{REAL}THEATRE

ABSTRACT

This Master Thesis presents a theoretical study, followed by an architectural design proposal of a theatre complex situated in Berlin, Germany.

Aiming to obtain a design which merges both architecture and engineering; we explore through a tectonic approach, the connection between the spectacular theatre realm and the real world, through the eyes of the contemporary society.

The outcome of this interaction between technique and beauty will teach us how to shape spaces that, in different scales and levels, invite people to act.

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MOTIVATION

As architecture students at Aalborg University, we find our roles and interests in a cross field between architecture and engineering.
To optmize the balance and cooperation between this two sister sciences, we have been introduced to Kenneth Frampton's Theory of Tectonics; stated in the book 'Studies on Tectonic Culture' published in 2001. The architect, critic, and historian says that Tectonics is an expression that consist of an approach to architecture achieved by incorporating both the measurable and immeasurable into a whole. In our understanding the measurable represents the structure and technique, while the immeasurable includes the poetic and aesthetic values of architecture.
For our master thesis, we aim to merge the angles represented by both technique and poetry, and with the acquired knowledge pursue in the creation of architecture that interacts with people, inspires actions and generates experiences.

Keeping these intentions in mind we decided to take part of a competition that, with a suitable program, would add to our final project the experience of a process that will be a reccurent pathway in our future professional life.

When we got to know the Idea Competition for a Site-Specific / Floating Theatre in Berlin, we realized that it would be a suitable challenging theme for applying our cross field knowledge using a Tectonic approach.

The Theatre represents the dependence between emotional and physical levels of architecture in creating worlds where people interact in studied, meaningful spatial relationships.
Every room is a stage, every public space is a theatre, and every facade is a setting; with places for entry and exit, scenery, props, and a design that sets up potential relationships between people.
This similarity just proves that the theatre is, in fact, the most social of the arts. Being surrounded by human relationships, it offers familiarity and empathy to the audience. This interrelation between the everyday life and the spectacle has a substantial potential in producing social interaction and political awareness.
Moreover, the challenge of developing a functional floating structure at the same time representative to the theatre realm, the chosen play and the surrounding context, caught our attention and provoked us even further.

To conclude, it has being our inicial aim for this projectual challenge to design a tectonic realm of social discourse through Theatre's artistic tradition, engaging the local community and the atre practitioners in a fruitful interaction.

In parallel, we expect to refine skills applicable to shaping spaces, that through a well performing and expressive structure will grant the pleasure in architecture, by adding to it experiences and inspiration.

{ For us, the Theatre represents the dependence between emotional and physical architectural levels in creating worlds where people socially interact through art and experimentation. }

PREFACE

Being inspired by the close relation between the theatric realm and tectonic architecture, we have chosen to design a Theatre Complex that will be located in Berlin, at the border between land and water.
Our starting point is a competition promoted by the International Organization of Scenographers, Theatre Technicians and Theatre Architects (OISTAD), that consist in designing a Floating Performance Space to be moored by the river Spree, in a location called Holzmarkt. This community is setlled on top of what used to be a 'no mans land', when the Berlin wall was dividing the east and the west of the area.

From that , we further elaborated a more complex program that was inspired from the experimental character of the OISTAD organization, and its potential relation with the particularly politicized local community.

The theatre complex gathers functions and spaces that stimulate the exchange between theatre practitioners and local community to create scenography and dramaturgy that display and question social dynamics.
Since we consider the spectacle as a reaction to reality, the theatre's structure becomes the playground were both real and spectacular interact, supporting and inciting a resonant outcome.

METHODOLOGY

The objective of this master thesis is to demonstrate the ability of merging architectural design and technical solutions. The project is based on relevant theories and skills; outcomes of the master's curriculum. We are aiming to demonstrate our ability to finding the balance between the project's scope, vision, learning goals, and limitations.

INTEGRATED DESIGN PROCESS

The methodology implemented in this thesis, formulated by Mary-Ann Knudstrup, deals with the Integrated Design Process, which supports a constant interaction between research, empirical studies and synthesis. This process is based on PBL (problem-based-learning), which represents the main educational model used at Aalborg University. Therefore, the main focus is to identify, during our study, key points and situations that need further research and unite solutions. The Integrated Design Process consists of five phases: Problem Definition, Analysis, Sketching, Synthesis and Presentiation. First, the problem formulation is essential in outlining the idea of the project. In the analysis phase, we regard the context, theatrical history, case studies, and also technical issues regarding acoustics, climatic influences, structural systems. This phase is followed by the clear picture of the vision for the project. During the sketching phase several options are being studied and reflected upon until reaching a solution. Here we develop ideas, aiming for the concept. Following the research part, the synthesis phase, conducts the detailing and developement of idea from the previous phase, using drawings, models and calculations. The simultaneous interaction between all the design phases generate a looping process which has as result an integrated design. Introducing engineering studies at a very early stage of the architectural design, makes it is easier to identify and deal with challenges related to structural performance, internal comfort, energetic efficiency, between others.
Seeking to explore the relation between architecture and the theatrical meaning, and the resulting spatial experience that influences and mediates culture, the process of our design is approached tectonically, constantly reflecting towards its phenomenological, technical, and sustainable matters.

TECTONIC ARCHITECTURE

The honesty and beauty in the structure

According to Kennet Frampton, the theory of tectonics is becoming more present in architecture nowadays; and a consistent aspect of the tectonic understanding is the poetic of construction (Frampton, 1995).
The notion 'poetic construction' can be interpreted in various ways. Roughly speaking, 'poetic' covers the aesthetic, emotional, and immeasurable values, whereas the 'construction' is the evidential counterpoint relying on concrete measures and structural principles.

The real challenge is to find the correct balance between poetic and construction. The Danish architect, Anne Beim, discusses the current role of an architect in her book, Tectonic Visions in Architecture. She argues that the balance between poetic and construction is shifting to favour the poetics, which means a lack of technical understanding that makes it difficult for the architect to bring the architectural idea from the drawing board to the construction site. (Beim, 2007)

The detail

Whether it is a certain atmosphere, an experience, a gesture, or a narrative, the architect must be able to work with a variety of aspects to bring the idea to the light of day.
Creating architectural experiences through structure, materials, light, sound and details, is a way of communicating an architectural narrative that signifies tectonic quality. The architect must develop the ability to refine an architectural detail and add value even on the lowest budget.
Predicting the needs of a building's users is essential to design structures that transition as their expectations and demands evolve, The tectonic approach, that poetically manifests the structure, guides us towards achieving a connection with the public who enter the theatrical realm.

SUSTAINABILITY

Even though sustainable architecture is not the primary focus of this project, it is an essential motivation for integrating sustainable aspects in the design process in order to strive for an in-depth and comprehensive architectural design. In this respect it is important to remember that sustainable architecture, just like any other notion of architecture, relies on integrated solutions where technical, economical, functional, social, and aesthetic aspects are combined to form a whole. In the same way as materials choices, orientation, ventilation and insulation concerns are equally important to the sustainable understanding and will be a natural part of the early design phase.

FROM THEORY TO PRACTICE

The many notions, methods, tools, and studies previously related, come together to form a toolbox of fundamental knowledge that is necessary to make informed decisions not only on the thesis development, but also later on in a multidisciplinary professional life. It becomes part of our job as architects to judge what is the correct combination of knowledge for any given project. The different aspects of architecture cannot be separated, but must be combined in the best possible way. Thus, an essential competence to possess is the ability to see the potentials and challenges in order to create the most value for the project and for the people affected by it.
Hence, the Integrated Design Process method can assist the development of this competence, enabling to combine technical issues with the architectural aspects from the beginning of the design process.

Problem Formulation

This phase consists of discussing and collecting information that are meant to shape a summarized ruler question. This question pictures the problem to be solved, and should lead the whole process in the research for its most suitable answer or solution.

Analysis

The first part of the analysis would give an overview of the history of theatre and its relation with architecture, technologies and society. Thereafter, it will be possible to better understand the way that this form of art manages to create such a strong connection with society. The study is conducted by focusing on the cultural and social implications of this connection and their possible translation to an architectonic design realm.

For analysing the study cases, the chosen method is Analysing Through Scale, developed by PhD Marie Frier Hvejsel. This method was chosen due to its strong connection to Tectonics and, therefore, direct relation to the general program.

By using the mentioned methog, it is possible to

analyse existing projects, while individualizing the different scales and levels of relation between technique and poetry. Therefore we focused on the five aspects to fully investigate the relation between spatial gesture and the architectural whole: function, emotion, realm, construct and principle.

When analysing the context, a time line is created for understanding the site and its surroundings, presented typologies and functions. Phenomenological investigations are further used as a tool to analysing the site, though the representation method Serial Vision, developed by urban designer Gordon Cullen. (Cullen; 1961).
This method investigate how users experience urban context. Considering users scale, feelings and impressions to describe how the space is perceived, this method collaborates directly to the current investigation path, focus in identifying tools to design space for social interaction.
For the site mapping the information where collected during local visits added to cartographic analyses and pictures survey. These informations were translated into two dimensional drawings. The climate survey is based on sun and wind data, in addition to personal reflection about local atmosphere changes throughout the seasons. Getting to understand the context makes it possible to define the users accordingly.
After the analysis are concluded, it is possible to summarize the concept or vision. To implement the gestures presented in the vision, design parameters are defined. This leads to refining the room program, originating the base of the project that will be lead to the next phase.

Sketching

Aiming to translate the concept into shape, different solutions will be developed and evaluated by using: drawings – plan, section, façade, using AutoCAD and ArchiCAD; physical models and 3D models studies; construction strategies and material considerations – using Autodesk Robot; passive technology strategies – day lighting, and shadows cast using Sketch up software simulation.

Synthesis

Final decisions for the design of the building are being taken, by refining the physical and 3D models – SketchUp and ArchiCAD ; plans, sections, façades – AutoCAD and ArchiCAD; optimization of calculations – light studies in SketchUp, acoustic studies in Ecotec, and structural systems – Autodesk Robot.

Presentation

The final phase consists in presenting the entire process though final drawings; models; diagrams, details and calculations; using the following tools (Adobe Photoshop,Artlantis,AutoCAD,ArchiCAD, SketchUp, Autodesk Robot, and physical models).

Applying the presented methodology, mainly composed by the combination between the Integrated Design Process and the Tectonic approach; different technical and conceptual solutions will be evaluated, focusing in the production of an architectonic project that resonates in the whole community's life, becoming a catalyst for social interaction.

{ ANALYSIS PHASE }

1.1. 9TH OISTAT THEATRE ARCHITECTURE COMPETITION 2015

The OISTAT Theatre Architecture Competition is an international idea competition, aimed for students and emerging practitioners, which is organised by the Architecture Commission of OISTAT (International Organisation of Scenographers, Technicians and Theatre Architects). It is a non-governmental organization (NGO) founded in 1968, and it consists mainly in a network for theatre architects and theatre technicians around the world. The organization has members from 53 countries and is a moving entity, the only international NGO with a migrating headquarters. Some main events organized by OISTAD, besides the Theatre Architecture Competition, are: World Stage Design: an international exhibition of contemporary scenography focused in stage, costume, lighting, and sound design; Scenofest: International Festival of Scenography hosted in Prague with workshops about scenography, costume, lighting and sound design, puppetry, digital media, site-specific, architecture and dramaturgy; Technical Invention Prize: is awarded to the theatre technician who comes up with the most creative idea for common practice on stage.

COMPETITION THEME:

The theme for the 2015 competition edition is the design of a floating theatre to be moored at a particular location on the river Spree in Berlin, Germany; but capable of being moved to other sites on the river. Competitors are asked to design a theatre for a particular performance, which will be defined by the competitor. In this way, the organization wishes to encourage a deeper understanding of the relationship between the performance itself and the space which it inhabits. Moreover, there is increasing interest amongst theatre practitioners in the use of temporary site specific locations to present particular productions. These settings can often provide a unique atmosphere, which resonates with a particular production or style of presentation; in a way which may not be possible in a conventional theatre. These are the themes to be explored in this competition:

Requirements:

- A space for a live performance with an audience of 200-300 either sitting or standing;
- Facilities for the audience, including toilets and the sale of tickets, food and drink, should be located on the land and should be temporary and easily moved to another location, when required.
- Provision for technical installations for the performance (lighting, sound, mechanical systems);
- Backstage accommodation for up to 20 performers;
- Provision for delivery and setting up of scenery and equipment;
- Other facilities appropriate to the type of venue or performance proposed (workshops, rehearsal space, offices, plant);
- Provision for safe evacuation of all occupants in an emergency;
- Good access for people with disabilities.

(OISTAT Theatre Architecture Competition Design Brief, 2014)

CHOSEN PLAY: JONAH

'Jonah' is a dramatic parable with one character written by Marin Sorescu, in Bucharest, 1964, when the Romanian government relaxed its censorship policies, signalling a new openness to free expression. Poet and playwright Marin Sorescu is considered by critics one of the most popular figures to emerge from Romanian literary culture in the years since.

Curator Diana Duta says, in her article about the author, that the choice of irony over confrontation has made possible for Sorescu to publish more freely and responds broadly to the hardships of Romanian life, overcoming the censorship. (Duta, D. 2014)

His play Iona (Jonah), uses dark humour, allegory and subversive wit to reflect on existential themes, such as the beauty, absurdity and tragedy of the human condition, in one continuous monologue, delivered by the fisherman eaten by a whale. What characterizes Sorescu's style is his unique type of humour, which allows one to empathise with the despair of his characters, while simultaneously looking in from the outside on a 'strange planet'.

This play was chosen, because the struggle that the actor goes through is directed related to the history of Berlin; the community was used to living the same experience of the socio-political pressure that the author is responding to.
It is meant to be a symbolic choice, in honour to the site location were the Berliner wall used to be; dividing the citizens and being witness of days of terror during the communist control.

Moreover, it is perfectly suitable to the proposed competition theme. Being located in a floating structure, it will be possible to create a deeply connected scenography, in an effort to promote what the competition crew expects of a new unique performative space.

REQUIREMENTS ADAPTATION TO THESIS PROGRAM:

The main adaptation from the original competition is about the complexity of the program and the size of the building. To complement the competition requirement we decide to develop an on-land structure creating a theatre complex, that will comprehend not just the facilities of the floating structure, but also another theatre room, with a flexible layout, able to host different kinds of plays. Added to that, workshops will be designed to host experimental projects and constructions related to theatre technologies.
Therefore, the on-land facilities will not be movable as requested, but fixed with broader usefulness, serving the whole complex.
The second adaptations is related to the chosen play and its unique characteristic; being a one man monologue. Being developed exclusively to host this play, it becames useless to design a backstage with accommodation for 20 performers.
This characteristic will help avoid oversizing the floating structure, overly interrupting the original river flow and view.
However, the audience amount will be respected as well as the other requirement: the safe evacuation and accessibility concerns.

Fig. 19.1. Illustration representative of the Jonah 's play

1.2. ARCHITECTURE AND THEATHER

The term 'theatre' comes from the Greek word 'theatron' and Latin 'theatrum', and it is defined as the building in which the spectacle unfolds. It is known that the theatre was born as a hymn, sung in choir, to honour Dionysus.
Today, our repertoire has grown considerably, from Greek tragedies to contemporary theatre. The dramaturgy art became part of our society as one of the oldest and, at the same time, more innovative art kinds.
Although recycling itself constantly to represent new ideals and artistic experimentation, the idea of sharing energy between a live actor and a live audience remains just as it ever was.
A theatre, however, is not simply a space for looking at, or listening to a performance; theatre is a form of art that plays a significant role in our society. For a story to be loved and appreciated it must be relatable to its audience; in the same manner, for theatre to be relevant, it must have a symbiotic relationship with society.

Theatre critic Kenneth Tynan once said:

"No theatre could sanely flourish until there was an umbilical connection between what was happening on the stage and what was happening in the world." (Tynan. K, 1966)

This meaningful relation between the real life and the spectacular life proposed by the play acts, is to be intermediate by architecture. Therefore the importance of the relation between this two art forms, architecture and theatre, mutually understanding and collaborating with each other to promote life experiences.
Through architecture, everyday life can become a play, that unfolds in a stage composed by squares, streets, buildings and furniture. The architect has the possibility to touch the users with their design, stimulating reflections and reactions.

This research aims to develop and experiment the architectural potential in putting the individual in the center of the life stage, inviting him to act.
Observing and investigating through the history of theatre, it is essential to spot what are the best and the worst technical, functional and aesthetical solutions that adress an effective venue. Sucessful theatres presumaly will inspire in creating a representative space for expressing our contemporary society.

{ A successful theatre supports the emotional exchange between the performer and the audience, encouraging and inspiring new experiences. }

Fig. 21.1. Theatre audience

1.2.1. THEATRE AND SOCIETY

GREEK THEATRE

According to Francois Chamoux's book, The Hellenistic civilization, published in 1985; in ancient Greek society, the dramatic performance has outlined itself in parallel with its development; reminding about the profound ideas of freedom and democratic ideals specific to the Greek world. This is reflected in the functional-spatial organization of theatres, built on vast amphitheatres centered on the game space, ensuring equal participation of the audience to the dramatic event that took place in the middle. (Fig. 23.1)

Often very large theatres, where people were gathering, were allowing the civilian community to gain its consciousness of unity. Also, the Megalopolis, the theatre, houses the Federal Assembly sessions. The separation between life and game is almost inexistent, this creates a strong sense of solidarity between those who watch and those who play. (Chamoux, F. 1985)

MIDDLE AGE THEATRE

In the Middle Ages, a new dramatic genre is born: The Mystery. It was not a play, but a dramatic religious composition of a huge size, and the representation lasted for several days. The façades of the cities will become the bones of the décor, mounted on after the other, this way forcing the audience and actors to move, following the thread of the action.

Mysteries were shows addressed to the faithful naive's imagination, reinforcing the social control practised by the Church.

ELIZABETHAN THEATRE

According to Ovidiu Dramba, in his book The theatre from its origins until today, published in 1973; in England during Renaissance, the shows were presented in places most able to concentrate numerous spectators, like inns, so the 'courtyard theatre', will be influenced by the functional and spatial configuration of an inn. The stage was arranged on a platform in the middle of the courtyard, and the spectators were occupying the rest of the courtyard plus the circular galleries. (Fig 23.2)

Dramba also mentioned that, when the theatre doesn't have its own building, the actors were playing in a tent, in a rented hall, in a hangar, a shooting range, or even in a hospital where a carpenter creates a stage and several benches. In this way, the theatre becomes more 'humanist', encouraging the sense of solidarity between the spectator and the show.

During this period, drama was a unified expression as far as the social class was concerned: the Court watched the same plays the commoners saw in the public playhouses. (Dramba, O. 1973)

ITALIAN THEATER

In the same period, in Italy, the renaissence brought back the Greek and Roman drama, where staging was made popular by using perspective architecture and paintings. These methods gave audience members the illusion of distance and depth. Scenery and stages were raked or angled to increase the illusion and create a perspective setting.

In 1580, Andrea Palladio designed the Vicenza Olympic Theatre (Fig. 23.3) as a sumptuous construction adopting the ancient amphitheatre plan. Palladio's stage included a high wall, with two rows of columns and overlapping niches.
The wall keeps the three gates of the Roman theatre, through which you can see an ancient city street in perspective. Then the actor plays not only in front of the stage, but in the gates as well, representing different places, allowing the stage movement.

Fig. 23.1. Greek Theatre
Fig. 23.2. Elizabethan Theatre
Fig. 23.3. Olympic Theatre

BARROQUE THEATRE

Europe will enter the 'era of bourgeois theatre', which will increase the separation between the stage and the audience. During this period the 'portal of the stage' is born; a fixed frame that clearly marks the separation of spaces. (Fig 25.1)
In the same way, the audience was divided in social hierarchical levels with the use of private balconies. The show will get a rhetorical character, especially in the French theatre, where the plays art will be reduced to the art of acting.

NEOCLASSIC THEATRE

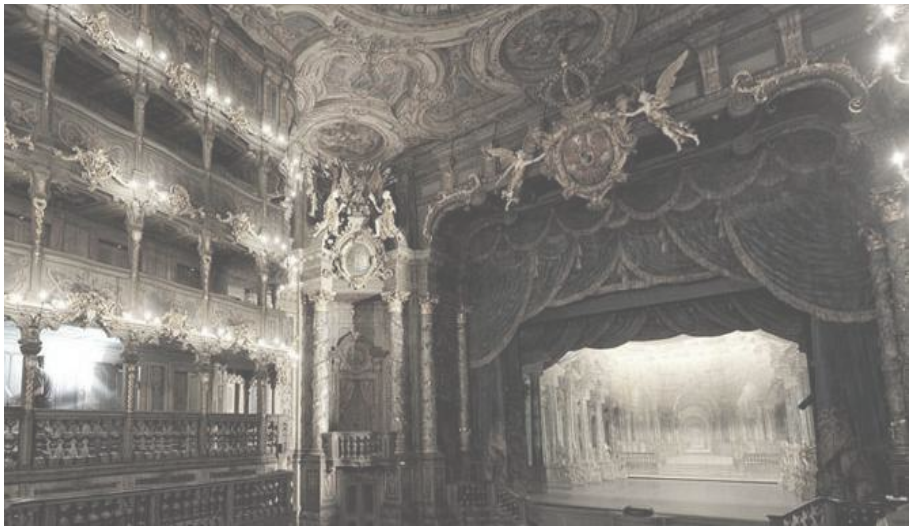
The neoclassic theatre had traces of a new bourgeoisie that prevailed in the society after the French Revolution. Such traits were also stimulated by the discoveries from ancient Greek and Roman civilizations and had interest in history and science and the whole academic world.
The general philosophy during the Neoclassical era was that the previous periods had been focusing excessively on emotions and the individual. People of the time believed that it was necessary to concentrate more on what each person could contribute to the whole society. People of the time placed a heavy focus on decorum, or dignified behavior, and they believed that the primary reasons for a play were to provide entertainment and to teach a lesson.
Grand, intricate scenery, elaborate drama and strict concern for the classics were earmarks of the movement, with most productions also characterized through the use of five acts, few performances and a high level of improvisation.

REALISTIC THEATRE

A special feature of this time is the fact that the show follows the romantic theatrical spectacle, with strong scenic effect; fashion designers are asked to create special pieces that offer an innovation in the whole perception of the performance. Now the stages loses depth, winning instead in width; decors no longer are planted to lead the viewer look into depth, but to give almost the feel of a painting. (Fig 25.2)

Late 19th century marks the emergence of the 'naturalism', as a result of the struggle waged by the people against theatre illusion. Naturalistic approach will revolutionize the actor's performances, the authenticity of the speech, the appearance and stage movement; players are encouraged to transpose the real life on stage.
The actors will not necessarily be directed towards the public, the sets will become larger and heavier, with a sophisticated mechanical stage; this leads to increasing the volume of the entire building.

Most theatres in the 19th century, however, remain as concepts. This happens because the cinema becomes popular and so many of the theatre buildings are turned into cinemas. This unfortunate event forces theatre contractors to draw some conclusions, so the future innovations will bring theatres popularity back.
The foyer loses the role of a festive importance gained during previous generations. The layout adapts to the landscape and plastic expression; the facades lose their monumentality, receiving a commercial model as the cinemas. The reduction and simplification of the stage's annexes are determined by the type of performance, and also the difficulties given by the site.
All theatres will give away their festive nature and adopt a creative expression, in harmony with the nature of the times.
The problems and the innovations introduced gradually, will lead to remarkable examples; Northern European will mark the moment by building several theatres in Scandinavia. (Fig.25.3)
These theatres mark an attempt to integrate social life of the city, by embedding in the public reception area exhibition spaces and connections with public restaurants.
The proposed ideas will be widely used in Europe and the United States.
(Chamoux, 1985)



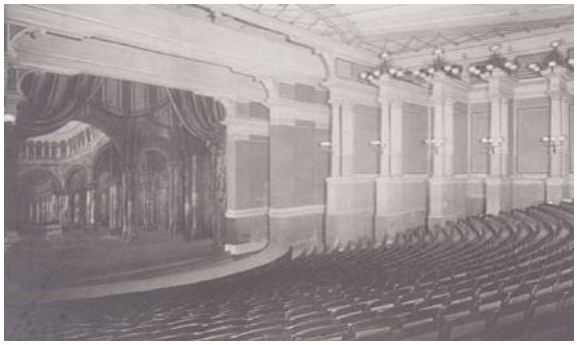


Fig. 25.1. French Theatre 17th Century
Fig. 25.2. Bayereuth Festspielhaus
Fig. 25.3. MalmoTheatre

"The complexity in designing theatre space lies in the marriage of two art forms with overlapping agendas. Success depends on understanding and negotiating this shared terrain effectively. "
(Tompkins and Todd, 2007 pg 02)

MODERN THEATRES

Modernism period is marked by the urgency in questioning the society, destructurized and chocked by the WWII horrors. New organizationals and social patterns will be suggested and experimented. This also reflects in the creation of an alternative theatre tradition, closely associated with the avant-garde, the experimental character remained an important part of the international theatre ever since.

During the period between the 30s to the 70s, the world became covered with huge auditoriums lacking in intimacy and connection to local context. Twentieth century architects consistently struggled to reconcile the apparently conflicting demands of great architecture and great theatre. Competent archtects as Frank Lloyd Wright, Louis Kahn (Fig. 27.1.) and Alvar Aalto are critizized by often priorizing architecture expression at the expense of density, focus, visibiliti or intimacy.
According to architect Haword Topkings; author of multiple sucessfull contemporary theatres in England; these new photogenic palaces of culture, advertised in the press and admired by other architects, have been received with concern or even despair from actors, designers and directors; proving actually to be culturally barren. (Tompkins and Todd, 2007)

As response to this , many of the most influential theatre companies have found inspiration in historic, quotidian or found space alternatives.
Industrial buildings, for example, (Fig 27.2.)were specially adapted for promoving the freedom to rebuild its performance space for each production; a freedom which would be impossible in any conventional theatre with high overhead costs and fixed technical equipment. In the same way, the debate around architectural space was constrained to its own practitioners directors, producers and production designers.

POST-MODERN THEATRE

Post-modern theatre is a relative recent phenomenon, coming out of the postmodern philosophy originated in Europe in the middle of the 20th century. Post-modern theatre emerged as a reaction against modernist theatre. Most post-modern productions are centered around highlighting the fallibility of definite truth, instead encouraging the audience to reach their own individual understanding. Essentially, thus, post-modern theatre raised questions rather than attempting to supply answers.

CONTEMPORARY THEATRE

After decades in which plays were marked by association, citation and intertextuality, nowadays theatre appear to experience a comeback to a kind of play that puts the focus on logic, psychological motivation and straight-forward narration. Theatre turns towards 'real' people with real problems. The plays refer to more than just themselves having an effect on the viewer again. The stories do not allow the viewer to be distanced any more and theatre regains its political responsibility back which was theatre´s main task from its beginning. Today, theatre´s political function is derived from human interaction and personal conflicts while the individual is re-installed as the active subject.
This 'back to back' can be seen as a result or response to the current resource crises. A sense of individual responsibility promotes paradigms changes that conduct the society to concentrate in the essential.
Although contemporary theatre focuses in preserving the direct interaction between actors and audience, avoiding that any equipments or structure distracts the public, a vast range of techniques, spacial arrangements and infrastructure are available nowadays. They are essential to provide the requested atmosphere of a successful venue, and understanding them is the next step in our research.

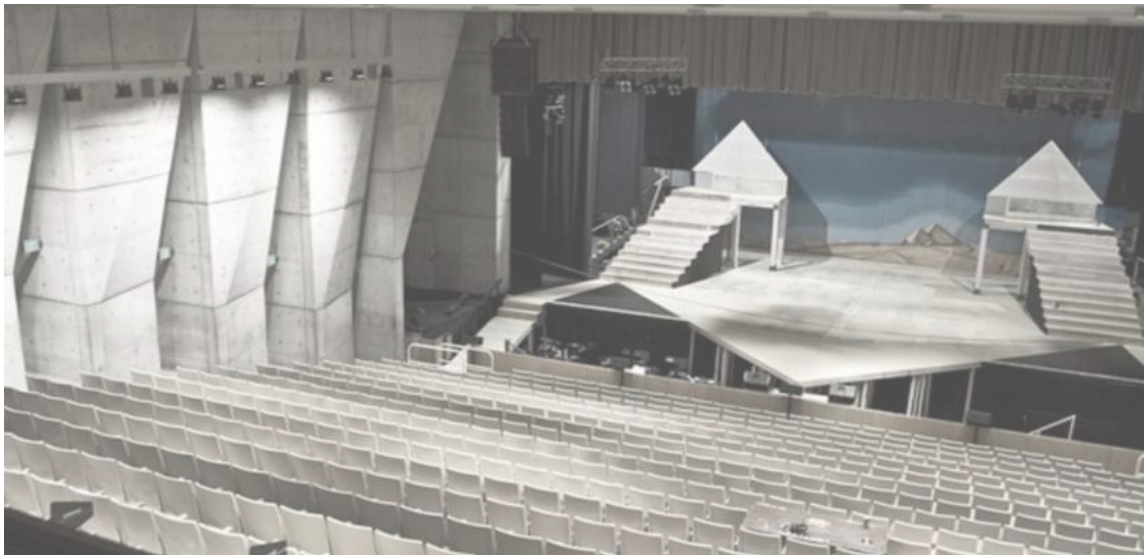


Fig. 27.1. The Arts United Center
Fig. 27.2. Théâtre du Soleil Company
Fig. 27.3. Young Vic Theater

1.2.2. THEATRE AND TECHNIQUE

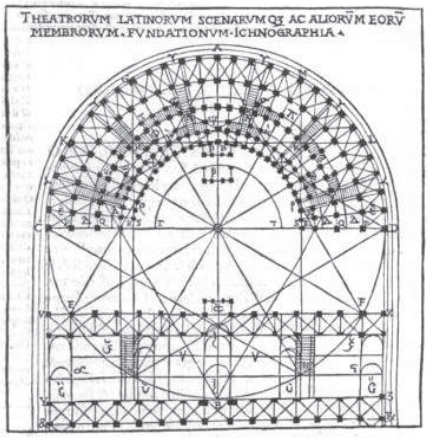
1.2.2.1. ACOUSTIC

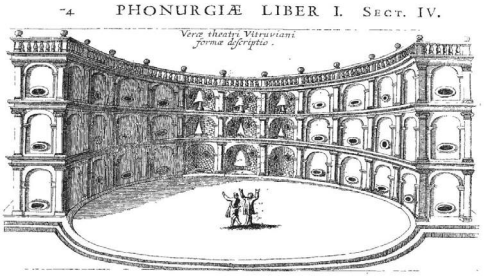
Acoustics has been important to designers of buildings, especially theatres and concert halls, for at least 2500 years.

The Roman engineer Vitruvius devoted several chapters of his book on building design and construction to the location and design of theatres (Vitruvius, Book V). The acoustic section is however, a summary from the Greek tecnhics developed from two or three centuries earlier which, in turn, probably had their origins in Pythagoras who first developed the subject around 530 BC.

Vitruvius discussed in particular the need for sound of all pitches to travel from the stage to the ears of every member of the audience by a direct route. This led logically to both raked seating and the semi-circular plan. (Fig.28.1 and 2)

Fig. 28.1 and 2. Vitruvius Theatre - Acoustic studies and audience distriution





He advised against vertical reflective surfaces that would prevent sound reaching the upper tiers of seats, since this particularly impairs the intelligibility of word endings. Such reflected waves, he wrote, can also interfere with the direct waves and distort sounds for the listener.

These explanations differ remarkably little from how we would put it today.

Hence, is possible to conclude that some main acoustic parametres have to be adressed while designing a acousticly efficient room:

DISTANCE: Controling distance between the sound source and the late audience avoiding exessive diminishing of loudness or intensity of the sound.

VOLUME: Ratio between the room volume and the audience have direct impact in the reverberation time.

SHAPE: The way the surfaces are designed can colaborate or disturb the efficient distribuition of the sound.

MATERIALS: Textures have different performances in reflecting or absorbing sound, affecting the intelligibility of speech and music, and have to be design acording to the needs.

Added to that, after centuries of acoustic practice, the recomendations to provide a favorable acoustical environment, according to theatre engeneers Everest and Pohlmann, 2014, can be summed up as it follows:

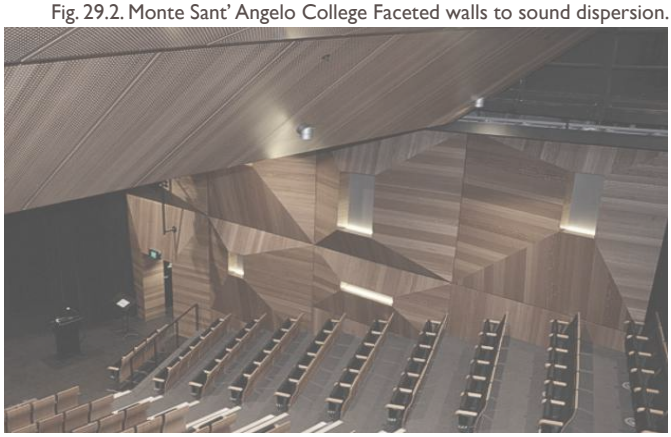
- Recommended reverberation time is 1.0-1.3 seconds focusing in the quality of speech (must be highter in large theatre when considering music)
- To control the reverberation time on the stage. Ideally, the reverberation time in the stage area should be the same as in the house. Since the stage area might have a higher ceiling than the rest of the theater, more absorptive materials might be required. (Fig. 29.1)

- Frequently, the back wall of the stage, and possibly one or both of the side walls, should be treated with an acoustically absorptive material.
- To control the reflections from the back wall. otherwise the presentation could reflect in the back wall and "slap back" to the actors. This won't necessarily impact the audience, but could be distracting for the people on stage. Because of this, it's usually necessary to treat the back wall with an absorptive material.
- For balconies, to consider adding an acoustic treatment to its face to avoid slap back.
- Splay or use of irregular surfaces on the walls to avoid flutter echoes. (Fig. 29. 2) Parallel reflective surfaces can allow sound to "ricochet" back and forth between the surfaces. This potentially annoying condition is referred to as standing wave or flutter echo.
- In the same way, faceting the ceiling helps with sound dispersion.
- The space will be less absorptive when only half full, since the audience itself is absorptive. By using absorptive seating areas, the reverberation time will remain more consistent regardless of the audience size.
- Noise from the lobby area can be disruptive. Openings such as doorways should be properly sealed. Consider a vestibule door system.
- Persons seated deep under a balcony might experience auditory distortion. To avoid this, the balcony should be no deeper than twice its height. Ideally, the balcony should not be any deeper than its height. (Everest and Pohlmann, 2014.)

Beside the technical aspects from the above listed parameters, its aesthetics also have to be considered. The tectonic approach is highly represented by the design of the acoustic solutions, that combine textures, material and shapes. These elements, added to the structure, furniture, light, and scenography, will be responsible by the conformation of the room atmosphere.

Fig. 29.1. Macalester College curtains used as acoustically absorptive material,

Fig. 29.2. Monte Sant' Angelo College Faceted walls to sound dispersion.



1.2.2.2 STRUCTURE - FORMS OF THEATRE

Theatre buildings evolved from the open-air amphitheatres of the Greeks and Romans times to the incredible array of forms we see today.Though some forms work better for particular types of performance, there is no ideal shape of a theatre. However, understanding the more commom types of stages, it is essential to choose witch kind will suit better the context and the proposed program. Moreover, the tectonic aproach requires that the technical solutions become an expression of the shape and structure, optimazing their interralition.According to Richard and Helen Leacroft , in their book:Theatre and Playhouse:An illustrated survey of Theatre Building from Ancient Greece to the Present Day, there are some prevalent organizations that must be further investigated. (Richard and Leacroft, R. and H.1984)

Arena: A theatre in which the audience completely surrounds the stage or playing area. Actor entrances to the playing area are provided through vomitories or gaps in the seating arrangement. (Fig. 30.1)

Proscenium: The audience directly faces the playing area which is separated by a portal called the proscenium arch. The stage is often raised a few feet higher than the first rows of the audience. The audience is on a rake, getting higher as the seating goes towards the rear of the house. (Fig. 30.2)

Thrust: A theatre in which the stage is extended so that the audience surrounds it on three sides. The thrust stage may be backed by an enclosed proscenium stage, providing a place for background scenery; but audience views into the proscenium opening are usually limited. (Fig. 30.3)

Traverse: The elongated playing area is surrounded by audience seating on two sides. (Fig. 30.4)

End stage:A theatre in which the audience seating and stage occupy the same architectural space, with the stage at one end and the audience seated in front facing the stage.

Open Floor: Can be used for Environmental , Promenade or Multiple theatre where the actors and audience are standing and moving around the space.

Fig. 30.1 Arena Stage
Fig. 30.2 Proscenium Stage

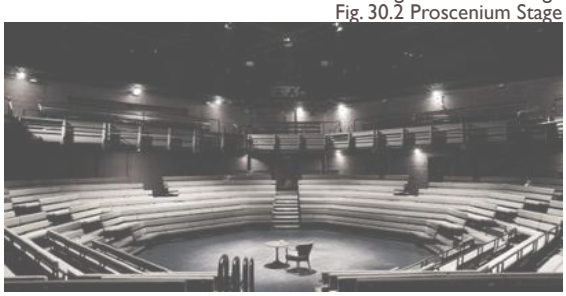


Fig. 30.23Thrust Stage
Fig. 30.4 Traverse Stage

FLEXIBLE THEATRE

Since flexible theatre results to be the most suitable for our project, it is essential to understand the way they work and the technology behind its organization.

Flexible theatre is a generic term for a theatre in which the playing space and audience seating can be configured as desired for each production. Often, the theatre can be configured into the arena, thrust, proscenium, end stage and other forms. (Fig. 31.1) Environmental, Black box and Studio Theatre are other terms for this type of space, suggesting particular features or qualities.

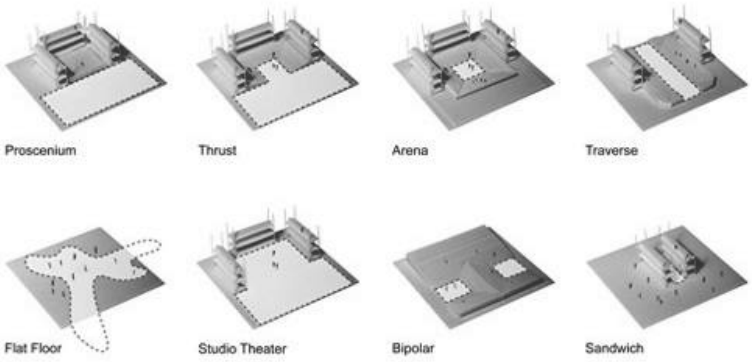
Black box or Studio theatre: A black box theater is a theater with a very simple, unadorned design, which makes it an extremely flexible space. Nowadays, numerous black box theaters can be found all over the world, putting on a range of performances from highly experimental to Shakespeare's plays. The room which contains the theater is typically square and painted black, because its neutrallity, which will not clash with costumes, sets, and lighting. The floor is flat and open, allowing people to arrange seating however they desire, and many black box theaters are designed to accommodate risers and platforms to create a raised stage, if desired. Rigging is accomplished on girders overhead which can hold set pieces, lighting, curtains, and other equipaments.

These spaces are also inexpensive to construct, which is very appealing. Black box spaces can also be used for rehearsals, freeing up larger stages for other tasks. The classic black box theater also has a very intimate feel, which appeals to many people, especially actors doing monologues and solo shows, because it allows them to connect with the audience.

Because the space can be used in so many ways, the design of a black box theater focuses heavily on practical measures which will allow the space to be used as desired. The acoustics are typically designed to be excellent, so that the stage can be located anywhere. The rigging grid, catwalk, or girders is also extremely flexible, meeting the needs of the theater's users. Typically a large storage space is attached for seating, set pieces, and other miscellanea, since the stark space doesn't leave much room for extra items.

Our project design aims to create a flexible space similar to a 'Black box', however the tectonics aspects should drive the concept of this flexible theatre further, adding qualities to the proposed spaces complex; presenting an experience that helps in the conception of its unique sought character.

Fig. 31.1 Flexible Stage Arrangaments in a Black Box Theatre



1.2.2.3. STRUCTURE - PARTS OF A THEATRE

Following actor's and play writer's tendency for innovation, technicians have to constantly update their knowledge and tools to materialise ideas and, at the same time, guarantee comfort, safety and efficiency. More than ever, new technologies are changing the way of doing and organizing the theatre, opening a big range of new possibilities; however, some techniques remain just as in the early ages. Understanding how the spaces are organized and controlled is essential to an adequate architectural project. According to architect Clive Odom, in his book Theatre Engineering and Architecture:Volume 1 , published in 2004, these are the most significative parts of the theatre:

HOUSE AND FRONT HOUSE

The house includes the lobby, coat check, ticketing counters and restrooms. More specifically, the house refers to any area in the theatre where the audience is seated. This can also include aisles, the orchestra pit, control booth and balconies.

Orchestra or Orchestra Pit: In productions where live music is required, the orchestra is positioned in front and below of the stage in a pit. Some orchestra pits have lifts or elevators that can raise the floor of the pit up to the same height as the stage. This allows for easier movement of instruments Often it will be equipped with a removable pit cover which provides safety by eliminating the steep drop off and also increases the available acting area above. (Fig. 32.2)

Auditorium: The section of the theatre designated for the viewing of a performance. Includes the patrons main seating area, balconies, boxes, and entrances from the lobby.

Control booth: The section of the theatre designated for the operation of technical equipment, followspots, lighting and sound boards, and is sometimes the location of the stage manager's station. The control booth is placed in the theatre in such a way that there is a good, unobstructed view of the playing area without causing any distraction to the audience. (Fig. 32.1)

Catwalks: A catwalk is a section of the house hidden in the ceiling from which many of the technical functions of a theatre, such as lighting and sound, may be manipulated. (Fig. 32.3)

STAGE

The area of the theatre in which the performance takes place is referred to as the stage.

Apron: The area of the stage in front of the proscenium arch. Typically not used as a performance space.

Crossover: The area used by performers and technicians to travel from stage, left to right, out of sight of the audience, created with maskings and draperies.

Fig. 32.1. Control Boot

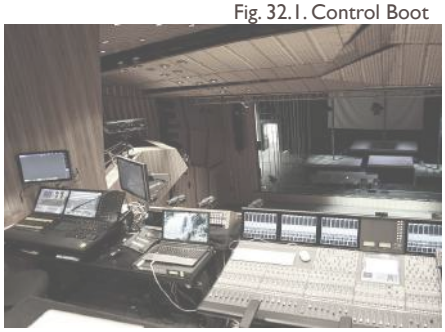


Fig. 32.2. Orchestra Pit

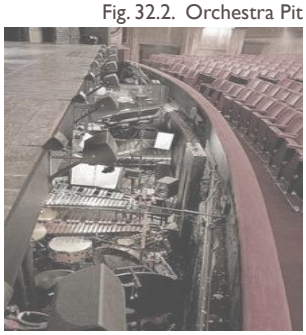
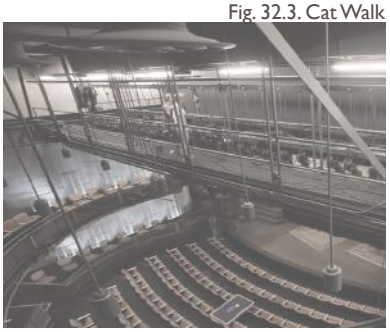


Fig. 32.3. Cat Walk



Prompt corner: Area just to one side of the proscenium where the stage manager stands to cue the show and prompt performers.

Rake: A slope in the performance space (stage), rising away from the audience.

Safety curtain: A heavy fiberglass or iron curtain located immediately behind the proscenium.

Acoustic Shell: A hard, often removable surface, designed to reflect sound out into the audience for musical performances. (Fig. 33.2)

Wings: Areas that are part of a stage deck but offstage (out of sight of the audience). The wings are typically masked with legs. The wing space is used for performers preparing to enter, storage of sets for scenery changes and as a stagehand work area. Wings also contain technical equipment, such as the fly system. (Fig. 33.3)

BACKSTAGE

The areas of a theatre that are not part of the house or stage are considered part of backstage. These areas include dressing rooms, green rooms, offstage spaces (i.e. wings), cross-overs, fly rails or linesets, dimmer rooms, shops and storage areas.

Dressing rooms: Rooms where cast members dress and apply makeup. Lockers, or costume racks are generally used for storage of costumes.

Green room: The lounge backstage. This is the room where actors and other performers wait in when they are not needed onstage or in their dressing rooms.

Fly system: A fly system is a system of ropes, counterweights, pulleys, and other such tools designed to allow a technical crew to quickly move set pieces, lights, and microphones on and off stage quickly by "flying" them in from a large opening above the stage; it is known as a fly tower/ flyspace. (Fig. 33.1)

Shops and storage areas: Depending on the space available, a theatre may have its own storage areas for old scenic and costume elements as well as lighting and sound equipment. The theatre may also include its own lighting, scenic, costume and sound shops. In these shops each element of the show is constructed and prepared for each production.

Trap room: A large open space under the stage of many large theatres. The trap room allows the stage floor to be leveled, extra electrical equipment to be attached, and most importantly, the placement of trap doors onto the stage (hence the name). It is usually unfinished and often doubles as a storage area. It is often also used as a substitute for a crossover.
(Clive Odom, 2004)

Fig. 33.1. Fly System

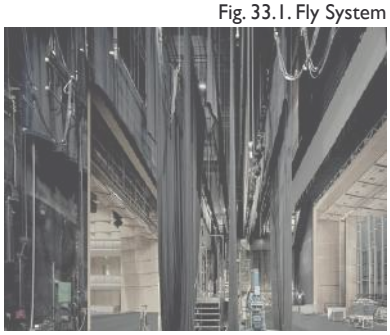
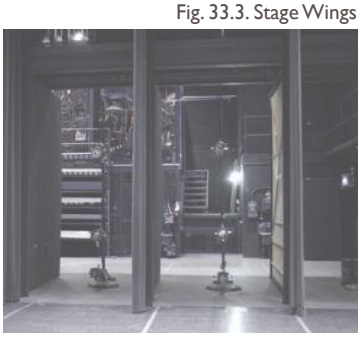


Fig. 33.2. Acoustic Shell

Fig. 33.3. Stage Wings



1.2.3. STUDY TRIP

After studing the theatre evolution, it was possible to understand how the contemporary theatres are organized nowadays and their expression of individual core concepts: different layouts correspond to different play styles creating a specific relation to their audience.
Therefore, it is important to indentify theatres around the world that have a similar spiritsand concepts as our proposal for Berlin and its community.

This research brought us to London. Since the use of temporary places and structures in the Elizabethan era and previously, the development of the 'court yard theatre'; the English theatre strengthened the relation between audience and actors and therefore, this became notorious by its humanistic style that relates directly to our project.

Some of the most popular and successful theatres of this kind are located in London and, not by accident, were designed or renovated by the same professionals: architecture office Howard and Tompkins in collaboration with CharcoalBlue theatre and acoustics consultants.

Therefore, we decided to contact this two offices for a meeting where it was possible to improve our knowledge about this specific theme and have some insights about their everyday experience in solving a big range of challenges in the theatre design, besides tips about new technologies and innovative proposals.

After a couple of email, both offices answered quickly and kindly set up dates for our meetings.
Added to this , we organized a backstage tour in the National Theatre, and booked tickets to be part of the audience in our favourite theatre, the Youn Vick.

HAWORTH AND TOMPKING ARCHITECTS

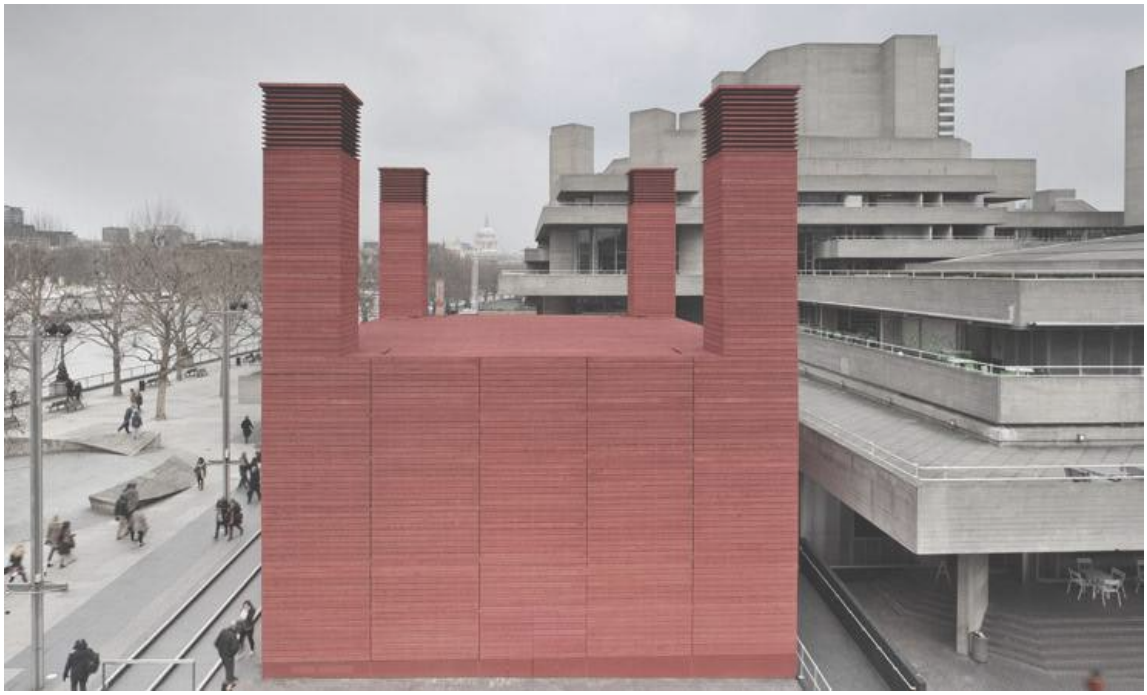
Roger Watts, one of the office's associate directors, was the architect that received us, and present the projects. He is responsible for dozens of successful theatre projects around England. Most of then are renovated, adapted or provisory structures.The fact that they have never built a full new theatre building just underline the concept of the office and the English theatre style; this can be translated in a kind of respect that the architects have in relation to the hierarchy between the two arts: architecture and theatre. In their projects, architecture works to facilitate, optimize and prepare the users and practitioners to the action, but never aim to overcome it with too expressive design, or expensive finishing that will difficult the freely modification and adaptation of the space.

During our meeting, Roger introduced us to some of their most interesting projects, like the Everyman Theatre; The Egg, The Shed, the Chichester Festival Theatre, Dorfman Theatre, between others.

In all of these projects it was possible to identify some common characteristics that can translate the architects design parameters that successfully create contemporary theatres: intimate spaces, with a close connection between audience and actors; concern not just with the audience 's comfort but also a special care for the actors; since their preparation for the action, the atmosphere during the acting and after all. The strict choice and use of material giving personality and life to the building, at the same time respecting the human scale and eventual original details; lightness and openness to the surroundings inviting the community to be part of the realm.
Other characteristic that strongly influence their successful design is the close integration with technicians and theatre practitioners since the early phases of their design process.

Haworth Tompkins

Fig. 35.1. Everyman Theatre
Fig. 35.2. The Egg Theatre
Fig. 35.3. The Shed Theatre

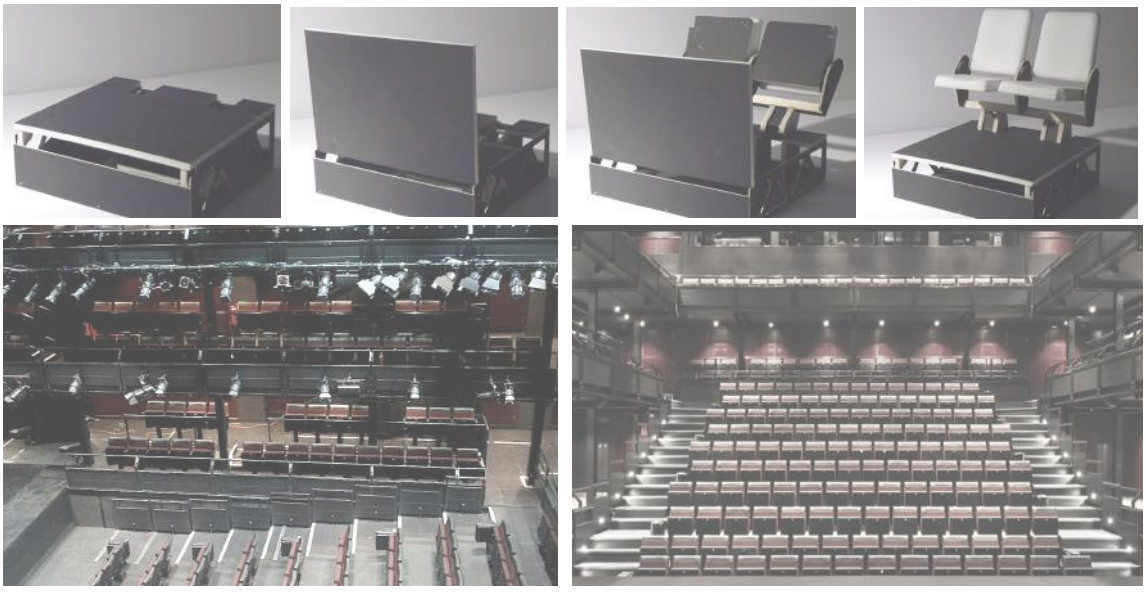


CHARCOAL BLUE THEATRE AND ACOUSTICS CONSULTANTS.

Gavin Green, co-founder of Charcoalblue, proposed to meet us directly in his latest finished work, the Dorfman Theatre; a small venue located inside the National Theatre, London. (Fig, 1 to 6)
There, he showed us some new technologies applied to increase the existent capacity, improve the room flexibility and the audience comfort.
He spoke about the close professional relation with Howard and Tompkins architects, and their successful partnership that allows the implementation of technical improvements since the start of a project.
Gavin has over seventeen years of experience designing theatre spaces all around the world. Having originally trained as an architect, Gavin specialises in auditorium design, the planning of theatre buildings and early stage feaxibility and briefing studies.
After a chat about the english theatre and tradition, he took us to see the back stage of the Young Vick theatre, another of their prizewinner projects.
There he showed us the rehearsal room and its technical trick to facilitate its flexibility; he also spoke about the main venue and how this theatre now became the most attended in town, as well as the foyer, restaurant and bar.
Taking about acoustic matters, Gavin explain to us that, in this case of intimate theatres, with occupation around 500 people, acoustic is not a big concern and usually does not require complex technologies. Controlling the volume, proportions and materials can be enough to guarantee an optimized interior acoustic that will suit different layouts.
One of the main worries, however, is to isolate the room from the eventual outside noise, special when the building is located close to busy streets or crowded areas.

CHARCOALBLUE
THEATRICAL INNOVATION | ESTD 2004

Fig. 36.1,2,3 and 4. Folding Chairs System
Fig. 36.5. Light System
Fig. 36.6. Audience Organization



NATIONAL THEATRE BACKSTAGE TOUR

For 1 hour and 45 minues, the theatre guide took us around the big brutalist structure designed by the architect Denys Lasdun in 1965. It is composed by 3 theatre room, Olivier, Lyttelton and Dorfman with respective capacity of 1.150, 890 and 450 people. The National Theatre performs over 20 different shows every year. Open 52 weeks of the year, 6 or 7 days a week, with up to 6 different shows available per week.
This creates demands for huge backstage areas and very complex logistic schemes.
Since the structure was recently renovated by Howard and Tompkins Architects, together with Charcoal Blue, we had the great oportunity to see and understand the mechanism of some of the most modern and creative solutions available nowadays.

Thought the Sherling High-Level Walkway we could visit the busy backstage production workshops for set construction and assembly, scenic painting and prop-making.

More than just introducing us to rich and complex theatrical spaces, unveiling some of the most traditional and also some cutting edge tricks for impeccable comfort and adaptability, this Study Trip has provided us with a more sensitive feeling about the actual atmosphere that a successful theatre requires.
We could say that, thought this dedicated professional presentation, we were also introduced to the 'theatre's genius locci'.
After this, we were able to review our project with new eyes, adding and improving considerably our design.

Fig. 37.1. Scenography Workshop
Fig. 37.2. Backstage View
Fig. 37.3. Backstage Entrance

1. 2. 4. CONCLUSION

According to Richard Pilbrow, theatre design consultant, and theatrical producer, the past 40 years have seen a revolution in attitude to theatre design. No longer is a theatre only a place for listening or viewing, it is also a place of feeling, emotion and, in that, architecture must play a critical role. (Pilbrow, 2006)

This aspect inspires and conducts the design to explore the relation between both, into designing spaces that not just entertain, but also incite reflections and interation.

After a general overview though the history of theater, it became easy to understand that out of all the forms of art, theater is the closest to society reflecting its cultural and social implications.
Inside the theater, social relationships are in action not only on stage and in the audience, but also in the relationship between them. When the public is viewing theatre, they watch all the connections that exist in the society, played out in front of them. The theatre is surrounded by human relationships presented in a social manner.

Moreover, the interrelation became evident between the interior organization and techniques and the way the emotions will be received by the audience. Although concentrated in guaranteeing efficiency and safety, theatre artists, engineers and architects have always tried to find ways to enhance the theatrical experience. Technological advances in the theatre world are a marvellous result of people grounded in the knowledge of the discipline and taking creative leaps to make the experience better, more enjoyable, and more meaningful.

The outcome from this research will guide us to the comprehension of the contemporary theater, positioning our design inside the current social and political scene clearly enough to support the choices that will compose our design.

1.3 CASE STUDIES

By using a theoretical method for analysing architectural case studies, it is possible to draw conclusions from the perception of an actual architectural space. The conclusions can be seen as means to raise the architectural quality, creating a better project. The systematic method Analysing Through Scale, develeoped by PhD Marie Frier Hvejsel, concentrates on a single object's ability to address humans through 'gesture'.

Its aim is to reflect upon the relationship between the given architectural form and the idea; in the end charter the means of which this is accomplished (Hvejsel; 2010).

The method is considered open in terms of adjusting and pointing out specific important aspects, with tangible outcome in the search of moving from theory to practice. Five aspects are analysed to fully investigate the relation between spatial gesture and architectural whole: function, emotion, realm, construct and principle.

One furnishing gesture forms the basic of the analysis, as both drawings and writing supports the perception of the element. It states the impact on people in terms of physical and emotional experience. By explaining this using a single spatial gesture, it is visible that it also contains the specific structural principles of the experience, from which architecture can be constructed. The spatial gesture is the notion of how people move within the given framework and thereby supports the definition of the tectonic and architectural quality and provides the tools - structural princiles - to achieve the goals of our thesis.

Using this methodology for analysing the architectural projects, it is possible to define the linkage between poetry and technique as a structural principle, introducing an emotional level in architecture.

Therefore, to guarantee the creation of genuine performance spaces, we choose to use the parameters given by our research as the methodology base for our case studies:

- To analyse the aspect of achieving a diverse environment that adapts according to each request, we chose to study Walter Gropius' Total Theatre;

- To understand the connection between the theatrical world and the political aspects of the society, we decided to analyse Gottfried Sempers' Bayereuth Festspielhaus;

- The experience created to invite people to act and reflect, we seek to understand by studying Aldo Rossis' Teatreo del Mondo.

Understanding the theatre as a critical display of the society, the process of designing architecture is approached through the parameters that guide architects since the beginning of time. The adjustable aspect that revolutionizes the layouts of the theatres, combined with the relation between performance art and politics and the experience created to invite people to act and reflect, come together creatinhg meaning.

The cases are examples of our tectonic theory and its use in practice. By analysing, they will provide a tool and understanding of the spatial theatrical gesture, helpful in our further process of creating architecture that invites people to act.

1.3.1. TOTAL THEATRE

The Total Theatre project was commissioned in 1927 by Erwin Piscator, one of the main protagonists of modernist theatre production, to Walter Gropius. Piscator's highly diverse productions demanded multiple adaptable situations of relationship between the spectator (the audience) and the spectacle (the play). As Piscators' work is known as being radical and controversial like the Bauhaus, his productions would have required an equally radical theatre building. At the time, Walter Gropius seemed like the best fitted architect to enable Piscator's vision.

FUNCTION

Gropius said that together with his friends at Bauhaus, they were concerned for some time about the problems of space in theatres, which up until that point had been a rigid placement of the audience facing a proscenium stage. (Zuvillaga, 2004)

To solve this functional problem, Gropius has combined ideas from several different conceptual theatre projects and other art projects.

Inspired by the precedent concepts, he designed the Total Theatre Project as an ellipse to which a rectangular stage building is attached horizontally to the auditorium. A smaller circular, rotatable seating platform sits within this ellipse, in which another small mechanized seating platform rests. In its normal state, the typology of a Greek theatre is achieved. This smallest seating platform is able to be mechanically sunken, so that a stage could rise creating a proscenium. The larger circular platform is also able to be rotated 180 degrees to face the rear of the theatre, making the mechanized proscenium stage sit in the middle of the sea of spectators. (Fig. 43.1)

EMOTION

The configuration is important to Gropiu's ideas within the architecture as it permits an experience of the spectator - spectacle relationship, an interaction unusual until then. Seating above the auditorium exists as U-shaped suspended platforms, again creating another playful interaction between the audience up above and the performance in mid-air or on stage below. Multimedia graphics and imagery are projected onto screens around the theatre give an envelopment of imagery and emotion. Although the typologies aren't original , the mechanization, which allows all three configurations to be achieved in the one building (Arena, Elizabethan and Italian), present a new possibility to experience the surprising turn of events while a production is in progress. (Sigel, 2004)

REALM

This adjustable solution was understood as an addition of the element of surprise for the audience. With such a 'machine', Piscator is able to excite, scare and even induce fear among the spectators, depending where they are sat within the theatre and what production is on show. (Fig. 43.2 and 3)

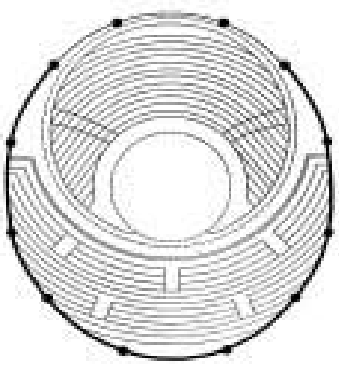
CONSTRUCTION

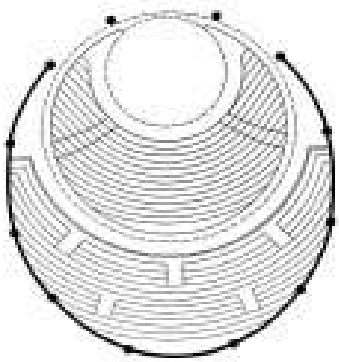
Although the innovative aspects of the project, the well performed and honest structure became unfeasible and had to be terminated at the stage of schematic design due to financial reasons.

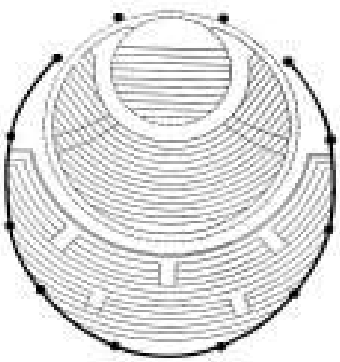
PRINCIPLE

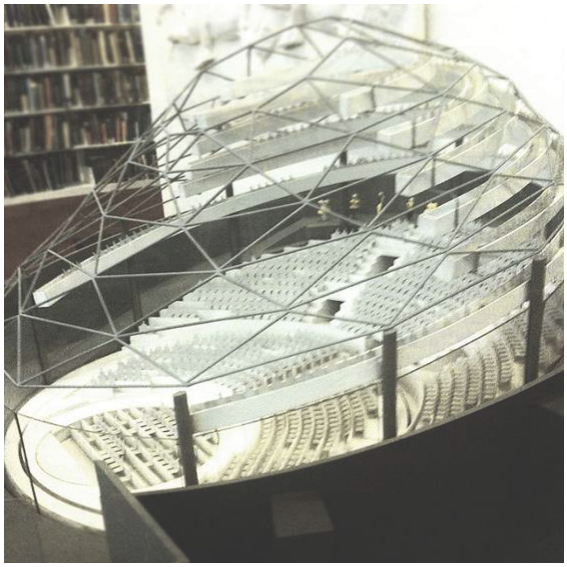
The principle of adjustability of Gropius' intent revolutionizes the theatres' layout, offering possibilities of multiple configurations for the theatrical spaces. As we seek to design a building that is adjusting according to time, while Gropius brings surprise in the way that the audience and the play revolve around each other; our wish is to contribute not just to the spectator - spectacle relation, but to the way that the theatre relates to an ever changing world.

Fig. 43.1, Total Theatre plans
Fig. 43.2, Total Theatre model pictures









1.3.2. BAYEREUTH FESTSPIELHAUS

As the late 19th century marks the beginning of 'naturalism' in the theatrical creation, this approach will revolutionize the actors' performances, being encouraged to transpose the real life into their roles.

FUNCTION

In the scenic space, naturalism brings several functional innovations:

- On stage, the actors will not necessarily be directed towards the public;

- The sets will become larger and heavier, including the technical spaces and backstage;

The naturalist theatres will keep the principle of the space separation between the stage and the auditorium.

EMOTION

Wagner's theatre at Bayreuth is an exception to these principles. Being designed exclusively for one specific play: the lyrical performance 'the Ring der Nibelungewn'; it has long been considered an unnecessary wish of the great German composer, conductor, stage director and writer, Richard Wagner.

Wagner believed that his works in their emotional complexity could not be represented in spaces provided by already existing buildings. Sensing that the living architectural contributes to the public's perception, he came up with a program that shows the main element as being the auditorium, solved as a sector of a circular amphitheatre, continuous, without any lodges. (Fig.45.2)

REALM

This type of organization favors the focus of the public towards the stage in a spatial unitary formula, creating a theatrical realm between the spectators watching the show and the actors. The solution has its limits due to lack of will for continuing this 'revolutionary' concept of excluding all boundaries between the spectators and the spectacle; therefore the stage is kept separated from the audience. (Fig. 45.1)

CONSTRUCTION

The dramatic performance has outlined itself in parallel with the development of ancient Greek society, reflecting profound ideas of freedom and democracy. This social equilibrium is reflected in the spatial organization of Sempers' project, with the amphitheatre centered on the performance space, ensuring equal participation of the audience to the dramatic event that takes place in the middle. (Carney, 2006)

PRINCIPLE

Semper managed to achieve a strong connection between the audience and the stage, but by preserving the transition space, where the orchestra is placed, this relationship is not direct. (Fig 45.1) Seeking to create a synergy between the actors and the spectators, the social structure of the audience needs to disappear, offering the feeling of belonging; while the development of the society is critically reflected on stage. This choice of inviting the audience to take part in the play, marks the principle of relation, between the theatrical world and the socio-political aspects of the society.

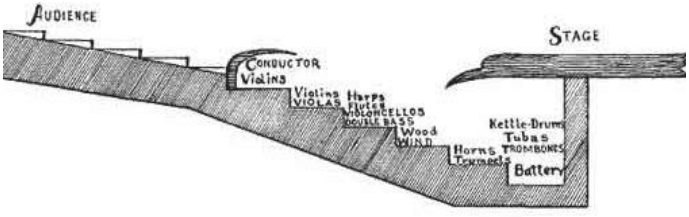


Fig. 45.1. Stage-audience sketch
Fig. 45.2. Bayereuth Festspielhus interior picture

1.3.3. THE WORLD THEATRE

The World Theater was designed by the architect Aldo Rossi, for the 1979-1980's Venice Biennale, which had as a theme 'Venice and the Scenic Space'. The idea was to evoke the floating theaters, structures that were characteristic for the city and its carnival during the 18th century. However Rossi went far beyond with his creation. The World Theater became a symbol of postmodernism, a manifest for the regress of the meaning in architecture; representing creativity, art, nostalgia and ephemeral character, contrary to the current international style, with its exaggerated rigidity and the lack of attention to users individuality.

FUNCTION

To garantee the relation with the place, history, and memories, he used simple envelope shapes organized in a way that refers to the context. Acting primarly as a base for what should happen inside, the theatre redefines architecture as being a stage for life. Rossi aimed to reconnect past and present in an architecture that understands time, as continuity. To create this relation he used the concept of reason, since it is a timeless quality of humanity. (Fig. 47.1)

'Nothing can be beautiful if it has its' meaning restricted just to itself' (Rossi, 1979, pg. 20)

EMOTION

Rossis' postmodern piece works as a joint connecting time, linking the city with the compositional process of new architectural interventions.

"The project for the Theater of the World is characterized by three facts; that it has a precise yet undefined usable space, that it figures as a volume following the form of Venetian movements, that it is on the water...a place where architecture ends and begins the world of imagination." (Rossi, pg. 80,1979)

REALM

By virtue of its extraordinary form and powerful poetic charge, the theatre would become etched in the collective memory. The Teatro, both sign and symbol, announced the revival of the Venice Carnival and the birth of the Architecture Biennale, becoming a programmatic symbol and perfect example of a constant exchange between the two disciplines: art and architecture. (Fig. 45.2)

CONSTRUCTION

The theater's form is given by the sum of pure elements: a parallelepiped stage, with two boxes of terraced stairs and an octagon to finalize. This choice facilitates the creation of a versatile stage for the performing arts. It was built in a Venetian shipyard and towed by sea to its site in the middle of the water, the Grand Canal in Venice next to the Punta della Dogana, where it remained for the Biennale.

When the Biennale was completed and the Venetian carnival was relaunched, the theater crossed the Adriatic Sea and settled in Dubrovnik, Croatia. In 1981 it was dismantled and in 2004 it was rebuilt in Genoa as one of the celebrations of Genoa European capital of culture.

The theatre designed by Rossi relates to our theme, not only by introducing a floating structure, but also by the connection among shape and meaning.

PRINCIPLE

The principle of connecting the past and the present, theatre and life trought geometry, colors and materials, is orginized in a unique way to honor architecture as a free way to emotions.
The theater represents a possible background, or a setting for the real life; this elusive feeling from when being part of and interacting in an urban performance, can rise to new understanding of the whole theatric principle.

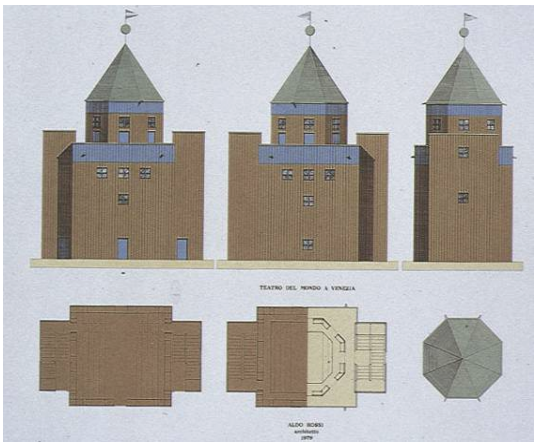


Fig. 47.1. World Teather Plans
Fig. 47.2. World Teather picture

1.3.4. CONCLUSION

The study cases provide relevant architectural tools, explaining theatre culture on a concrete level.

Gropius' intent revolutionizes the theatres' layout, offering possibilities of multiple configurations for the theatrical settings, bringing surprise in the way that the audience and the play revolve around each other.

Semper managed to achieve a strong connection between the audience and the stage, but by preserving the transition space, where the orchestra is placed, this relationship is not direct.

Rossis' theatre represents a setting for the real life, offering a new understanding of the role of the architecture in shaping the real life.

In these cases the theatre becomes the linkage between poetry and technique, through gestures that adjust, relate and connect accordingly.

All the elements questioned, developed and proposed by these architects in such different historical and social context, inspire and underline the sought design concept, proving that the potential in the theatre art must be continuously developed and used in its most to simultaneously create social relations.

1.4. CONTEXT ANALYSIS

GERMANY

With a landmass that stretches from the North Sea and the Baltic Sea in the north to the Alps in the south, Germany has the largest population of any EU country. (Fig. 51.2)

It's now two decades since the events of 1989 swept away the Berlin Wall and brought to an end a turbulent and agonizing century for Germany. III served at crucial points in its brief history as a united nation-state by erratic and adventurous rulers who twice led it into disaster – in 1918, as Kaiser Wilhelm's dream of empire ended in defeat, starvation and revolution; and at the end of World War II, as Hitler's vile race-war rebounded in terrible fashion on the German people who had chosen him as their leader.

There followed a period of forty-five years in which not one Germany but two faced each other across a tense international divide – the so-called Iron Curtain – throughout the years of the Cold War. (roughguides.com, 2014)

Since the reunification, Germany has gained a higher profile as a place to visit, thanks partly to the remarkable resurgence of Berlin, one of the most fascinating and exciting cities in Europe.

BERLIN

Berlin is an edgy city, from its fashion to its architecture to its charged political history. The Berlin Wall is a sobering reminder of the hyper-charged postwar atmosphere, and yet the graffiti art that now covers its remnants has become symbolic of social progress. It is a big multicultural metropolis, but deep down it maintains the unpretentious charm of an international village. Locals follow the credo 'live and let live' and put greater emphasis on personal freedom and a creative lifestyle than on material wealth and status symbols.

The choosen site is on the northeast bank of the river Spree in central Berlin. Its an area known as the Holzmarkt , located in the borders between Mitte, Kreuzberg and Frederichshain neighborhoods. (Fig. 50.1)

These neighborhoods are caractherized by a big range of activities, specially artistic and creative spaces,clubs, afordable cafes and restaurants.

They represents the soul of contemporary Berlin, with its unique urbanisation process and socio-political history that atracts young and creative people from everywere reinforcing its multicultural characther .

Fig. 51.1. Berlin Map

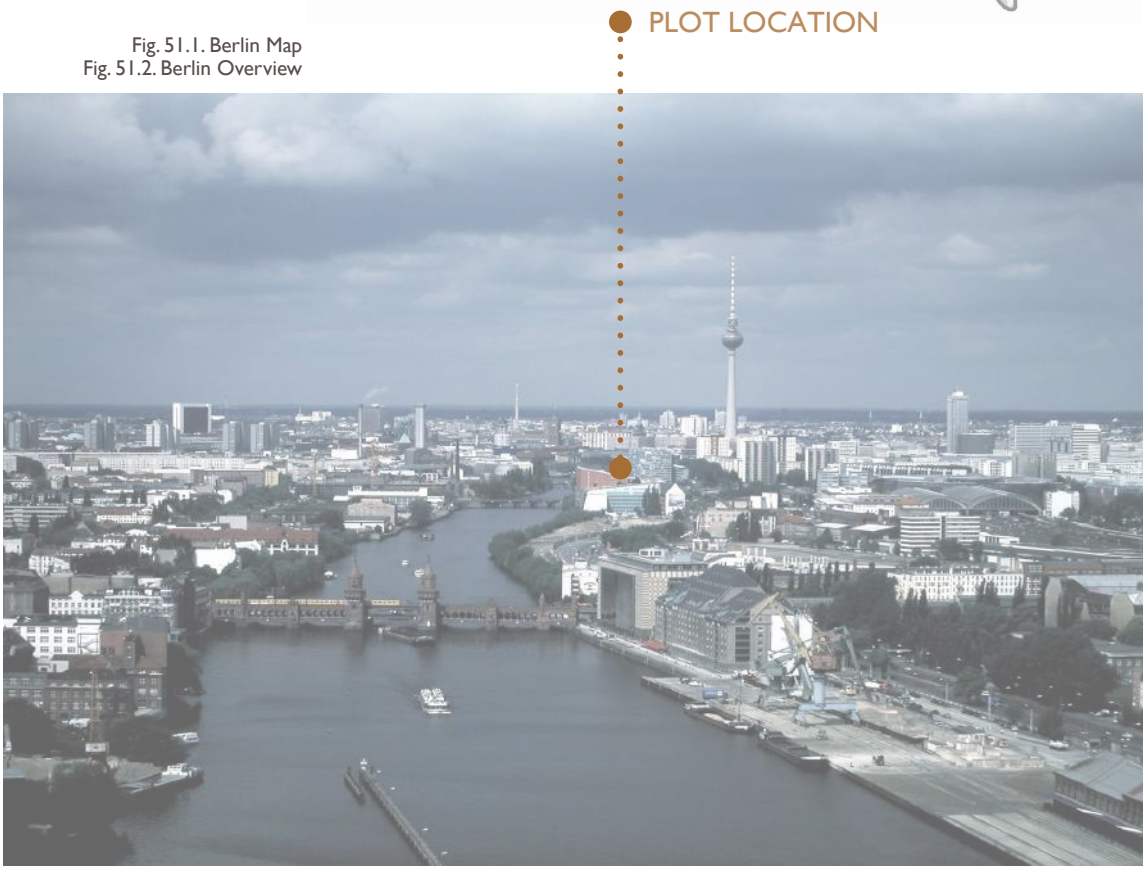


Fig. 51.2. Berlin Overview

PAST

This part of the river Spree was the boundary between East and West Berlin during the years of the Berlin Wall (Fig. 52.1.), and as a result became an undeveloped 'no man's land'. (Fig. 53.1, and 2) Since the wall was demolished after unification in 1989, the area has developed slowly with some of the old industrial building being converted to cultural spaces mixed to a number of large new corporate buildings further to the east. (OISTAT Theatre Architecture Competition Design Brief, 2014)

It is an area in fast and profound transformation where the empty plots, originated by the city filled with architecture that not always represent the population desires. Authorities and locals constantly discuss and diverge about the use and privatisation of the land, history preservation and social gentrification.

Fig. 52.1. Berlin Wall Map

PRESENT

In recent years the Holzmarkt site, which sits between the river and a railway line, has been occupied by a cooperative who have erected a number of low cost temporary buildings and structures and use the site as a place for young Berliners to hold cultural events and parties. (Fig 53.03)

It can be seen as a simbol to this hedonist generation of youngs, artists, artisans and musicians interested in integrate economy nature and culture in a unique way of land use and architecture. (OISTAT Theatre Architecture Competition Design Brief, 2014)

In the words of the cooperative:

"The Holzmarkt is the center of the neighbourhood – physically and spiritually, the market, the creative village, the club and the restaurant invite, surprise, inspire and entertain."

Throughout protests and long discussions, the organized local community and the Holzmarkt cooperative managed to stop the execution of an already approved urban plan for the area: The Media Spree Project.

The resistance to this dense and lifeless development had organized itself and reached its temporary peak in 2008, when 87% of the voting population of Friedrichshain – Kreuzberg supported the citizens' referendum "Spree Riverbank for All".

After that, in 2014, the plot property was officially given to the cooperative.
(holzmarkt.com, 2015)

Fig. 53.1. Berlin Wall and the River Spree
Fig. 53.2. Berlin Wall 'Dead Strip'
Fig. 53.3. Holzmarkt view

1.4.1. TYPOLOGIES AND MATERIALS

Previous studies demonstrate that the site composed by superposition of architectonic typologies, fact that could therefore, open the proposed building to many creative solutions. However, we believe that it is essential to further analyse them in order to understand and individualize the most important patterns that compose the aesthetics of the area and, from that, to define the directions to follow to be able to collaborate in the maintenance or improvement of the local atmosphere.

BRICKS & 18TH CENTURY BUILDING

Before the first and second world war, that seriously compromised the existing urban infrastructure, this area was filled with industrial buildings that used the river to distribute their production. Traces of this architecture and period are still visible in the site area, however, many of these constructions were demolished after turning into ruins. Lately, some of them such as the Radial System Building (Fig. 55.8.6) were recovered and adapted to new uses. However, it is still possible to find industrial ruins that attract lots of interest from young and creatives, due to the sites' connection to history, and the whole range of possibilities in its empty big scale spaces.

The most well know industrial ruin is located in front of the plot in the opposite river bank and was an old Ice fabric. (Fig. 55.6.) Nowadays the Eisfabrik can be found in the tourists guides as a suggestion for unique Berlin's experiences. They suggest tourists to enjoy the unique panorama from the roof top, but to avoid disturbing the life of local homeless inhabitants. Unfortunately the building owner has other interests for the site and, contrary to public manifest to reuse the structure, the old ice fabric will be turned down very soon. (abandonedberlin.com, 2011)

Red brick, arches and chimneys are representative patterns of these typologies, being directly related to the site specially trough the crossing train line and its structure. (Fig. 55.2.)

SOCIALIST WAY OF BUILDING

More references to the brick works will be found lately in contemporary buildings as the Ibis Hotel (Fig. 55.7) and the Water Plan Company (Fig. 55.4.) completely coated in red bricks. Both building made a superficial attemp to relate to industrial architecture but managed just to camouflate itselves in the mess of the local skyline.

In the back of the site, it is possible to recognize the DDR (Democratic Deutschland Republik) Architecture. (Fig. 55.1) It was essential to the political organization for expressing their social ideals thought architecture, with its intrinsic elements of standardization, functionality and, more important, lack of hierarchy usually found in the use of facade decoration. Many of this massive and tall blocks are found in this area, directly connected to the party's headquarters that used to be located close to Alexanderplatz, just 1 km from the site.

CONTEMPORARY ARCHTIECTURE

Still composing this puzzle of architectonic styles, we can see in the triple glazing offices towers, concerns about sustainability, transparency, technology and shape innovation. (Fig. 55.5)

It is essential and appropriate to mention that the Holzmarkt temporary buildings, are constructed with recycled windows and wood from the previous ocupied building that was desmanteled, they are representing in their experimental aesthetic the spirit of the site.

Fig. 55.1. Modern Residential Tower
Fig.55.2. Train Archs
Fig. 55.3. Holzmarkt temporary building
Fig. 55.4 Water Plan Company

Fig. 55.5 Office buildings complex
Fig. 55.6 Ice Fabric
Fig. 55.7. Ibis Hotel and Bridge
Fig. 55.8. Radial System V

1.4.2.FUNCTION SURVEY

Beyond numerous and diverse functions found in this very central area, the most relevants to shape the local atmosphere, are the big range of cultural activities. The historical process that ended up promoting the abandon of this area once called 'the dead strip', is paradoxically the same responsible to creates its actual character. Many of the abandoned buildings where lately taken and reinvented as creative collective spaces. Its creators, young people looking for expression and liberty, started this hedonistic movement in opposition to many years of repression. Unique in its kind, this area symbolized by the Holzmark (Fig.57.4) concentrate nowadays some of the most original and worldwide known night clubs and cultural centres:

RADIALSYSTEM V

Formerly a turn of the century pumping station for the Berlin Wasserwerke (Berlin Water Services) , it was opened in September 2006 and currently functions as a cultural centre where new ideas should 'radiate' out in all directions. Privately owned, the house functions as a platform for a wide spectrum of partners and uses. It plays a key role in an international network of partners, and collaborates with concert halls and opera houses, music festivals, music schools, orchestras, as well as museums, galleries and other independent event organizations. It is also opened to companies, associations and other institutions that hold non-public events. (Fig 57.5) (radialsystem.de)

POSTBANHOF

Because of its nearness to the former border stripe and the associated interest of Berlin's government in recreating this historically significant area from Friedrichshain to Kreuzberg, the old Postbahnhof building fortunately escaped decay. Nowadays, the large space is being used to host events, from international fairs to private parties and have in its dependences the famous night club and concert house Fritz Club.(fig.57.2) (postbahnhof.de)

O2 ARENA

This is a multi-use indoor arena that opened in September 2008. With a capacity of 17,000 people, it is home to the Eisbären Berlin ice hockey club and the ALBA Berlin basketball team, and is used for either ice hockey, basketball and handball matches as well as concerts. (Fig. 57.3) (o2world-berlin.de)

BERGHAIN

Opened in 2004, the name "Berghain" is a composite of the names of the two quarters that flank the building's south and north sides: Kreuzberg (formerly West Berlin) and Friedrichshain (formerly East Berlin). It is one of the most international known nightclubs famous for its tecnho music venues and the eccentric interior's minimalist design dominated by steel and concrete. The club is located in a former power plant and is distinguished by its enormous dimensions, which accommodate an 18-meter high dance floor and space for 1500 guests. (Fig. 57.1) (berghain.de)

EAST SIDE GALLERY

The East Side Gallery is an international memorial for the Berlin Wall and the separation years. It includes a 1.3 km long section of the Berlin Wall and it is the largest open-air gallery in the world with over one hundred original mural paintings. Galvanised by the extraordinary events which were changing the world, artists from all around the globe rushed to Berlin after the fall of the Wall, leaving a visual testimony of the joy and spirit of liberation which erupted at the time. The Gallery consists of 105 paintings by artists from all over the world, painted in 1990 on the east side of the Berlin Wall. (Fig. 57.6) (eastsidegallery-berlin.de)

Fig.57.1 Berghain
Fig.57.2. Postbanhof
Fig.57.3 O2 Arena

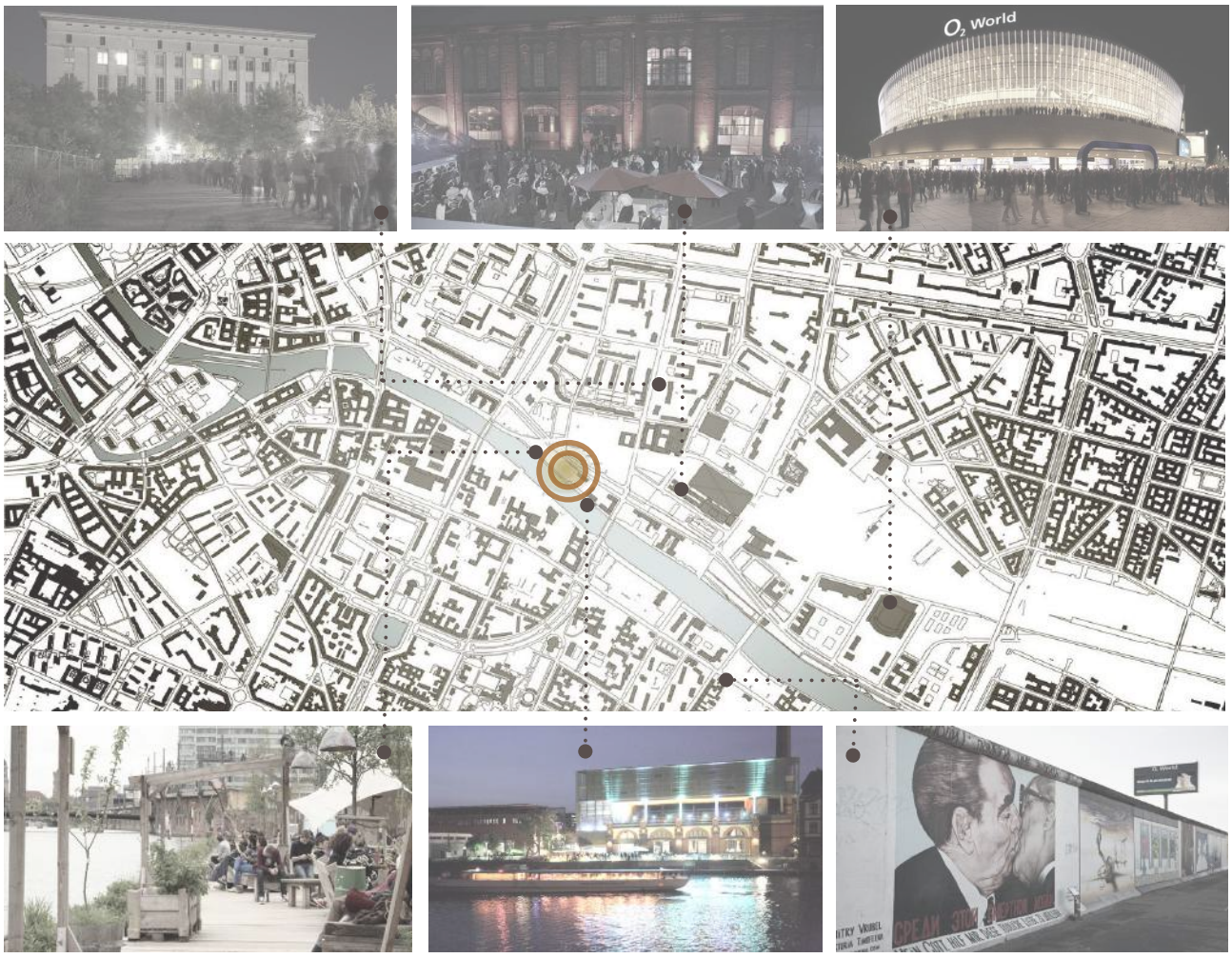


Fig 57.4.Holzmarket
Fig 57.5 .Radial Sistem V
Fig.57.6 East Side Gallery

1.4.3. SERIAL VIEW

To achieve a better connection with the place, we strategically analyse the site inspired by the representation method Serial Vision, developed by Gordon Cullen. Inspiration from this method is used to absorb and analyse the character of site, by photographing from significant viewpoints while moving around. These viewpoints are depicted to contrast and enhance visual impressions to identify the actual character of place. (Cullen; 1961)

VIEW A: SCHILLINGBRÜCKE

The first significant view emphasises the fact that the plot has no back; instead it has two important and visible façades directed one to the main street and one to the river.
From the Schillingbrücke we have a wide view from the river and the city landscape, where it is possible to see the superposition of architectonic typologies, representing time and history. The "TV tower", powerful landmark and symbol of Berlin is framed creating a romantic view and a strong connection with the city and its urbanity. (Fig. 59.2)

VIEW B: OPOSIT SPREE BANK

From the other side of the river bank, it is possible to have a panoramic view of the back skyline and the building high variation. The relation between train line and plot is emphasized and the difference between the buildings scale highlights the 'emptiness' of the plot and its character as a 'remaining area'. However, some movement is individualized in the Holzmarkt with its temporary constructions and creative site arrangements.
(Fig. 59.5.)

VIEW C: MICHAELBRÜCKE

From this bridge will be possible to have a panoramic view of the future building. The impression here is, again, strongly related to the superposition of typologies and functions. It reveals a free and experimental character in a chaotic skyline punctuated by vertical elements: old brick industrial chimneys, modern pipes and crains, the last being regularly seen in he city sky, being read already as one of Berlin's symbolic elements. The Holzmarkt activities and public underline the local spirit and creates expectations for new elements to come. (Fig. 59.3)

VIEW D: HOLZMARKTSTRASSE - SOUTHWEST

Unlike the riverside view, from this viewpoint the plot is hardly recognizable. The tall and continuous wall blocks, the view towards the river, and the large avenue, disconnects all, giving a 'transitional' character to the area with difficult functions identification. This isolation reinforces the feeling of being in a standing or remaining area. (Fig. 59.6)

VIEW E : HOLZMARKTSTRASSE - NOTHEAST

Although very similar to the previous one, this view gives us a better understanding of the actual site location. The TV tower works as a lighthouse in a completely decharacterized area. (Fig. 59.4)

VIEW F : RIVER BANK PROMENADE

This walking path promotes a special experience, connecting the plot with the river banks, the water and the sky. It's a radical alternative route to the main avenue and its side walks. The scarce greenery points out the potential for a more elaborated landscape and the improvement of this promenade. Moreover, it creates an unusual connection between the buildings adding some curiosity in discovering or exploring the area. (Fig. 59.7)

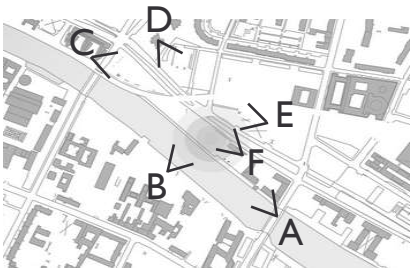


Fig. 59.1. Serial View Map

Fig. 59.2. View A

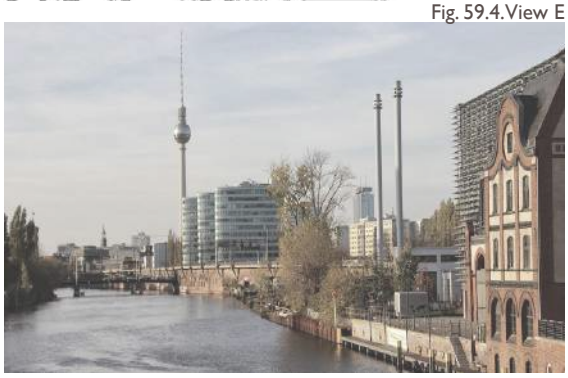


Fig. 59.3. View C

Fig. 59.4. View E

Fig. 59.5. View B

Fig. 59.6. View D

Fig. 59.7. View F

1.4.4. SITE MAPPING

FLUX

When analysing the area, the aim is to gain a better understanding on how the site, representing the base of the theatre, can be approached.

Reaching the plot, we see it is well defined by infrastructure and landscape; on the south west it connects directly to the Spree river, while to the north east, parallel to this natural barrier, the Holzmarktstrasse marks the border.
Pedestrians can easily reach the area, both from across the river (on the two bridges), and if they arrive at the train station close by, to the north east. Taking the car is also an option, but by far the most pleasant means of transport is sailing.

GREENERY

Greenery is present in the vicinity of the plot; the biggest impact is launched by the vegetation belts lying on the opposite sides of the river. However, the neighbour community also has a unique impact on the site, with much cultivation of flower and vegetable. All the Holzmarkt community is actually very 'green' in its core concept and, probably the presence of the greenery there will just increase in the future.
The Holzmarkt Strasse is also very green, fact that also works as a buffer belt for the local traffic.

Fig.60.1. Flux and greenery map

1.4.5. CLIMATE

Berlin in the Spring is beautiful, as the city awakens from winter, the leafy squares spring to life and the many parks and lakes around Berlin start to regain the greenery and color. March can still be rather cold, with temperatures up to around 4°C. By in May, however, temperatures have recovered and have a daily mean of 14°C. Wet and cool days are the perfect time to explore the city.

Berlin in the Summer has pleasantly warm weather, rarely hot. Temperatures average out at around 20-24°C, and rarely climb higher than 25°C. Everyone enjoys the outdoors even though some rainy days can be expected. During the summer days and nights, the city is alive with events, festivals and shows.
(Fig. 61.2)

Berlin in the Autumn transforms it's many green areas, as the autumn colors weave their magic on the city. Temperatures in September, October and November tend to drop quickly, going from around 14°C in September down to 4°C in November, and as winter approaches, the wet and windy weather does too.

Berlin in the Winter; December, January and February, has the temperature close to freezing point, but there's not much variation between daytime and night temperatures. The dry wind and the snow are common, but only enough to give a covering of snow which soon vanishes again.
(Fig. 61.4)

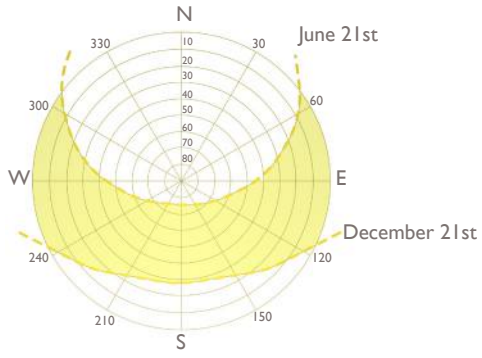


Fig. 61.1. Sun Path Diagram

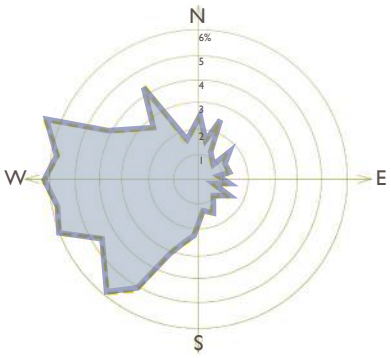


Fig. 61.3. Wind Distribution

Fig. 61.2. River Spree During Warm Season

Fig. 61.4. River Spree During Cold Season

1.4.6. USERS

Following the site analyses, it is now possible to set up the user profile and further understand their behaviour and consequently how to respond to their expectations relating to our program. The program will be developed focusing specially on the combination of two users profile:

THEATRE CREW + HOLZMARKET PUBLIC

THE THEATRE CREW (Fig. 63.1 to 3) includes architects, technicians, light and sound designers, actors, play writers, students and free practitioners that seek for innovation and experimentation in this performance art field. This user's selection was strongly inspired by the existence of the OISTAD organization and the wish to offer them a suitable physical space. The organization has members from all around the world; it is a moving entity represented by the only international NGO with a migrating Headquarters.
Through this on-line network of promoted events, they inspire and encourage new ideas and technologies. Therefore, the presence of these users in the chosen site and in the proposed theatre complex will provide the necessary strength to support innovations and creativity, in direct exchange with the local community, linking it back to the international network.

The HOLZMARKT PUBLIC: Includes a big range of different users, however the most recognizable are the young and creative kind, the so called Hipsters.

THE HIPSTER (Fig.63.4) subculture typically consists of a generation ranging between 17 to 35 years old, that lives in urban areas maily in international city centres. This subculture has been described as a "mutating, trans-Atlantic melting pot of styles, tastes and behavior" (Haddow, D. 2008, pg 29) and is broadly associated with progressive political views, organic and artisanal foods, alternative music, experimental fashion sensibility (including vintage and second hand clothes); representing their attempt for an alternative lifestyles. Hipsters are typically described as middle class young bohemians in search for autenticity, art and alternatives to the consumer society.

Added to that we will consider the local BERLIN INHABITANTS, (Fig.63.5) ranging from all age and gender, they are quite politizied people that organized themselves in cooperatives to defend their ethics. Most of them where witnesses or lived in the old East Berlin, while the wall still divided that area and freedom was strictly and systematically usurped. This explain why the political and social questions are nowadays checked and controlled more closely.

The last minority users to be considered, are the TOURISTS. People that will be mainly attracted by the Holzmarkt and other local cultural offer and can be at the same time, attracted by our theatre.

Fig. 63.1. Architects / Atage Designers
Fig. 63.2. Actors
Fig. 63.3. Sound and Light Designers
Fig. 63.4. Hipsters
Fig. 63.5. Locals

1.4.7.CONCLUSION

Berlin is one of the largest cities in Europe and has experienced political turmoil throughout the last century mainly due to World War II and the subsequent division of the city by the Berlin Wall. All this particular events that uniquely shaped, not just local history, but also the city configuration; originated what today is a versatile and creative urban context, with space for innovation and experimentation. Locals share their experiences trough art and creativity, searching for freedom and alternative lifestyle.

The chosen site is immerse in a very special context, being located exactly where the wall used to be, dividing the city. After the fall of the wall, the plot and adjacent building remained in a 'standing' situation, feeling that, until today is possible to recognize.

However, the proximity to important landmarks and traffic nodes shows the potential for development. This inevitable reflections about its hibernating potential reminds the passers by of Berlin's history; the once present wall and the constant social and political transformations.

The resulting overlapping of architectonic typologies and functions, and its historical meaning as borderline, gives the area a character of freedom and experiment, underlined by the organized cooperative called Holzmarkt; and all the other alternative cultural activities that were slowly emerging from abandoned buildings.

Therefore, the users' interaction will create a vibrant and creative realm, promoting the necessary cooperation between people that have a natural interest for experimentation, art and expression; and others that are hungry for innovation, surprise and ideas for an alternative and more ethical society.

1.5. VISION

Understanding the theatre as catalyst for social interaction and experimentation, we aim to design a space that optimizes these characteristics incorporating the community's REAL life into the SPECTACULAR life produced in the theatre's realm.

We believe that political and artistic reflections can emerge from this synergy, stimulating social interaction and improvement.

Therefore, our design must INVITE PEOPLE TO ACT; this can be defined as the Gesture that we will seek to create during our design process.

To reach this objective, we wil propose differernt levels of interaction, where the public and the own structure meet creating different experiences.

Moreover, we believe that, using a structural principle that can refer to the historical context and can be adapted by the users, we will inspire people to take control of the structure, acting upon physical and psychological elements, in order to produce expressive and experimental artistic manifests.

1.6. DESIGN PARAMETERS

EMOTION / GESTURE :

- Integration of technical and architectonic elements ensuring efficiency and emotion;
- Use of humble materials and finishes giving the public more freedom to take part in the program and interact;
- Use of transparency and permeability facilitating the comprehension of the space, inviting participation;
- Structure that refers to the theatre's reality and stage equipments;
- Different stage settings that stimulate spontaneous interaction and new experimentation;
- Large, free space workshops that stimulate interaction and experimentation;
- Physical and emotional connection between floating and on land buildings;
- Adequate expressive scenography and structure for representing the site specific play, 'Jonah', in the floating theatre.

SUSTAINABILITY:

- Broad use of glass for guaranteed natural light;
- Open spaces reduce losses of natural light distribution;
- Wood as primary renewable construction material;
- Layered facades for suitable insulation and overheating control;
- Hybrid ventilation system using natural ventilation combined with mechanical ventilation;
- Compact use of the plot;
- Compact volume, optimizing resorces and the use of passive strategies.

CONTEXT REFERENCE:

- Use of wood as reference to the Holzmarkt and its temporary constructions;
- Structure Design that refers to the history of the surroundings, once a river dock, connecting the public to the context and to contemporaneity;
- Floating Structure reinforce the presence of the water;
- Chosen Play 'Jonah' honors the local history of the comunity; during the Berlin wall division.

CONNECTION/ ACCESSIBILITY:

- Double access from river and street;
- Free layout and permeability, reinforces visual and physical connection;
- Direct access for handicap having the ground floor free of obstacles and easily accessible lifts.

FUNCTIONALITY/ADAPTABILITY:

- Free plan with empty spaces for different uses;
- Large and free spaces for workshops;
- Double or triple hight for theatre scenography equipment and props, where necessary;
- Direct access to transportation facilities;

CONTEMPORANEITY:

- Use of simple and renewable materials represents a concern with resources spenditure;
- Architecture as base for social interaction and reflection;
- Less concern about plastic effect of the architectonic object in favor to its effective use.
- Respect for the surroundings:
- Adjustability of layout to social changes and experimentation, saving time and resources.

1.7. PROGRAM

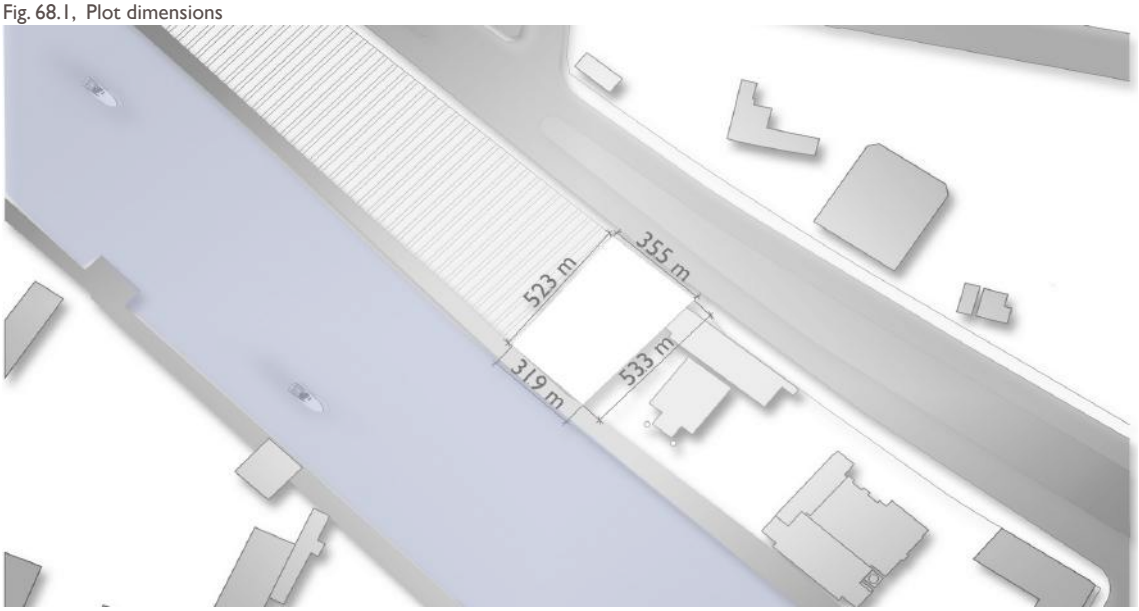
The theatre program elaboration is vital to ensure the aimed interaction between the real world and the spectacular word; to effectively promote the synergy and emotion that we search as outcome of our proposal.

Therefore, we decided to approach the users classificating them as representative of the Real and Spectacular world.

SPETACULAR WORLD: **The International Organisation of Scenographers, Theatre Architects, and Technicians (OISTAD)**
Because of its straight relation with architecture and technical aspects and its contribution to the theatre's continuous innovation, we decide to promote a physical space for the already existing OISTAD network. We hope to stimulate a more direct interaction during the creation and experimentation in the areas of stage design, architecture, light design, acoustic and sound design, costume design, scenography and dramaturgy.

REAL WORLD: **Holzmarkt Cooperative and Local Community**
The local neighbours will represent the real world, bringing to the theatre's artists opportune themes for debate and experimentation. Being particularly politicised, frequently questioning the current social system, this community innovates suggesting and experimenting alternative political and social configuration, with the use of the proposed structure, they will be able to use the theatre as another way to spread and test its ideas.
Guaranteeing trough the program that this two groups will be invited to act; the exchange being supported by the architecture, we will ensure the interaction between Real and Spectacular.
Added to that, it wis our interest to create a flexible performative room, adaptable to different plays, that promote a direct interaction between audience and actors. The floating theatre will be, however, a site specific performing space, developed to host only one play, as requested in the OISTAD competition, adding to the program a unique experience.

Fig. 68.1, Plot dimensions



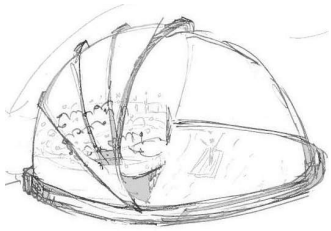
		Function	Experience	Confort	Intimacy	Adjustability	Acoustic
On land building (350 square meters)	Theatre room (1200 square meters)	Auditorium	***	***	***	***	***
		Stage	***	***	***	***	***
		Changing rooms/toilets	*	***	**	**	**
		Green room	*	***	*	*	**
		Control room	-	*	-	*	*
		Crossover	-	-	-	***	***
		Backstage	-	**	**	***	**
		Storage	-	-	-	**	*
	Facilities (600 square meters)	Foyer	**	***	**	***	**
		Tickets Counter	*	***	-	***	**
		Cloackroom	-	*	-	***	*
		Caffe / Bar	**	***	**	**	**
		Storage	-		-	-	*
		Toilets	*	**	*	-	*
	Administrative (600 square meters)	Office	**	***	**	***	**
		Kitchen	*	***	*	*	*
		Plant room	-	*	-	-	*
		Storage	-	*	-	**	*
	OISTAD (600 square	Workshop 1 (stage,sound and light)	**	***	**	**	**
		Workshop 2 (costume and playwriting)	**	***	**	**	**
		Library	**	***	**	**	**
Floating building (350 square meters)		Auditorium	***	***	***	***	***
		Stage	***	**	***	*	***
		Changing room/toilet	**	**	**	**	**
		Engine room	-	-	-	-	*

SKETCHING PHASE

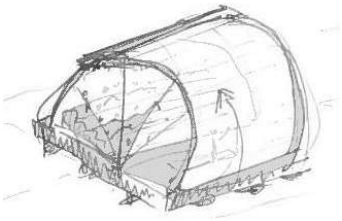
2.1. FLOATING THEATRE

JONAH TRAPPED IN THE BELLY OF THE FISH

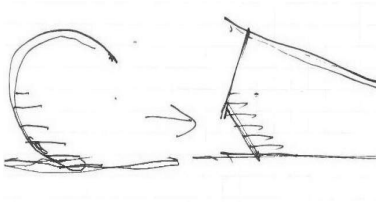
Initial sketches are done for the competition. How to relate the floating structure to the chosen play 'Jonah', performance that unfolds inside a belly of a giant fish? The presence ofwater will enable the creation of a floating stage, reinforcing the singular experience of having the audience floating on water while watching the spectacle.



1. Initially, the idea of a rounded object seemed more representative of a fish.

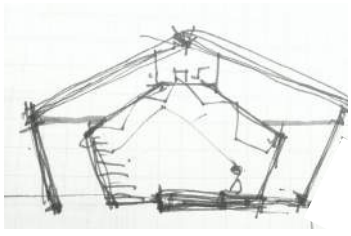


2. The design followed concerns about the connection to the on land structure and the possibility of adapting it to different climatic conditions.

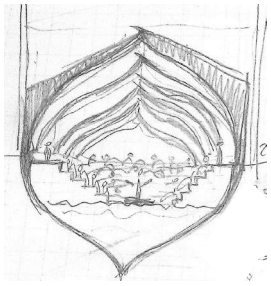


3. The rounded structure is too literal. It difficults the connection with the other volume.

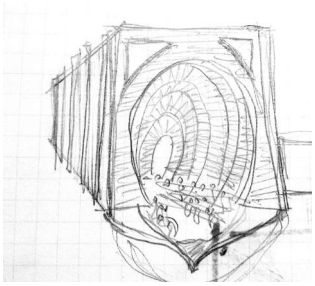
Design ideas for the site specific space were further developed keeping the external squared shape. The intention now, was to surprise the audience with an internal contrast. Tectonic structure should furnish the stage to create the requested atmosphere.



4. A double layer prepares the audience, creating a journey towards the inside of the fish.



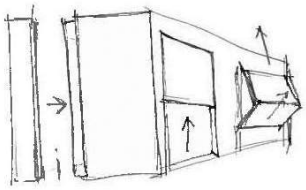
5. The idea of using a boat hull as a base for the structure was arisen, and mirrored structural elements suggest the fish innards.



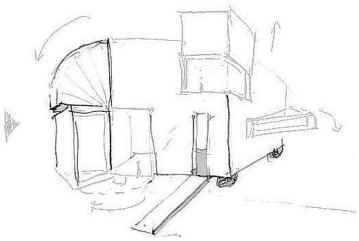
6. To reinforce the contrast and surprise effect, the exterior is squared and the inside rounded. The floating stage develops in the middle of the audience's rows.

2.2. ON LAND THEATRE

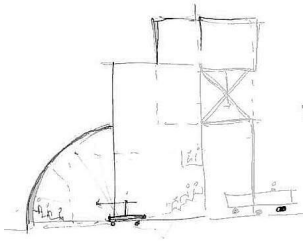
Parallel to the floating structure, the on land building starts to be sketched considering the initial concept of a theatre machine, that should be as flexible as the stage, adapting itself to different venues.



1. Large doors can be moved in different directions to change the layout and the furniture.



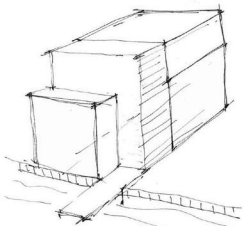
2. Other mechanisms could help to create the building identity, such as sliding, unfolding, pivoting and wheels mechanisms.



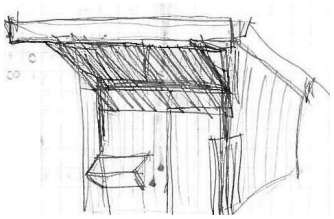
3. To relate its form to the floating structure, an arched structure is applied to the facade.

After discarding the rounded shape for the floating structure, new sketches were made seeking for new formal elements.

4. Folding, irregular surface. This idea was dropped because its current extensive use could compromise the building identity.



5.Straight, rectangular composition, doesn't relate to the ever changing Holzmarkt context.

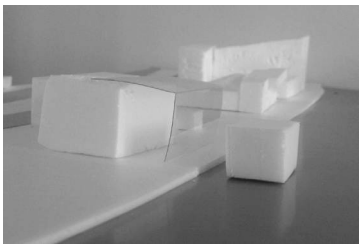


6.Compact unity with flexible elements. The projected roof creates a dialogue with the floating structure**.**

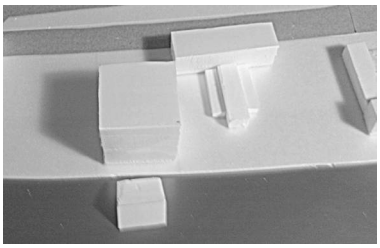
2.3. FLOATING + ON LAND

SHAPING THE RELATION

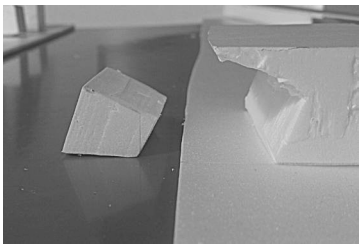
Using physical models, the relation between the two volumes was further investigated as well as their relation with the surroundings.



1. Two squares, connected by a transparent foyer. Because of the orientation, it woulf requiremore shading.

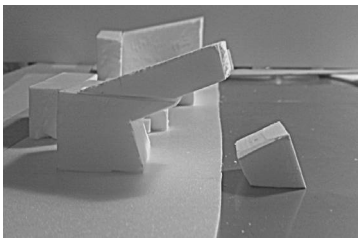


2. Rotating the floating box creates singularity, promoting interest. This shape suggests an oversized joint or dovetail.

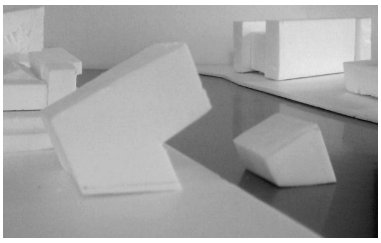


3. The solid on land volume is carved to underline the complementarity. The facade is partly shaded.

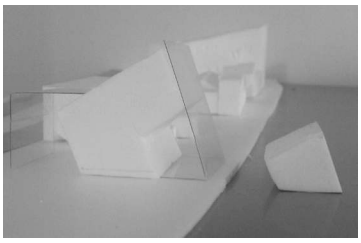
The idea of complementary boxes is further developed. Some experiences are seeking for an optimal shape that could host efficiently the program and protect the facade from overexposure.



4. Extended roof reinforces the connection between elements, but it will create a complex spam that covers excessively the river side.



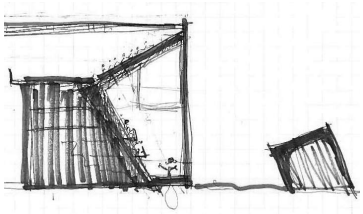
5. Clear and compact box that is also tilted , reinforces the openness of the building to the surroundings.



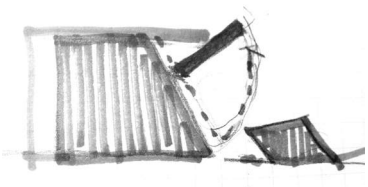
6. The open space originated between the volumes could use protection, for it to become more useful during the cold season.

TRANSLATING THE CONCEPT

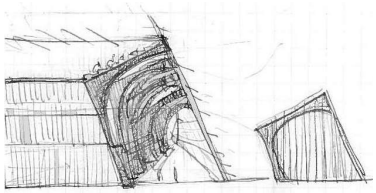
A third space is created in the meeting between the on land and floating theatres. This space is vital for the building's concept, since it will work as the link between the community and the theatre practitioners.



1. An open air theatre will take use of the shape to organize the audience, directing the stage to the river promenade.

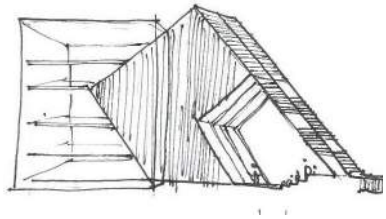


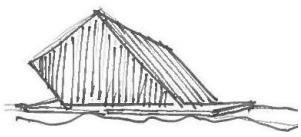
2. For a deeper integration, the whole theatre could open itself to the open air venue and the floating structure.



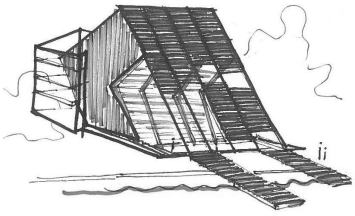
3. Another alternative for the integration could be applying as a similar structure used in both elements,

Once more the curved lines were discarded since the concept of the building requires a simple shape and structure, able to invite the community to take part of the proposed activities.





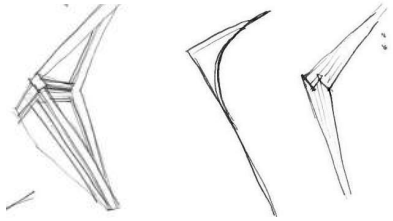
4. The façade composed of movable wooden elements protects and shades the open air theatre. A glazing block is attached to the back facade to host administrative function, guaranteeing natural light.



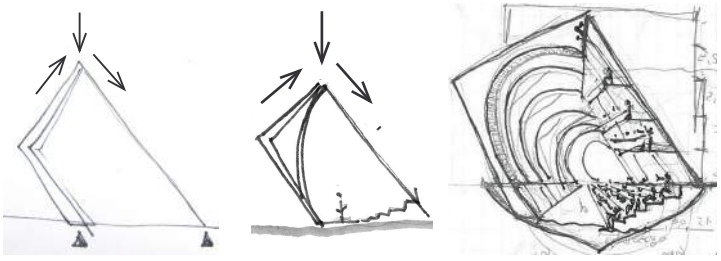
5. The connection with the floating theatre is reinforced by the wooden elements that can slide trough rails becoming decks for access.

2.4. STRUCTUTAL INVESTIGATION

Since the initial sketches, structural elements were considered in a tectonic manner, creating and furnishing the spaces. However, at this point, some further investigations were done concerning their performance.

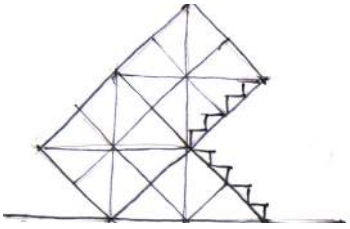


1.The idea of using a framed structure correspond more to the shape and, with the possibility of supporting a large span, could collaborate offerig a free plan, important for an adaptive space.

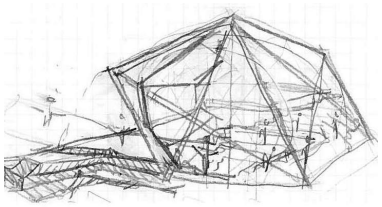


2.Relating the interior of the floating venue to the fish shape, an arch can be inserted, also reinforcing the structure.

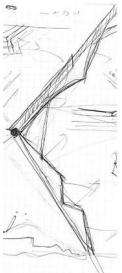
Seeking for simplicity and modularity, other structural system was considered. The chosen material is timber and glulam.



3.After simplifying the structure in squared braced frames, the modules are tilted to follow the shape. The two main diagonals will receive the audience's sits.



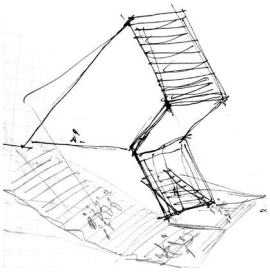
4. The same idea is tested in the floating theatre but it must be combined with a folding wall that furnishes the interior of the room and works as the main entrance.



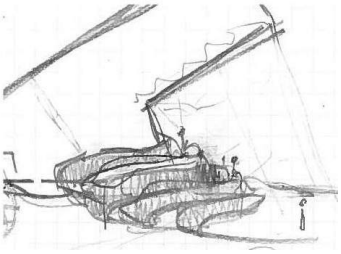
5. Inside the Theatre, these elements represent the organic nature of the fish and help with acoustic comfort. Besides, when opened, it creates steps for the outdoor audience.

2.5. SURROUNDINGS CONNECTION

The shape of the building creates an open air theatre and an area for interaction with the public, however, it is not connected enough with the Holzmarket. How can we become part of the community?



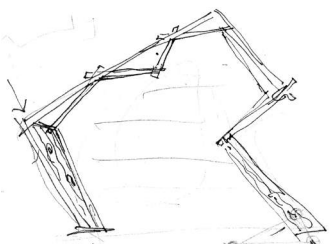
1. Staircases are malleable elements. They can be used in different moments for different activities.



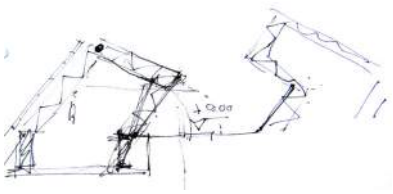
2. Reflecting the landscape of the Holzmarkt, the stairs can turn from a hill in to audience seats for the open air theatre.

3.The hard-organic shape of the stairs enters the building, conducting and inviting the public.

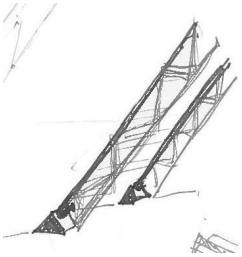
The framed structure has been chosen and it's elements are further investigated, seeking an expression and a 'gesture' that reinforces the building's concept.



4. Timber was chosen as the primary material for the façade, therefore glulam elements can be used for the structure, combined with a trussed roof.



5. A full trussed frame can be an alternative, since it relates to the cranes usually found in the area; once a small harbour.



6. Although glulam was the initial material choice, metal is an alternative, being more suitable for trusses.

2.6. CONCLUSION

During the sketching phase, all the experiments and ideas were being refined, leading to our concept of clear and simple volumes that, combined, create different venues and experiences.

The space became interactive and invites people to take part of the activities. Both volumes are organized and connected by the staircases that create an exciting contrast between the rectangles and its hard landscape shape.

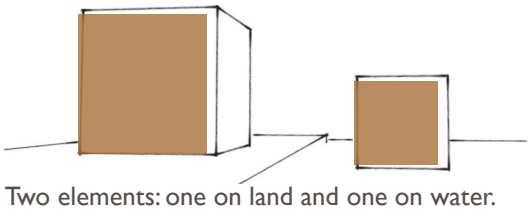
Likewise, the structure should have a straight and simple shape, and the choice of using glulam as the structural material was taken considering both reasons: aesthetics and sustainability.

SYNTHESIS PHASE

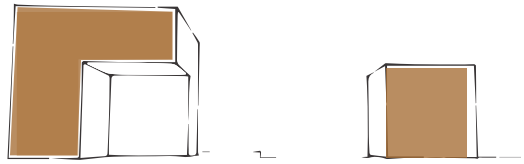
3.1. DESIG CONCEPT

CONNECTING THE BUILDINGS, CONNECTING TWO DIFFERENT WORLDS

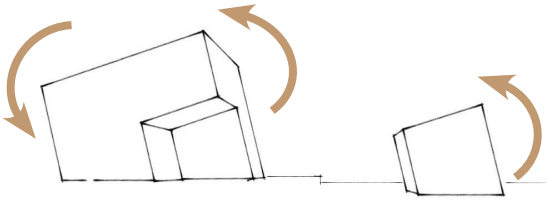
Although the two buildings cannot be physically connected since they are separated by the water and the river promenade, they must efficiently function in both situations: together and individually; in order to create diverse experiences. This relation represents the proposed concept, where the interaction between two different worlds produces a unique result.
Trough the volume's shape, materials, structure and function it is possible to esthetically and emotionally connect them, becoming obvious for the local users as much as the whole urban context.
Design parameters regarding the volume, plot occupation, accessibility and orientation are taken into consideration in this presented solution.



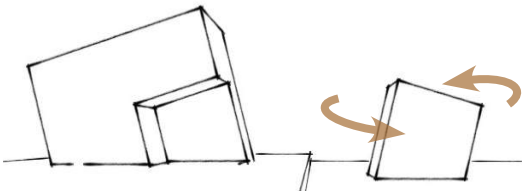
Two elements: one on land and one on water.
How to connect them aesthetically an emotionally?



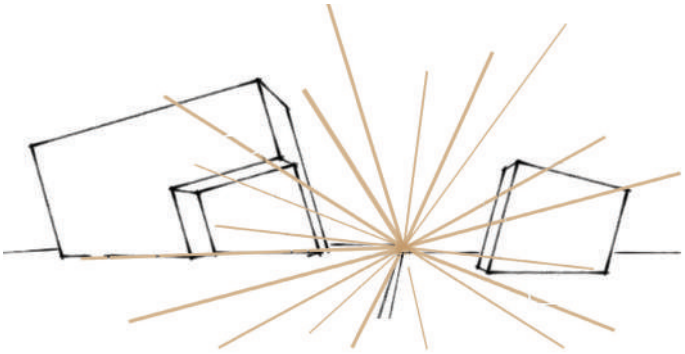
The smaller element on water is detached from the main structure; they complement each other.



After rotating the volumes the geometry opens itself to the surroundings and creates an intriguing shape, inviting people to approach the building.



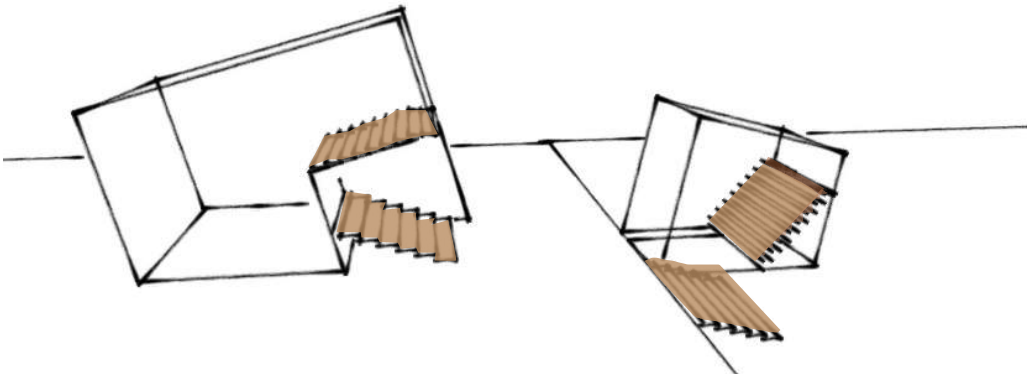
To frame the space created in between the building, guaranteeing an adequate atmosphere, the floating volume is turned.



This new space is where the real life and the spectacular life merge together. It must be designed in a way to attract and invite people to take part of the creative theatric process and interact, facing new experiences.

3.2. ORGANIZING, INVITING AND LEADING

After designing a simple but strong shape, the space created in between the buildings must be elaborated focusing on effective functions and activities to be hosted and the requested atmosphere. Moreover, it is essential that the volume does not close itself in relation to it's direct neighbours, the Holzmarkt community. Design parameters regarding the permeability, flexibility, accessibility and connection to the surroundings are specially taken into consideration in this presented solutions.



The shape of the tilted volumes acommodates the audience, and an open air theatre becomes the joining element to connect the two buildings, and the two worlds. When the floating structure is docked, the wolume will be opened and connected to this open air theatre, complementing the auditorium with its own structure.

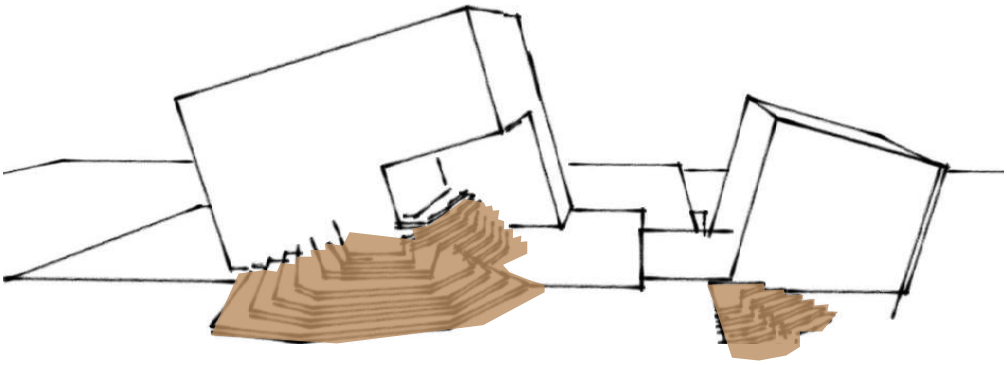
STAIRS

More then just an auditorium, the stairs can provide many uses and experiences. They become themselves an atraction and serve the public independently of the building's functions. It is a scenery for the life of the city.
In the folowing images is possible to see some of the different possibilities for the use of stairs:

Fig. 84.1. Gathering

Fig. 84.2. Organizing

Fig. 84.3. Storaging



The stairs will take a initial carachter of a hill, connecting the buildings to the neighbour landscape, thereafter they transforms themselves in the auditorium for the open air theatre. They provide access into the buildng, and enters the volume furnishing the restaurant, leading the public to the other central staircase that keeps its hard organic shape. Likewise, the floating teathre is organized by the stairs that provide the public with a close connection to the water.

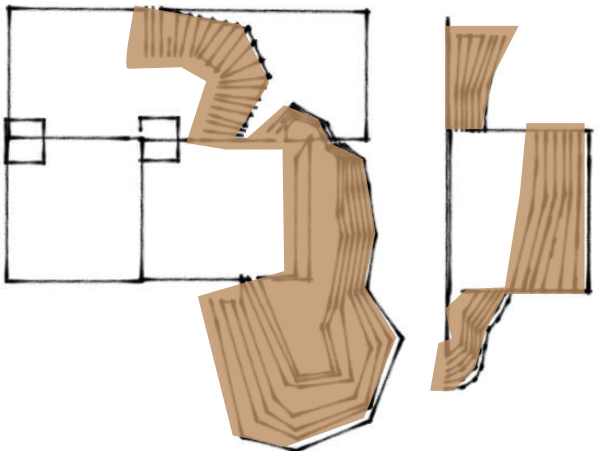


Fig. 85.1. Landscaping

Fig. 85.2. Connecting

Fig. 85.3. F urnishing

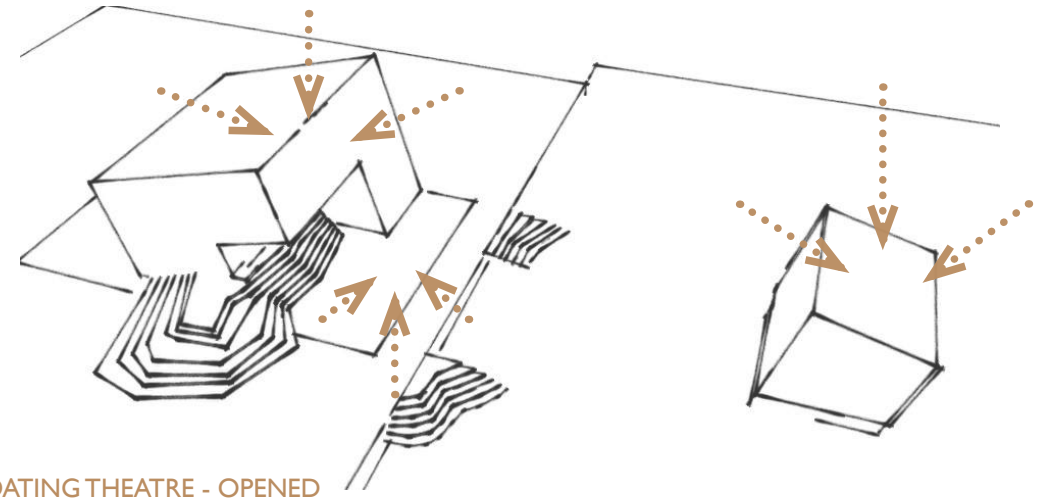
3.3 CREATING EXPERIENCES AND INTERACTION

The theatre complex is formed of different interior spaces where different activities will evolve. Being a place for experimentation of the theatric realm, the spaces will collaborate for a broad experimental spectrum. This will also keep the public interested and the building operating as much as possible.

FLOATING THEATRE - CLOSED

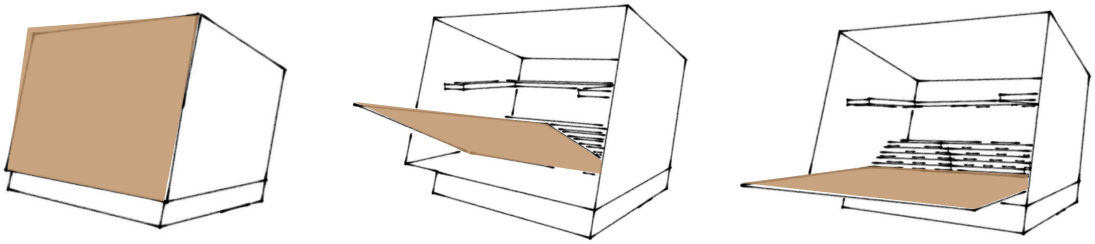
Two main scenarios are planned for the interaction between the two buildings:

- When the floating venue is hosting the site specific performance, the volume is closed and a tow boat will carry it along the river. In the meantime, the open air theatre and the main theatre room will be available for independent performances.



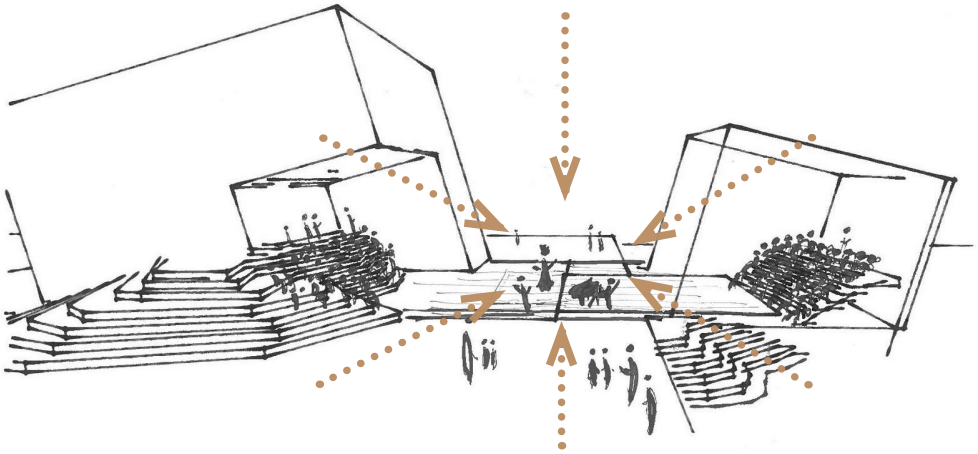
FLOATING THEATRE - OPENED

Another scenario is possible when the floating part is docked and opens itself to create another typology of outdoor theatre, the traverse stage. This will be possible when the lateral wall of the volume on water is opened and connects itself with the existing floor of the open air theatre, merging both audiences.

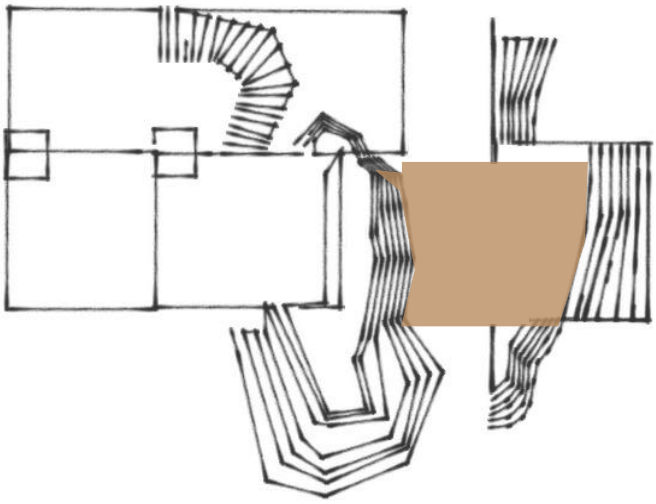


The mechanism will also provide dramatic access to the floating venue, with an engine that closes and opens the door before and after the performance, creating expectation and underlining the theme of the play; trapped inside the fish.

When this set will be prepared, the stage will be located in the centre of the auditorium and will then became the expression of our main concept: the real life, represented by the movement from the river promenade will become the stage. The public should feel invited to performs, to interact with the practitioners, or just watch freely a performance that will eventually inspire towards reflection.



Many other configurations can be developed by the practicioners; the buildings organization and construction permits and underlines the experimental caracter of the place.
The stairs have being designed with intermediate platforms to provide spaces for small size isolated performances in combination with other scenarios.
The art of the theatre is specially creative, reinterpreting and changing the spaces as much as it collaborates with the performance, adding character, functionality and poetry. Therefore, free spaces are designed with the purpose of future iterations and adaptations.



3.4. CONTROLING PRIVACY, AND LIGHT

Other aspect that facilitates the adaptability of the spaces is the control over the facades. The workshops, rehearsal room, administration office and other common functions require big amount of natural light, and also the possibility of controlling it, avoiding overheating and glare. Therefore, insolation and shadows are simulated and studied in the following diagrams.

Fig. x.1. and 2 , Winter Solstice 9am

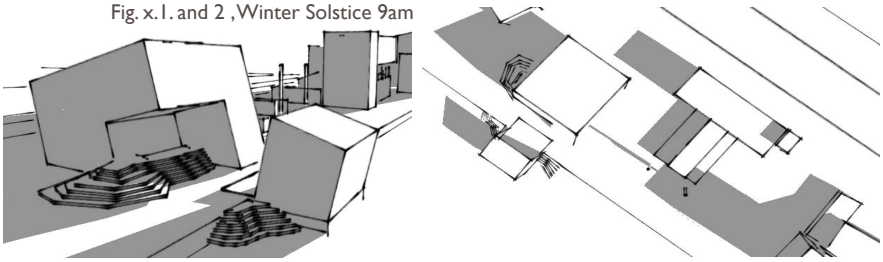


Fig. x.3and 4 Summer solstice 3 pm,

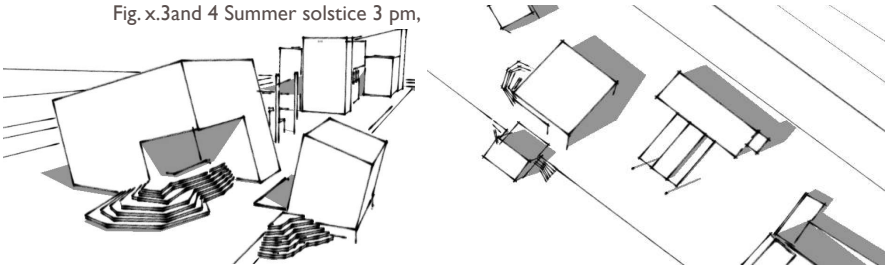


Fig. x.5. and 6 Summer solstice 9 am

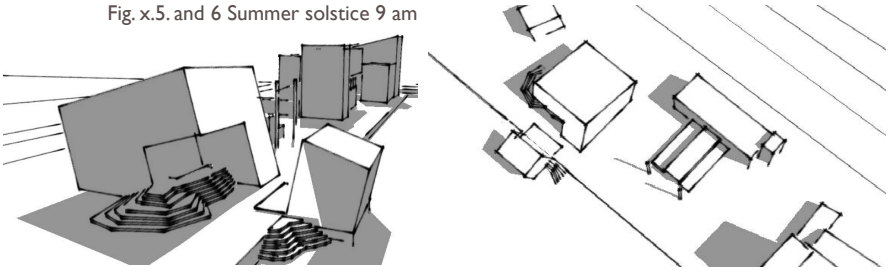
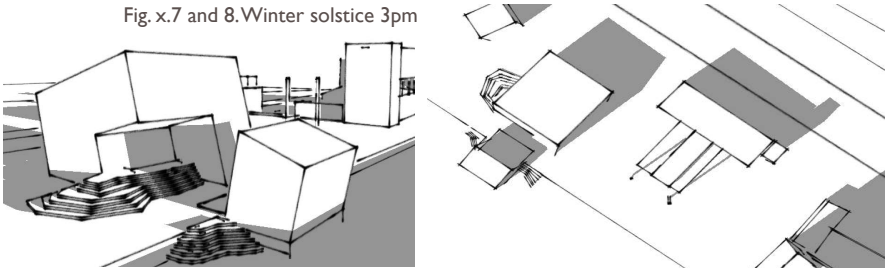


Fig. x.7 and 8. Winter solstice 3pm

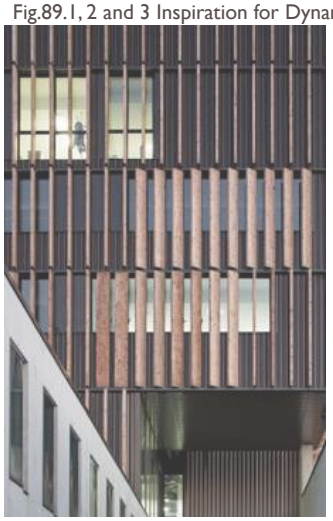


Following the above images, it is possible to understand that the volume will be highly exposed to direct sun light, mostly because little or no shadow is cast from the surroundings.
Even though there is a substantial amount of cloudy days in Berlin, during the winter time, the building will receive enough day light. This is a positive aspect during the cold season, but it can be problematic during summer time when overheating can compromise the comfort.

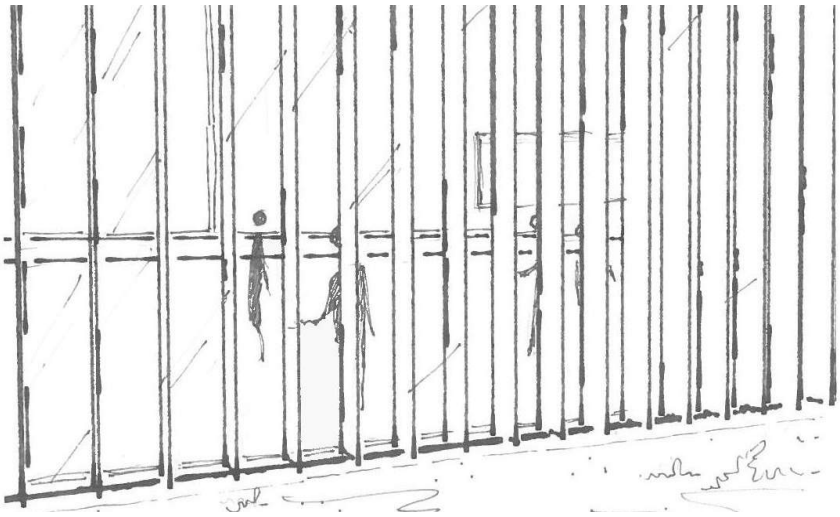
3.4.1. GLIPS OF VIEW HANDING CURIOSITY AND CONTROLING PRIVACY

Added to the necessity of controlling the sun light, the idea of opening the building to the public is a strategy to provoke curiosity, stimulating the interaction between the practitioners and the community. The workshops, the rehearsal room and the main theatre room can be opened and closed to fluctuate the amount of light and control the view trough the dynamic facade, composed by vertical louvres. These elements are coating the volume, reinforcing the use of wood as having an adaptable character to iterate and experiment.

Fig.89.1, 2 and 3 Inspiration for Dynamic Facade

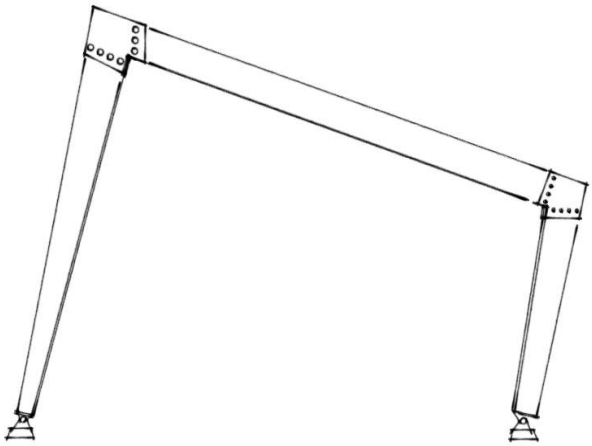


Moreover, the vertical elements will be organized in modules, to be controlled manually by the users, underlining the interaction and autonomy over the structure.
The building's facades became another scenografic element giving the users the opportunity to adapt to the building when it shows it's intentions according to the climate.



3.5. TECTONICALLY CONSTRUCTING

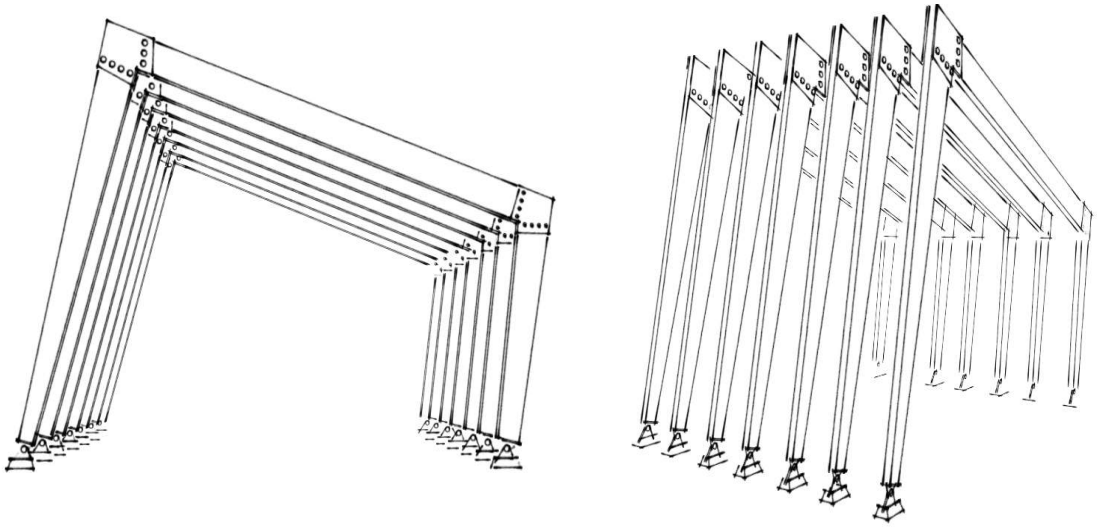
Following the tilted shape of the volume, the structure was thought to create free plans, covering the large span, hanging the shell upon the interior spaces and their individual requirements.
Glulam was picked to reinforce the choice of wood as the main construction material of the building, with it's intrinsic characteristic of warmth, relating directly to carpentry, so often used in the theatric realm for sceneries and props. Glulam is also a conscious choice for its renewable component and strong resistance to fire.



The strutural frame relates directly to the machines of the river docks, once present also in this area. The idea of a machine collaborates to link the building to the surroundings and, to reinforce this connection, joints are designed with bolted steel plates, usually found in cranes and industrial buildings.
Machines are controlled by men, and the interaction between them originates a product. Materialistic or intellectual, the finite product of the theatre is art.

Fig. 90.1. Dock Crane - Inspiration for Structure Shape Fig.90.2, 3 and 4 Inspiration for Structural Joints

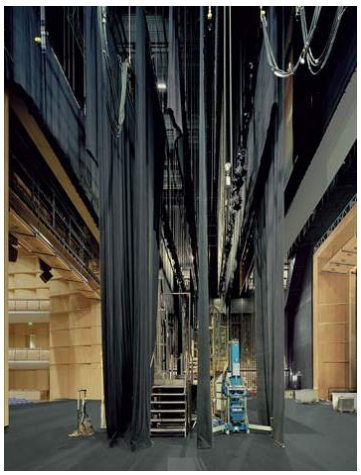
When the elements are organized and aligned to support the structure, the choice was to place them closer then usual to each other, with just 1.5 meter of distance. This choice was made to create another reference to the theatre's real: the stage's wings. This elements are strongly related to the architecture of theatre and are the places where the artists wait for their turn before finally entering de scene.



The reduced distance between the elements allows the doors and entrances to be distributed in the same rhythm of the wings, suggesting that each person can actually enter the stage, underlining the idea that all the spaces created in the building can become stages for acting and interacting.

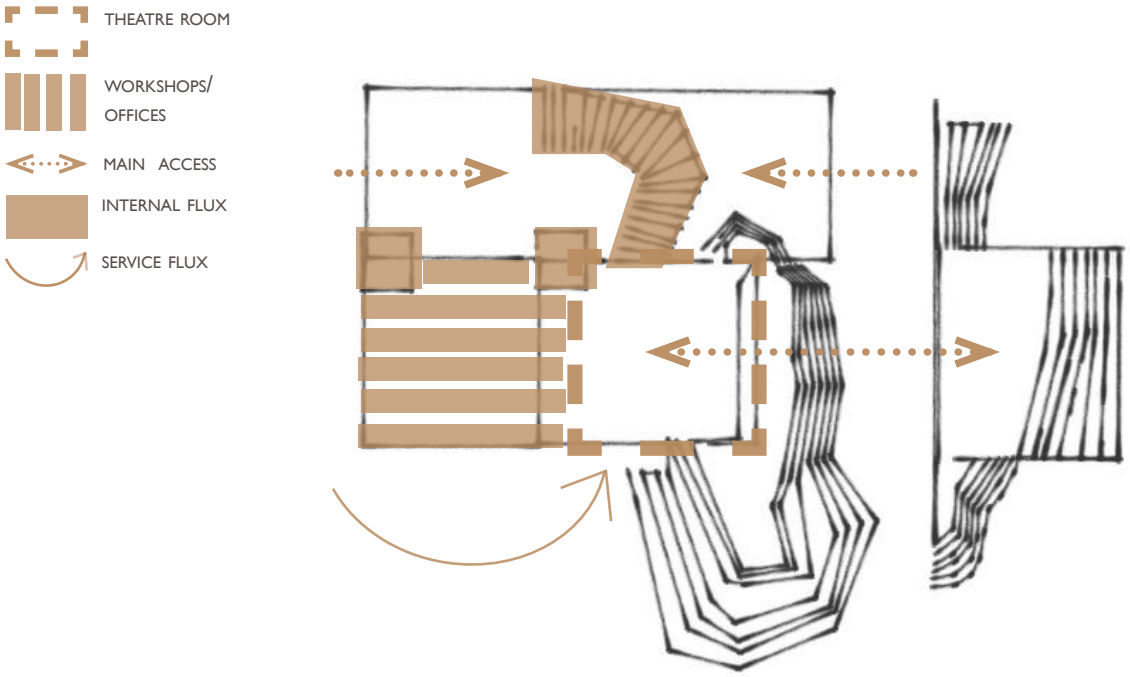
Fig. 91.1. Stage Wings - view from the audience

Fig. 91.2. Stage Wings - view from actors



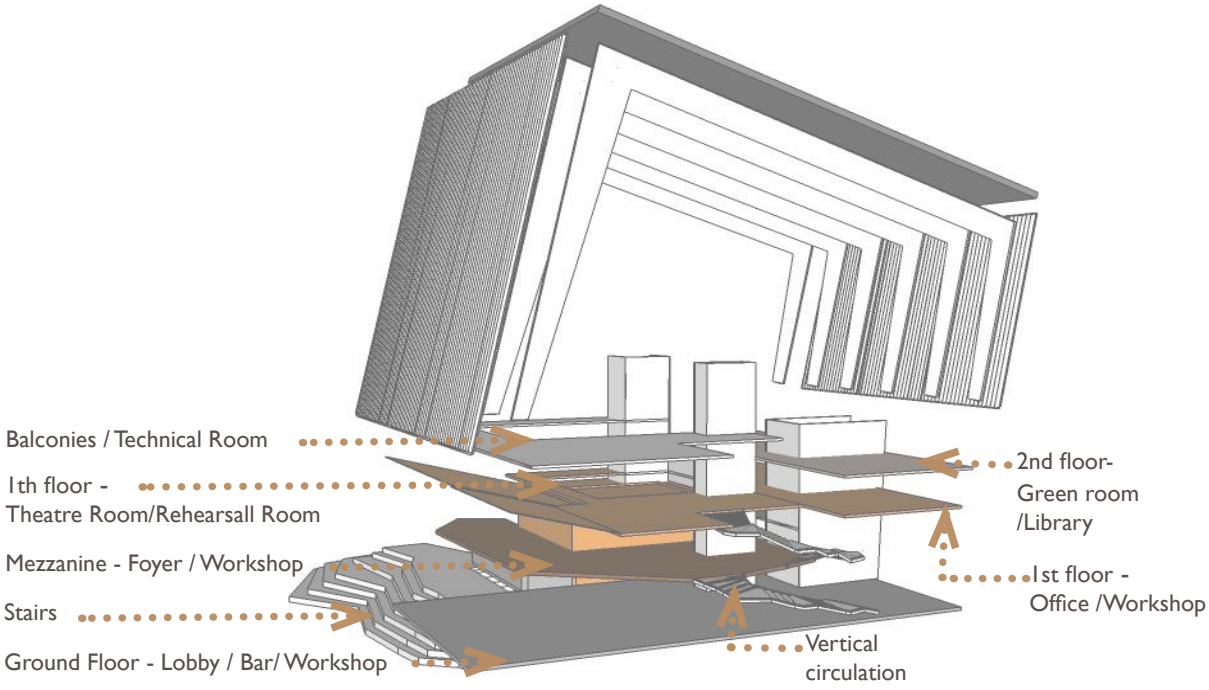
3.6. ORGANIZING FUNCTIONS, FLUX AND INTERACTIONS

The layout was planned to facilitate the relation between the spaces, placing the workshops and the theatre room directly connected. In this way the ideas experimented can be directly applied and tested in the venue. Meanwhile, the circulation happens freely from one facade to the other, connecting the street to the river. Special care was taken concerning the permeability across this lobby area, to permit the visual connection between Holzmarktstrasse and the river side, with the floating venue.
Also, physical accessibility is guaranteed in thess mergent areas, where elevators, ticket counters and foyers and stairs prepare the public before distributing them throughout the theatre.

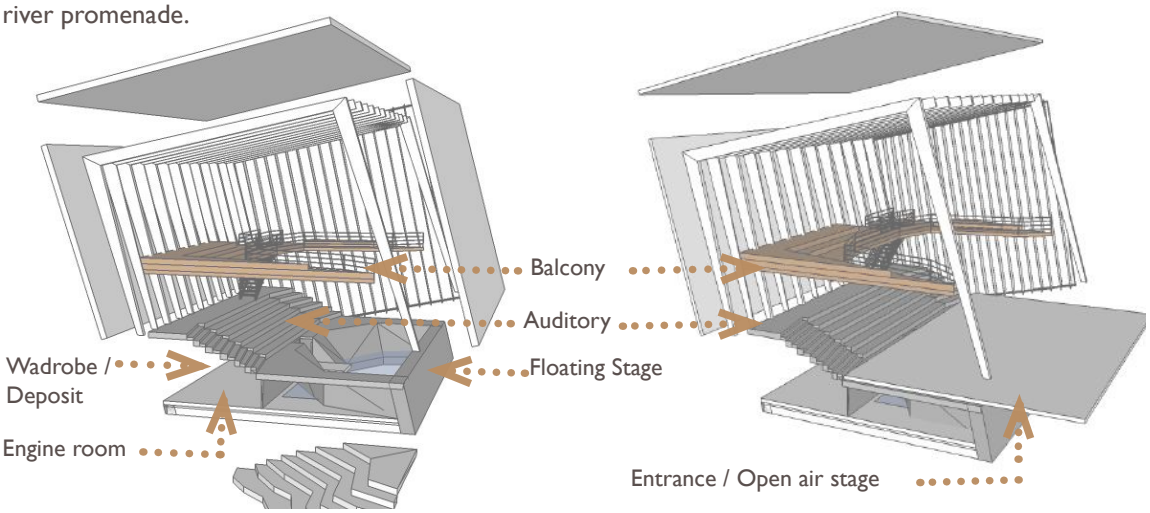


The ground floor also hosts the bar/café, with direct view and access towards the river promenade. This placement helps attract the public working independently of the theatres. However, it is expected that the bar will be used as the foyer for the venues, concentrating the public before and after the presentations.
The stair cases give access to a second foyer, with an overview upon the river and the lobby. This separation is important in case of small venues, where the full capacity is not used and the space can be shrank in order to achieving intimacy. As all others, this area can gain a multi use purposse for exhibitions or receptions.
A service access is located on the left side and is hidden by the stairs that will also be used for storage.

The illustrations show how the floors are organized with different functions.Vertical circulations are planned to fulfill fire escapes requirements, and also divide the flux from the theatre public to the everyday users.

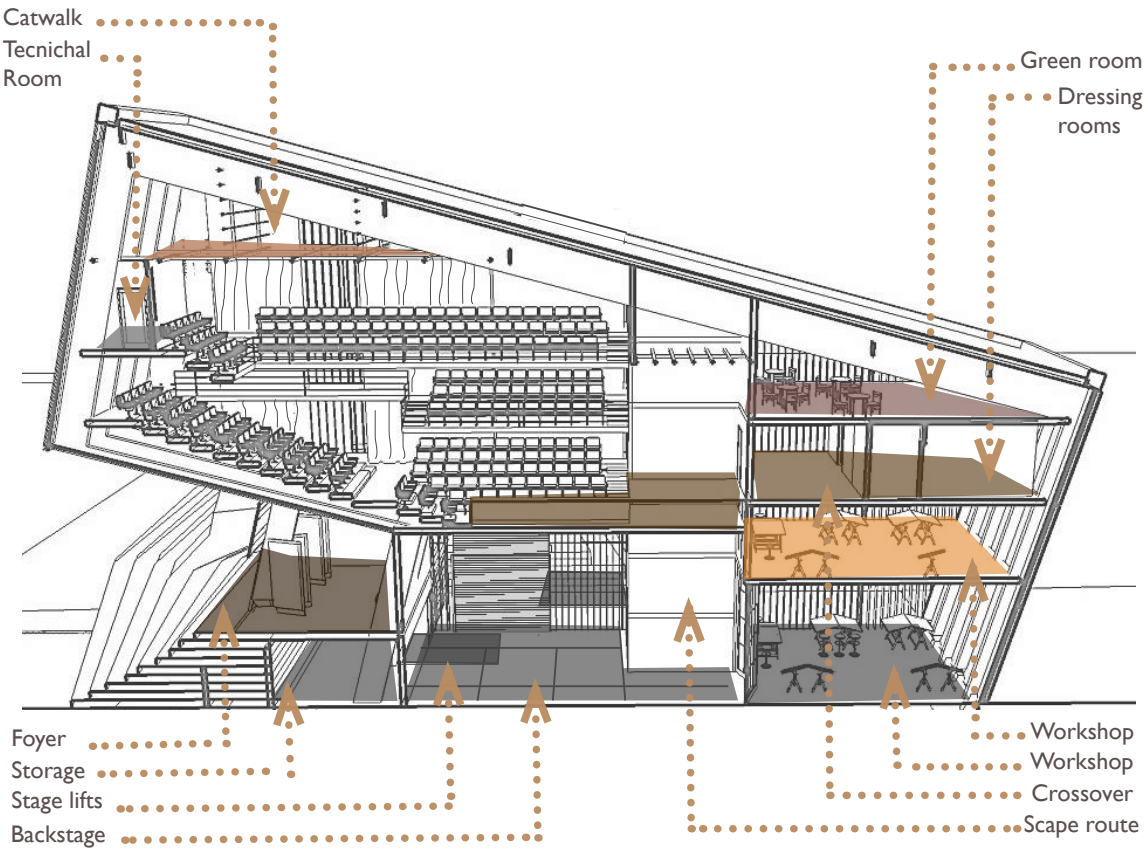


In the floating structure, is important to see the transformation that is offered when the stage is covered with the main wall/door, creating another plain surface, to be integrated with the open air stage on the river promenade.



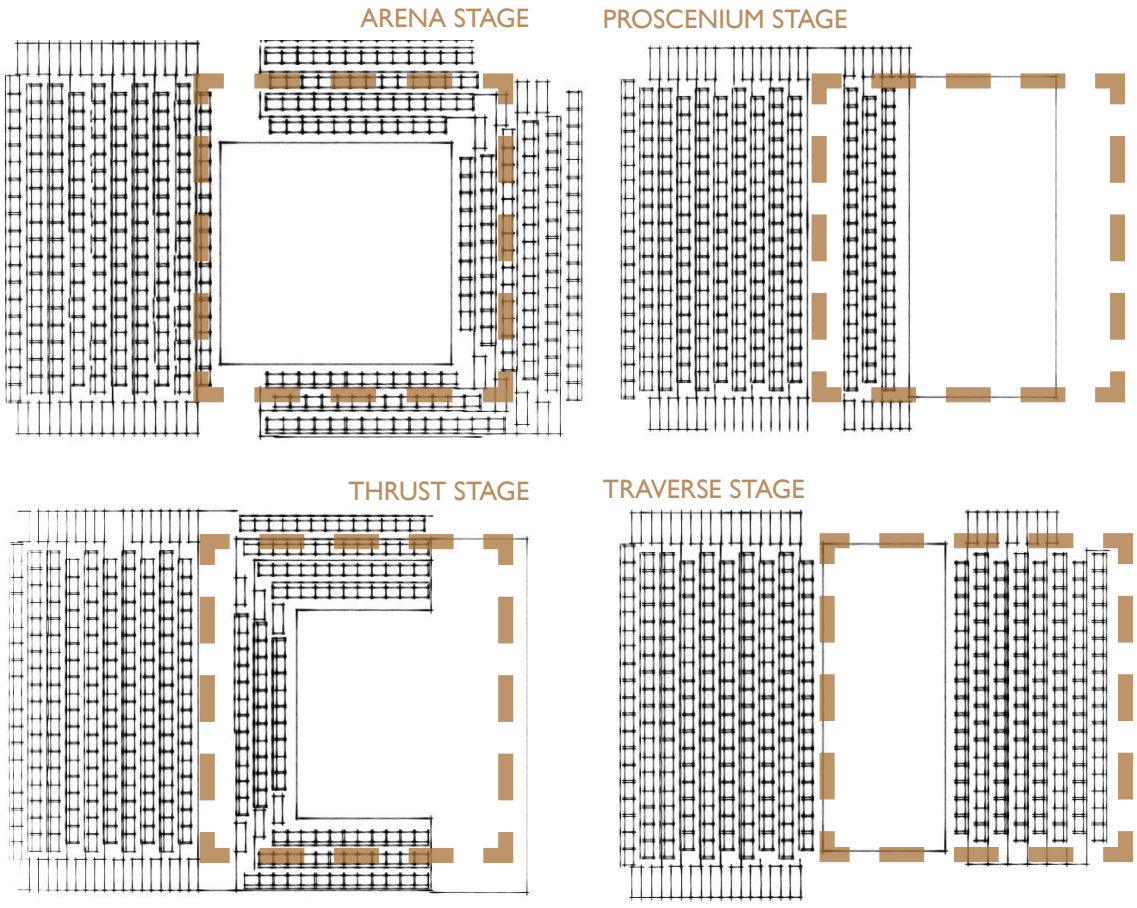
3.7. THEATRE ROOM

During the theatre room design, choices were made in relation to the atmosphere that we were seeking to achieve. As previously described, the main intention is to create an intimate space, able to directly connect the audience with the actors, avoiding the presence of technological or architectural elements that could distract the public from the event. On the other hand, the distribution of the audience is made with special concerns, not just for the visual and acoustic benefits of the audience, but also of the actor's comfort. Therefore, the room is ' furbished with people' creating a direct and symbiotic relation of interaction. Two extra layers of balconies were designed beside the main auditorium, in order to bring the public as close as possible of the stage.



All the specific demands for the theatre room are provided, with a dedicated spacious area for artists, with a green room located on the attic, enabling privacy and contact with the open air. Though a separation wall the green room is also connected to the library and has two independent entrances from the ground floor. In the above diagram, it is possible to see how the backstage works: placed in the bottom of the stage, directly connected to the storage and exterior service gate. Also, it is directly connected to the workshops, so that the scenery can be set up entirely in this area before being elevated trough a system of lifts fixed on the perimetral walls.

This lifts, broadly used in theatres nowadays, will provide velocity in changing the scenography, the stage location and moving the stair up and down from the storage, enabling other driving aspect in the theatre room design: the adaptability and flexibility of the layout.
To be used as an experimental room, it is imperative that it can follow the practitioner's creativity adapting the stage and the audience in infinite possibilities. However, the design foresees some of the most common layouts of the contemporary design, as seen below.



The dashed line represents the perimetral limit of the backstage and the area that can be modified with the use of lifts; hence, is possible to understand that the stage will always be able to adapt to new scenery directly trough the lift planks.
On the other hand, they are organized in a way to prioritize the main auditorium, that is fixed and uses the volume's construction to accommodate most of the seating. In this way, less effort is required to setting the chairs, reducing working hours.

3.7.1 ACOUSTIC

During the development of the design, acoustic parametres were applied seeking mainly to isolate the interior from the surrounding's noise and guaranteeing an optimal acoustic for the venues.
However, after the study trip, where we visited contemporary theatres and talked to skilled acoustic tecnhicians, some parametres were rearranged and new priorities where defined.
For a sucessful intimate theatre room, higly flexible and experimental, it is essensial that no equipments, structural elements or even furniture are inserted between the audience and the actors. In this kind of spetacle, the clarity of speech is the most important acoustic achivement.
Therefore, other parametres become essensial to our design such as: the volume, seatings arrangment, audience capacity, materials textures and the sound isolation from external sources.

AUDIENCE'S LAYOUT: Probably the most important choice regarding the acoustics in the room was the placement of the audience. Since the theatre should be intimate and prioritize the direct contact between actors and audience, the auditorium was distributed in a way to wrap the stage, guaranteeing the maximum vicinity of each seat to the stage. Moreover, distributing the audience into two levels of balconies, we take advantage of the natural distribution of the sound.

VOLUME DESIGN: The shape of the room is acoustically efficient, collaborating to spread de sound in direction to the audience. Without parallel surfaces we have a 'speaker effect' that reflects the sound easier to the late audience and higher to the balconies.
Moreover, the ratio between the number of people and the total volume is within the recommended.

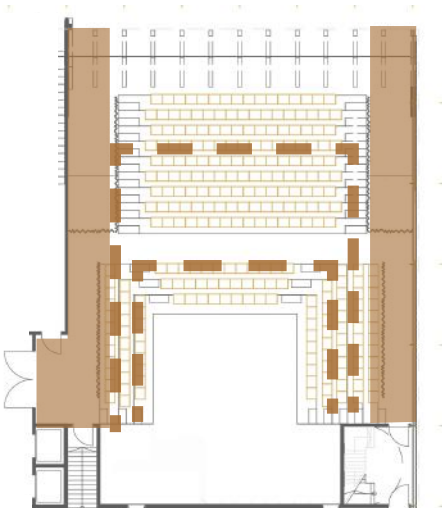
BUFFER ZONE: In addiction to the sound proof insulation applied on the peripheral walls, the circulation corridors, required specially for the fire escapes, will be closed, in order to guarantee the separation between the other areas of the building, providing also insolation for the eventual exterior noise. This empty area will work as a buffer zone and, for the same reason, an extra space was destinated for the main entrance.

ROOF INSULATION: The green roof will work to insolate the room to the outside and avoid internal losses.

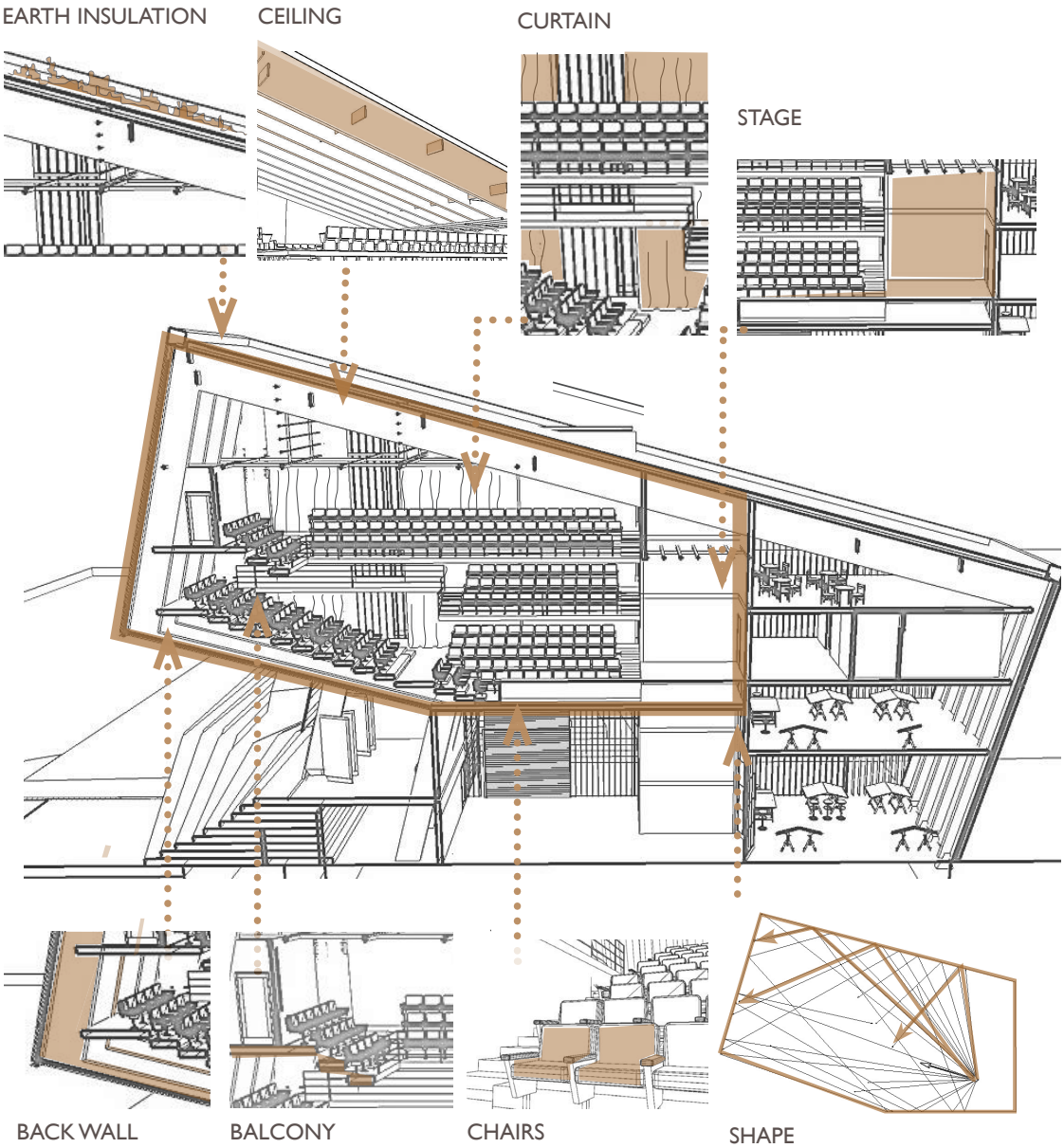
CEILING ELEMENTS: The ceiling will be defined by the structure, creating a reflexive surface, avoiding echoes and collaborating with the appropriate reverberation time.

BACK WALLS ELEMENTS: Likewise the ceiling, the structural elements will help avoid the sound "ricochet" back to the stage.

CHAIRS:
To avoid that the room loses its intimacy, all the sits will be covered with absorptive material to maintain the reverberation time.



AUDIENCE LAYOUT BUFFER ZONE



BALCONIES: No deeper then twice its high avoiding auditorium distortion.

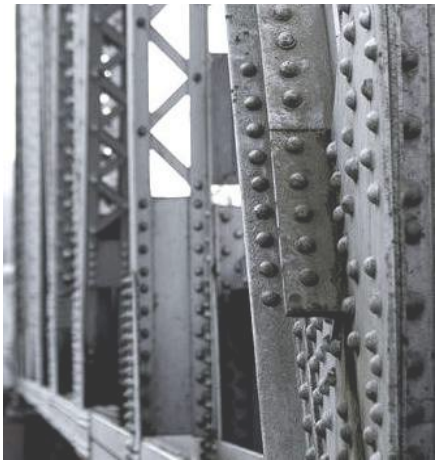
STAGE: The stage walls and floor will receive an absorptive material to avoid echoes during the performances.

CURTAINS: The lateral walls, partition to the buffer zone, will receive a velvet curtain layer, able to open and close to change the acoustic of the room as necessary.

3.8. MATERIALS

In addition to the structure that was inspired by the dock cranes, other elements from the old once existent industrial buildings and warehouse, inspired us to design the furniture and the details of the building, in order to create a warm atmosphere that relates to the surrounding and it's history, respecting technologies and materials in their best application and use.

Fig. 98.1,2,3 and 4. Inspiration - Industrial buildings details




Mixing old and new materials, the design will collaborate to create the sought atmosphere, with personality and warmth, at the same time reinforcing the idea of the building becoming a place for production, creation and interaction, not comparable to a museum or a philharmonic.
Moreover, materials like wood, steel and concrete age well, not compromising the aesthetic but, on the contrary, interacting with time, adding experiences to the building's life.

Fig. 98 .5,6 and 7 . Inspiration - Contemporary reinterpretation of industrial



Three main kinds of wood will be combined in the complex: wood for the facade's louvres, recycled wooden planks for the floors of the stages, workshops, stairs, offices and library, and glulam for the structure in both floating and on land buildings.
The same wooden planks are applied on the open air stage and on the door of the floating theatre that, when connected, will merge into one surface.

Fig. 99.1. Reference - Wooden louvres

Fig. 99.2 Reference - Stage floor

Fig. 99.3,Reference -Glulam structure

Concrete floor will be used in the front stair cases that will serve as audience for the open air theatre. For continuity, durability and thermal mass use, all the slabs will be also in concrete.
Red chairs and red curtains are chosen to compose the atmosphere connected to the warm materials, directly relating to the old industrial buildings period, besides identify with the main building function: a theatre.

Fig. 99.4 Reference - Red chairs

Fig. 99.5 Reference - Concrete floor

Fig. 99.6 Reference - Read curtains

3.9. SUSTAINABLE SOLUTIONS

The approach of working with passive solutions as an integrated part of the design, is intended to reduce the energy consumption to a minimum. In addition to the previously presented solutions; like the orientation of the building and the use of dynamic facades; other technologies are considered to collaborate with the sustainability of the building. (they will be briefly described although not precisely calculated)

GREEN ROOF

The shape of the building offers a vast roof area, that will be visible from the surroundings fitting up in the urban context. A green roof will collaborate to the roof's aesthetic and also technical aspects:

- Energy Efficiency - improving insulation;
- Acoustic Insolation and Sound Absorption;
- Storm water management;
- Prolong life of waterproof membrane;
- Moderation of Urban Heat Island Effect;
- Improved Air Quality;
- Increased Biodiversity.

Fig. 100.1 Green Roof

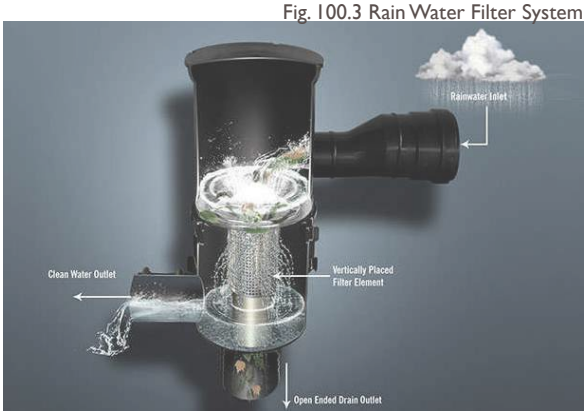
Fig. 100.2 Solar Panels In the roof

SOLAR PANELS

The German's renewable energy matrix is leaded by wind power, but although a country without abundant solar hours, Germany generated half of its electricity demand from solar energy for the first time in 2014.

Photovoltaic panels will be placed on the roof taking advantage of the free area. Produced energy will reduce the consumption from central distribution.

Fig. 100.3 Rain Water Filter System



RAINWATER HARVESTING AND REUSE

Still taking advantage from the large roof, an area was designated for the harvest of rain water, rather than allowing it to run off.

After filtered, the water can be used for toilets and also for the heating system.

Besides reducing the consumption of potable water, rain water harvesting collaborates with storm water management;

Fig.101.1 Roof Ventilation

Fig. 101.2 Geothermal Energy Instalation Detail

Fig. 101.3 Concrete floor as thermal mass

HYBRID VENTILATION

In order to reduce the energy consumption in relation to the cooling demands, and improve users comfort, it will be beneficial to utilize natural ventilation. Systems of intake and exhaustion that take use of thermal buoyancy can be applied. During the summer this approach will be most beneficial, while in winter the natural ventilation can cause heat loss. That is why mechanical ventilation, including heat recovery, will be combined in a hybrid ventilation system.

GEOTERMAL ENERGY

Since ancient times, people have been using this source of energy for taking baths, heating homes, preparing food ,and also nowadays, this technique is being used for direct heating of homes and offices.

Geothermal energy became everyday cheaper and more affordable and, in this particular case, can be easily installed given the large dimensions of the site. The theatre's building will consume significant amount of energy in the HVC system and, therefore a room is reserved for the geothermal pumps on the ground floor.

THERMAL MASS

Concrete floors will be used to absorb thermal energy when the surroundings are higher in temperature than the mass, and also to give thermal energy back when the surroundings are cooler, without reaching thermal equilibrium. This will allow the building to be heated or cooled, keeping the internal comfort for longer besides retain the occupant's thermal energy longer.

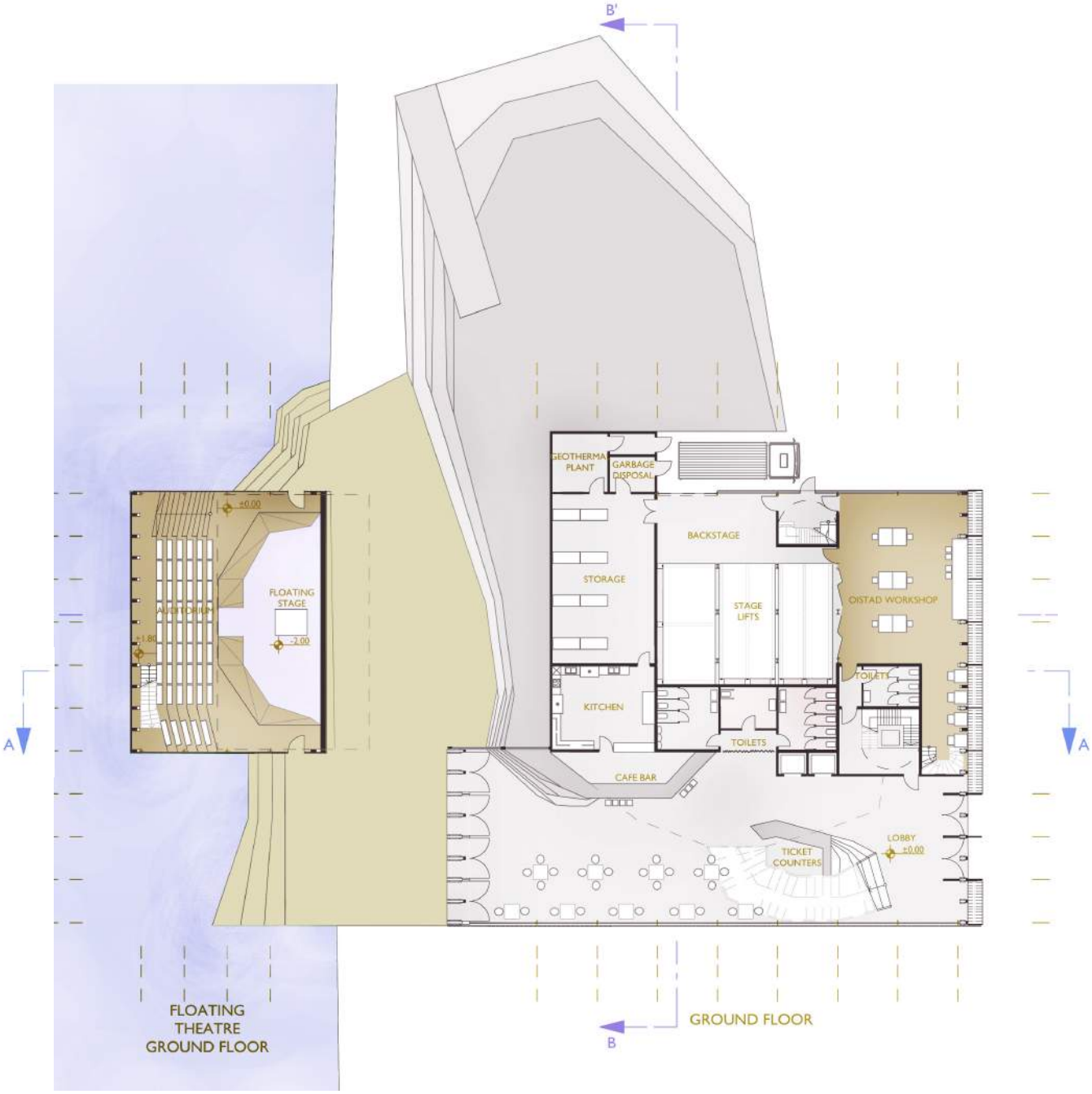
{ PRESENTATION }

4.1.MASTERPLAN

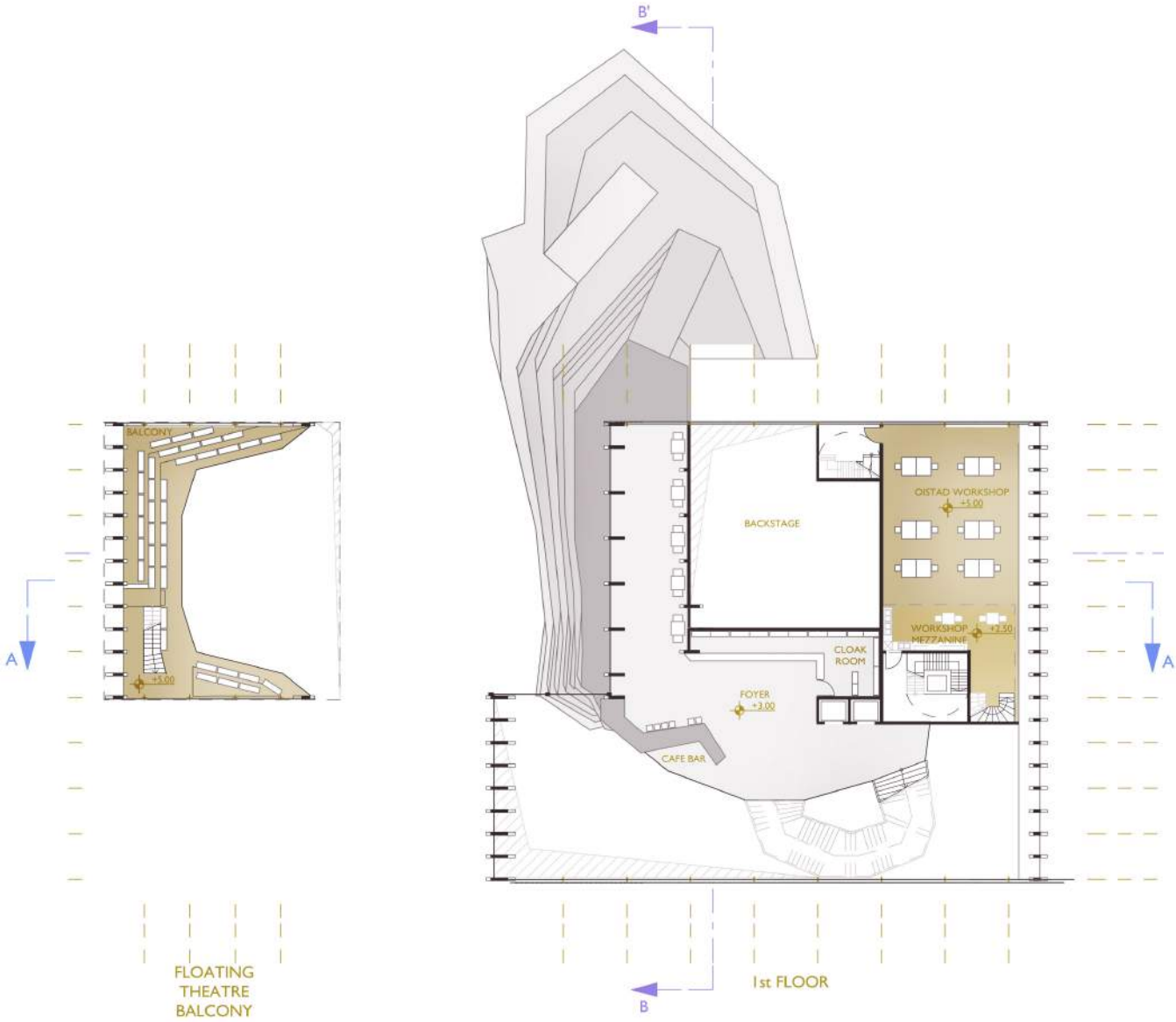
The Masterplan shows the relation between the project and the surroundings. However the Holzmarkt buildings are still uncertain due to the ongoing construction works, continuously changing their aspect. Therefore, its representation is likewise uncertain, although the trees have a realistic location.
Also in this image, the roof is pictured with its different layers of grass, solar panels and glazing openings.
The extensive area has and important aspect that was designed to collaborate with the surrounding's aesthetics, since it is going to became part of this urban ever changing context.

4.2.PLANS

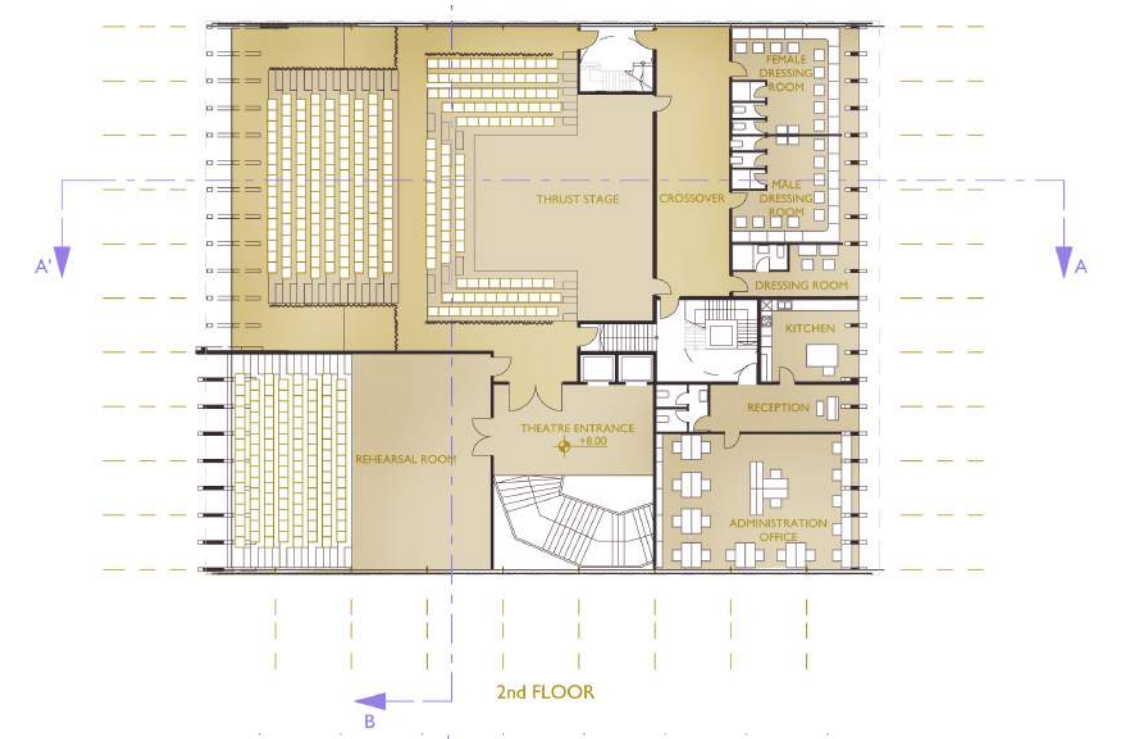
The ground floor plan shows how the staircase enters the building, turning in towards becoming the bar furniture; the tickets counter and it continues up to the interior stairs. This design strategy furnishes the lobby and at the same time conducts the public, inviting them to enter the indoor spaces.
The floating theatre also follows the same concept, where the stairs became the artificial pond where the stage and the actor will be floating on; the audience will follow the theatre's hard organic shape.

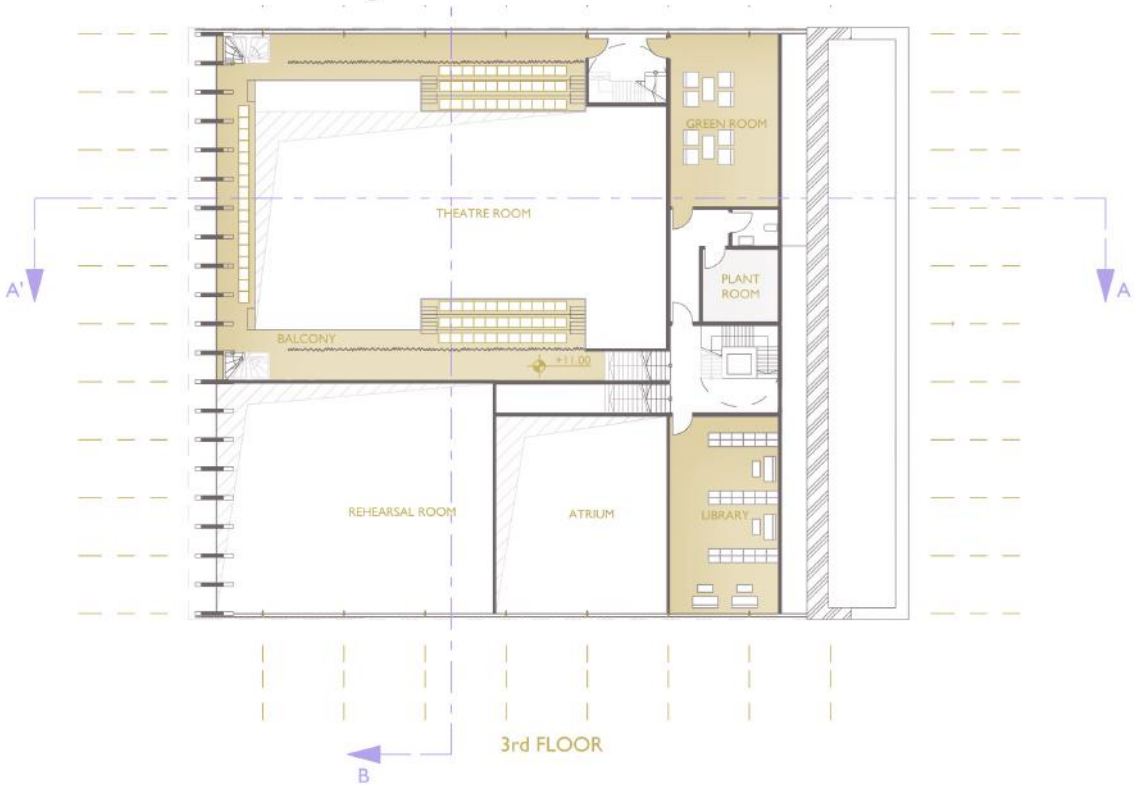


The First Floor's plan pictures the foyer and its role in connecting the exterior with the interior, being useful for both venues. Moreover, the bar rises itself from the ground floor, serving both areas. This is a strategy for dividing the foyer area proportionally to the amount of audience and scale of each performance. Alternative to its use as a foyer, this area can serve as a multiuse space, hosting other activities or even small venues happening at the same time.



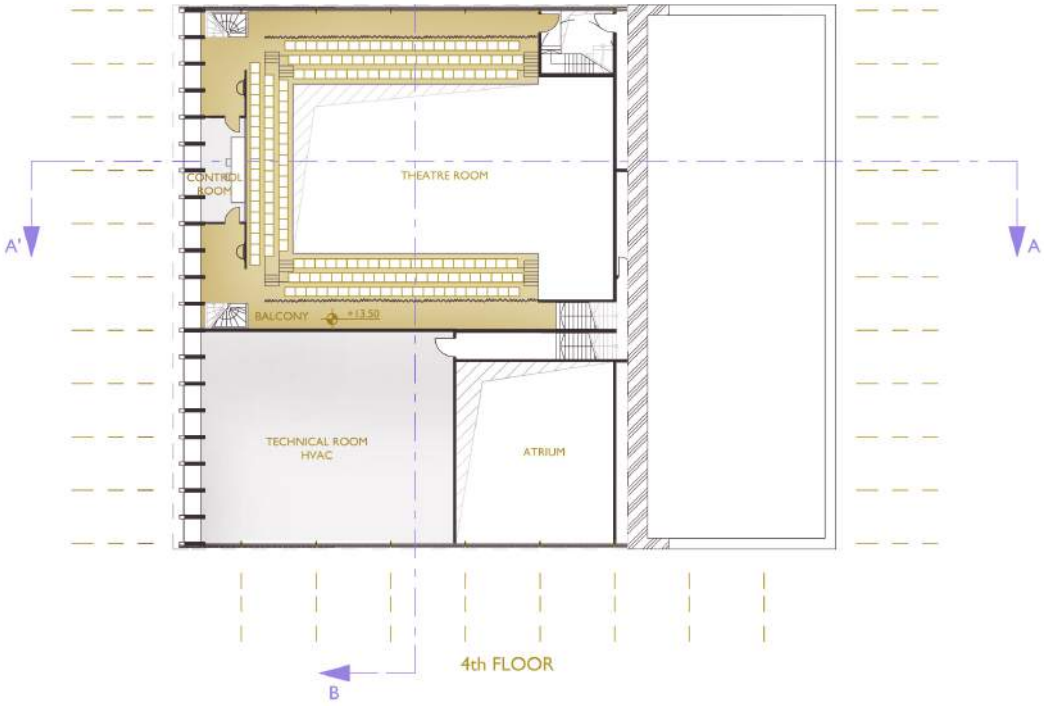
The Second Floor shows the theatre room, the actor's zone, added to two main dressing rooms, a private room is designed for special guests. The stairs give access to the green room, and also to an independent entrance, adding flexibility and privacy for their practice. The rehearsal room can be used for small venues and, in that case, the same dressing rooms are used since connected through the corridor.
Although the administration office is located on the busy floor, where its presence can be more requested, it gains its independent entrance.
On this floor, it is possible to see the green room, connected directly to the roof luminaries, useful in need of a smoking area. A library can be accessed both from the green room and the ground floor, serving the users of the whole theatre complex.

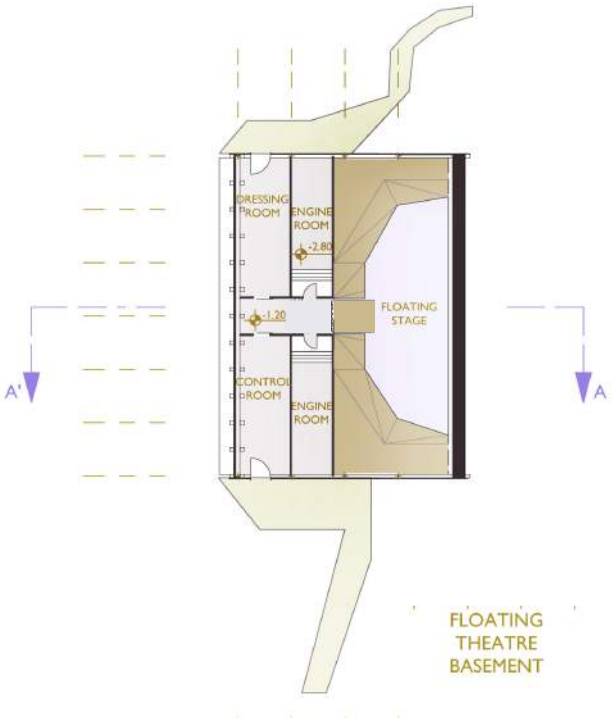




The Forth Floor shows the theatre's balconies, not dipper then 3 rows, guaranteeing intimacy, acoustic and visual comfort.
A large area was reserved for the technical room, since this kind of building request a wide range of appliances. Moreover, this area can become another workshop or host other functions in the future, when the building starts adapting itself to its occupants.

The Last image shows the Floating Theatre's basement, where the dressing room is locate. There, we also find the control room and engine room, from where the responsible will sail the building by the river. Once the actor is ready, he enters the scene (artificial pond) through a corridor were the floating stage will be docked.





4.3. SECTION

In the first section in possible to see the relation between the two buildings; their proportions and heights are showing a clear connection.
The Backstage, that actually should be called Under stage, is also visible in relation to the stage projection and adjoining workshops.
In the floating theatre, the relation between the stage on water and the audience is represented, considering that the building is actually closed while the Jonah Play is performed

SECTION AA

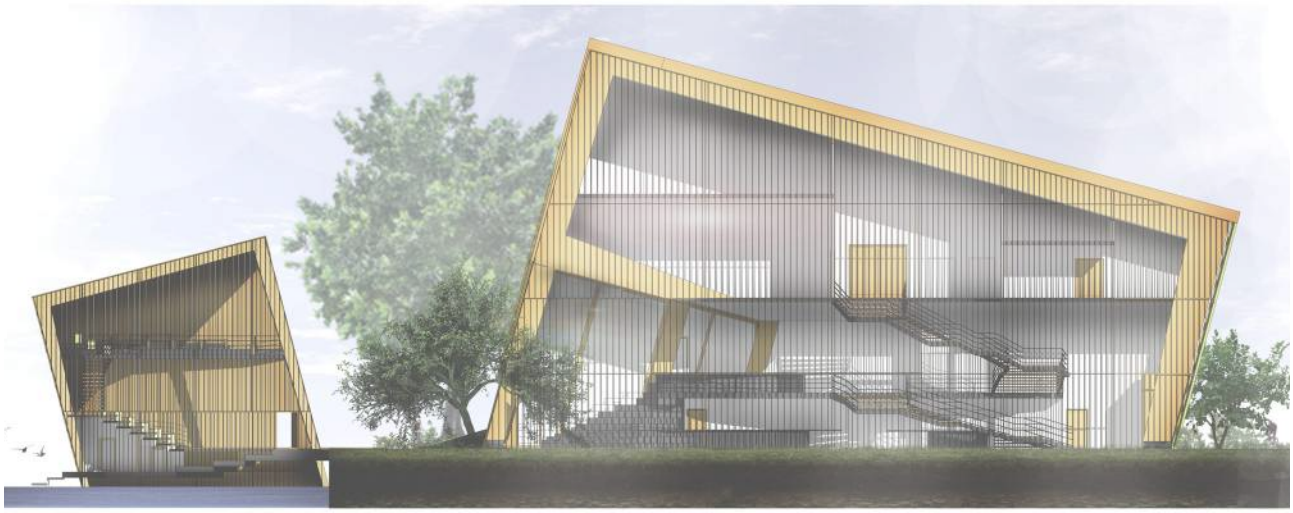
The second section offers a view to the interior of the rehearsal room, surrounded by the wooden wall and structure.
Both the rehearsal and the theatre room have ventilation windows placed in the roof, enhancing the thermal buoyancy effect. It is also clear to understand how the main lobby links with the mezzanine, and with is triple height guarantees a visual communication with both entrances, located on opposite sides of the building. .

SECTION BB

4.4. FACADE

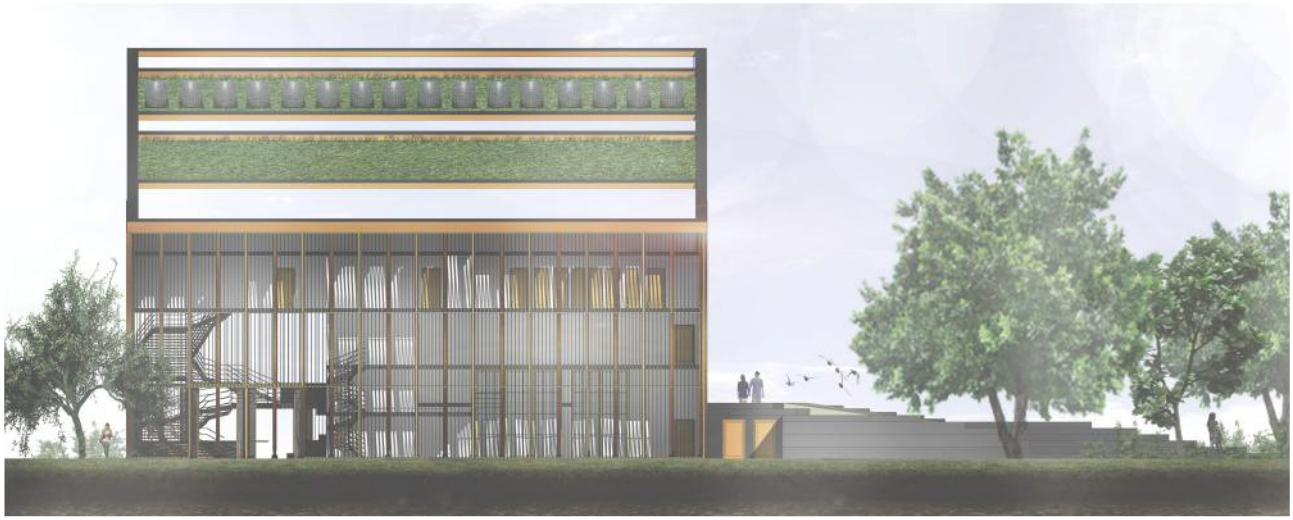
The facades pain an important picture describing our project: the transparency provided by the louvers. They have an essential role in the composition of the concept design, inviting and connecting the real life to the spectacular one.
At the same time, they compose a dynamic facade, ever changing in the same rhythm the urban context, giving flexibility to the interior layout in relation to the amount of light and also the feel of intimacy.

The northeast facade shows how the structure frames both buildings, and their proportions in relation to their different scaled structure.



NORTHEAST FACADE

The Southeast Facade gives a view of the roof's important role in the building's aesthetic composition. The transparency here is specially requested for the less illuminated orientation, in order to visually connect the street access to the river side's floating theatre. It becomes also easy to see how the staircases will help to hide the parking space and the service entrance, conducting the users to enter the building.



SOUTHEAST FACADE

This façade shows that the louvers will mainly be closed in the theatre room area, since the performance usually request special light effects. However they can open to create other kind of atmosphere, adapting to new site specific performances that integrate the view and the natural light.

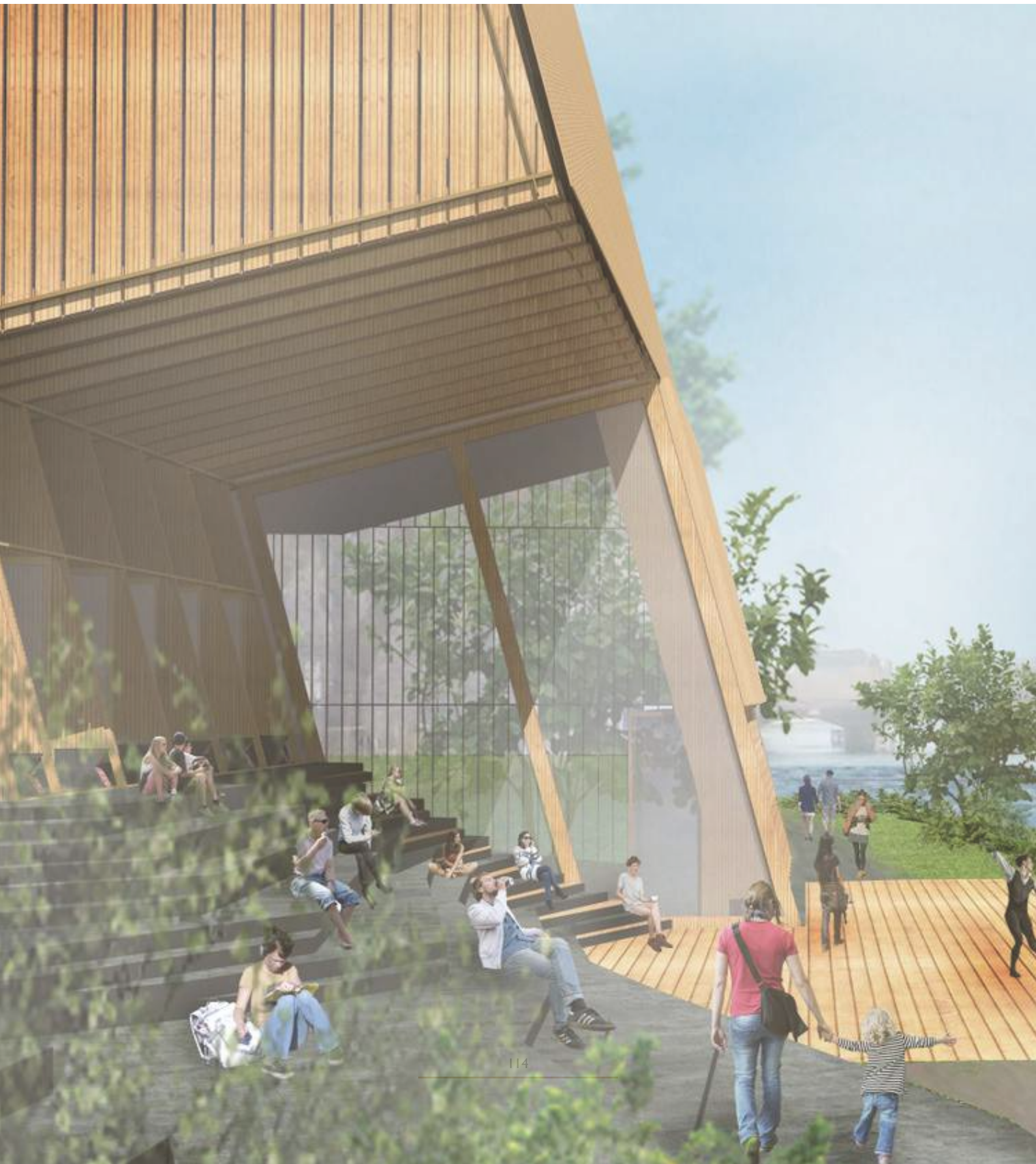
SOUTHWEST FACADE

The Northwest Facade is the most important and we expect that most of the public will gather here before, while or after the activities.
The orientation to the river, receiving direct sun light, creates a special atmosphere. The feeling of this view invites the world to approach, being able to enter the building through the doors of the transparent facade of the lobby and foyer. These two areas are used by the cafe/restaurant; meant to deserve both the users of the complex and also attract their own clients.

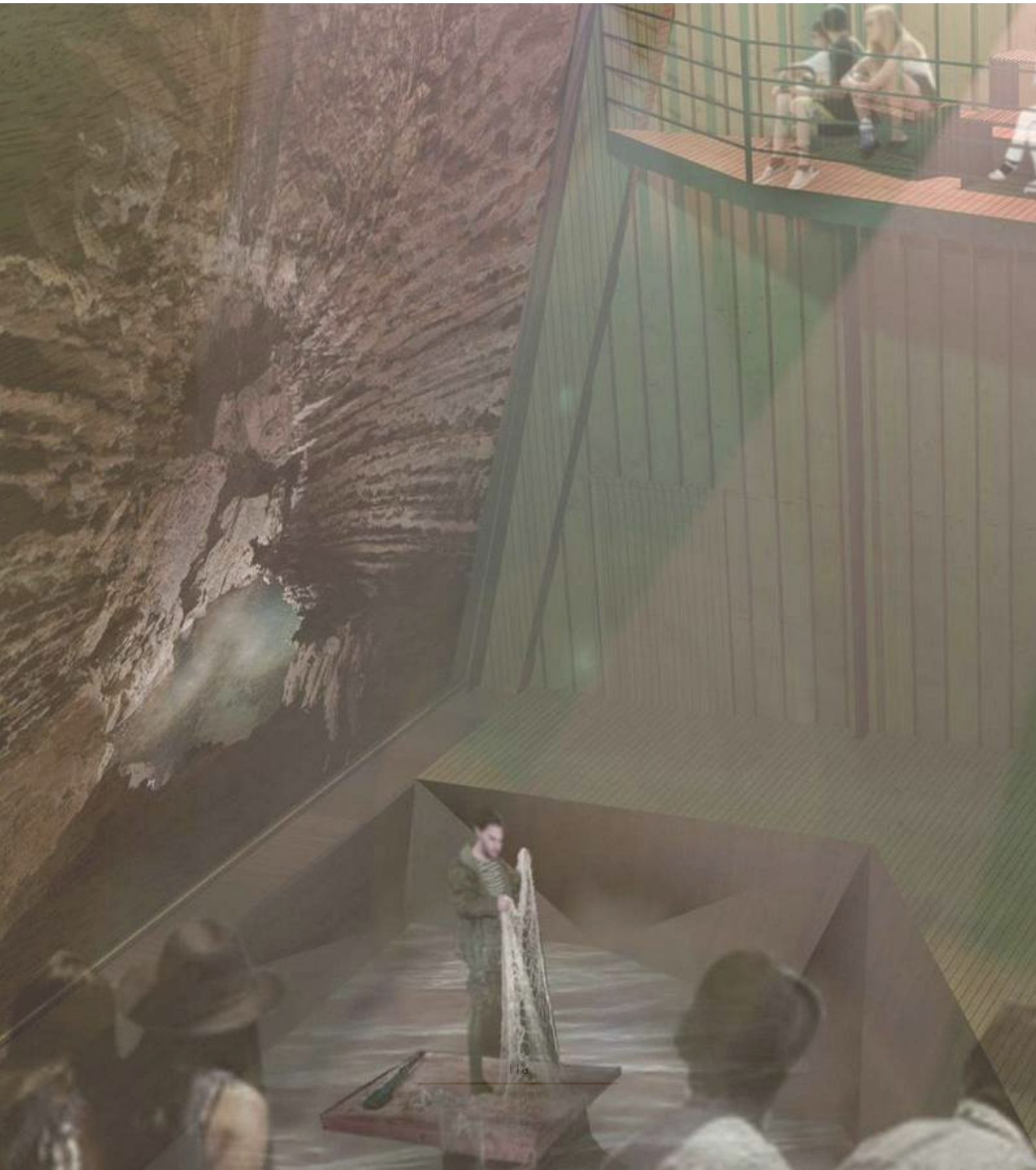
NORDWEST FACADE

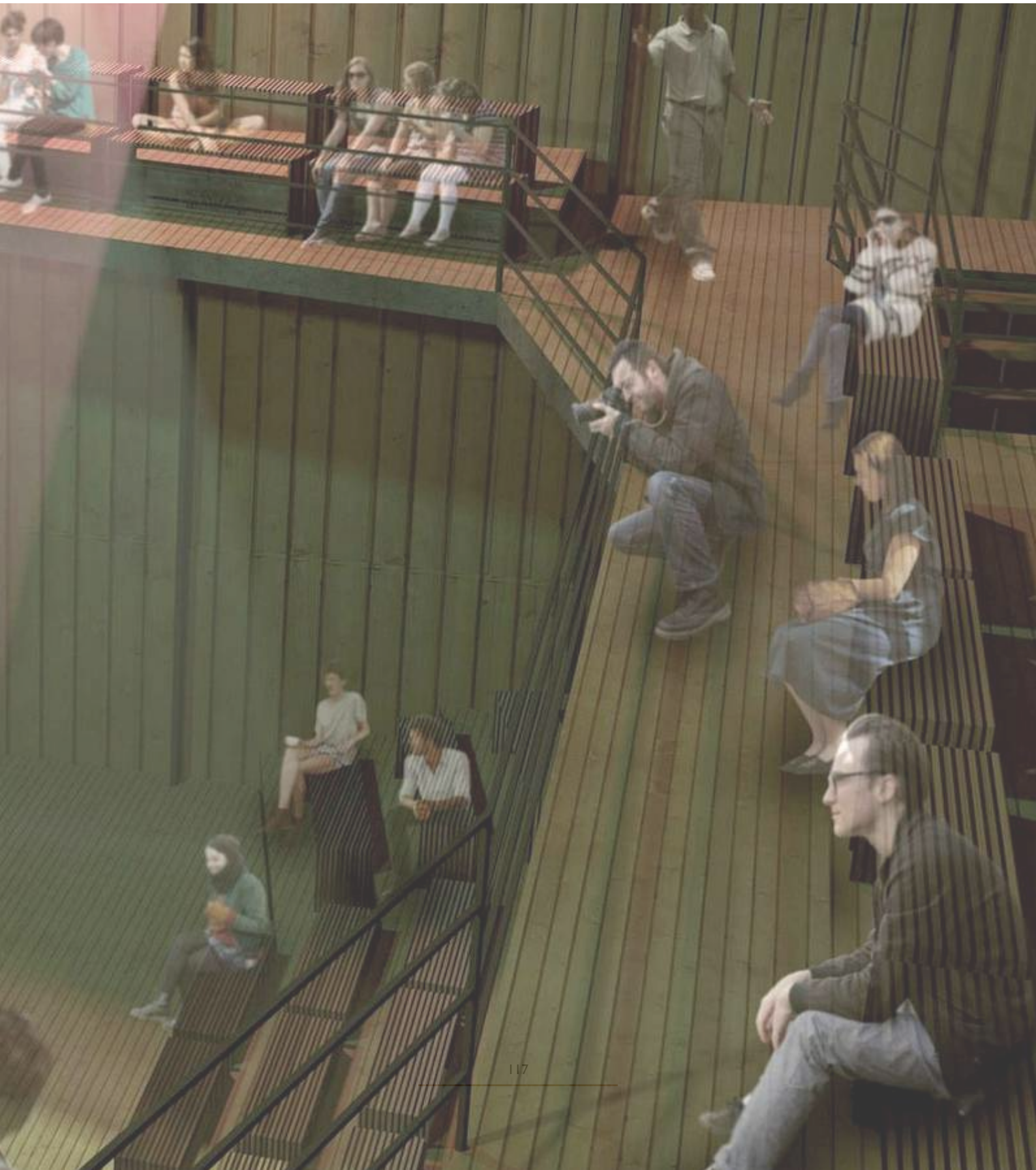
4.5.VIEWS

OPEN AIR THEATRE



FLOATING THEATRE - JONAH





THEATRE ROOM

{ DETAILING }

5.1. STRUCTURE

The structural system of the theatre consists in repetitive frames, placed every 1.5 m. The outlines of the frames are integrating the principles used when developing our concept.

DESCRIPTION

One frame is made out of two columns supporting the top beam. Instead of placing diagonal elements connecting the top beam with the columns; our solution was to modify the dimensions of the top and bottom section of each element. This way the columns include the diagonal reinforcements creating a sculptural effect. This simple structure is followed by a set of frames that include an inclined cantilever beam, hosting the audience in the main theatre room. They also repeat every 1.5 m, in order to remember about the layered scenografy, gradually offering transition and focus. All the elements are made out of glue laminated wood GL32c, following the Eurocodes. In order to optimize the dimensions of the elements that form the frame, we decided to draw a Robot model of the more complex one.

The frame needs to react to the applied forces, being able to support all normal loads that are applied on this 30m spanned beam; and also the wind, approaching from a side. (Fig.120.1)

Fig. 122.1. Front view of the frame

THE FRAME

The frame is 20 m tall, with a span of 30 m, a cantilevered element of 9 m, and load bearing slabs and wals locking the assemble together.

The different sections of the beams will give the columns a good attenuation effect considering the wind loads.

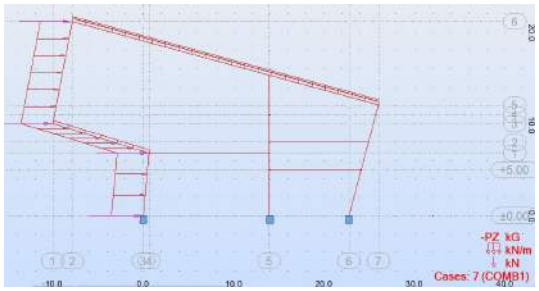
SUPPORTS

There are two types of supports, according to the type of joint. We have used fixed supports for the connection of the columns with the foundation, and pinned supports where other elements meet.

LOADS

The load case includes snow load, wind load, roof load, live load, the structure's own gravity load, and the appliance's and audience's load. (Fig. 120.2)

Fig. 122.2. Load combination applied

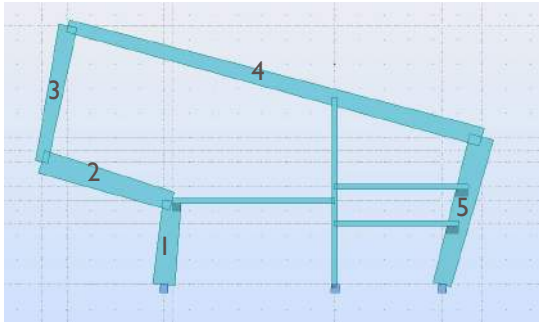


DIMENSIONS

Through iterations, while aiming to reach the most well performing structure, we tried out different types of sections, and we ended up with elements that have a constant 30 cm depth and variable height. The height of the elements varies the following way:

1st element: 180*150
2nd element: 150*190
3rd element: 100*150
4th element: 150*100
5th element: 150*200 (Fig.121.1)

Fig. 123.1.Frame sections



RESULTS

In the result diagrams bellow we can see the deformation that the loads create to the structure, as well as the moment that appears in each elements. (Fig. 121.2 and 121.3)

Fig. 123.2. Deformation

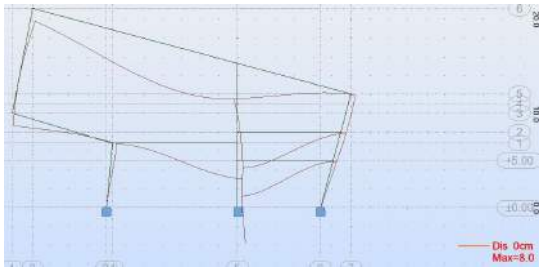
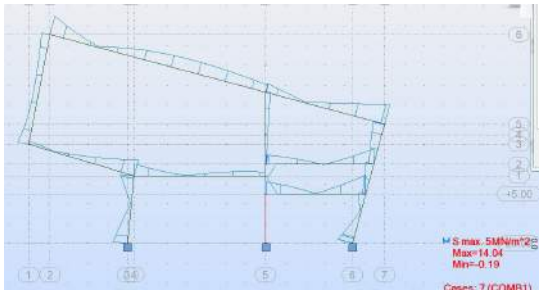


Fig. 123.3. Moment



As a result of the timber member verification done in Robot, we have reached to observe that the elements, using the above mentioned sectioned, are not over dimensioned. In order to keep the consistence and the scenografic layered feeling, we preserved the same section of the elements throughout the entire theatre building. (Fig.121.4 and 121.5)

Fig. 123.4. Frame verification

Member	Section	Material	Lay	Laz	Ratio	Case
27 Timber Memb	100150	GL36c	31.33	130.55	0.41	7 COMB1
28 Timber Memb	190-150	GL36c	22.65	128.33	0.62	7 COMB1
29 Timber Memb	180-150	GL36c	14.40	79.21	0.96	7 COMB1
30 Timber Memb	200-150	GL36c	24.52	144.37	0.87	7 COMB1
35 Timber Memb	150 100	GL36c	95.78	404.65	0.78	7 COMB1

Fig. 123.5. Frame verification

5.2. ACOUSTICS

Acoustic calculations where done in order to reach the suitable reverberation time and relation volume per person.
Using Ecotect software, it was possible to analyse the sound rays trace within the volume and simplified the shape ensure us about the sound distribution in the room.

However, as previously described, many factors will influence the final result, witch can be easily modified though the layout changing.

1. Recommended Volume/ People Ratio =
Speech 4 to 8 people/m2
In The Room:
3.200 m2 volume = 6,4 m3/p
500 people

2. Recommended maximum distance from late audience = No more than 20 metres
In the Room: 15 metres maximum

3. Material sound absorption coefficient (500hz):
Seats = Fabric upholstered 0.8 (occupied)/ 0.6 (free)
(500 people)
Floor = Suspended Concrete floor covered with timber 0.1
(30 m2)
Inclined floor = Suspended Concrete floor covered with timber =0.1
(174m2)
Ceiling = Suspended Plaster Insulation 0.05
(260m2)
Walls = Gypsum wall board= 0.05 framed plasterboard 0.1
(182,0m + 182,0m) Stage floor= Timber boards = 0.2
(100m2)
Stage back wall = Framed plywood Partition= 0.1
(112m2)

4.Recommended reverberation time for speech 1,0 to 1,2 seconds =
In The Room : 1,02 full / 1,13 half full

Sabine equation:

$$T_R\ 500hz = \frac{0,16\ (3200)}{A\ tot}$$

A tot (full) = 500 (0.8) + 30 (0.1) + 260 (0.05) + 174 (0.1)+ 364 (0.1) +100 (0.2) + 112 (0.1)

$$T_R\ 500hz = \frac{0,16\ (3.200) = 512 = 1,02s}{501,2}$$

A tot (half full) = 250(0.8) +250 (0.6)+ 30 (0.1) + 260 (0.05) + 174 (0.1)+ 364 (0.1) +100 (0.2) + 112 (0.1)

$$T_R\ 500hz = \frac{0,16\ (3.200) = 512 = 1,13s}{451,2}$$

4. Ray tracing:
In the following illustrations is possible to see how the inclined roof collaborates to spread the sound in direction to the audience and balconies, However much of the sound will be further reflected by the framed structure, the audience rows and balconies and, therefore, the studies are just a briefly test of the acoustic comfort.

Fig. 125.1. Ray Trace - Side View

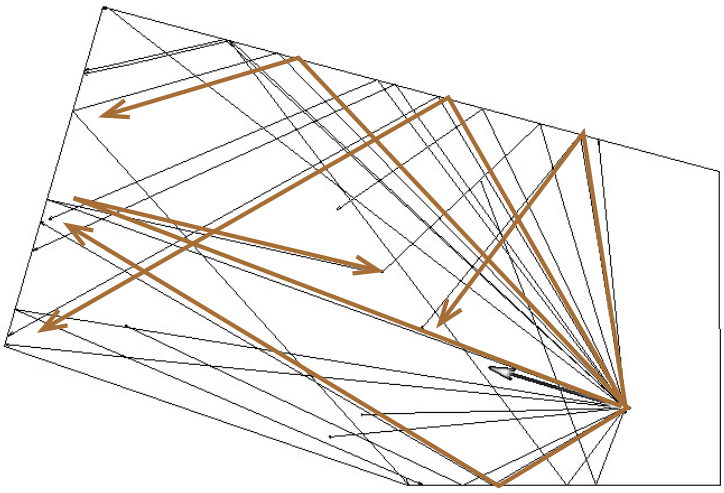
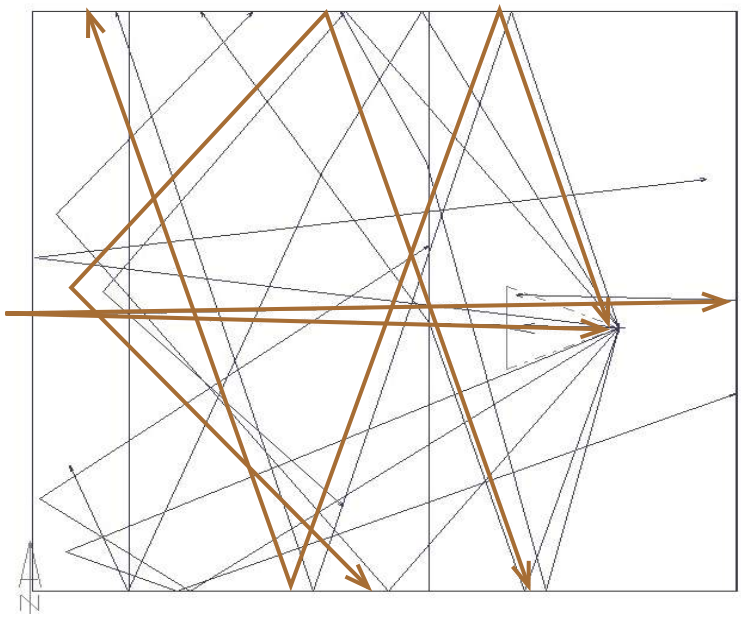


Fig. 125.2. Ray Trace - Top View



5.3.FIRE PROOFING

This section presents the necessary considerations concerning fireproofing the theatre and securing the inhabitants.

APPLICATION CATEGORY

According to the German Building Regulations it is firstly important to define the application category of a building, where it is being distinguished between 6 categories. A building like a Theatre is categorized as Usage category 3, that comprises Assembly Building - building sections for day time occupancy by large numbers of people, in which the people who occupy the building section are not necessarily familiar with the escape routes, but are capable of taking themselves unaided to a place of safety (DIN 18205: 1996 -04). Each category consists of specific regulations concerning several features of the fireproofing strategy, however, this project will only focus on the crucial aspects concerning the layout of the building.

OCCUPANT CAPPACITY

Corresponding to the floor space factor, the total capacity of the building is calculated, resulting in 1.140 occupants. Using the building Regulation paramethers, we come to a final necessity of 6 emergency doors with 1,10 m width each discharging directly to safe open air area.

FIRE ESCAPES

The fire escape strategy of the Theatre is presented in the following diagrams. It emphasizes how each building's occupant can have two separate exits; as alternative routes. Distances to the nearest fire escape never exceed 25 meters even though the minimum settled, when two exits route are provide, is 32 metres.

Furthermore, stair cases likewise respect the minimum recommended and have being calculated in relation to the total occupancy, therefore, 3 staircases with 1,10m width each will provide safe exit for 340 people each, for a total or 1.020 people, 180 more than the existent for the 3,5 floors above the ground.
The escape route conditions respect requested width of 1.5 meters; a special evacuation lift should be provided for disable people.

FIRE SECTIONING

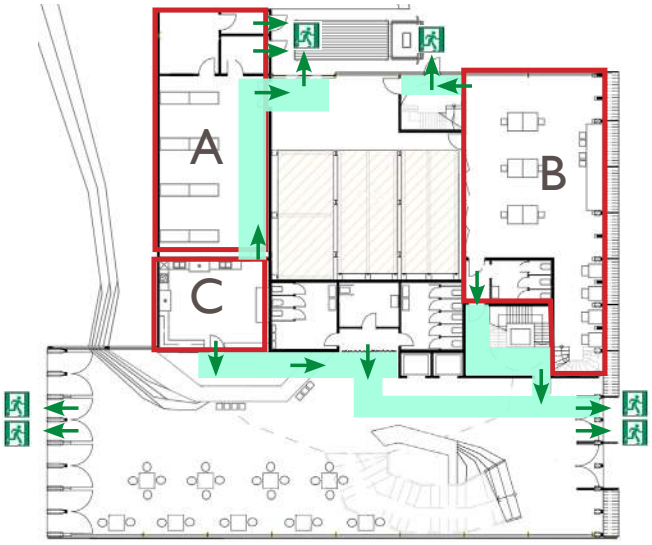
Although the building does not exceed 2.000 m2 and, therefore, does not require compartmentation, the Backstage area, the Storage, the Kitchen, the Main Theatre Room and the Workshops will be divided into fire sections, in order to secure the fire from spreading to the surrounding rooms within the time for an evacuation. Such caution will be taken due to the high fire load that this kind of room will contain.
To accommodate this, the construction materials will be coated with fire restraining finishing, the walls between the rooms will be built in concrete and the doors will close automatically in case of fire detection. Also, an automatic sprinkler system and smoke ventilation will be provided.

FIRE SERVICE VEHICLE ACCESS

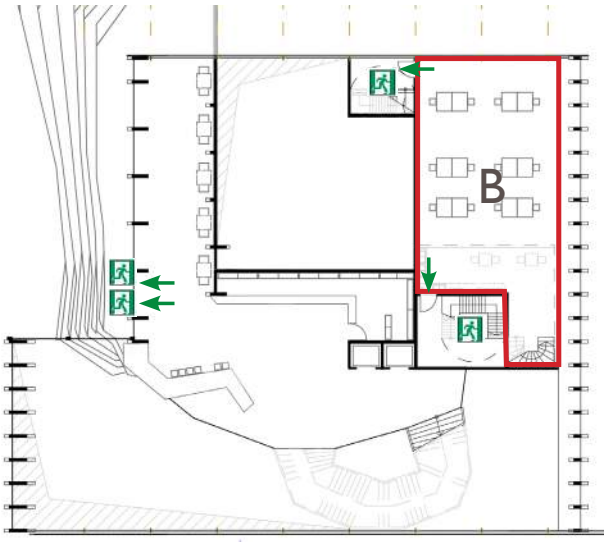
Although the building does not exceed 2.000 m2 a Fire Service vehicle access will be provided.

SPREAD OF FIRE BETWEEN BUILDINGS

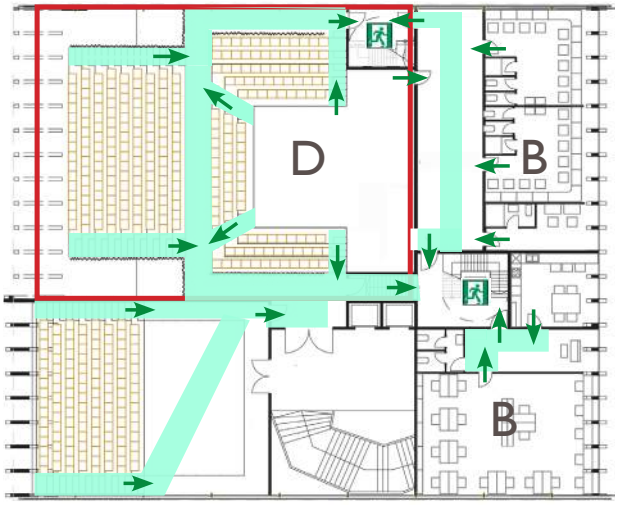
The building design respects the minimum distance of 1,8 metres from it's direct neighbours to avoid fire spread between them.



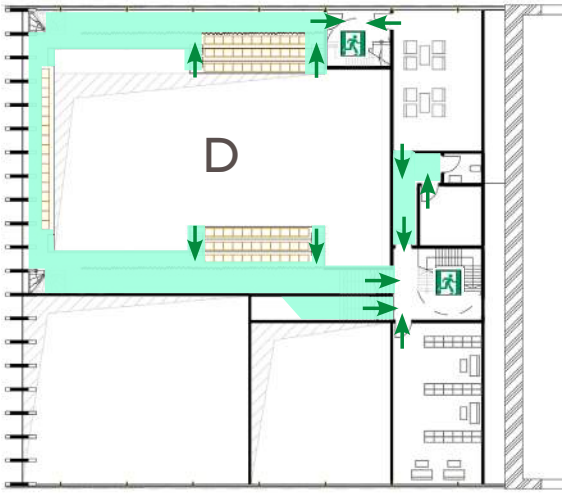
GROUND FLOOR



MEZZANINE

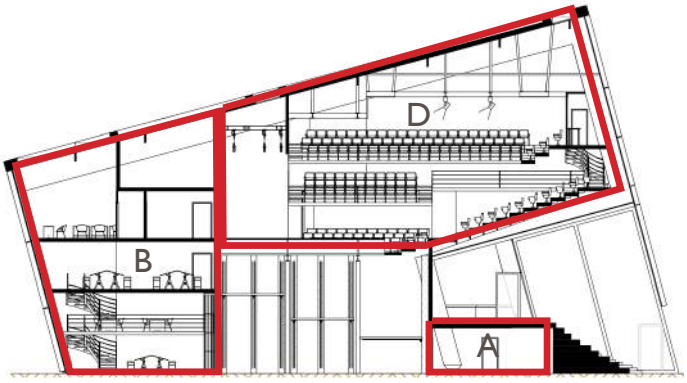


FIRST FLOOR

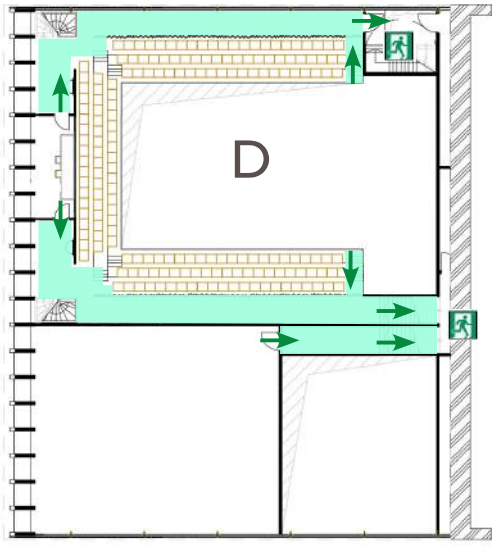


SECOND FLOOR

FIRE SCAPE ROUTE FIRE EXIT FIRE SECTION



SECTION



THIRD FLOOR

5.4.VENTILATION

Natural ventilation is not just necessary to reduce the energy demand, it also improves the internal comfort and the productivity.
The building has special characteristics that facilitate the use of natural ventilation; such as it's location, volume and layout.

Being located on the river side, without dense and polluted surroundings, will guarantee a frequent and qualitative air exchange.
The compact and isolated volume gives more freedom to locate openings in the exposed facade and in the large roof taking advantage of the thermal buoyancy. (Fig. 127.1)
In the layout, a central atrium drives the ventilation of the common areas to the stack system.

The identified potential of natural ventilation is more effective in the middle seasons, while in the winter mechanical ventilation is recommended to avoid heating losses.

In the summer, instead, a cooling system may be requested to low down the external air temperature before getting inside the building. For very warm days, or days without any wind, a fan system must be necessary to suck inn the fresh air.

Natural ventilation is peculiarly suited to performing arts spaces due to its almost silent operation. Moreover, actors and artistic directors appear to prefer working in non mechanically-conditioned environments. Also, natural ventilation is proved to be more comfortable, for the audience, taking into consideration relative large concentration of public that, for a couple of hours, stand static and concentrated on the show. Mechanical ventilation reduces the amount of oxygen and therefore, can conduct to a feeling of fatigue and lack of attention.

The natural ventilation intended, therefore, to reduce the dependence on mechanical systems reducing the energy demands, and improving the well being, thermal and aural comfort.

The idea for this specific space consists in insufflating fresh air from channels into the space at low level; it relies on the natural thermal buoyancy created by the heat of the audience and lighting to carry the stale air upwards and out of the space. (Fig. 127.2)

However, before getting inside, it is important to ensure that the external noise and the differences in temperature are controlled.
The solution is to force the air to pass though a labyrinth, where the air suffers acoustic attenuation balancing it's temperature to the internal one.

In the main theatre room, the fresh air is easily caught on the front facade; oriented to the dominant wind direction. The riverside reduces levels of pollution and noise. After being passively sucked in by the difference of pressure and temperature, the air will pass trough the structure located under the main auditorium, which will function as a labyrinth, later popping up beneath the raked seating. (Fig. 127.3)

To complete the thermal buoyancy effect, openings are located in the roof, on the top of the auditorium and on the top of the stage, guaranteeing a good comfort in all zones.

Fig. 129.1. Commom Areas Stack Ventilation

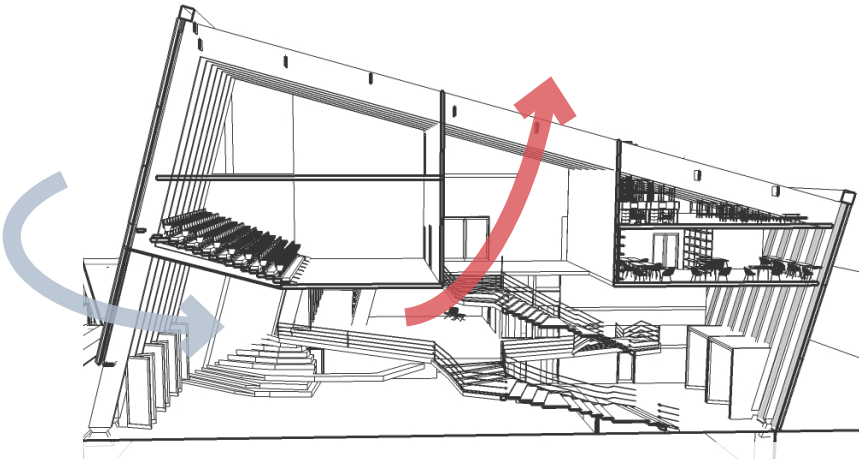


Fig. 129.2. Theatre Natural Ventilation

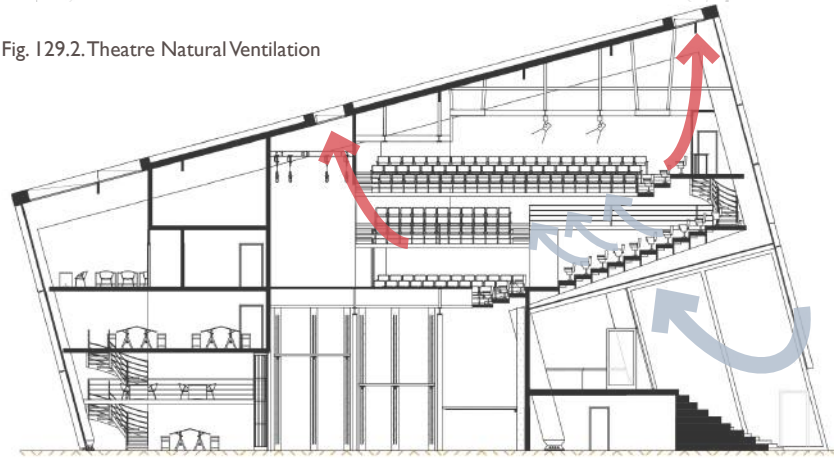
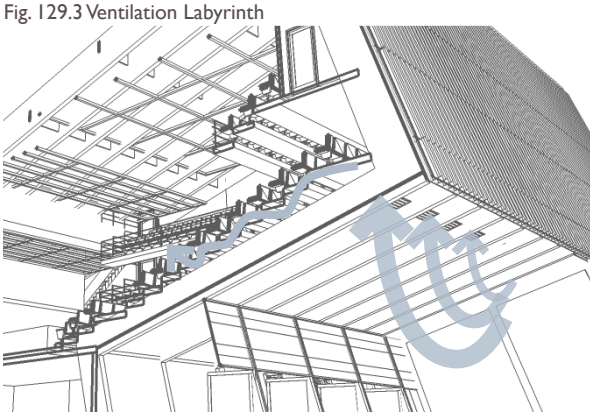
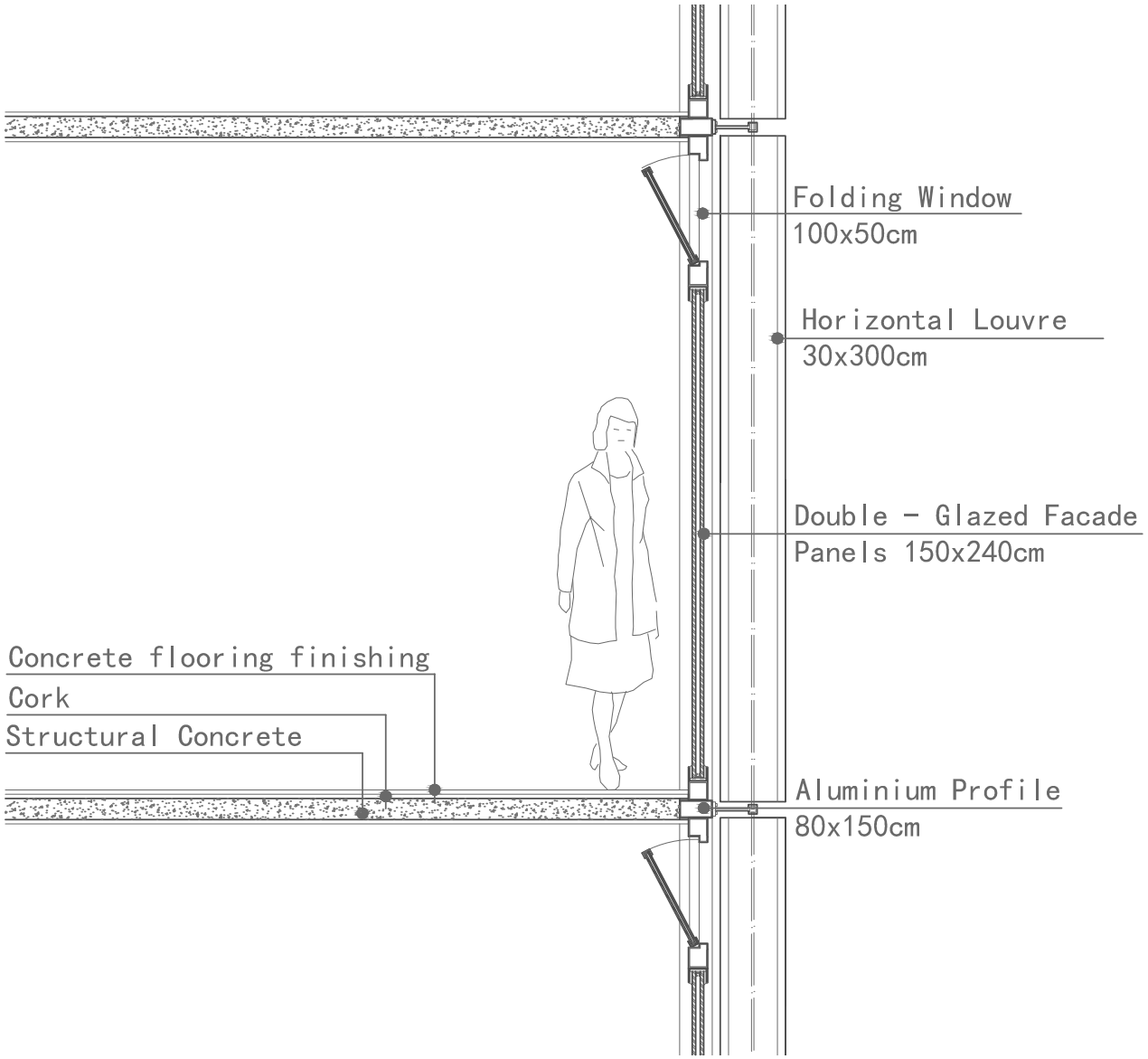


Fig. 129.3 Ventilation Labyrinth

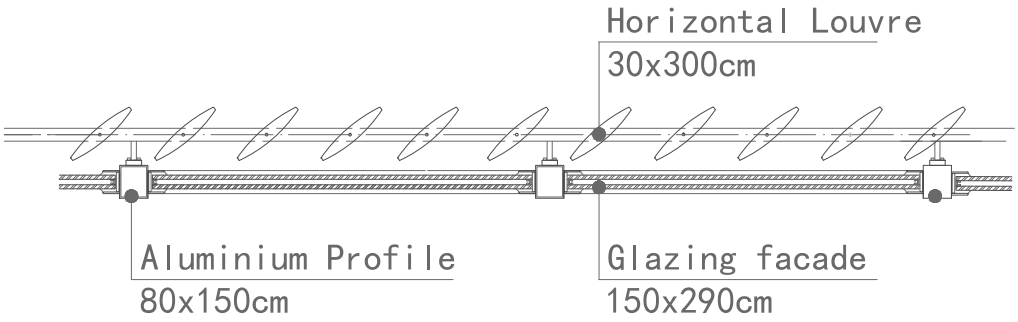


5.5. CONSTRUCTION

5.5.1.CONSTRUCTION DETAIL - FACADE

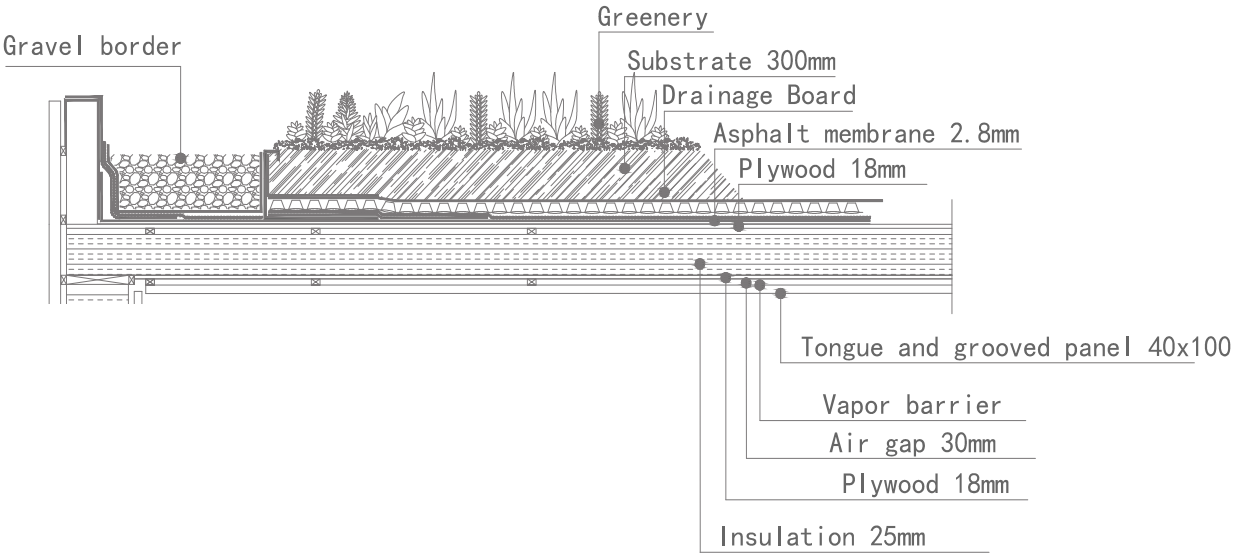


FACADE SECTION



FACADE PLAN

5.5.2.CONSTRUCTION DETAIL - GREEN ROOF



6. CONCLUSION

As stated in our Motivation section, it has been our aim through this thesis to develop a comprehension of architecture, among its potential to influence human beings on how t shape the relation based on the tectonic approach balancing beauty and technique.

Throughout our process, this ongoing research has been informed by gathered knowledge from the two years of studying Architecture and Design at AAU, added to our previous academic experience. This complies with our aim for this master thesis, to becoming a toolbox of accumulated knowledge, gathered through a collection of different experiences, semester projects, courses, workshops and seminars; thus preparing us for our architectural careers.

The chosen theme, The Theatre, became a suitable way whereby to investigate the responsibility and potential of architecture in creating more than just functional spaces, but stages where people live in: 'Real Theatres'. Spaces where people experience, exchange, and get inspired by architecture that invites them to act.

Within this context, our intention was to celebrate and honor The Theatre as an art kind that resonates in the social and political life. We believe the direct social exchange, which is magically offered inside the spectacular theatre realm, is missing in our contemporary society; therefore we are recalling for it.

Composed by two different volumes, the building itself has an inter relation creating different experiences while the spatial organization changes.
The most important and symbolic aspect of this interaction happens when both buildings are settled together, creating the open air theatre, that locates the stage in the centre of the street, the city, and the real life.

Therefore, we believe that our project contemplates the initial intentions and, though the application of our knowledge as architects and engineer, manages to reinterpret spatially the relation between the society and the actors, real life and spectacular, merging the barriers and stimulating interaction.

Although the conceptual aspects are the driving forces on our thesis, technical and functional aspects are essential in the production of architecture. Applying the tectonic integrated approach has guaranteed that essential aspects were investigated in early phases, giving to the whole project a more holistic and symbiotic outcome.

As future architects, it is now easier than ever to reflect upon the complexity of this profession, with the strong meaning of this methodology that follows. And, therefore, now is the moment to perceive into the presented report and design all potentialities for further improvement and investigation.

Uniting the spatial theatric gesture in a constructive principle, an awareness of letting construction meet poetry already in the initial phase is achieved, letting the two merge together creating unity. Consequently, the proposal could offer a higher level of detailing, among the structure optimization, the detailing of the used passive strategies and the enhancement of the level of detailing for the floating theatre.

However, it is possible for us to assure that this process has added immensely to ours skills; not just as architects and engineers, but also as pieces of the social puzzle, that seek continuously for emotional improvement.

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