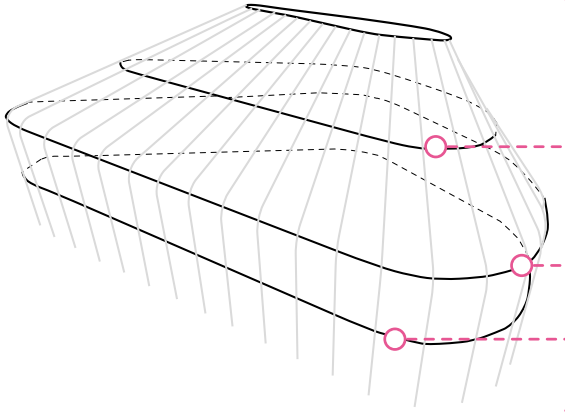
Structural system

1. VERTICAL
LOAD-BEARING STRUCTURE

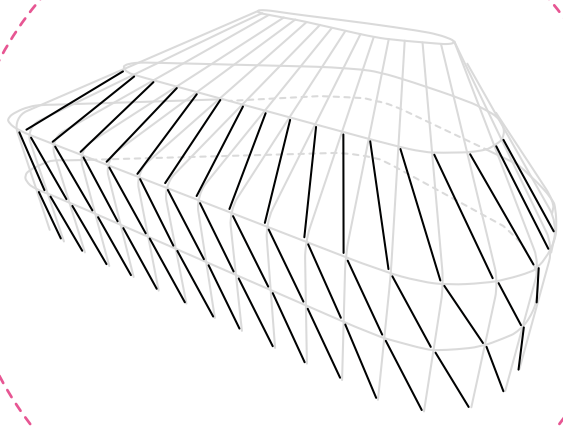


RIGID-WELDED VERTICAL CONSTRUCTION
STEEL HOLLOW PROFILE
ø 15.00 cm

2. HORIZONTAL
LOAD-BEARING STRUCTURE



3. BRACING



4. TENSION ROPES

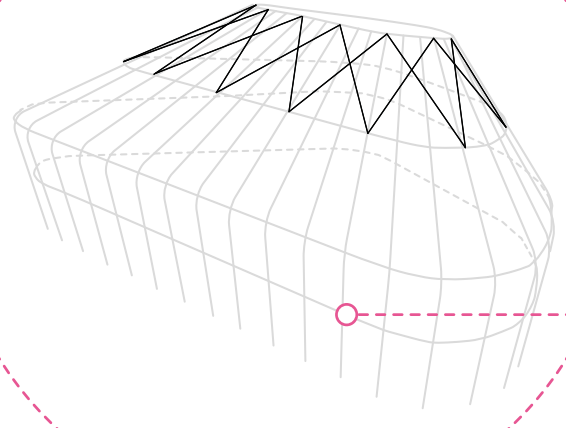
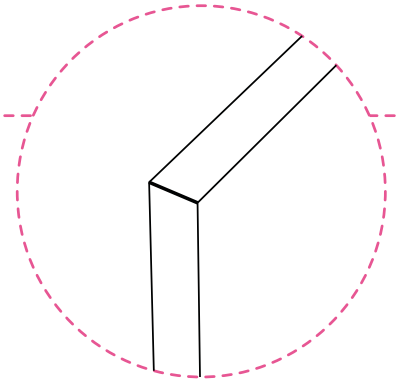
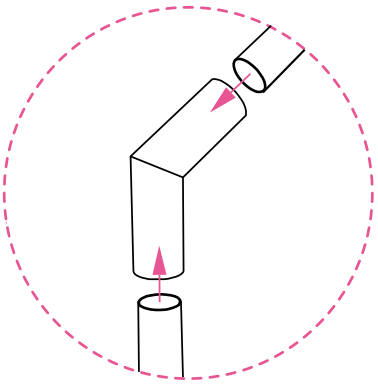


fig. 71. *



WELDED CONNECTION

cut on bevel and
welded bend proof

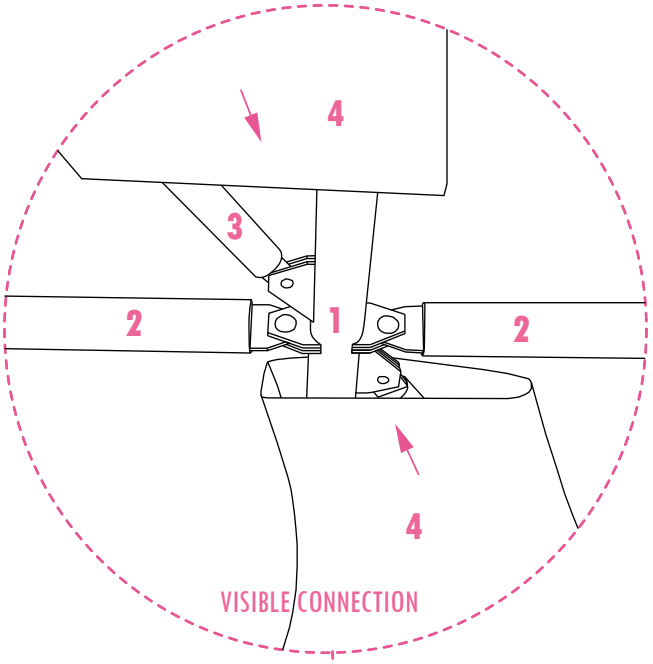


CONNECTION PIPE

Thrust Belt

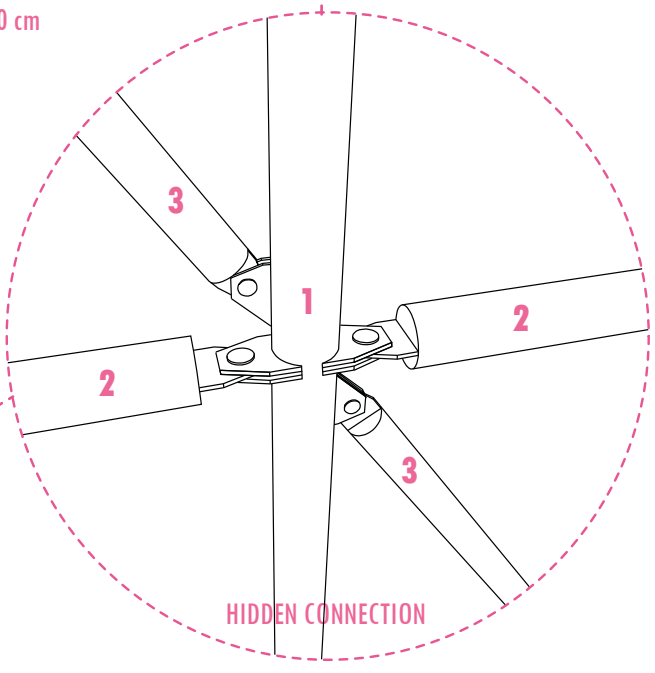
Tension Belt

Thrust Belt



VISIBLE CONNECTION

1: Vertical steel hollow profile (rigid welded) ø 15.00 cm
2: Horizontal steel hollow profile (thrust or tension) ø 15.00 cm
3: Bracing steel hollow profile ø 10.00 cm
4: organic panel



HIDDEN CONNECTION

Connection joints

adaptable to different angles

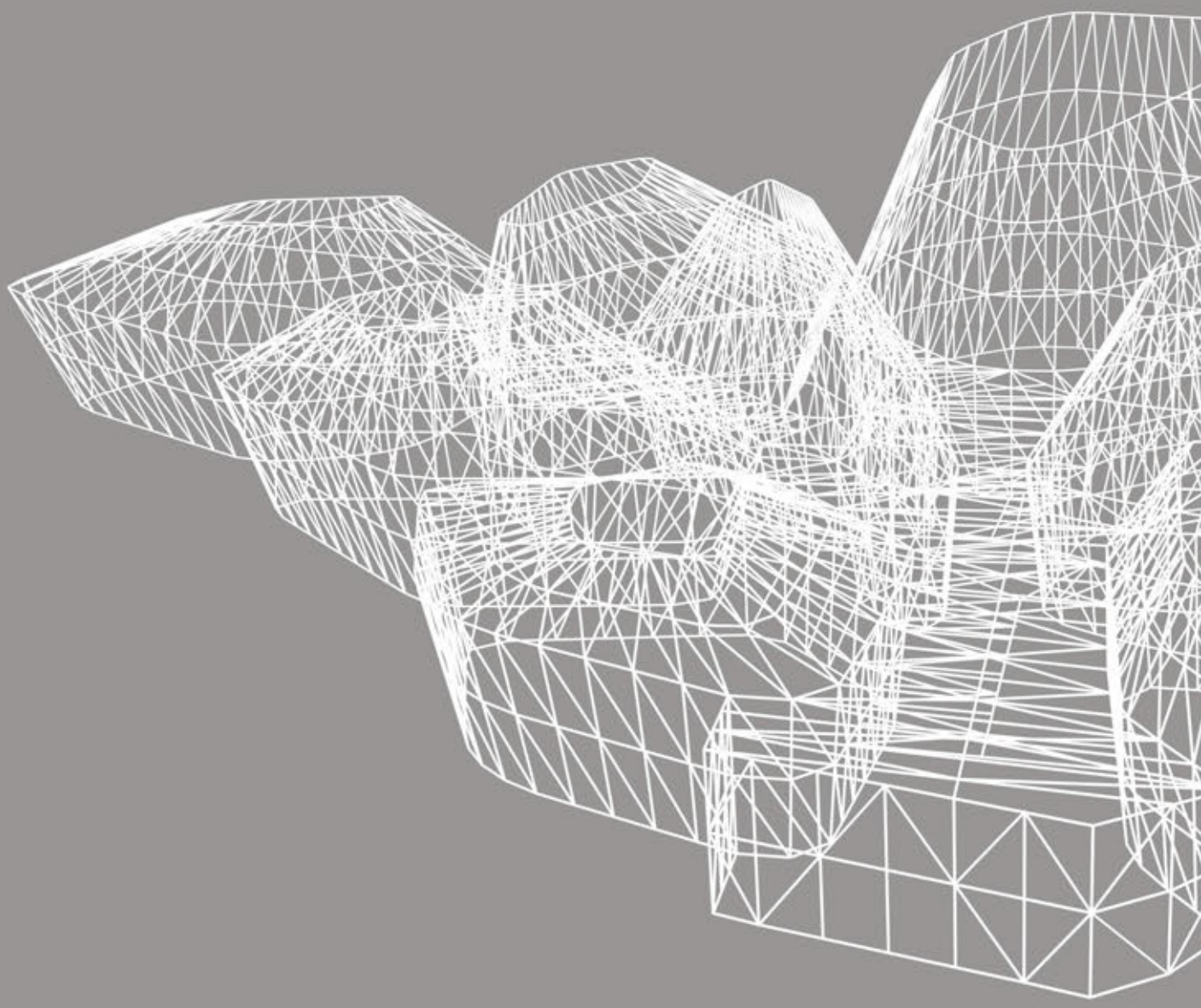
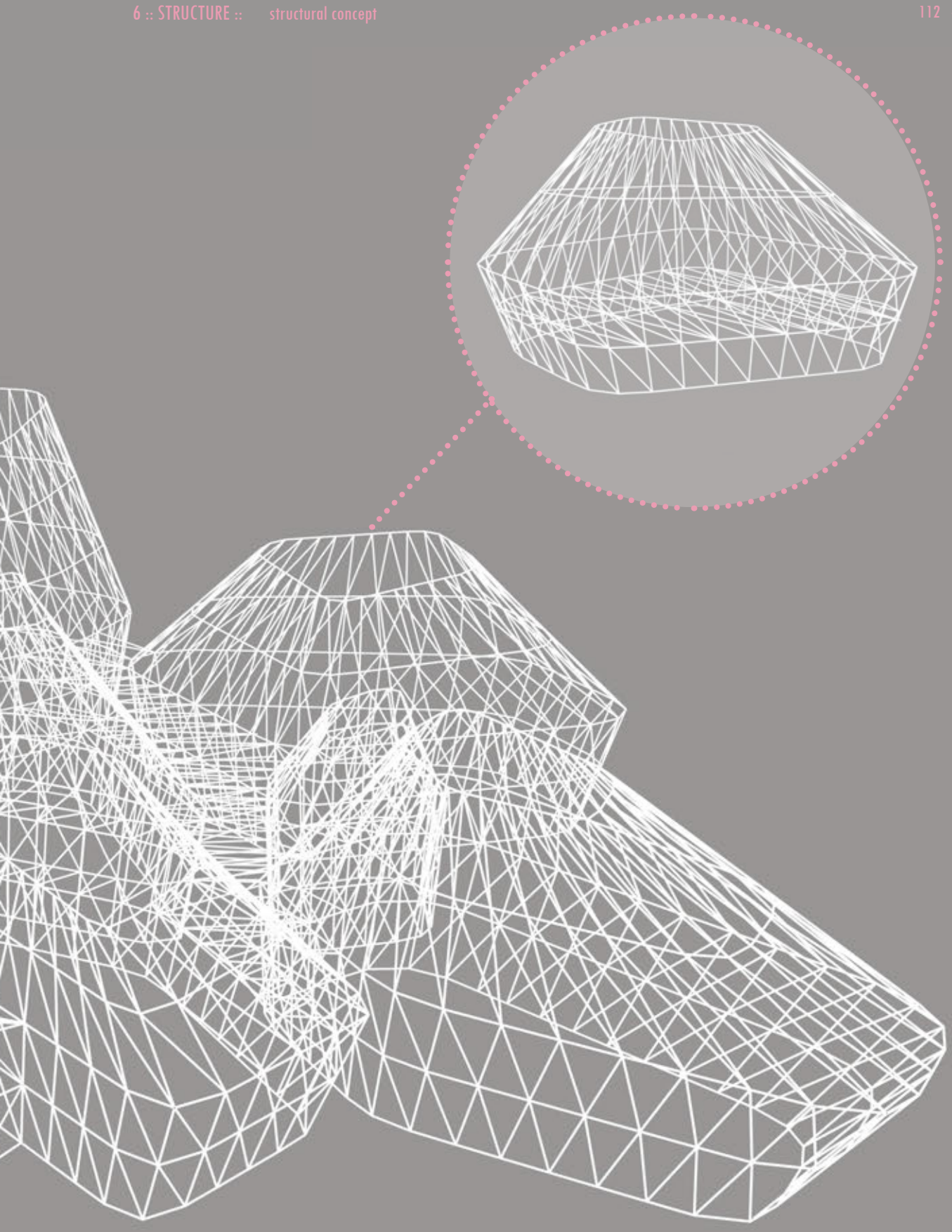
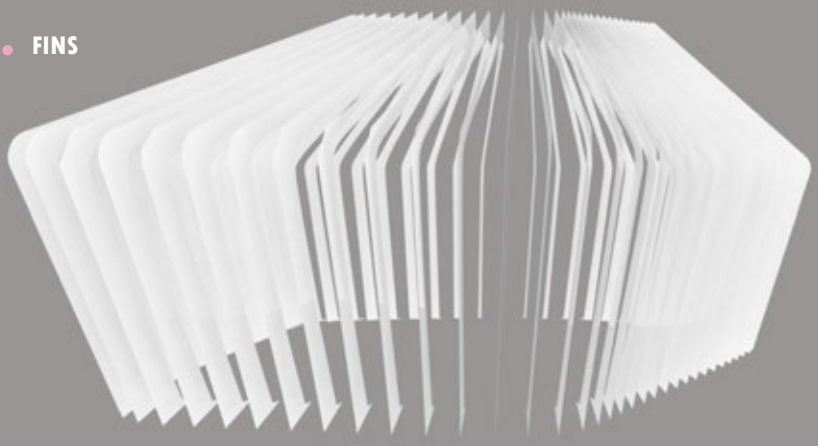


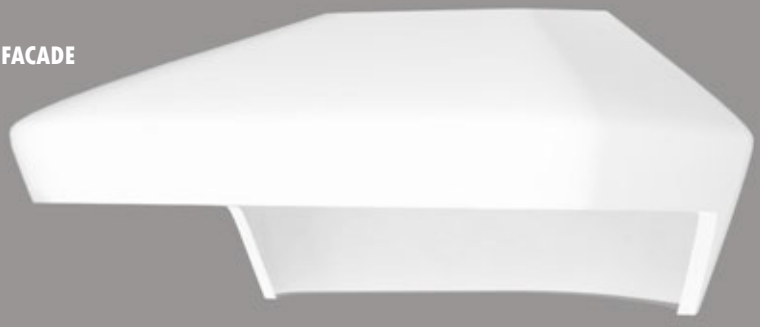
fig. 72. *



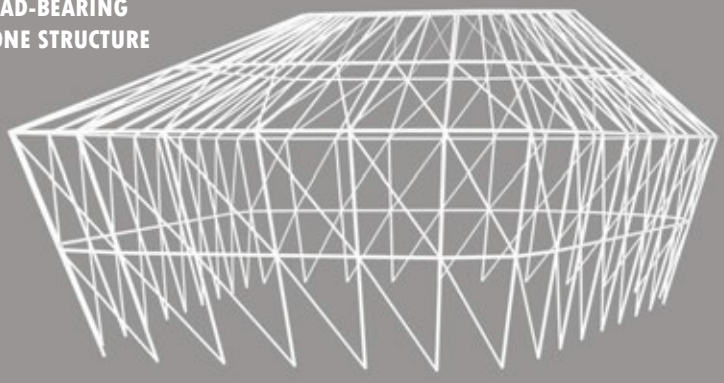
4. FINS



3. FACADE



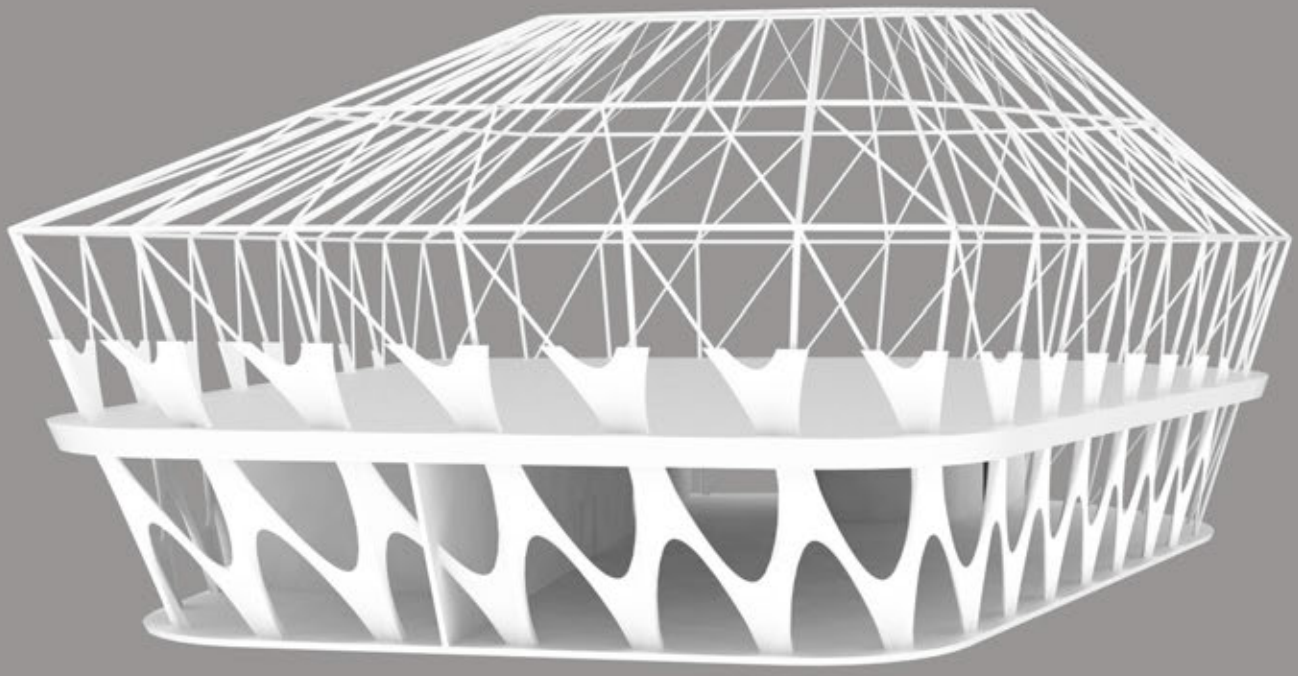
2. LOAD-BEARING
CONE STRUCTURE



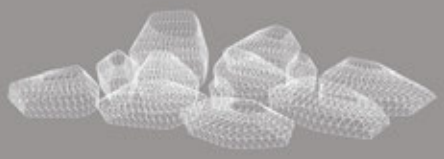
⊕ ADDING ORGANIC STRUCTURE
WHEN VISIBLE

1. FLOOR CEILING AND
GROUND FLOOR WALLS

fig. 73. *



The outer skin of each volume is covered in full height add-on fins that resemble natural structures such as seashells or geological formations and can either block or filter the sunlight or let it through. As the requirements for the three different main functions with regard to natural light are highly specific and complex. The facade and it's openings are designed as independant from the building's load-bearing structure; hence glazed areas can be freely introduced to any extend between the non-structural fins and the structural steel system. In addition to the glazed wall openings each cone features one rooflight that face different directions according to the actual lightening requirement.



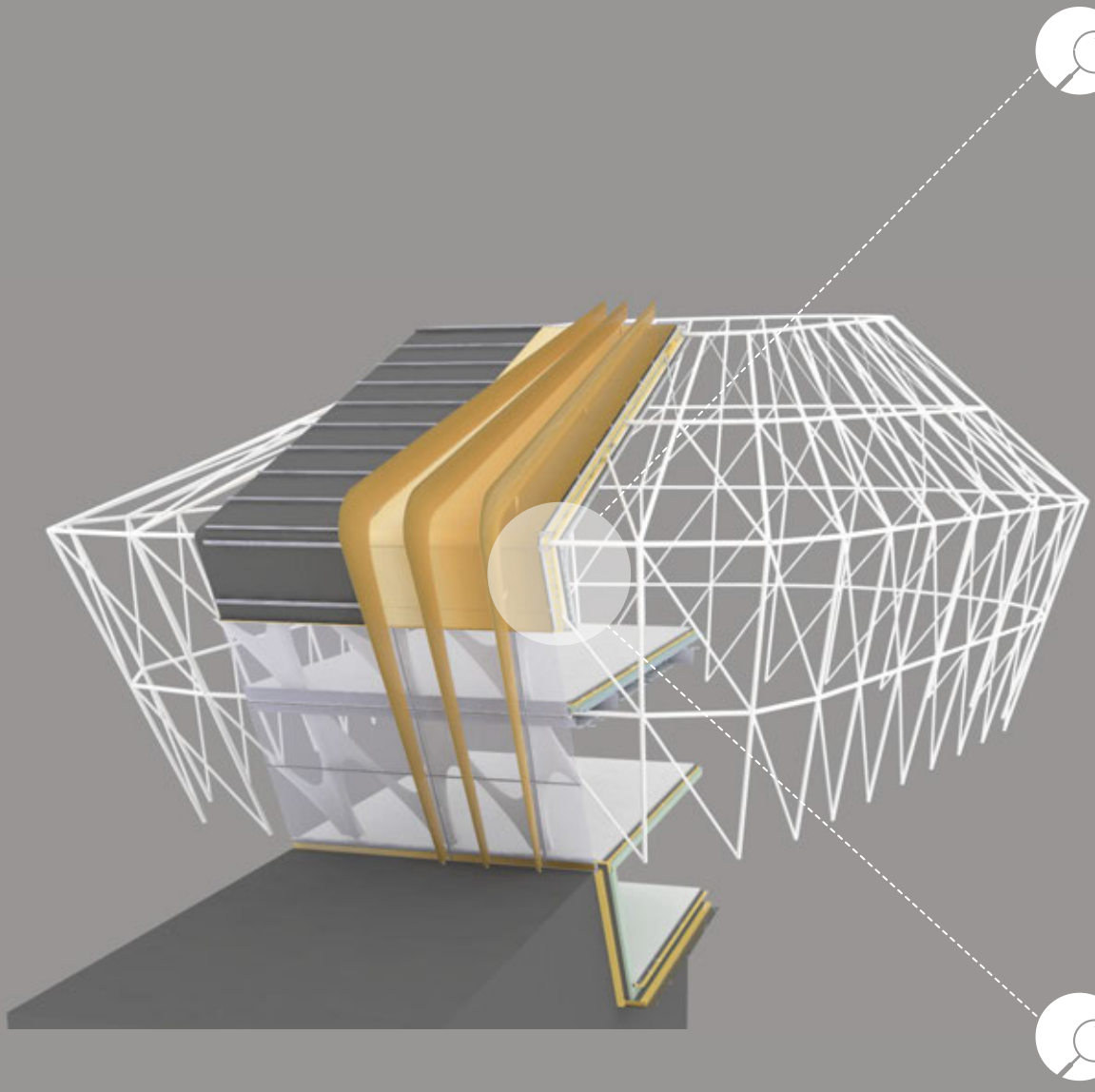
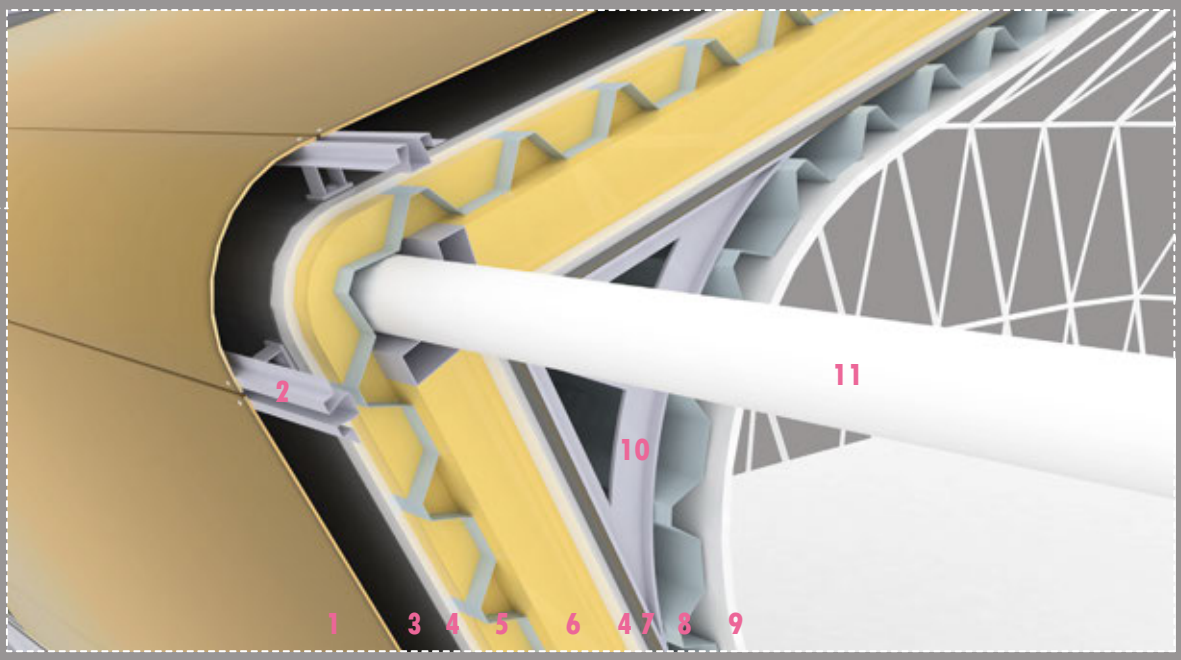
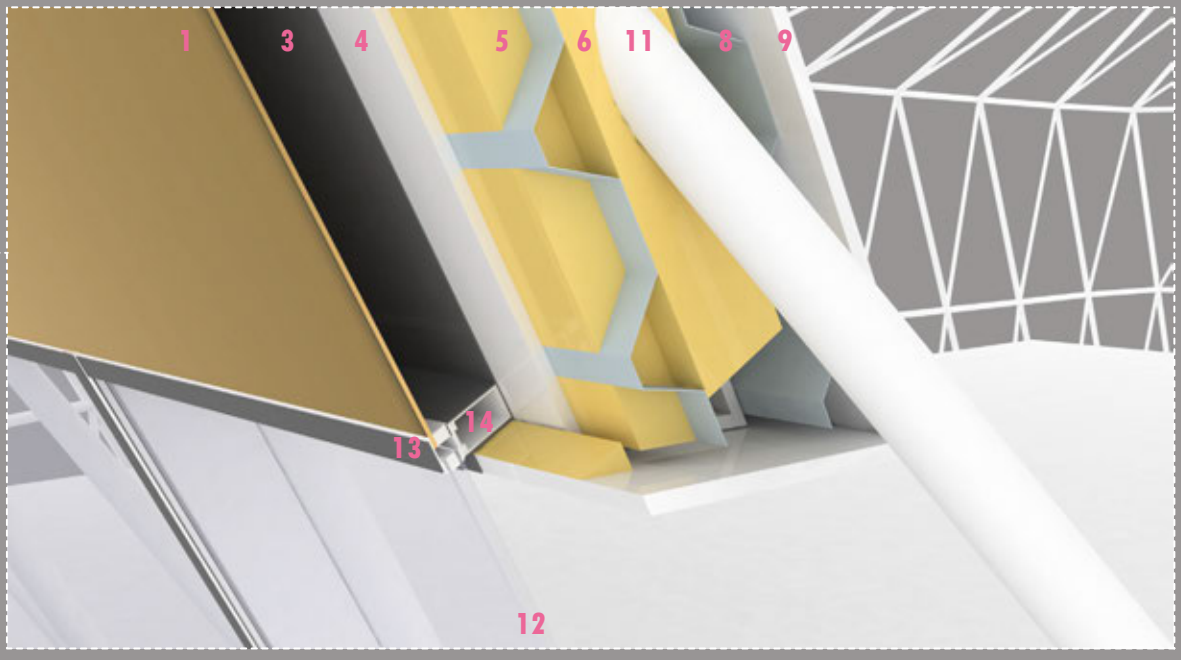
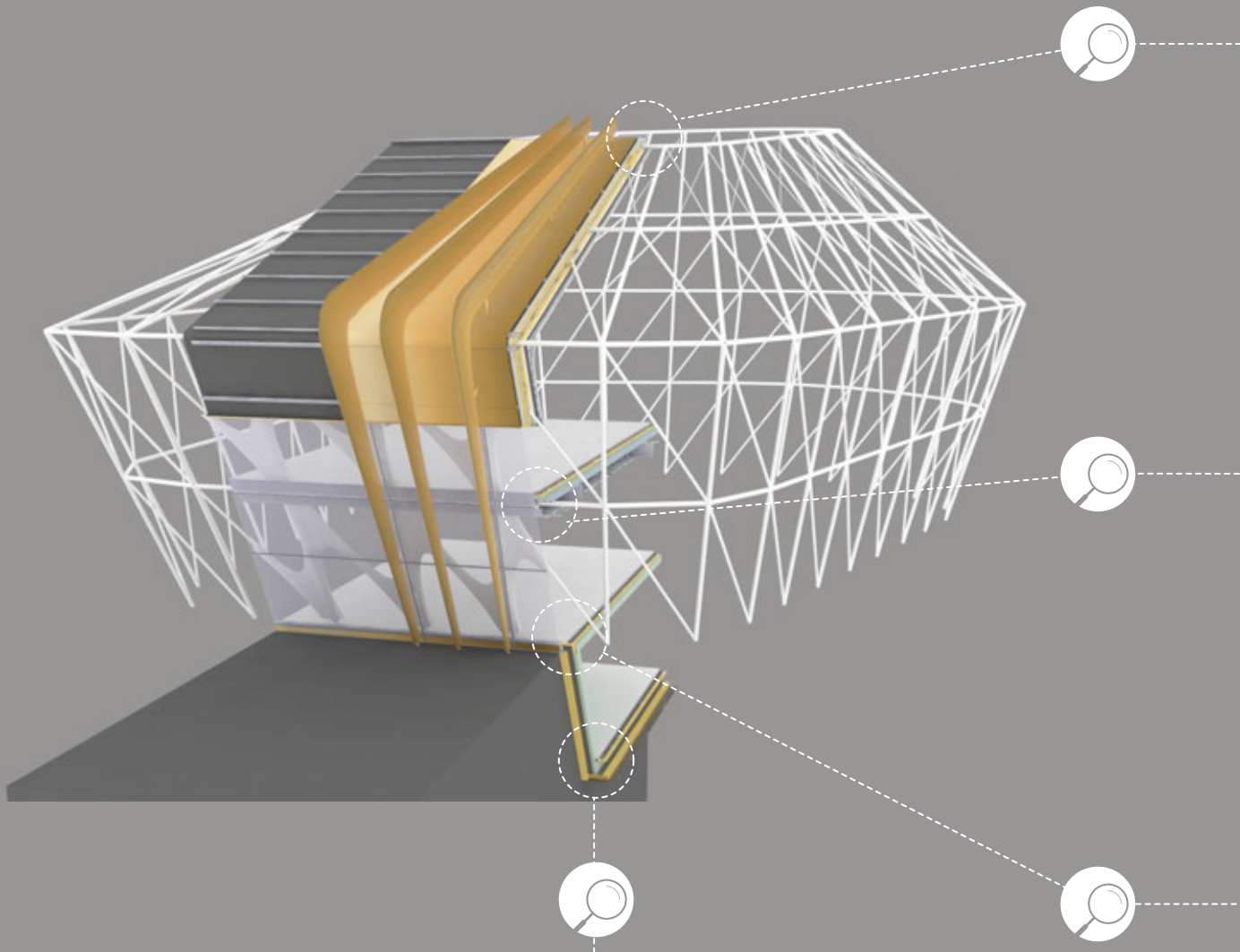


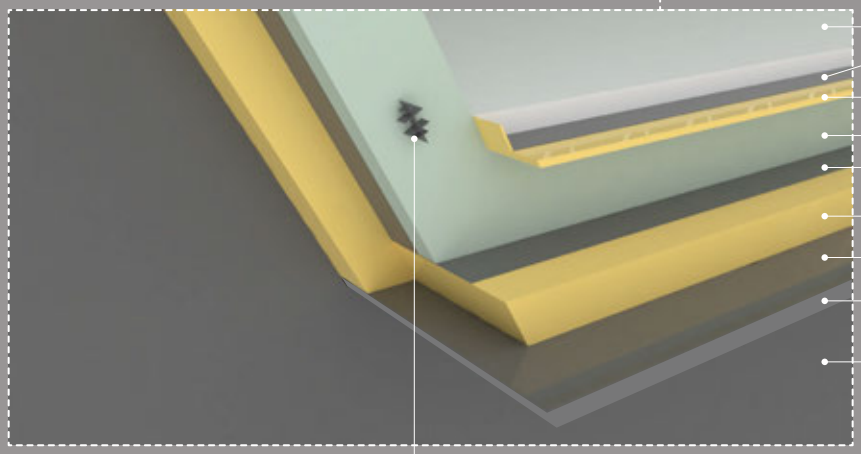
fig. 74. *

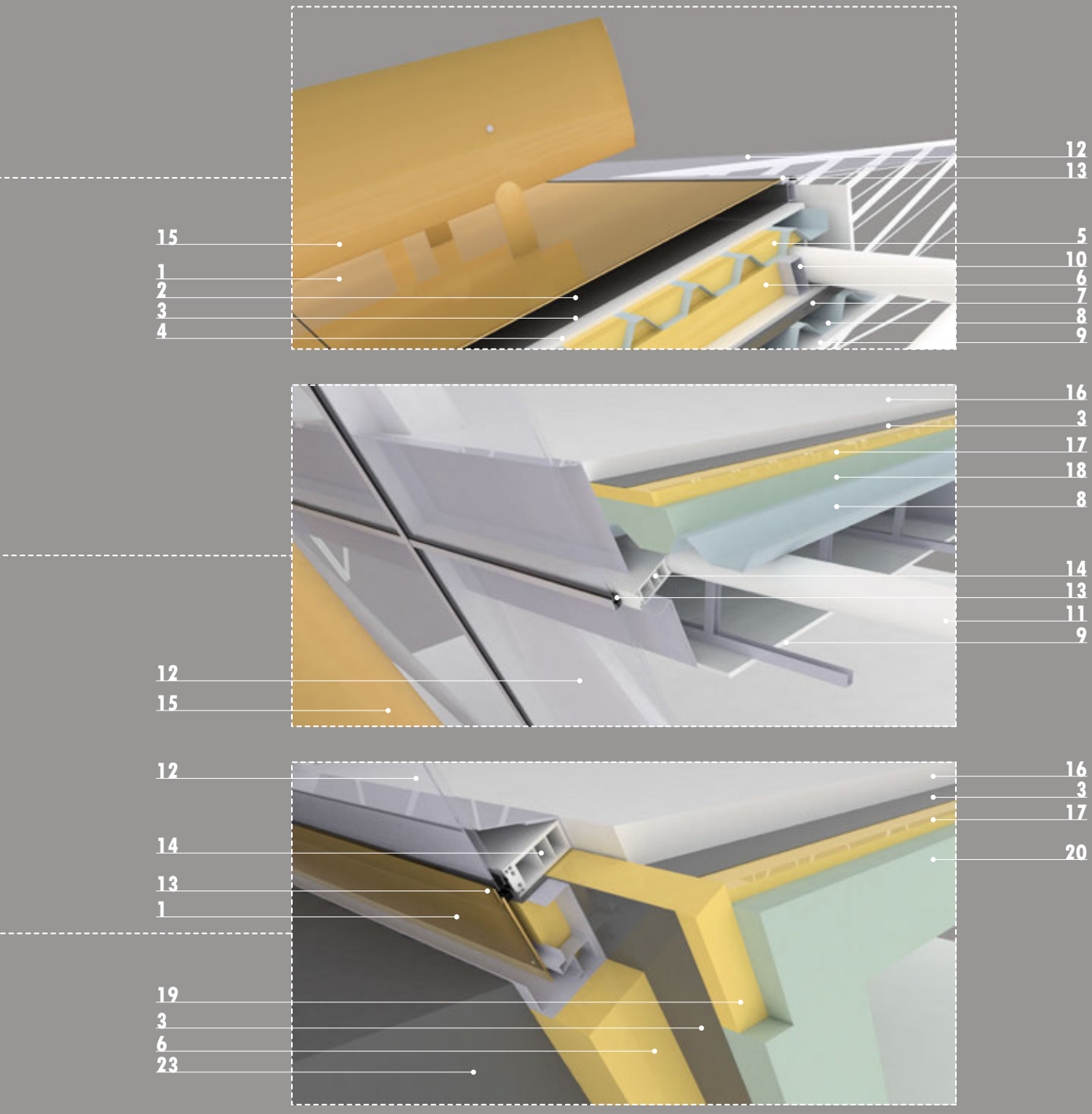


1 ALUCOBOND
2 subconstruction (ventilated)
3 waterproofing
4 oriented strand board (OSB)
5 composite panel (with insulation)
6 insulation/subconstruction
7 vapour barrier
8 trapezoidal metal sheet
9 GRPP glasfibre reinforced plastic panels
10 supporting frame
11 load bearing steel hollow profile
12 double glazed unit
13 pressure plate and capping
14 extruded aluminium glazing bar






16
3
17
20
3
6
3
22
23
21

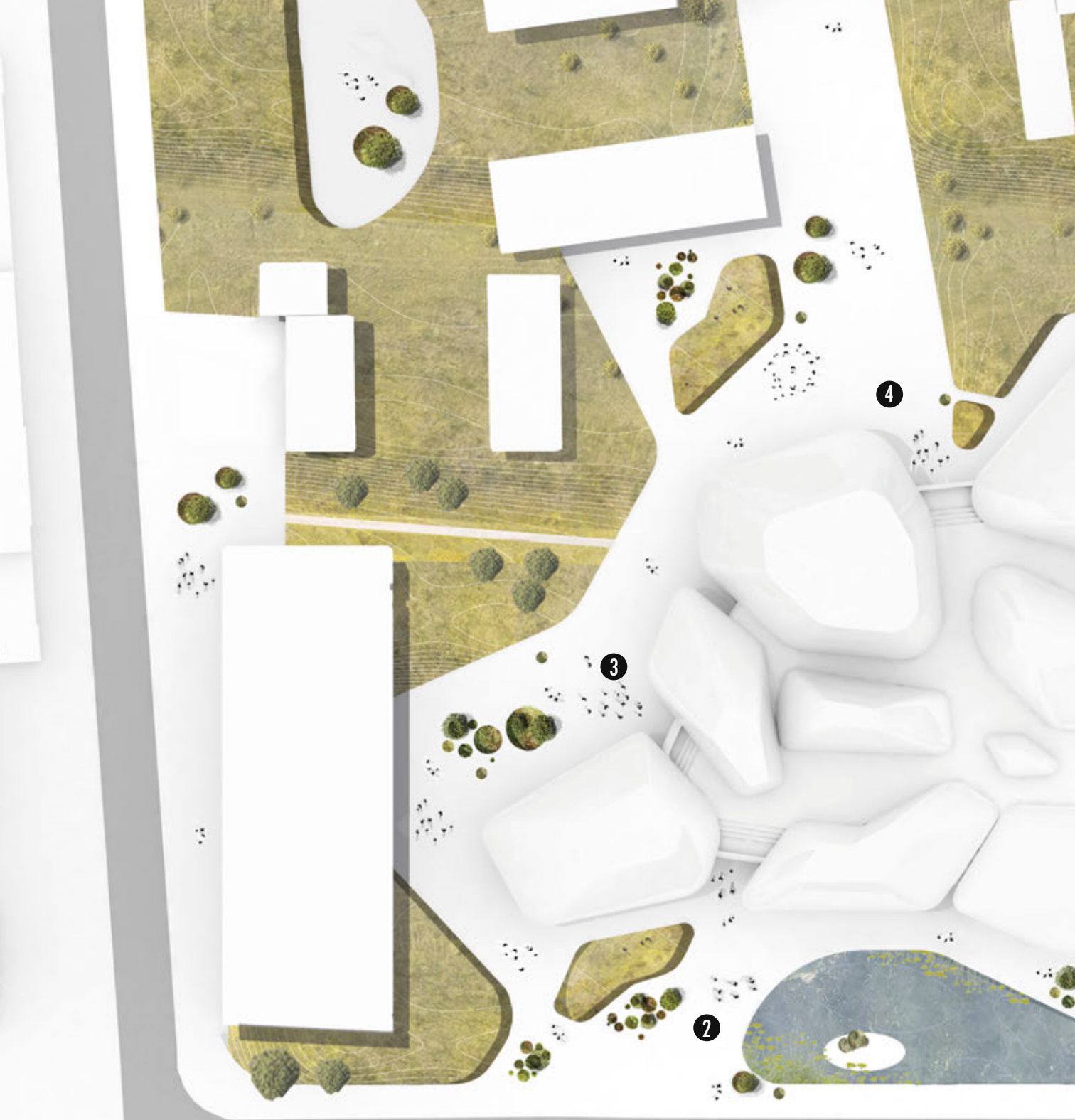


1 ALUCOBOND
2 subconstruction (ventilated)
3 waterproofing
4 oriented strand board (OSB)
5 composite panel (with insulation)
6 insulation/subconstruction
7 vapour barrier
8 trapezoidal metal sheet
9 GRPP glasfibre reinforced plastic panels
10 supporting frame
11 load bearing steel hollow profile
12 double glazed unit
13 pressure plate and capping
14 extruded aluminium glazing bar
15 fin
16 screed
17 impact sound insulation
18 reinforced concrete
19 structural thermal break element
20 waterproof concrete
21 sealing strip
22 concrete layer
23 ground

fig. 75. *

7. LANDSCAPE *

fig. 76. *

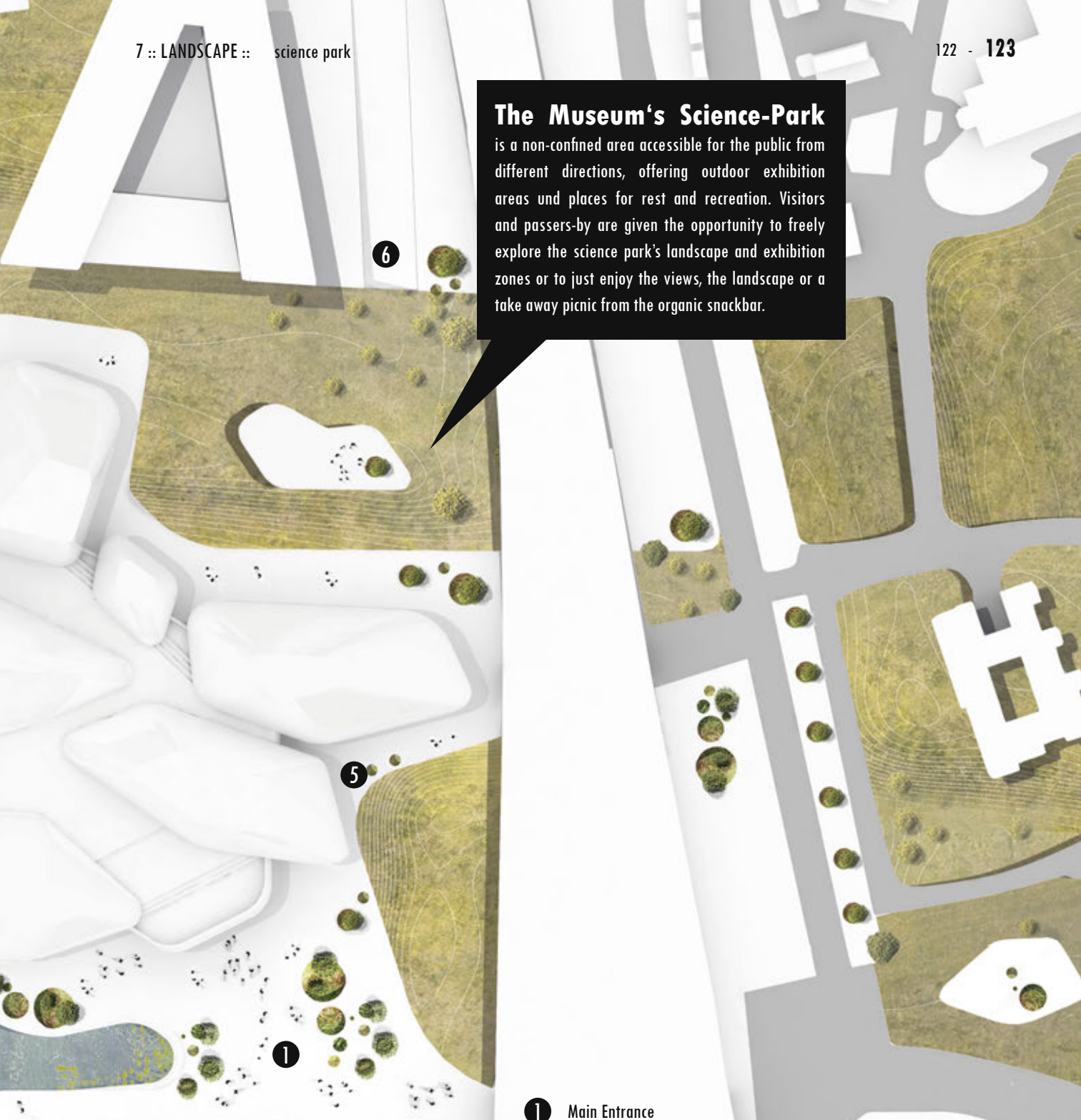


SCIENCE PARK +00.00M

DESIGN CONCEPT - BIRDS EYE VIEW

The Museum's Science-Park

is a non-confined area accessible for the public from different directions, offering outdoor exhibition areas und places for rest and recreation. Visitors and passers-by are given the opportunity to freely explore the science park's landscape and exhibition zones or to just enjoy the views, the landscape or a take away picnic from the organic snackbar.



1. Main Entrance
2. Education Entrance
3. Library Entrance
4. Research & Auditorium Entrance
5. Staff - Side Entrance
6. Delivery Entrance (to underground storage and car park)

fig. 77. *

The Botanical Rooftop Garden

features serveral botanical zones, adding up to an interlinked outdoor exhibition area to give vistors the opportunity to leisurely stroll through the landscape or specifically explore the different fields of botanical science. In-between the latter various spots for rest and recreation are situated, from which the whole of the science park can be observed, and the most striking of which would be the large panorama terrace above the entrance that provides an extensive view across the landscape and the neighbouring Berlin Zoo.

ROOFTOP GARDEN +10.00M

DESIGN CONCEPT - BIRDS EYE VIEW

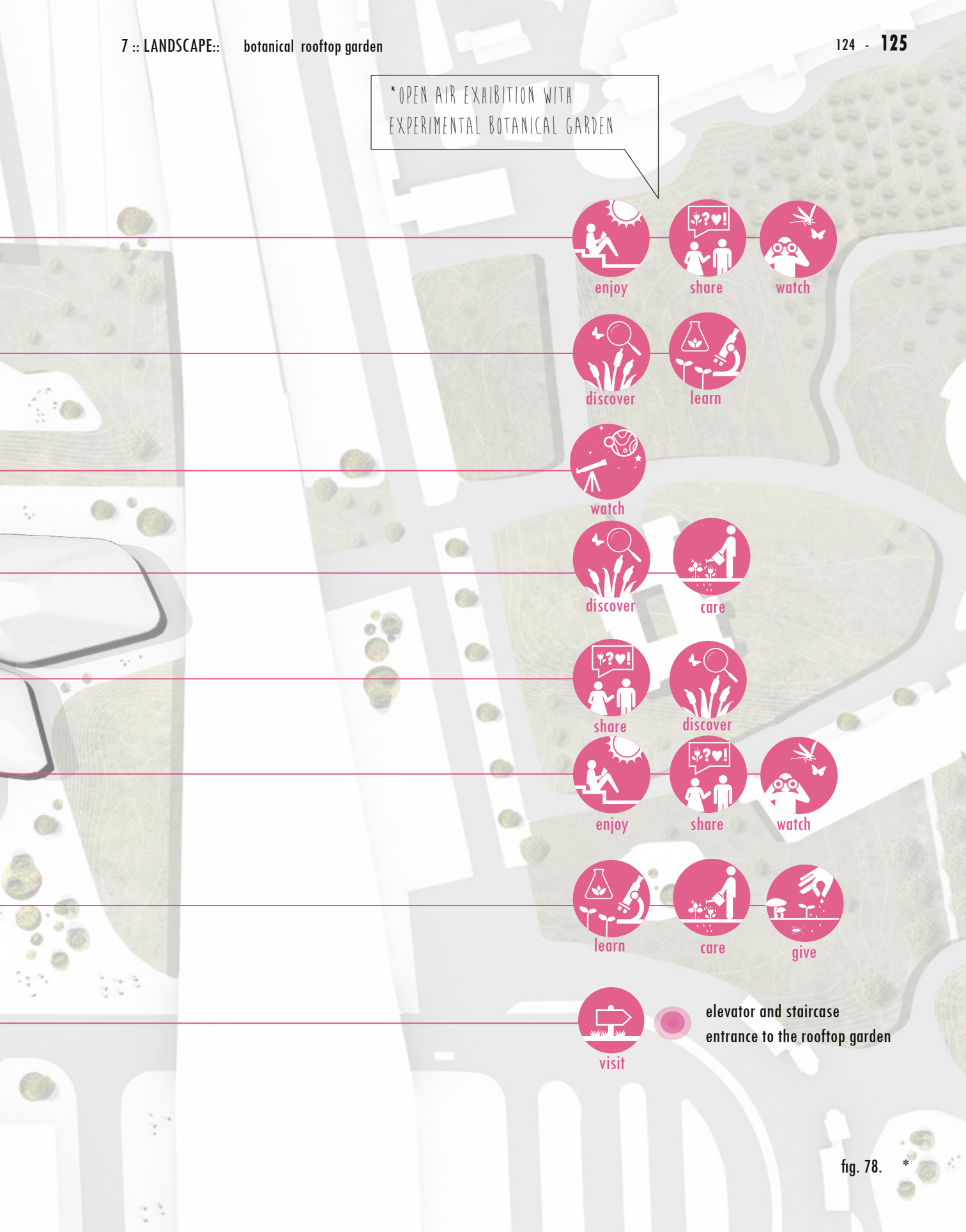

*OPEN AIR EXHIBITION WITH
EXPERIMENTAL BOTANICAL GARDEN
enjoy
share
watch
discover
learn
watch
discover
care
share
discover
enjoy
share
watch
learn
care
give
visit
elevator and staircase
entrance to the rooftop garden

fig. 78. *

*USE LOCAL PLANTS TO ENSURE PLANT ADAPTION TO THE ENVIRONMENT

sunny

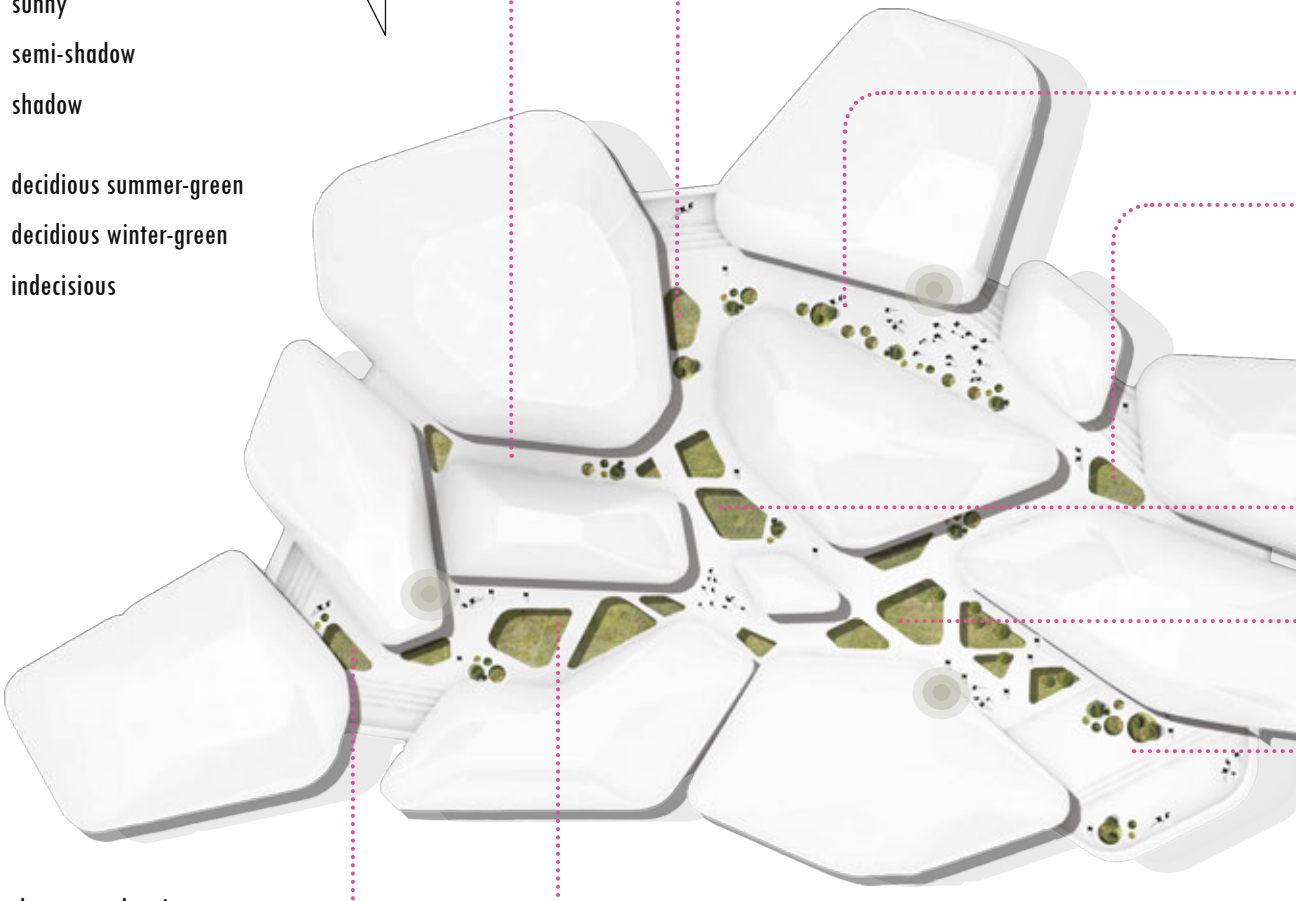
semi-shadow

shadow

sg decidious summer-green

wg decidious winter-green

id indecisious



elevator and staircase

exit to museum space

ROOFTOP GARDEN +10.00M

BOTANICAL GARDEN AND PLANTS

WINTER GARDEN

ALPINE GARDEN

care

wg

Geranium macrorrhizum
„bigroot geranium“

wg

Luzula nivea
„snowy wood rush“

PHYSICS GARDEN

EXPERIMENTAL

give

id

Thymus serpyllum
„wild thyme“

sg

Oenothera missouriensis
„evening primrose“

FLOWER OASIS

share

id

Linum perenne
„blue flax“

sg

Centranthus ruber
„jupiter's beard“

4 SEASONS PARK

PICKNICK & RELAX

enjoy

watch

sg

Tamarix pentandra
„tamarisk“

sg

Fragaria vesca var. vesca
„wild strawberry “

EDUCATIONAL (KIDS AREA)

learn

sg

Aronia melanocarpa
„black chokeberry“

id

echinocereus reichenbachii
„Purple Candle Cactus“

CACTI AND SUCCULENTS

discover

id

Delosperma cooperi
„Pink Carpet“

fig. 79. *

ROOFTOP GARDEN * ORGANIC SKYLINE

fig. 80. *

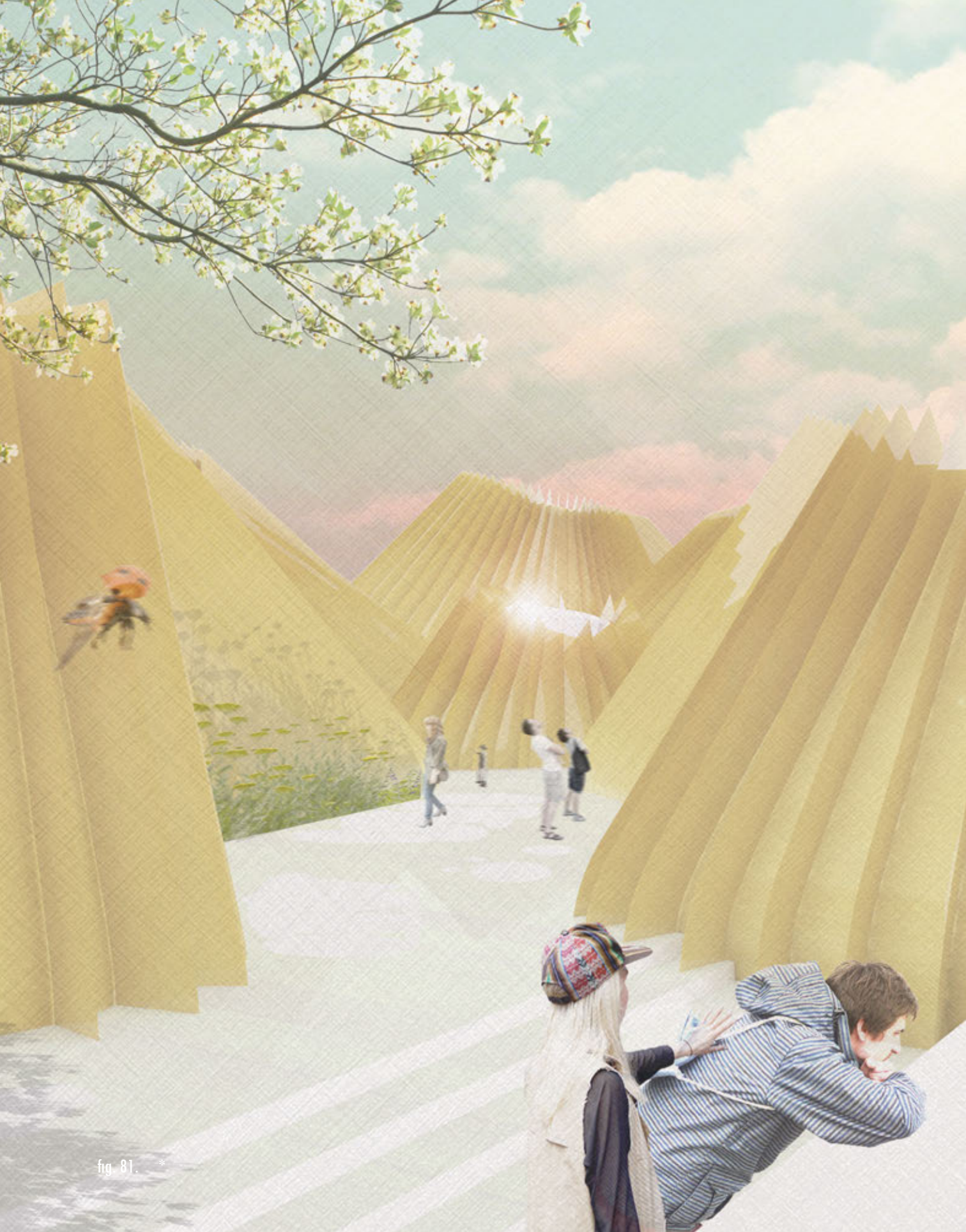
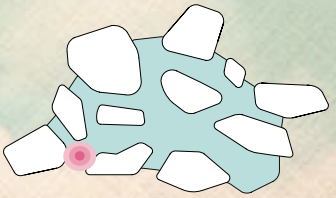
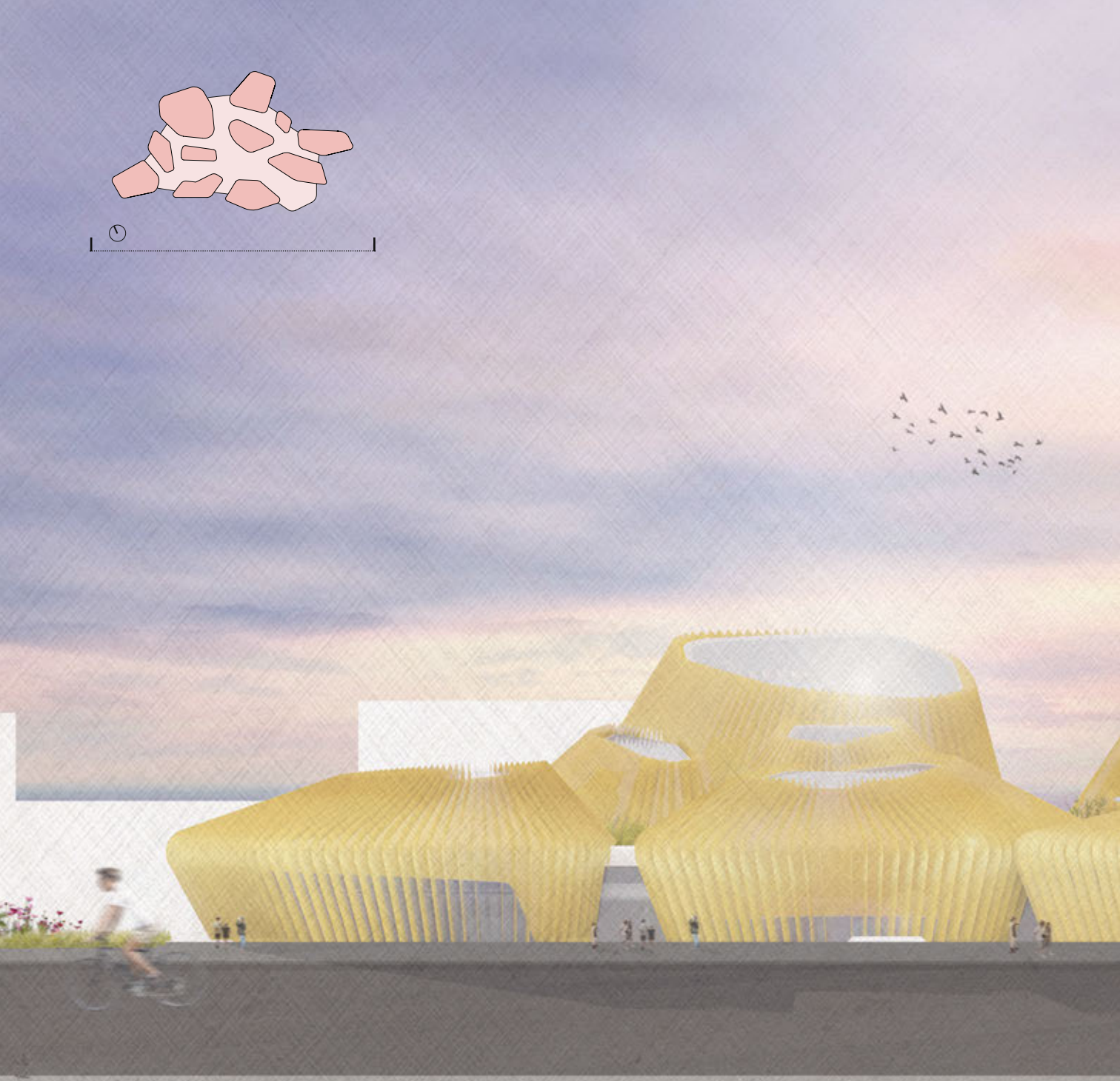


fig. 81. *



ROOFTOP GARDEN * BOTANICAL FIELDS

8. IMAGES*
SCIENCE BUSTER



FRONT VIEW

fig. 82. *

* BACK VIEW

fig. 83. *

fig. 84. *


...VIEW FROM THE HIGHLINE

...VIEW FROM THE TRAIN STATION

fig. 85. *

fig. 86. *


...FLUID EXHIBITION SPACE

fig. 87. *

...ORGANIC SNACK BAR

fig. 88.

...MAIN ENTRANCE FOYER

THANK YOU! ...

...MY THANKS♥ TO ALL MY FRIENDS AND
FAMILY WHO SUPPORTED ME SOOOOO LOVELY
DURING THIS DIPLOMA THESIS!

...*PROF. BERTHOLD *KAYA *JULIAN *CLEMENS *NIELS *PAUL *ISA *CALVIN
*MYRRE *ZEYNEB *JOHANNES *MARTIN *ANNA *LISA *LILLI & ARMIN *ROBERT

9. IMAGE INDEX *

2 :: TOPIC

FIG.1 "FOOTPRINT"
ILLUSTRATION: AWR-COMPETITION, OFFICIAL BRIEF, BERLIN NATURAL CITY
P. 11

FIG.2 BERLIN SITE AREA
ILLUSTRATION: AWR-COMPETITION, OFFICIAL BRIEF, BERLIN NATURAL CITY
P. 13

3 :: ANALYSIS

FIG.3 MAP SECTION EUROPE, GERMANY, BERLIN
GRAPHIC: CHRISTIN KURZE
P. 15

FIG.4 MAP OF GERMANY,BERLIN, ADMINISTRATIVE STRUCTURE, CHARLOTTENBURG
GRAPHIC: CHRISTIN KURZE
P. 16-17

FIG.5 AERIAL PICTURE BERLIN, MAIN ATTRACTIONS
GRAPHIC: CHRISTIN KURZE
AERIAL PICTURE: BING MAPS
P. 18-19

FIG.6 AERIAL PICTURE BERLIN, MAIN ATTRACTIONS
GRAPHIC:CHRISTIN KURZE
AERIAL PICTURE: GOOGLE MAPS
P. 20-21

FIG.7 AERIAL PICTURE BERLIN, SITE, PUBLIC TRANSPORT
GRAPHIC: CHRISTIN KURZE
AERIAL PICTURE:GOOGLE MAPS
P. 22-23

FIG.8 SITE ANALYSIS, PUBLIC TRANSPORT
GRAPHIC: CHRISTIN KURZE
P. 24-25

FIG. 9 - 10 AERIAL PICTURE, SITE LAYOUT
GRAPHIC: CHRISTIN KURZE
AERIAL PICTURE: GOOGLE EARTH
P. 26-29

FIG.11 SITE CONCLUSION, MUSEUM LINKS SCI
GRAPHIC: CHRISTIN KURZE
P. 30-31

FIG.12 NATURE'S GEOMETRIES
ILLUSTRATION: HTTP://WWW.ARCHITECTMAGAZINE.COM/IMAGES/TMP32A5.TMP_TCM20-132134.JPG_10-05-14
P. 33

FIG.13 HUMAN GEOMETRIES, HUMAN CELL FORMATION
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://HISTOLOGY.MED.UMICH.EDU/SITES/DEFAULT/FILES/ENDO_1_THYROID_LOW.JPG_05.01.14
P. 34

FIG.14 HUMAN GEOMETRIES, HUMAN SWARM
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://2.BP.BLOGSPOT.COM/_7FJPQOA-4KI/TLXMOWLEWHI/AAAAAAAACV4/
BZTMIOKCLJA/S1600/SWARM1.JPG_05.01.14
P. 34

FIG.15 HUMAN GEOMETRIES, FINGERPRINT
GRAPHIC:CHRISTIN KURZE
ILLUSTRATION: HTTP://2.BP.BLOGSPOT.COM/_7FJPQOA-4KI/TLXMOWLEWHI/AAAAAAAACV4/
BZTMIOKCLJA/S1600/SWARM1.JPG_05.01.14
P. 34

FIG.16 HUMAN GEOMETRIES, HUMAN BONE STRUCTURE
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://TH03.DEVIANTART.NET/FS70/PRE/I/2011/332/3/D/SEAMLESS_BONE_
STRUCTURE_BY_HHH316-D4HLLU8.JPG_05.01.14
P. 34

FIG.17 HUMAN GEOMETRIES, HUMAN TOOTH STRUCTURE
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://WWW.FEELGUIDE.COM/WP-CONTENT/UPLOADS/2011/12/CAVITYTOOTH.
JPG_06.01.14
P. 34

FIG.18 HUMAN GEOMETRIES, CEREBRAL CORTEX
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://PROTOMAG.COM/STATICS/W11_PORTRAITS_OF_THE_MIND_P216_
ELECTRONMICROSCOPY.JPG_05.01.14
P. 34

FIG.19 GEOLOGICAL GEOMETRIES, TAFONE STONE
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM1.STATICFLICKR.COM/39/84148980_1F4AFE3C88_O.JPG_05.01.14
P.35

FIG.20 GEOLOGICAL GEOMETRIES, BALSAT STONE
ILLUSTRATION: HTTP://WWW.PICKYWALLPAPERS.COM/AROUND-THE-WORLD/IRELAND/GIANTS-CAUSEWAY-STONE-ROAD-PICTURE/_06.01.14
GRAPHIC: CHRISTIN KURZE
P. 35

FIG.21 GEOLOGICAL GEOMETRIES, ICE CRYSTALS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM6.STATICFLICKR.COM/5016/5535601850_FEDF40ECFF_O.JPG_06.01.14
P. 35

FIG.22 GEOLOGICAL GEOMETRIES, DESICCATED GROUND
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://THUMBS.DREAMSTIME.COM/Z/CRACKED-DRY-EARTH-TEXTURE-2555152.JPG_06.01.14
P. 35

FIG.23 GEOLOGICAL GEOMETRIES, CORAL REEF
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://IMAGES.NATIONALGEOGRAPHIC.COM/WPF/MEDIA-LIVE/PHOTOS/000/280/CACHE/GREAT-BARRIER-REEF-AERIAL-VIEW_28007_600X450.JPG_06.01.14
P. 35

FIG.24 GEOLOGICAL GEOMETRIES, TERRACED RICE FIELDS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://UPLOAD.WIKIMEDIA.ORG/WIKIPEDIA/COMMONS/1/16/TERRACE_FIELD_YUNNAN_CHINA.JPG_06.01.14
P. 35

FIG.25 ZOOLOGICAL GEOMETRIES, GIRAFFE
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://TH00.DEVIANTART.NET/FS27/PRE/I/2008/111/6/8/STOCK_TEXTURE_6___GIRAFFE_BY_VERTASUAL.JPG_04.01.2014
P. 36

FIG.26 ZOOLOGICAL GEOMETRIES, BUTTERFLY WING
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM4.STATICFLICKR.COM/3079/2527643046_A00614C776_O.JPG_05.01.14
P. 36

FIG.27 ZOOLOGICAL GEOMETRIES, BARNACLE
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FC08.DEVIANTART.NET/FS71/I/2013/215/3/1/SEEPOCKEN_IV_BY_CODINA-D6GFCSJ.JPG_27.02.14
P. 36

FIG.28 ZOOLOGICAL GEOMETRIES, TROPICAL FISH
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM4.STATICFLICKR.COM/3704/9885816674_874EDFBD2D_O.JPG_04.01.14
P. 36

FIG.29 ZOOLOGICAL GEOMETRIES, CORAL
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM1.STATICFLICKR.COM/34/71740585_901A09DF39_O.JPG_05.01.14
P. 36

FIG.30 ZOOLOGICAL GEOMETRIES, STONY CORAL
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM6.STATICFLICKR.COM/5097/5545770328_7A917D1377_B.JPG_05.01.14
P. 36

FIG.31 BOTANICAL GEOMETRIES, LEAF CELLS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM4.STATICFLICKR.COM/3691/9048990807_AA17D70EE7_B.JPG_05.01.14
P. 37

FIG.32 BOTANICAL GEOMETRIES, FEAF CELLS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM7.STATICFLICKR.COM/6110/6304162388_237570E67F_O.JPG__05.01.14
P. 37

FIG.33 BOTANICAL GEOMETRIES, CHLOROPLASTS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM3.STATICFLICKR.COM/2849/10655617516_5ED4BABFA7_O.JPG_05.01.14
P. 37

FIG.34 BOTANICAL GEOMETRIES, SUNFLOWER
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM3.STATICFLICKR.COM/2866/10196801806_9CF01ECCEF_O.JPG_05.01.14
P. 37

FIG.35 BOTANICAL GEOMETRIES, ROMANESCO
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM1.STATICFLICKR.COM/95/245077293_4B80FA5E6E_O.JPG_05.01.14
P.37

FIG.36 BOTANICAL GEOMETRIES, PHYSALIS
GRAPHIC: CHRISTIN KURZE
ILLUSTRATION: HTTP://FARM5.STATICFLICKR.COM/4041/4587762383_B28684EFE5_O.JPG_05.01.14
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FIG.37 SPATIAL ORGANISATION, CONNECTIONS
GRAPHIC: CHRISTIN KURZE
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4 :: CONCEPT

FIG.38 SPATIAL ORGANISATION, THE BUILDING'S PROGRAM, ORGANISATION OF FUNCTIONS
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.42 ORGANISATION OF FUNCTIONS, STEP 4, MIXING CIRCULATING+ CLUSTERED ORGANISATION
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.44 DESIGN CONCEPT: WHAT ABOUT...? ACCESS...?
GRAPHIC: CHRISTIN KURZE
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FIG.45 DESIGN CONCEPT: WHAT ABOUT...? PASSAGES...?
GRAPHIC: CHRISTIN KURZE
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FIG.46 DESIGN CONCEPT: WHAT ABOUT...? NATURE'S GEOMETRY... ? SCULPTURAL APPROACH - METAPHORICAL IDEAL
GRAPHIC: CHRISTIN KURZE
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FIG.47 DESIGN PROCESS, MINI FLOOR PLANS
GRAPHIC: CHRISTIN KURZE
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FIG.48 COMPETITION ENTRY - BOARD: IMAGE AND FACTS
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.50 MINI FLOOR PLANS, DIAGRAM: FUNCTION DISTRIBUTION
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.54 GROUND FLOOR PLAN SECTION: RESEARCH, EDUCATIONAL SCIENCES, PREPARATION TECHNIQUES, ORGANIC SNACKBAR AND SHOP
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
P. 84-85

FIG.57 GROUND FLOOR PLAN SECTION: EXHIBITION, EXHIBITION, MULTIFUNCTIONAL EVENTSPACE, AUDITORIUM
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.63 FLOOR PLAN: FURNITURE CONCEPT
GRAPHIC: CHRISTIN KURZE
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6 :: STRUCTURE

FIG.64 INSPIRATION BARNACLE
ILLUSTRATION: BARNACLE:HTTP://IMAGES.FOTOCOMMUNITY.DE/BILDER/PFLANZEN-PILZE-FLECHTEN/PILZE-FLECHTEN/PILZE-DIE-AUSSEHEN-WIE-BLUETENKELCHE-NEIN-SEEPOCKEN-LTANDRE-14E173AE-1224-4FCA-9C71-35C22240363E.JPG_10-4-2014
P. 101

FIG.65 INSPIRATION BARNACLE
ILLUSTRATION: BARNACLE: HTTP://WWW.MARLIN.AC.UK/IMGS/0_SEMBAL5.JPG_10-4-2014
P. 101

FIG.66 INSPIRATION BARNACLE
ILLUSTRATION: BARNACLE: HTTP://WWW.FOTOGALERIE-HELGOLAND.DE/DATA/MEDIA/12/SEEPOCKE_YNGVE_HELGOLAND.JPG_10-4-2014
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FIG.67 INSPIRATION BARNACLE: MAKE UP AND STRUCTURE
GRAPHIC: CHRISTIN KURZE
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FIG.68 STRUCTURAL ANALYSIS, STRUCTURAL FIN
GRAPHIC: CHRISTIN KURZE
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FIG.69 IMPLICATION ON DESIGN PROCESS, ORGANISATION PARAMETER DIAGRAM
GRAPHIC: CHRISTIN KURZE
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FIG.70 STRUCTURAL CONCEPT, STRUCTURAL SYSTEM, LOAD-BEARING WALL, FASCADE AND CEILING
GRAPHIC: CHRISTIN KURZE
P. 108-109

FIG.71 STRUCTURAL CONCEPT, CONNECTION JOINTS
GRAPHIC: CHRISTIN KURZE
P. 110-111

FIG.72 STRUCTURAL CONCEPT, 3D AXONOMETRY
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.74 3D STRUCTURAL DETAILS
GRAPHIC: CHRISTIN KURZE
P. 116-117

FIG.75 3D STRUCTURAL DETAILS
GRAPHIC: CHRISTIN KURZE
P. 118-119

7 :: LANDSCAPE

FIG.76 FOREGROUND PLANT
IMAGE: HTTP://SOZAIYA.COM/MEDIA/CATALOG/PRODUCT/CACHE/2/IMAGE/9DF78EAB33525D08D6E5FB8D27136E95/9/Z/9Z1026.JPG__25-5-2014
P. 121

FIG.77 LANDSCAPE, BIRDS EYE VIEW, SCIENCE PARK
GRAPHIC: CHRISTIN KURZE
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FIG.78 LANDSCAPE, BIRDS EYE VIEW, BOTANICAL ROOFTOP GARDEN
GRAPHIC: CHRISTIN KURZE
P. 124-125

FIG.79 LANDSCAPE, BIRDS EYE VIEW, BOTANICAL ROOFTOP VEGETATION
GRAPHIC: CHRISTIN KURZE
ILLUSTRATIONS FROM TOP LEFT TO BOTTOM RIGHT:

ILLUSTRATION BIGROOT GERANIUM:
HTTP://WWW.ROBSPLANTS.COM/IMAGES/PORTRAIT/GERANIUMMACRORRHIZUM040513.JPG02__JASIMONE MONTANA__HTTP://STATIC.PANORAMIO.COM/PHOTOS/LARGE/11558046.JPG__07-05-2014

ILLUSTRATION SNOWY WOOD RUSH:
HTTP://WWW.KERNELIV.DK/239-THICKBOX/LUZULA-NIVEA-SNEFRYTLE.JPG__07-05-2014

ILLUSTRATION WILD THYME:
HTTP://GRAINES-ET-SEMENCES.FR/59-168-THICKBOX/10-GRAINES-THYMUS-SERPYLLUM-THYM-SERPOLET.JPG__07-05-2014

ILLUSTRATION EVENING PRIMEROSE:
HTTP://WWW.ABOUT-GARDEN.COM/IMAGES_FORUM/GALLERY/12147/14231-PUPALKA-MISSURSKA-OENOTHERA-MISSOURIENSIS-KK.JPG_07-05-2014

ILLUSTRATION BLUE FLAX:
HTTP://STATIC.PANORAMIO.COM/PHOTOS/LARGE/24798068.JPG_07-05-2014

ILLUSTRATION JUPITER'S BEARD:
HTTP://CREATIVE.PLANTDATABASE.INFO/PLANT_IMGS/SIZE3/CENTRANTHUS_RUBER_I14145P6202.JPG_07-05-2014

ILLUSTRATION TAMARISK:
HTTP://WWW.BUZZLE.COM/IMG/ARTICLEIMAGES/566219-5212-2.JPG_07-05-2014

ILLUSTRATION BLACK CHOKEBERRY:
HTTP://WWW.PLANT-WORLD-SEEDS.COM/IMAGES/SEED_IMAGES/ARONIA_MELANOCARPA/SIZE3_500X500/ARONIA%20MELANOCARPA%201.JPG_07-05-2014

ILLUSTRATION WILD STRAWBERRY:
HTTP://DROBAS-GARTENBLOG.EXIGEM.DE/CATEGORY/FILES/2011/06/ERDBEER2.JPG_07-05-2014

ILLUSTRATION PINK CARPET:
HTTP://WWW.SNWA.COM/NMA/PLANT_SEARCH/DROSANTHEMUM_COOPERI-3.JPG_07-05-2014

ILLUSTRATION PURPLE CANDLE CACTUS:
HTTP://IMG2.RAJCE.IDNES.CZ/D0203/1/1828/1828250_2B37E711A9FC7879F65963C41492DAB2/IMAGES/ECHINOCEREUS_REICHENBACHII.JPG_07-05-2014

P.126-127

FIG.80 IMAGE BOTANICAL ROOFTOP GARDEN, ORGANIC SKYLINE
GRAPHIC: CHRISTIN KURZE
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FIG.81 IMAGE BOTANICAL ROOFTOP GARDEN, BOTANICAL FIELDS
GRAPHIC: CHRISTIN KURZE
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8 :: IMAGES

FIG.82 IMAGE SCIENCE BUSTER: EXTERNAL VIEW, FRONT VIEW
GRAPHIC: CHRISTIN KURZE
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FIG.83 IMAGE SCIENCE BUSTER: EXTERNAL VIEW, BACK VIEW
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.85 IMAGE SCIENCE BUSTER: EXTERNAL VIEW, ...VIEW FROM S-BAHN STATION
GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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GRAPHIC: CHRISTIN KURZE
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FIG.88 IMAGE SCIENCE BUSTER: EXHIBITION AREA, ...MAIN ENTRANCE FOYER
GRAPHIC: CHRISTIN KURZE
P. 146-147

9. BIBLIOGRAPHY *

P. 10-13 COMPETITION BRIEF
HTTP://AWRCOMPETITIONS.COM/DOWNLOAD/OFFICIAL BRIEF_NATURAL CITY_HQ.PDF_12-11-2014

P.15 LATITUDE, LONGITUDE: BERLIN HERTZALLEE
HTTP://WWW.FAVICATE.DE/GEO-LAENGEN-BREITENGRADE_25-5-2014

P.16 BERLIN: DATA AND FACTS
HTTP://WWW.BERLIN.DE/BA-LICHTENBERG/DERBEZIRK/DATENFAKTEN.HTML_25-5-2014

P. 18-19 BERLIN: MAIN ATTRACTIONS, MUSEUMSGUIDE
HTTP://WWW.BERLIN.DE/MUSEUM/_25-5-2014

P. 18-23 ALL AEREA VIEWS FROM THE INTERNET:
P. 26-29 GOOGLE EARTH: HTTPS://WWW.GOOGLE.COM/MAPS/
AND BING MAPS: HTTP://WWW.BING.COM/MAPS/

FONT CREDITS

:::BRAIN FLOWER::: BY DENISE BENTULAN
DNN.BNTLN@YAHOO.COM
HTTP://DOUXIEGIRL.COM/FONTS

CUT `N` GO

CV!

CHRISTIN KURZE

(*17-09-80 LICH - GER)

> ARCHITECTURAL STUDIES

TU DARMSTADT, TU VIENNA

> ADRESS

KÖLBLGASSE 32 / 22 / 3. VIENNA

> MAIL: KWIS@GMX.AT

>+++ GERMAN /++ ENGLISH/

+FRENCH/ +SPANISH / +JAPANESE

BASICS

> DSTY::: GERMAN SCHOOL IN TOKYO / YOKOHAMA
1989 - 1993
> HIGH SCHOOL IN RHEINLAND-PFALZ
1993-2000 // A-LEVELS
> NAGANUMA SCHOOL > LINGUISTIC CULTURE TOKYO
2000-2001
> TOURISTIC BUSINESS COLLEGE IN MANNHEIM
2001-2004
> TU DARMSTADT ARCHITECTURAL STUDIES
2004-2007// BACC ARCHITECTURE
>ERASMUS TU WIEN
2007-2008
>TU VIENNA MASTER STUDIES IN ARCHITECTURE
2008
> TU VIENNA EXPECTED GRADUATION DIPL. ING.
JUNE 2014

ARCHITECTURE

> DESIGN:BUILT - PARKLIFE / 1:1 PROJECT
2009 TU VIENNA, DEP. HOUSING / PETER FATTINGER

> HOLODECK ARCHITECTS / 1. VIENNA
2008-2009
::: COMPETITIONS

> SQUID ARCHITECTURE / 16. VIENNA
2009-2013
::: DESIGN CONCEPTS
::: DESIGN INTEND DRAWINGS
::: PLANNING APPLICATION
::: WORKING DRAWINGS & DETAIL DESIGN
::: COMPETITIONS

> ARCHITEKTURTAGE "ANDERS ALS GEWOHNT"
TEMPORARY FACADE INSTALLATION
2012

>NANA ARCHITEKTUR / 7.VIENNA
2013
::: DESIGN CONCEPTS
::: DESIGN INTEND DRAWINGS
::: PLANNING APPLICATION
::: WORKING DRAWINGS & DETAIL DESIGN
::: CONSTRUCTION SUPERVISION

GRAPHICS/3D

> PLANS:::AUTODESK AUTOCAD, ARCHICAD
> GRAPHICS / PICS::: ADOBE* ILLUSTRATOR/
INDESGIN / PHOTOSHOP
> 3D ::: RHINO / GOOGLE SKETCHUP / CINEMA 4D
> MICROSOFT WORD / EXCEL / POWERPOINT

PERSONAL

> I LOVE SPORTS ::: RUNNING / CYCLING / YOGA
/ SWIMMING / HIKING ...
> AND THEATRE ::: AKADEMIETHEATER / KASINO /
GARAGE X / RABENHOF
> ALSO: INTERIOR DESIGN & GRAPHIC DESIGN :::
> BUT MOST: HAVING A GOOD TIME