

MUSIC FOR A BUILDING FOR MUSIC

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Public Building: MUSIC MARVEL

Music & Popular Culture Re-Wired

AR3AP100 MSc3/4 2021-22

Graduation report by **Dimitrije Milić** (Student ID 5109507)

Responsible instructor: Prof. ir. Nathalie de Vries

Course coordinator: Ir. Paul Kuitenbrouwer

Tutors: Ir. Henk Bultstra

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- 1. GRADUATION PLAN WITH DESIGN OBJECTIVES FOR MSC4
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A.1

GRADUATION PLAN

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information		
Name	Dimitrije Milić	
Student number	5109507	
Studio		
Name / Theme	Public Building - "Music Marvel"	
Main mentor	ir. Henk Bultstra	Architecture
Second mentor	Ir. Florian Eckardt	Building Technologies
Argumentation of choice of the studio	By making this choice I was encouraged to merge the two fields that I work and study in and pursue appropriate architectural solutions that answer to my fascinations in both architecture and music. Furtherly, I have found my experience in music production, music venue organization and my experience in architectural design of music building of potential value in contribution to this studio.	
Graduation project		
Title of the graduation project	Music Marvel – A Temple of Experiences	
Goal		
Location:	The Binckhorst, Den Haag, The Netherlands	
The posed problem,	The Binckhorst, a former industrial area of The Hague, is being readapted into the mix-use development defined in an urban plan adopted in 2009. According to this plan, the area will attempt to appropriate a new character that would benefit the new high-density, luxurious residential architecture. The plan however does not cover any new cultural content and is thus threatening the previously settled, 'street' and urban culture responsible for the prevailing vibrant energy.	

	The ambition of this project is to provide a solution to this threat by presenting a cultural beacon, a MUSIC MARVEL, that will neutralize the predominant image of mass-capitalist ambitions in the area.
research questions and	1) What does 'monumentality' stand for today? 2) Who does monumentality serve? 3) Can monumentality serve everyone? Almost the entirety of architectural profession seeks some sort of timelessness. A lasting individual accomplishment that would change, not necessarily just the profession, but even more confidently, the habits of contemporary living, problems caused by ever-growing financial differences, overpopulation or some other similarly pressing and monstrous social issue. If not, then it seeks beauty, acceptance in the world of art and recognition as future heritage. In both ways, architecture craves the status of monumentality. The famished regime of the modern world that inspires daily technological breakthroughs for the sake of expanding capitalism almost completely neglects encouragement of societal values and creates global confusion about ultimate beliefs. During this process of 'disenchantment of the world' (Weber, 1917) it is harder than ever to imagine one asset valuable to all people, and therefore, harder than ever to create a monument cherished by the entire population. Monumentality does not speak to the individuals in the society.
design assignment in which these result.	To create a collective space for a modern society we must understand each individual thoroughly and separately. Even if all this information could be assimilated in whole, it would soon be outdated due to the changing human nature and all attempts of creating a worthy space would be ill-fated. Today's world leaves no time for philosophical decoding of personalities in the design process, yet urges for a mechanism that would, as envisioned by Toyo Ito, "build fictional and ephemeral architecture as a permanent entity" (Ito, 1992). Such entity that communicates with the passer-by and, in the same time, creates an analogy

of their wavering experience. A personification through a function that corresponds to all ambitions of the MUSIC MARVEL.

All of the perceived world is reflected somewhere within the observer's brain as a pattern of brain activity. Using electroencephalographic technology this activity can be measured and used as input data for algorithms that change the surrounding architecture in the adequate time frame.

In this way it would be possible to create the ephemeral effect in architecture that only correlates to the coexisting brain activities of the observers and stops existing as soon as the activities change. A new technique that would help exclusion of subjective architectural trends imagined by individuals and implementation of 'living' and reacting mechanisms that shape the space only with a goal to suit every user.

This new technique could shape a specific movement in architecture that challenges idolatry of architects based on their recognizable but rigid designs and create new form of monuments that are constantly appropriating and unpredictable.

Process

Method description

This study will include many experimental exercises that would help differentiate brain activity in different actors. This will require cooperation with performers and the audiences and translation of these encounters into data that will be used as input value for algorithms that have a goal of manifesting individual experiences in the surrounding physical space. The project will deal with neurology, brain waves, soundwaves, music production and technical architectural and engineering solutions that would allow these study results to take a physical form.

Reflection

Neurological architecture is a real time interpretation of the surrounding world perceived by humans. The specific idea behind the MUSIC MARVEL is revolving around sound inputs and outputs but it also inspires imagination that questions limits until which neurological decoding may affect the world around us. A predictable next step would be further influence on the interior as well as the exterior of the building. This could later indicate possibilities of affecting the buildings surroundings and communication between buildings through the language of telepathy between their users. Consequently, it could even inspire a new form of digitalization through such communication and a creation of not only living entities within the cityscape, but also a city-organism consisted of interdependent parts that, actually, presents its citizens. In another direction, neurological architecture might affect the way we see other forms of design. The introduction of EEG equipment to our everyday lives, that permits us to reserve relevance in the world of neurological architecture, could cause revolutionary tendencies in fashion design. Or influence other industries that would adapt their products and markets towards the new collective habits. The creation of this mechanism that enables living architecture could influence a formation of a different world.

Literature and general practical preference

Literature

Solà-Morales, M. d. (1992). Public Spaces, Collective spaces. Barcelona: La Vanguardia.

Gehry, F. personal communication

Weber, M. (1917). Science as a Vocation. Munich: Munich University.

Gebauer, L., Kringelbach, M. L., & Vuust, P. (2012). Ever-changing cycles of musical pleasure: The role of dopamine and anticipation. Washington D.C.: American Psychological Association

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Novak, M. (2005). AlloBrain@AlloSphere,

Roussel, M. (2016). The Brain Without The Body? Virtual Reality, Neuroscience and the Living Flesh, Societe des Anglicistes de l'Enseignement Superieur

Hauptmann, D., Neidich, W. (2010), Cognitive Architecture, From Biopolitics to Noopolitics. Architecture & Mind in the Age of Communication and Information, Delft School of Design

Hosale, M-D., Murrall, S., De Campo, A. (2018), Worldmaking as Techné: Participatory Art, Music and Architecture, Riverside Architectural Press

Planning Graduation Plan	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	5.1
Q3																					
Complete prelaminar design in drawings (1:100) and physical model studies (1:500)																					
EEG studies, scripting and experimenting with the performer and the audience																					
Further integration of the design on the site																					
Programmatic placement and interior routing																					
Interior design concepts																					
Concepts for structure, material and sustainability.																					
Research regarding ephemeral generative architecture																					
Written paper research																					
P3 presentation																					
Q4																					
Fix positions and demensions of the project.																					
Finish theoratical research																					
Design mannual regarding sensory architecture and the contribution to music																					
Design development from P3 in more detail (from 1: 100/50 to 1:20/5)																					
Visualization studies of important elements [1: 20/10/5]																					
Translation of the Design Manifesto of MSc3 into a Project Description text with storyline and concept clarification diagrams																					
Preparation of the P4 presentation (concept, pre-editing)																					
P4 presentation																					
Q5																					
Making and finishing presentation 3D model																					
Graduation Booklet (process and research)																					
Physical model (1:200)																					
Finalizing P5 presentation																					
P5 presentation																					

P3

P4

P5

B.1

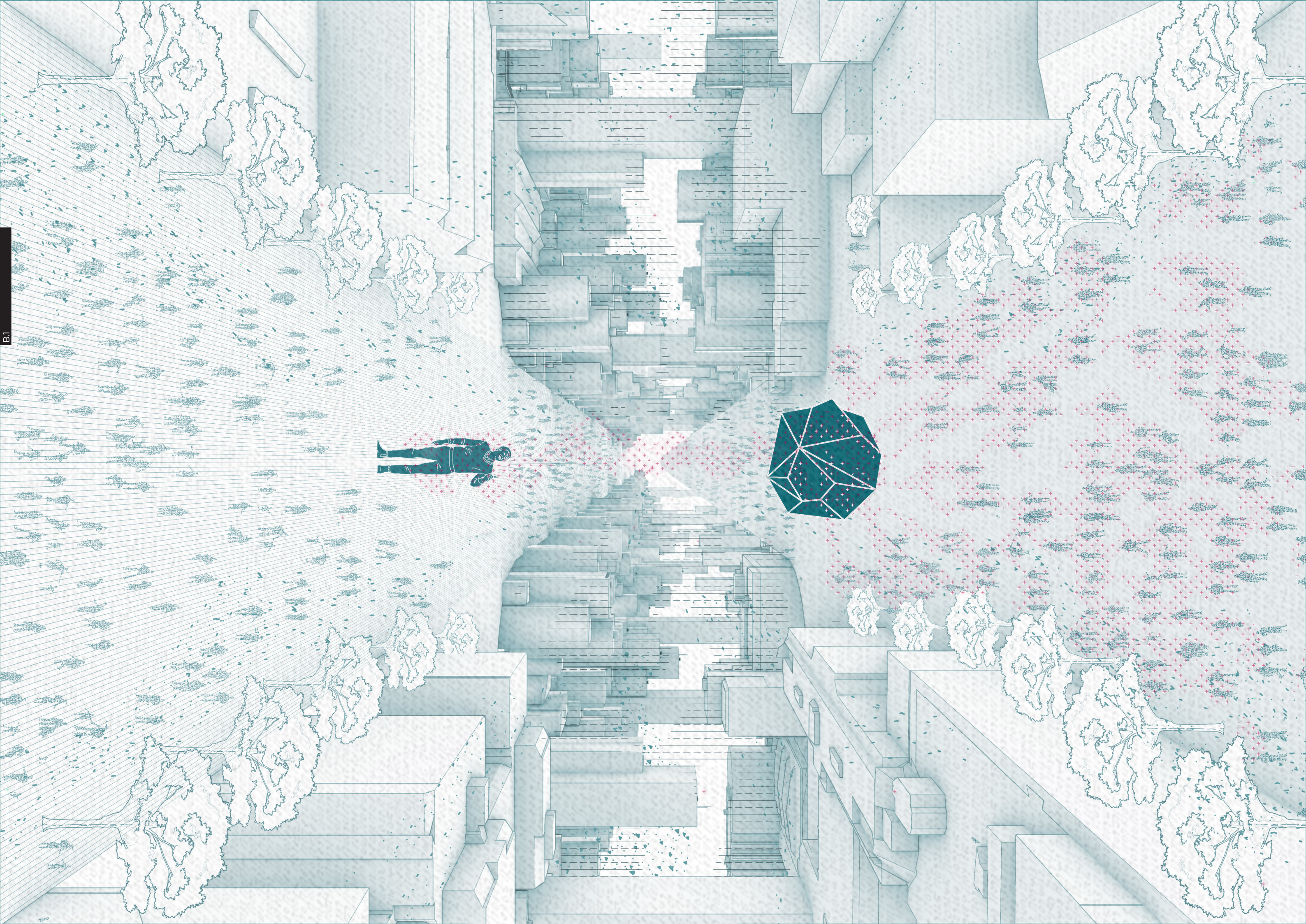
INDIVIDUAL DESIGN MANIFESTO

GLORYFICATION OF
THE ARCHITECT(URE)

THE BUILDING IS NOT MADE FOR THE PERFORMANCE. IT IS MADE FOR THE EXPERIENCE CAUSED BY THE PERFORMANCE. THE BUILDING SHOULD BE A PLACE OF PERFORMANCE BUT ALSO A PERFORMANCE ITSELF. THE EXPERIENCE IS CAUSED BY THE PERFORMANCE. CAN THE PERFORMANCE BE CAUSED BY THE EXPERIENCE? • HOW WE UNDERSTAND SPACE IS RELATED TO HOW THE SPACE SHOULD BEHAVE. THE SPACE NEEDS TO BE FLUID. THE BUILDING NEEDS TO BE FLUID. WE DESIGN BUILDINGS THAT DO NOT CHANGE, WE TRAP MOMENTS OF THE PAST IN STRUCTURES. THE MOMENTS WILL BE REPLACED BY THE NEW ONES BUT THE STRUCTURES WILL STAY. THEY WILL NOT BE UNDERSTOOD. THEY WILL NOT BE RELEVANT. • "THIS IS MY FAVORITE BUILDING!", BUT THEN I CHANGED. SO "THIS WAS MY FAVORITE BUILDING!". "THIS BUILDING MEANS NOTHING TO ME...". • THE MUSIC MARVEL WILL CHALLENGE THE PROCESS OF DESIGNING AS WE KNOW IT. WE GLORIFY ARCHITECTS FOR A CERTAIN PERIOD WHILE THEIR ARCHITECTURE IS RELEVANT. BUT THEIR ARCHITECTURE IS NOT TIMELESS, AND SUCH IS THEIR GLORY. THE NEW ARCHITECTURE NEEDS TO BE TIMELESS IN ORDER FOR IT TO REMAIN A MONUMENT. IN ORDER FOR IT TO ANSWER TO EVERY INDIVIDUAL. IT NEEDS TO COMMUNICATE WITH EVERY INDIVIDUAL. THE ARCHITECT IS NOT A BUILDER, THE ARCHITECT IS A VISIONARY. THE ARCHITECT WILL CREATE A MECHANISM AND THE MECHANISM WILL BUILD. WHAT IS BUILT WILL BE REBUILT ACCORDING TO THE NEEDS OF THE USERS. • WHAT IF WE COULD READ MINDS, CAN A MIND BE READ AND DECHIFERED FAST ENOUGH. SO THAT THE DATA CAN BE RELEVANT BEFORE THE MIND CHANGES? BUT WHY DO WE NEED TO DECHIFER IT. LET'S JUST USE IT AS NUMBERS. NUMERICAL VALUE = INPUT. INPUT DATA WILL FEED THE ALGORITHM AND THE ALGORITHM WILL CHANGE THE BUILDING. NO NEED TO ANALYSE WHAT PEOPLE WANT FROM ARCHITECTURE WHEN THEY CAN CREATE IT IN REAL TIME. I AM THINKING RED, IT TURNS RED. I AM FEELING SAD... • THE MUSIC IS MAKING ME WANT TO MOVE. THE MUSIC IS MAKING ME SURPRISED. THE MUSIC IS MAKING ME WANT TO CRY. THE MUSIC IS MAKING ME LOVE. • THIS BUILDING ENCOURAGES MY BEING. THIS BUILDING IS ME. • THE TWO OF US ARE ALONE IN THIS BUILDING. THIS BUILDING IS THE TWO OF US. • THE WHOLE POPULATION OF THE WORLD IS IN THIS BUILDING. THIS BUILDING IS THE WORLD. • RATHER THAN BEING JUST A SYSTEM OF PREPROGRAMED FUNCTIONS AND AN INNOVATION IN ENGINEERING, SHOULD NOT EVERY BUILDING ALSO TRY TO MAINTAIN THE CONVERSATION WITH THE PUBLIC IN THE FORM OF EPHEMERAL MONUMENTALITY THAT LEAVES A FLEETING BUT DISTINCTIVE EXPERIENCE FOR EACH INDIVIDUAL? • IT WILL BE POSSIBLE TO CREATE MUSIC OUT OF BRAINWAVES. THEN WE CAN CREATE MUSIC FOR AUDIOGENERATIVE VISUALS OR MECHANISMS. A MUSIC FOR A BUILDING FOR MUSIC. A NEVER-ENDING CIRCLE BETWEEN THE ARCHITECTURE AND ITS PURPOSE. • ARCHITECTURE THAT MUTATES IN RESPONSE TO THE NEUROLOGICAL FEEDBACK THE EQUIPMENT THAT IS USED FOR BRAIN ACTIVITY DECODE IT MUST ACCOUNT FOR TECHNOLOGICAL IMPROVEMENT SYSTEM WHEN AVAILABLE. • I LOVE SINATRA, HE SAYS: TH YOU'RE RIDING HIGH IN APRIL, SHOT DOWN IN MAY, BUT WHEN I'M BACK ON TOP, BACK ON TOP IN JUNE, I SAID THAT SOME PEOPLE GET THEIR KICKS, STOMPING ON A DREAM, I CAUSE THIS FINE OLD WORLD, IT KEEPS SPINNIN' AROUND PIRATE, A POET, A PAWN AND A KING, I'VE BEEN UP AND KNOW ONE THING, EACH TIME I FIND MYSELF, FLAT ON MY BACK IN THE RACE. THAT'S LIFE, I TELL YOU, I CAN'T DENY BABY, BUT MY HEART JUST AIN'T GONNA BUY IT, AND IF I ONE SINGLE TRY. I'D JUMP RIGHT ON A BIG BIRD AND THEN I'D FLY, I'VE BEEN A PUPPET, A PAUPER, A PIRATE, A POET, A PAWN AND A KING, I'VE BEEN UP AND DOWN AND OVER AND OUT, AND I KNOW ONE THING, EACH TIME I FIND

DESIGN
BY
PERCEPTION
-TION





B.₂

THEORY RESEARCH

THE IDEA OF THE MUSIC MARVEL - THE CHALLENGE & THE POTENTIAL

MUSIC MARVEL - A TRANSFORMABLE SPACE

To understand the maximal potential that the MUSIC MARVEL may achieve, one must first take into consideration the social expectations as well as the physical realm that primarily determine the core purpose of the building. This means, that reflection on social constitution of the Binckhorst presents the first factor in the definition of the venue.

New residential developments that are starting to assume their presence in the area promise a dense population of 'high-class' residents, as is described in multiple advertising presentations. However, that change will hardly affect the previously established lifestyle encouraged by new businesses that have taken over old industrial buildings and turned them into inviting affordable places that encourage gathering of young creatives. This dichotomy, encouraged by the general diversity in the whole city, is the most important factor that emphasizes the demand for a collective space that will welcome people of all social groups and interests.

"The morphological, urban, architectural and civil wealth of a city is that of its collective spaces (...) Public spaces absorbed by particular uses, or private spaces that acquire a collective use." (Solà-Morales, 1992)¹

Further, with the successful opening of the new musical venue in The Hague, Amare, that happened this year, the necessity for large, strictly musical spaces that provide services and rooms for various performances and private sessions at the same time or large pre-organized public events is minimized. There is no

need of another such grand venue, especially in the non-central location as is the Binckhorst.

This space needs to be an adaptable, modest-sized marvel that occupies just enough area that can suit every type of performance, one at the time, and no more than that in order to maintain its efficiency and sustainability. One space for at least 100 members of the philharmonic orchestra, an opera theatre, a dance performance, a rock band, a DJ event, a dance class group etc. All of these types of performance have mostly different technical and acoustic demands of the surrounding space. For that reason, this place must transform accordingly and value every performance equally.

Perusing transformability in venue design permits savings both in budget and space, and is a tempting idea that can hardly be considered new. Many venues have included elegant solutions that achieve this type of adaptability and create a moving hybrid building that changes in service of its users. However, such constrained movement, although often highlighted as technically remarkable, plays little part in the architectural expression and monumentality, and does not live conjointly with the attitude or the experience anticipated within the boundaries of musical buildings.

Rather than being just a system of preprogrammed functions and an innovation in engineering, should not every building also try to maintain the conversation with the public in the form of ephemeral monumentality that leaves a fleeting but distinctive experience for each individual?

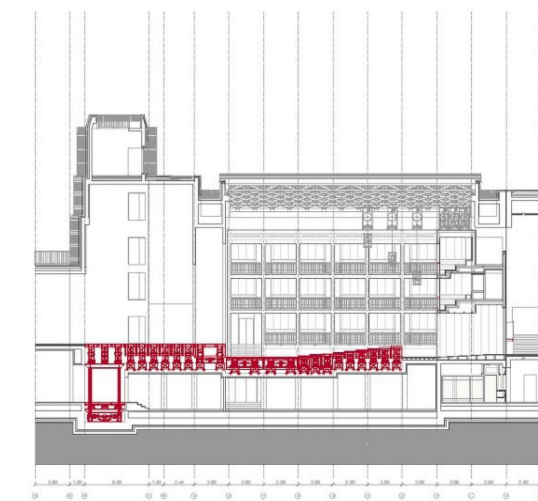
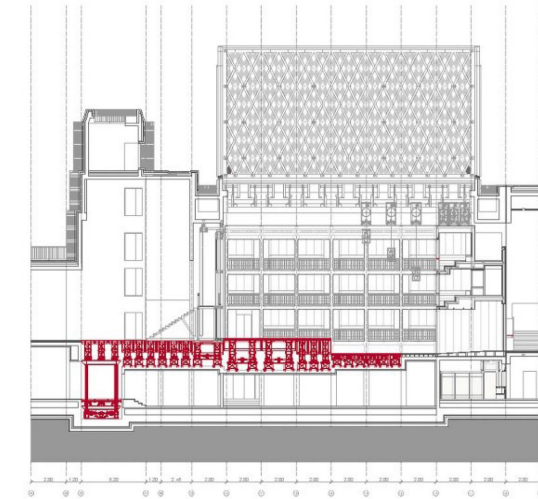


FIGURE 2

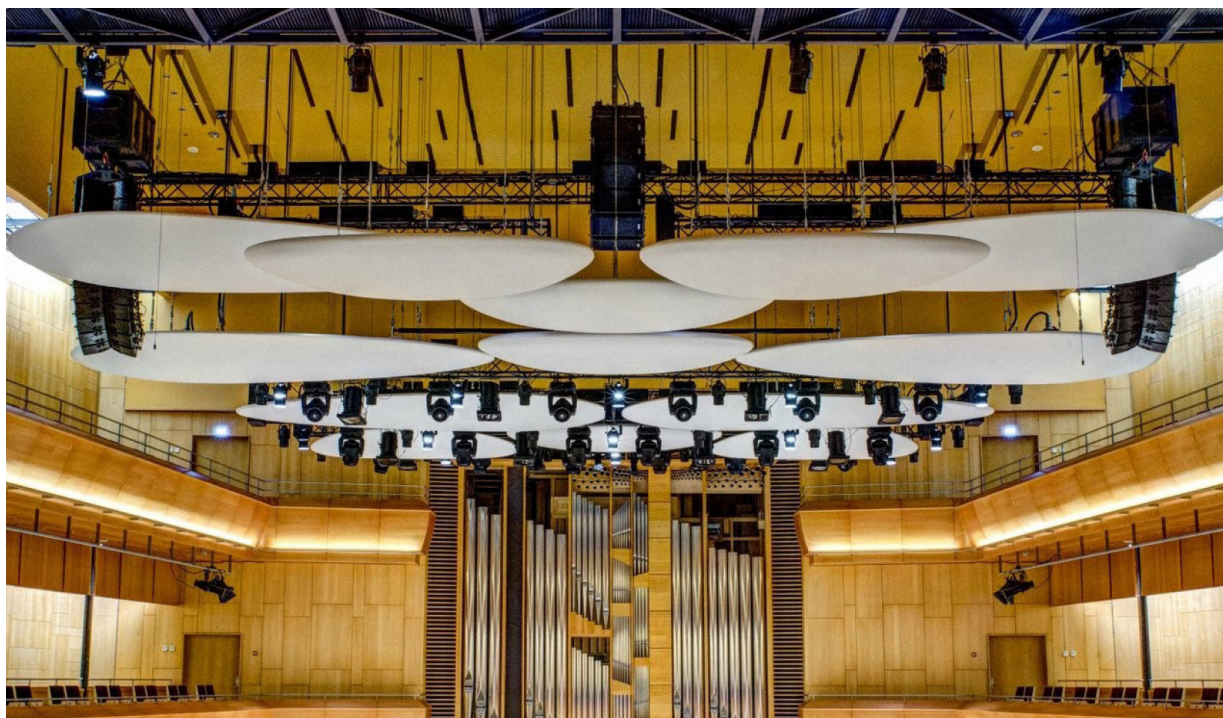


FIGURE 4



FIGURE 3

ARCHITECTURE FOR ALL, ARCHITECTURE FOREVER

MONUMENTALITY TODAY

"Architecture should speak of its time and place, but yearn for timelessness." - Frank Gehry²

Almost the entirety of architectural profession seeks some sort of timelessness. A lasting individual accomplishment that would change, not necessarily just the profession itself, but even more confidently, the habits of contemporary living, problems caused by ever-growing financial differences, overpopulation or some other similarly pressing and monstrous social issue. If not, then it seeks beauty, acceptance in the world of art and recognition as future heritage. In both ways, architecture craves the status of monumentality.

The only obstacle in this process, that would lead an architect to glory, is that today we are less and less certain of what monumentality stands for. The famished regime of the modern world that inspires daily technological breakthroughs for the sake of expanding capitalism almost completely neglects encouragement of societal values and creates global confusion about ultimate beliefs.

This "disenchantment of the world" (Weber, 1917)³, as described by Max Weber, is one of the reasons why it has become hard to imagine a single architectural piece, that holds value, that is not historic, to all observers. In a time of this much cultural diversity, one space can only be meaningful to all if it somehow simultaneously answers to all individual personalities. Architects have to abandon the habit of designing according their own intuition or according to subjective preferences with ambition of glorifying a part of their ego in the process. Instead, in order to create a place equally important to all bystanders, an architect

should generate a technique that includes and depends on all in a way consistent to the values of each individual.

PERCEPTION AND EXPERIENCE

Everything that we perceive is a target to our reflection and consequently a trigger to our behaviour. The pavement, the birds, other people, colors and movement just as much as architecture that we experience, are the unavoidable stimuli that we experience daily. Most of this stimuli are subject of our posteriori knowledge, as defined by Kant, being just a variation of the previously experienced realities. However, we often find ourselves in anticipation of a priori knowledge, new findings. Axiological cognition of these occurrences allows us to interpret them as pleasurable surprises which explains the human desire of exposing oneself to new music, performance, architecture or overall – new art.

"Music can be experienced as pleasurable both when it fulfils and violates expectations. The more unexpected the events in music, the more surprising is the musical experience." (Gebauer, Kringelbach, & Vuust, 2012)⁴

This sensation, found in exposure to music, will definitely not be absent in a musical building, however, as a result of its program rather than of its architecture. Having in mind the aforementioned ambition of the MUSIC MARVEL towards acquiring the identity of an ever-changing architectural monument, this space must also hold a similar predisposition to provide surprising experiences.

In addition to being adaptable, modest in size, monumental and of lasting value for all, sustainable and efficient, the MUSIC MARVEL must be 'alive'!

CREATING FOR ALL MINDS AT ONCE

Always has architecture been a reflection of the on-going societal condition. We are currently experiencing a society that shifts between reality and virtuality and due to our acclimatization to the dual world the border seems to be fading. Human well-being now depends on the tangible world as much as it does on the simulated unreality which has become an inseparable part of how we experience our surroundings. Perception of the physical plane has become dependent on its concurrent understanding in the virtual environment of social media, augmented reality or new technologies that in any way enhance our experience. This new human ability has made us even more estranged now that every individuals' comprehensions are more tightly associated with preferred virtual trends than with the shared physical environment that we co-exist in. Architecture can no longer account on geo-cultural similarities in human recognition of value and must tend to every human individually.

To create a space for a modern human, we must understand their needs and expectations, system of valorisation, ambitions, fears etc. To create a collective space for a modern society we must understand the same set of traits for each individual separately. Even if all this information could be assimilated in whole, it would soon be out-dated due to the changing human nature and all attempts of creating a worthy space would be ill-fated.

This 'data' world leaves no time for philosophical decoding of personalities, yet urges for a mechanism that would, as envisioned by Toyo Ito, "build fictional and ephemeral architecture as a permanent entity" (Ito, 1992)⁵. Such entity that communicates with the passer-by and, in the same time, creates an analogy of their wavering experience. A personification through a function that corresponds to all aforementioned ambitions of the MUSIC MARVEL

DECODING BRAIN ACTIVITY

The perceived world must be reflected somewhere within the brain as a pattern of brain activity. Different parts of the brain reflect different types of information related to what we are currently experiencing mixed with our biased thoughts and private feelings. Because our brains work as non-linear dynamical systems that rely on firing of interconnected synapses, all activity can be detected in form of brainwaves. Brainwaves that are in direct correspondence with the stimuli in the outside world. That means that our brains in the moment of new experiences produce content that can be described as private and personal duplicate of the outside world.

If, with aid of now widely accessible EEG (electroencephalography) technology, we aim to extract these brain activities we could form a collection of an individual's reactions to a certain stimulus without having to philosophically ponder on its deciphering. Extracted brainwaves could be used as input data in the formation of an algorithm that would create a mechanism that reacts to every (or all) individual(s).

THE LIVING MARVEL - A TEMPLE OF EXPERIENCES

There are five types of brain waves, each linked to different types of brain activity and all of those types would be present within a person that is experiencing a space for the first time. Imagine that instead of appropriating the space based on the examination of the observer's primary experiences we extract their brain activity and translate it into data that affects the surroundings in real time. In this way we would be able to create the ephemeral effect that only correlates to the coexisting brain activities of the observers and stops existing as soon as the activities change.

All waves are time series that span a range of frequencies, this makes all waves easily comparable and translated. The sincerest way of communication between the MUSIC MARVEL and its attendees is a dialogue in music. People come to musical venues with a goal of reacting to the music that the venues provide. This happens during the time of performer activity. However, when the performers are not active, the venues remain silent. This is where the MUSIC MARVEL differs from other venues. Moments without performer activity shift the spotlight towards the audience that subconsciously creates music through their experience of the building. A primary experience (stimulus 0) affects brain activity of each individual in a way original to their reasoning, that is then extracted in the form of brainwaves and translated into sound-waves that are emitted within the building. This creates a new experience (stimulus 1) that affects everyone in a similar fashion and so the process persists. New experiences (stimulus 2, 3, 4 etc.) are formed and the dialogue between the building and the people inside it is continuous and unpredictable, making the building an ever-changing living entity (Figure 5).

In this manner it will be possible to create **music for a building for music**. A never-ending circle between the architecture and its purpose.



FIGURE 4

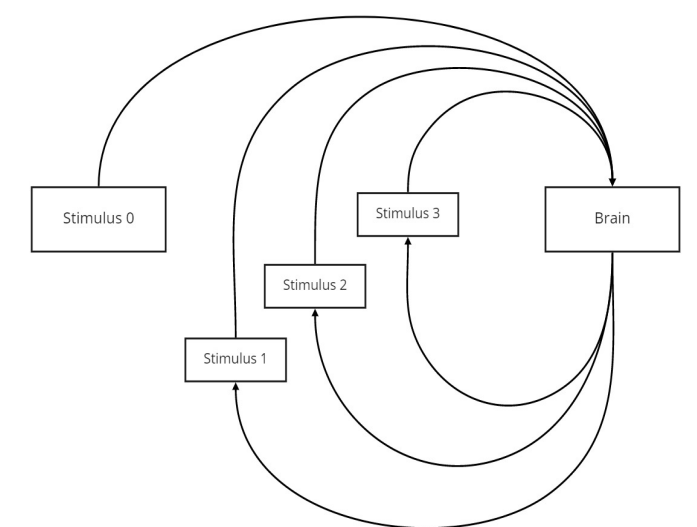


FIGURE 5

"The big question is - when will we be in an age where the thoughts in my mind or the music in my mind translates directly to" - Dr. Richard Boulanger⁶

Current technologies allow us to play recorded brainwaves as audio files. However, those sounds are nothing more than unpredictable noises. If intended for space enriching purposes, these noises should depend greatly on their artistic interpretation and organized combination, perhaps with parallel consideration of musical theory, in order to achieve the desired musical effect.

AIMING TOWARDS THE LIMITLESS WORLD

Architecture that mutates in response to the neurological feedback depends on the latest advancements of the equipment that is used for brain activity decoding. In order to stay relevant over time, it must account for technological improvements that can be incorporated into the system when available.

Neurological architecture is a real time interpretation of the surrounding world perceived by humans. The specific idea behind the MUSIC MARVEL is revolving around sound inputs

and outputs but it also inspires imagination that questions limits until which neurological decoding may affect the world around us. A predictable next step would be further influence on the interior as well as the exterior of the building (Figure 8 – 11). This could later indicate possibilities of affecting the buildings surroundings and communication between buildings through the language of telepathy between their users. Consequently, it could even inspire a new form of digitalization through such communication and a creation of not only living entities within the cityscape, but also a city-organism consisted of interdependent parts that, actually, presents its citizens.

In another direction, neurological architecture might affect the way we see other forms of design. The introduction of EEG equipment to our everyday lives, that permits us to reserve relevance in the world of neurological architecture, could cause revolutionary tendencies in fashion design. Or influence other industries that would adapt their products and markets towards the new collective habits.

The creation of this mechanism that enables living architecture could influence a formation of a different world.

FIGURES:

- FIGURE 1
Stavanger Concert Hall, Movable acoustic ceiling elements in SOURCE Waagner Biro Stage Systems
- FIGURE 2
The Gdask Shakespeare Theatre, the main hall: sections of the Italian configuration (left) and the Elizabethan configuration (right) SOURCE ArchDaily
- FIGURE 3
The Gdask Shakespeare Theatre, the main hall: Retractable roof SOURCE BBC
- FIGURE 4
WDCH Dreams by Refik Anadol at Walt Disney Concert Hall by Frank Gehry SOURCE Digidult
- FIGURE 5
The loop of simulation in the MUSIC MARVEL - relationship between the stimuli and the brain
- FIGURE 6
Dr. Richard Boulanger composing music using soundwaves produced from his own brain activity, Berkeley College of Music SOURCE Boulanger Labs
- FIGURE 7
Brainpalace by Christian Losert, artistic installation that reacts to neural feedback SOURCE Christian Losert

SOURCES:

- 1
Solà-Morales, M. d. (1992). Public Spaces, Collective spaces. Barcelona: La Vanguardia.
- 2
Gehry, F. personal communication
- 3
Weber, M. (1917). Science as a Vocation. Munich: Munich University.
- 4
Gebauer, L., Kringelbach, M. L., & Vuust, P. (2012). Ever-changing cycles of musical pleasure: The role of dopamine and anticipation. Washington D.C.: American Psychological Association
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Ito, T. (1992). Architecture in a Simulated City. London: New Prairie Press.
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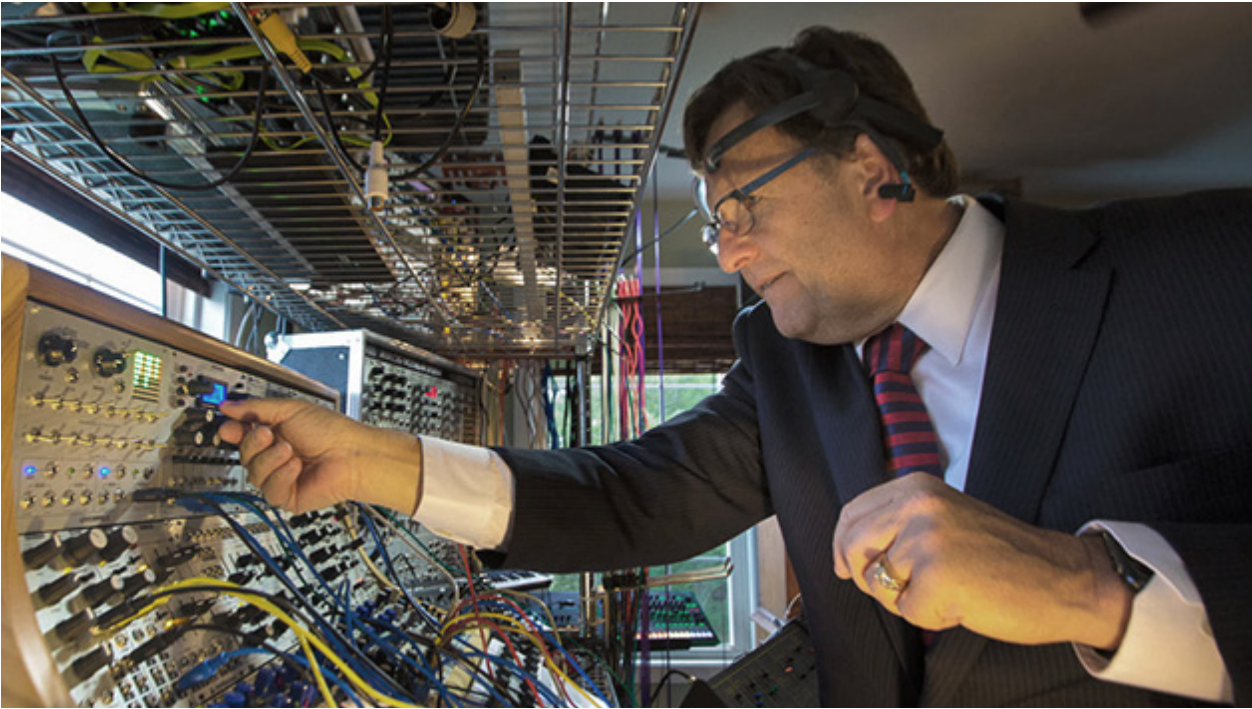
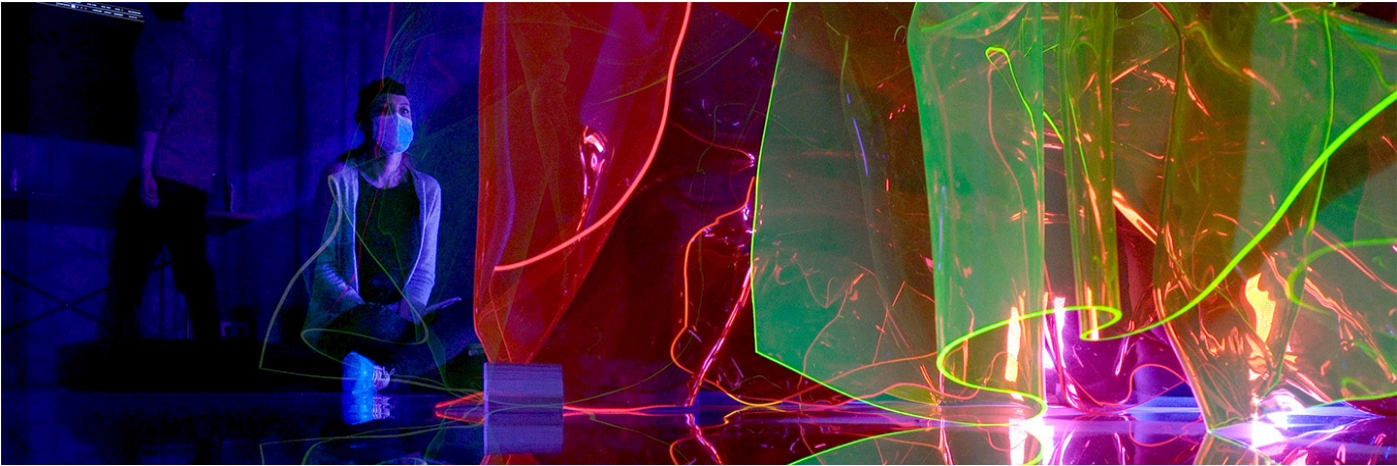


FIGURE 6



C.1

DESIGN BRIEF

FACILITY DESCRIPTION

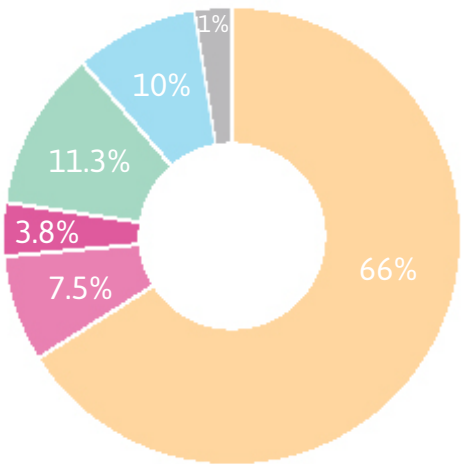
MUSIC MARVEL - A TRANSFORMABLE SPACE

The Music Marvel is a musical performance venue that serves as a significant landmark within The Hague. It assumes a form of a performance hall venue linked with other required spaces that allow the buildings best but simple spatial functioning. The Music Marvel has no ambition of hosting multiple performances, as well as having many of its spaces occupied at the same time in a way that it may challenge other more traditional musical/performance venues within the city. Its first and only goal is to provide a unique spatial experience that will follow any type of performing arts that are taking place within its hall. These performances are translated in real-time into the architectural interpretation of the audience's experiences within the hall, as well as on its outer skin. Considering such a complex role of artistic and scientific interpretation of musical performances, the facility description of the venue remains brief in order to highlight only the ephemeral character of the architectural ambition.

Furtherly, the hall is transformable in a way that permits different types of musical performances according to their acoustic requirements.

SUMMARY OF SPACES

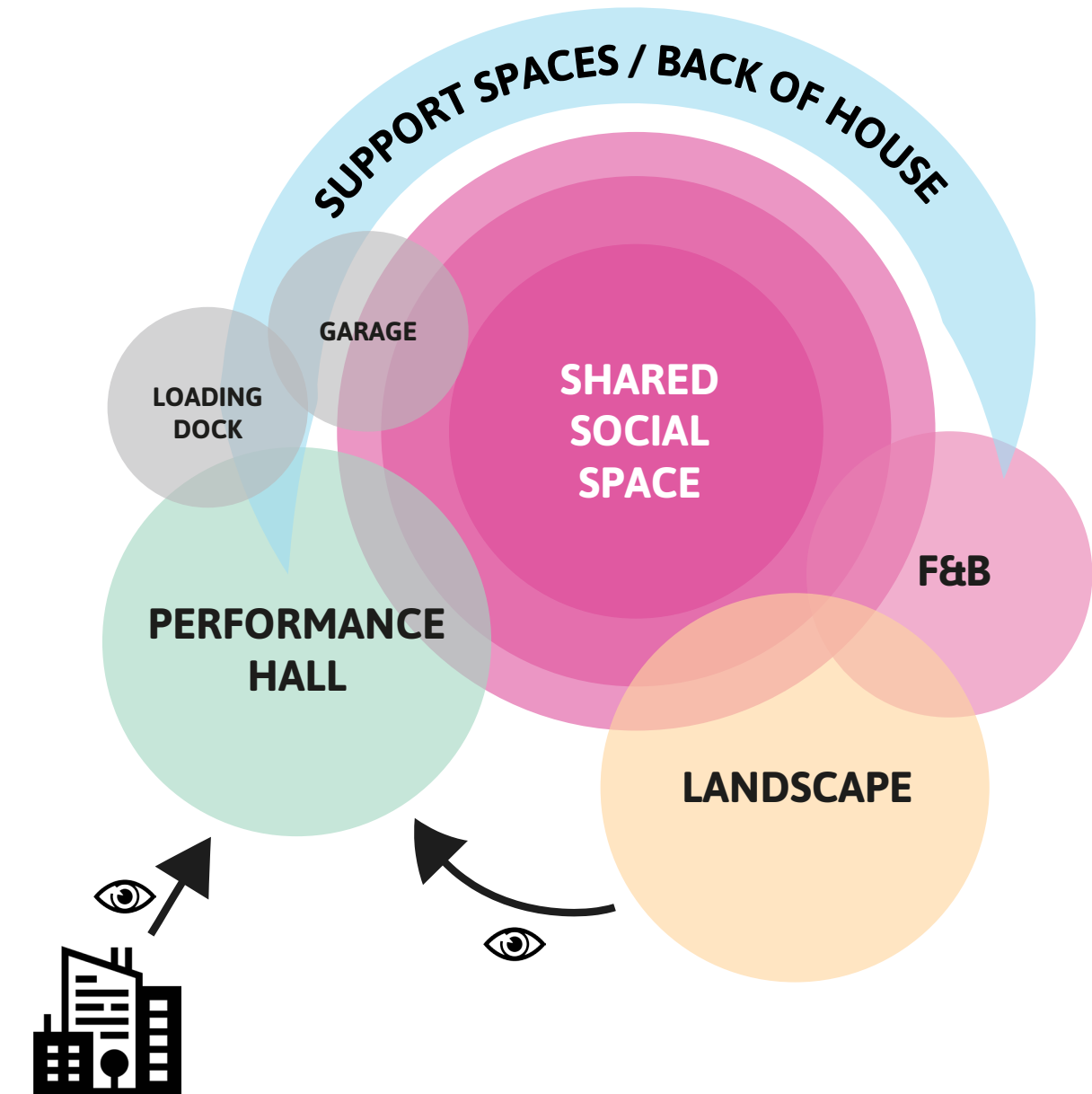
BGA (sq. m.)		
1.1. Exterior of the Building		
Outside public spaces	1171	
Landscape	WIP	
2.1. Front of House (Public Area)		
Shared Social Space	1120	
VIP / Performer area	WIP	
2.2. Front of House (Commercial Area)		
F&B (Café / Restaurant) - with own BoH and Kitchen	785	
Retail (Gift Shop)	205	
3.1. Performance Spaces		Seats
Performance Hall	2500	1550
Back Stage	350	
4.1. Back of House		
Storage	900	
Loading Dock and Receiving (performance and F&B)	650	
Offices / Staff area	900	
Technical spaces	400	
5.1. Circulation (that is not previously covered)		
Circulation	WIP	
6.1. Underground		Parking spaces
Parking	6300	240



A LIST OF SPACES

- Exterior of the Building: Outside public area, Landscape auditorium, F&B
- Front of House: Foyer, Coat & Bag Check, Information, Ticketing, F&B, FoH Manager's Office
- Performance Spaces: Performance Hall, Stage, Auditorium, Back stage, Camera room, Equipment room, Stage elevator room, Seat storage, Organ space
- Back of House: Loading Dock / Receiving area, Storage, Staff and offices, HVAC and EE technical spaces
- Circulation: Elevators, Stairs,
- Underground: Parking, Staff desks

CONNECTION OF SPACES

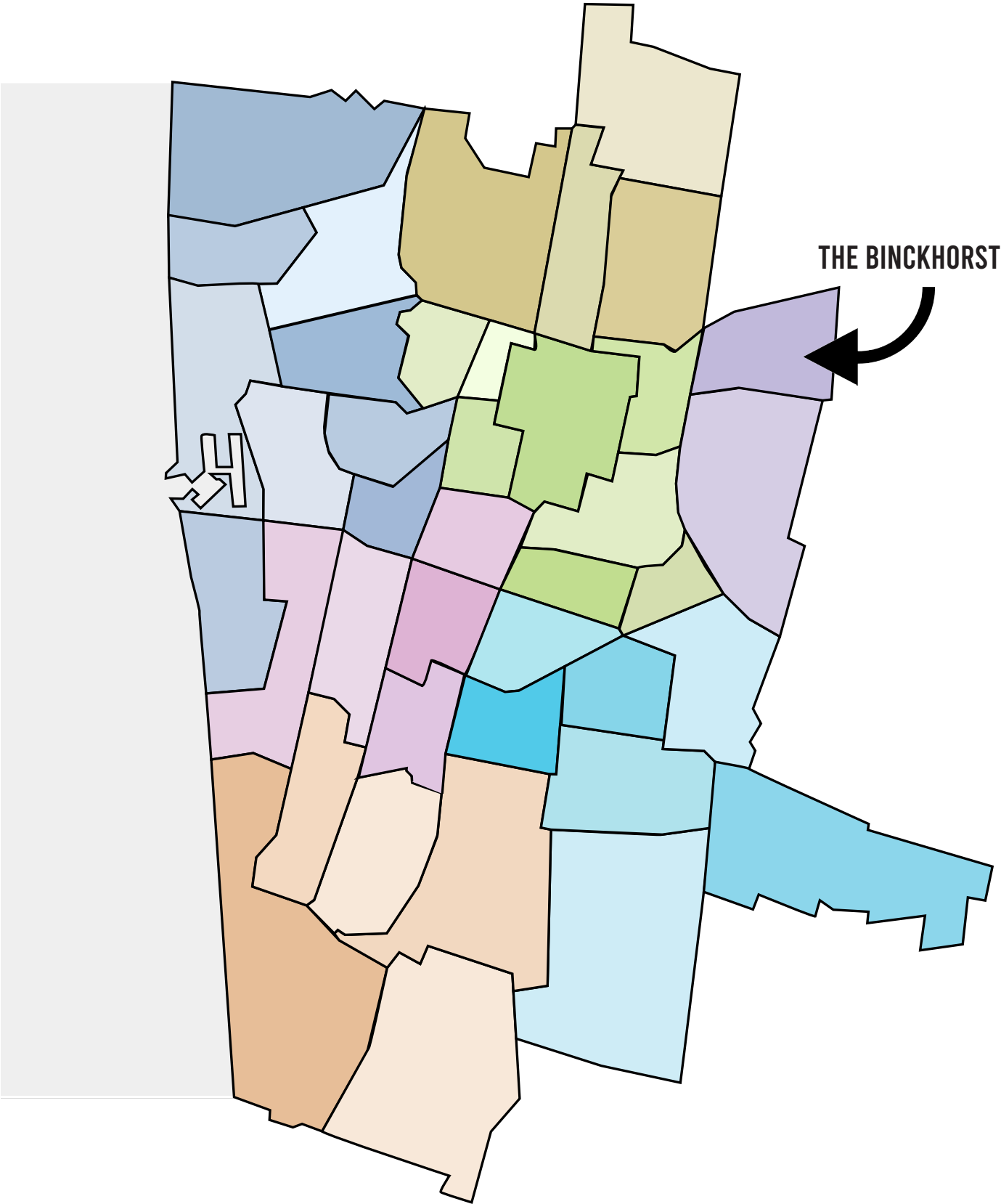


D₂.1

PROCESS DOCUMENTATION:
INDIVIDUAL RESEARCH BOOK

THE CITY

THE HAGUE, NETHERLANDS



CONTEXT & SITE (TREKVIETZONE WITHIN THE BINCKHORST)

UNDERSTANDING THE LOCATION: THE BINCKHORST

The Binckhorst, a former industrial area of The Hague, is being re-adapted into the mix-use development defined in an urban plan adopted in 2009. According to this plan, the area will attempt to appropriate a new character that would benefit the new high-density, luxurious residential architecture. The plan however does not cover any new cultural content and is thus threatening the previously settled, 'street' and urban culture responsible for the prevailing vibrant energy.

The ambition of this project is to provide a potential solution to this threat by presenting a cultural beacon, a MUSIC MARVEL, that will neutralize the predominant image of mass-capitalist investments in the area.

The Binckhorst currently consists of patches of land occupied by remaining industrial buildings, some re-adapted and some not, well connected with streets that support heavy traffic. The area is surrounded by water on most sides which allows another type of transportation and could be considered the most important visual attribute of the site. Coverage with greenery is poor but is being resolved as the realization of the adopted urban plan continues. The current state of the area seems very inviting to any architect that contemplates on further development in any part of the Binckhorsts, setting up little restrictions due to the in-existent coherence in context of historical value.



THE MONUMENTS

Although it is known for its industrial character, the Binckhorst also possesses valuable monuments that affect all plans for further development. Among many valuable buildings and abandoned rail infrastructure that both have debatable value and potential in the Nieuw Binckhorst, there are two other monuments that drastically stand out. The Sint Barbara cemetery and the 17th-century Manor De Binckhorst are green areas that will surely persist and influence the new urban plan. Additionally, two restaurants within the Trekvlietzone are currently occupying buildings dating from around 1920s. These undoubtedly hold architectural value that should be cherished.

TREKVLIEL

The Trekvlietzone is currently being transformed from what was formerly and industrial area into what is to be an attractive place to live and work. In the future, the zone will have between 750 and 1000 residential units (apartments, more than houses) that will be built for diverse clients and residents. In the location of the former Dutch Air Force headquarters, a development called The Binck City Park is being designed. This development will have major impact on the environment and specifically on the neighbouring location of the Music Marvel. The plan for this area promises a continuation of the green area from around the Manor De Binckhorst and 'Long van Laak' all the way to the

water in the South-West part of the zone. This waterfront green area could serve as a direct green connection to the landscape around the Music Marvel that is designed to gather people from the dominant residential surroundings around the building that will 'perform' for the passer-by.



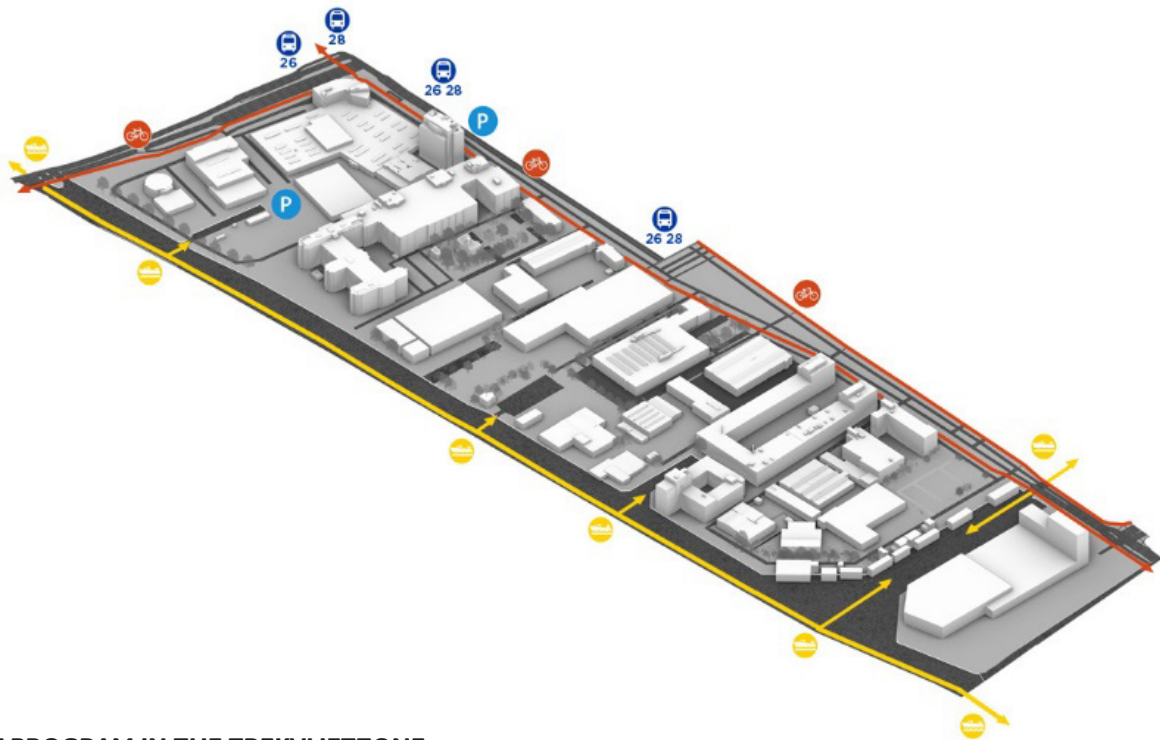
MANOR DE BINCKHORST

BINKCITY PARK

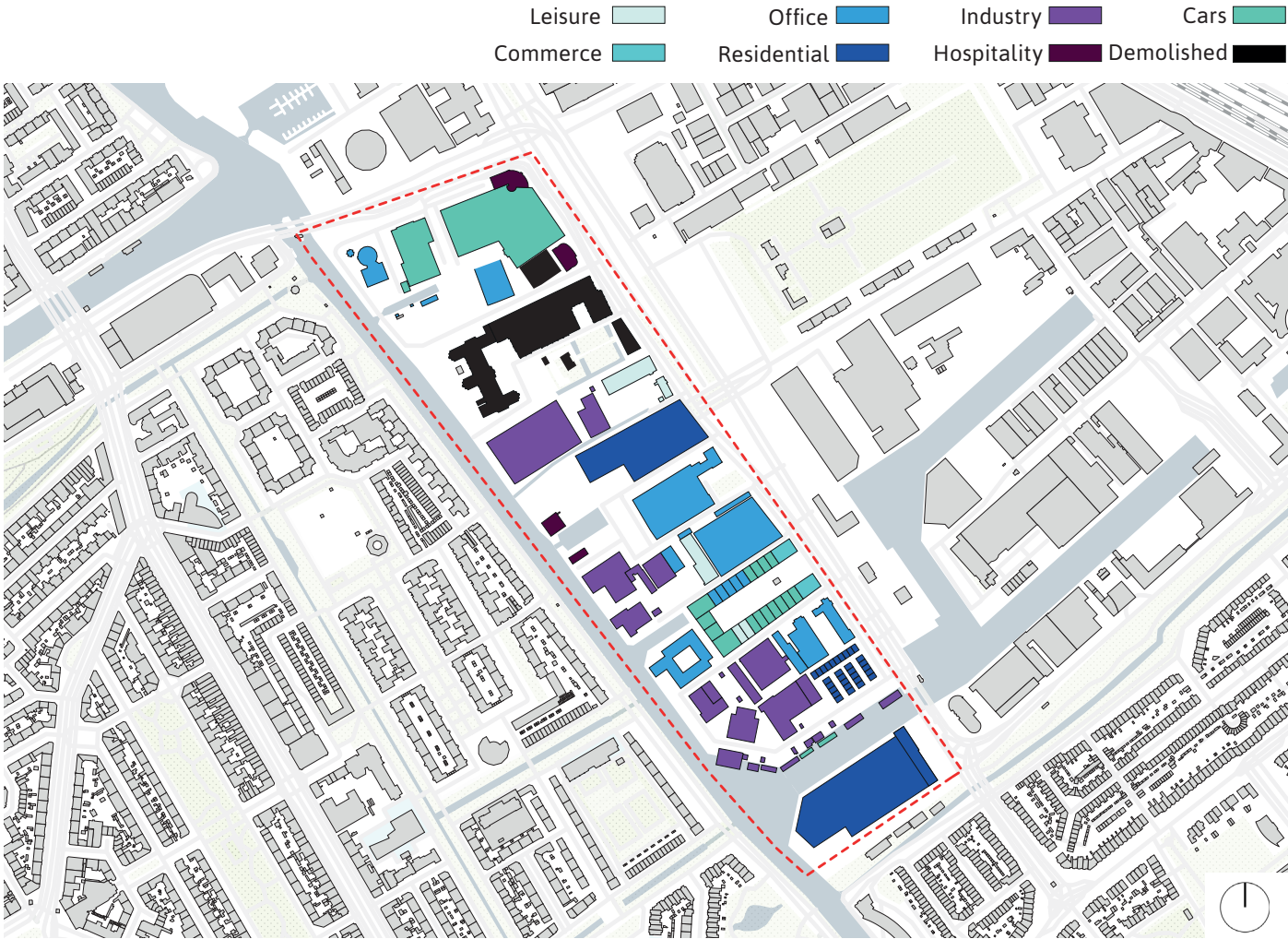
THE MUSIC MARVEL

INFRASTRUCTURE IN THE TREKVLIELZONE

The Trekvlietzone is connected to the main road of The Binckhorst on its North-East side. It is very easy and fast to travel, by foot or by public transport, through the area thanks to the good and logical existing connection. Such infrastructure is beneficial to the future plans that have an ambition of almost completely eliminating street parking in order to minimize pollution as well as to make the visual more inviting. Currently, little to none improvement is needed in the public transportation system as well as for the bike access to the deeper parts of the area. However, new developments, underground parking and the future residential density of the area might demand changes.



CURRENT PROGRAM IN THE TREKVLIELZONE



CASE STUDY: PARADISO

(Selection of research done as part of Group work with Daphne Vlak, Hakkican Unsur and Bart Schipper)

ABOUT

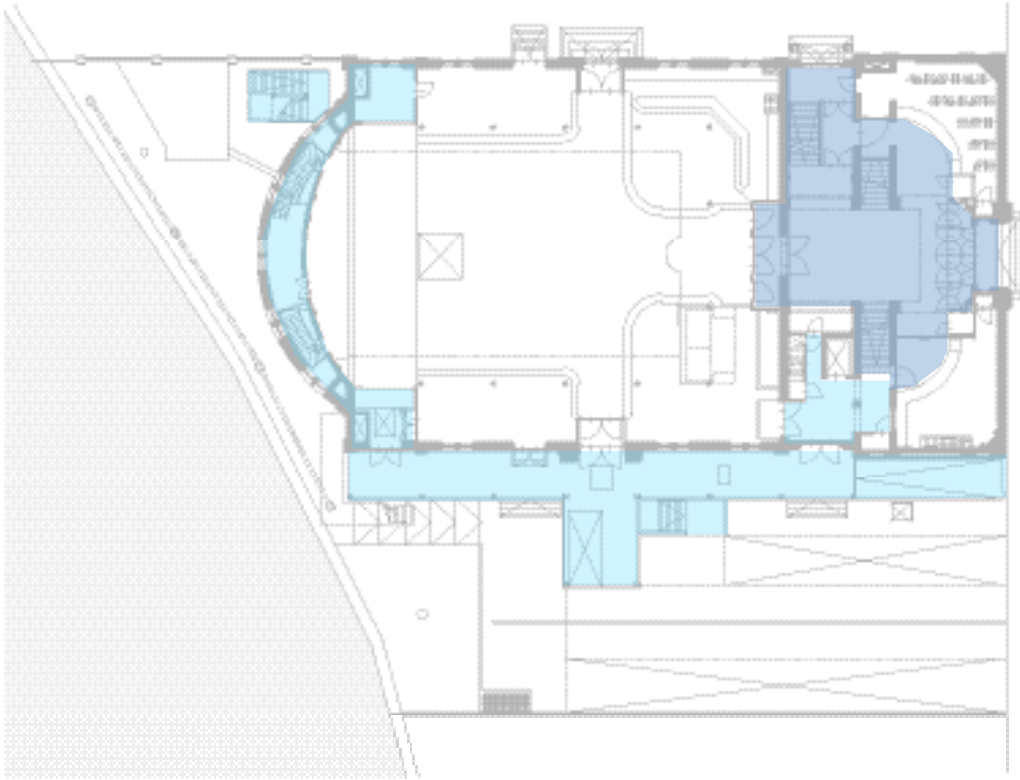
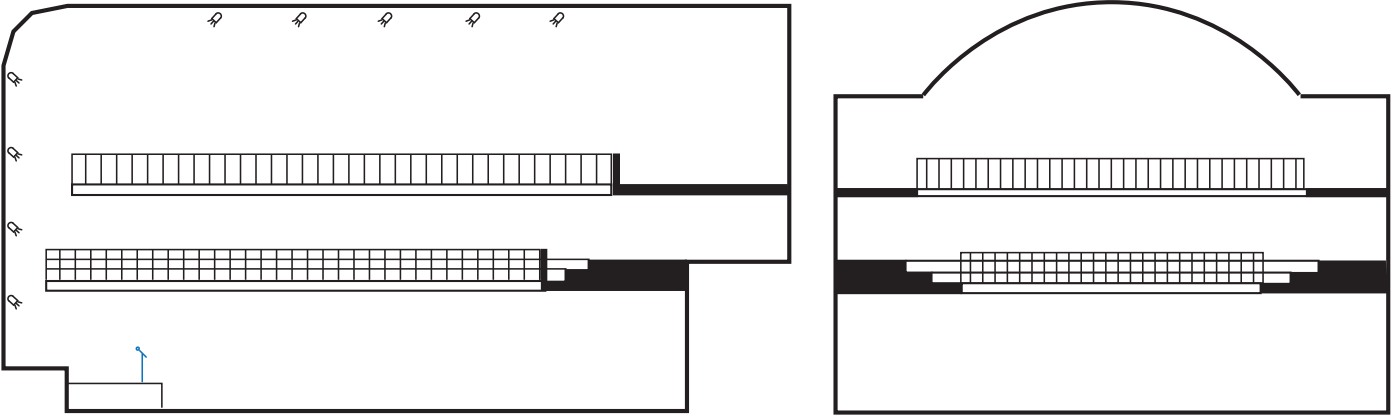
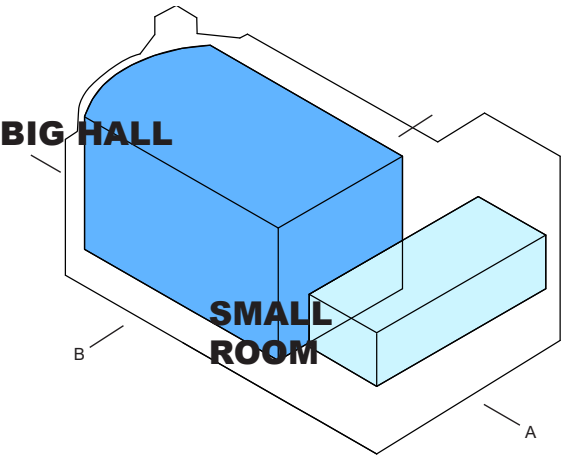
Paradiso is also located in Amsterdam. It finds itself in the older part of Amsterdam in between the canals. The venue is fits in tightly with the surrounding buildings. The building is enclosed by the roads on the front end and by the back at the back end. Visitors can come via car, public transport, bike and by foot. Coming via the canals is an option, but very unlikely due to time and economical factors. Coming by car is possible, but the venue relies on other parties for parking options. The venue has a tram stop close by and bicycle parking on its property, so those are the most popular options. The building can be approached from two sides of the same street and visitors can enter the building via the main entrance door at the front of the building, directly located on the curb. Staff and musicians enter via the backside of the building and logistics is carried out outside on the east side of the building.

CIRCULATION & ACCESS

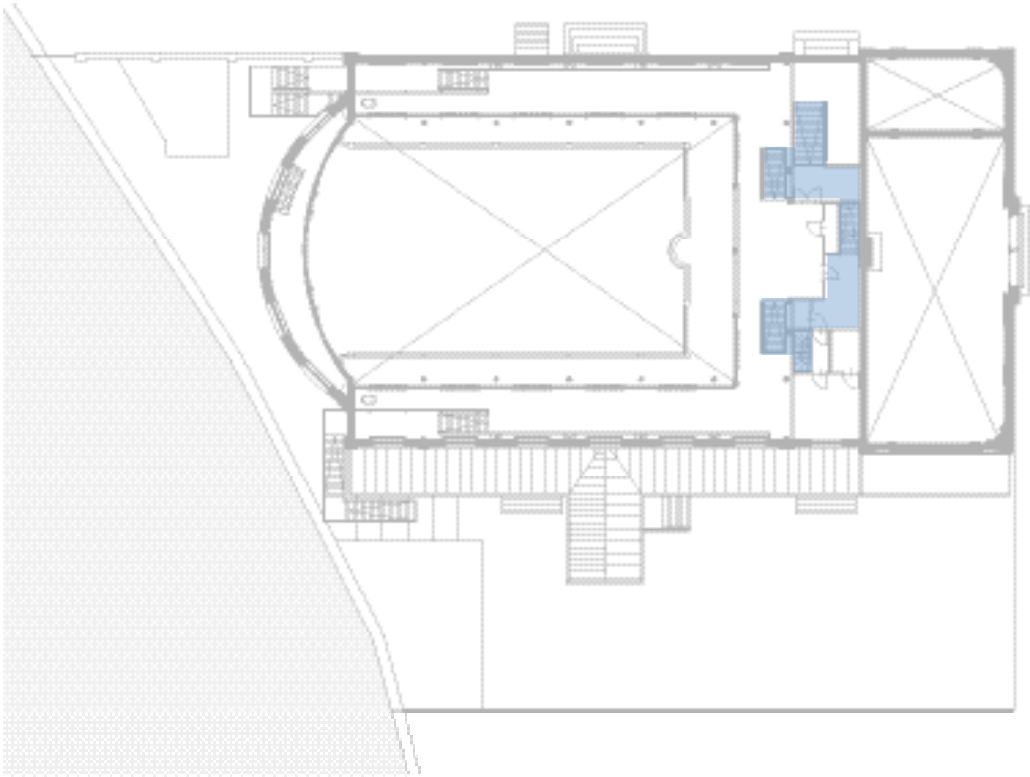
Paradiso has two spaces for events. The first and main being the big hall. This hall is used for concerts with a standing crowd and the most well known. The second one is the small room and is unfamiliar with most people. It can be used for music, but not simultaneously with the big hall. It is most often used during the day for other types of events. The basement is also used as an event space, every now and then performances are given there. There is a bar and seating and the space can also be used for the musicians only. Paradiso is very space efficient. The halls take up 38% of the total volume of the building. The remaining 62% is mostly used for circulation, logistics and storage. Even so, the routes for the visitors of the building are organised very efficient, so that the least amount of space was lost to logistics during the renovation. The circulation for visitors is kept at the front end of the building as much as possible. People can reach the hall directly on ground floor level, or go up via a set of stair to one of the two balconies. The stairs are rather narrow and do not have a defining character.

The figure above shows the accessibility of the building for the public, the musicians and private areas. These spaces are

what makes up 62% of the building. The main hall is highlighted here fully, from bottom to the roof, but in the calculation, the structural space above the hall are not accounted for in the volume of the concert hall. For this analysis, it was agreed upon to calculate the volume of the hall according to its acoustic envelope. The most outstanding feature of Paradiso is the efficiency with which they have packed the programme into the building. Every space has a specific function. This venue has a very clear division between the front of the house and the back of the house, which can be seen both in the plan and in the section.



Ground floor level



Second floor level

Publicly accessible Private/accessible for musicians

20 m



CASE STUDY: MUZIEKGEBOUW AAN 'T IJ (+BIMHUIS)

(Selection of research done as part of Group work with Daphne Vlak, Hakkican Unsur and Bart Schipper)

ABOUT

Muziekgebouw aan 't IJ is located in the area Amsterdam-East and can be reached via various modes of transport. Visitors of the building can come by car, bike, walking and public transport. Visitors could possibly even come by boat, since the building is located in a harbour area. They could dock on the south side of the building, since the north side is only for bigger transport ships. The image above show the direct connections the building has to its surrounding area for it to be reached. The public can park either their car or bike in the parking garage underneath the concert building for a fee. People coming by foot or public transport can cross the bridge over the water and enter the building at a higher level. Logistics uses the same road as the public, but has their loading dock inside the building. People can enter the building at different points, two of them are shown below in blue. The lower being named the main entrance, but since there are so many ways to enter the building, this is just a title. The smaller one on the higher level is where you enter when having crossed the bridge and enters at the level of the BIM House.

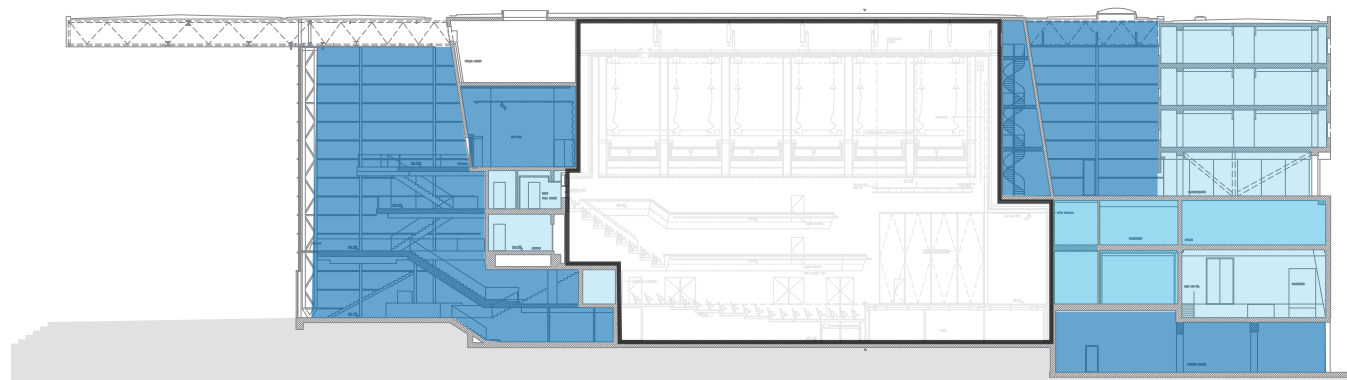
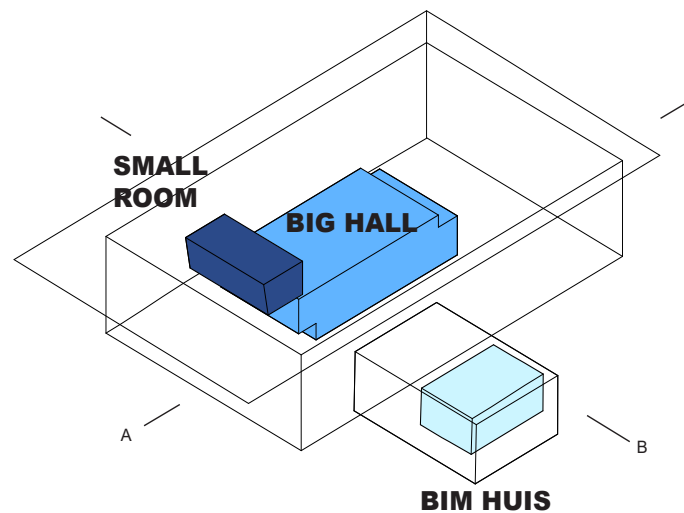
HALLS & CIRCULATION

The building consist of three official dedicated rooms. The main hall and the biggest one being the Big Hall. This is where concerts and other big events take place. The second one is the hall in the BIM Huis. This hall can be used for concerts, but also for lectures or other event types. The last one is called the small room. This event space is mainly used for talks or other corporate events, but can be opened up and joined with the foyer space. Muziekgebouw aan 't IJ has a lot of supporting space. This supporting space consists of functions such as circulation space, foyers, bars/restaurants, technical rooms, offices, logistics and so on. It makes up for 90% of the building.

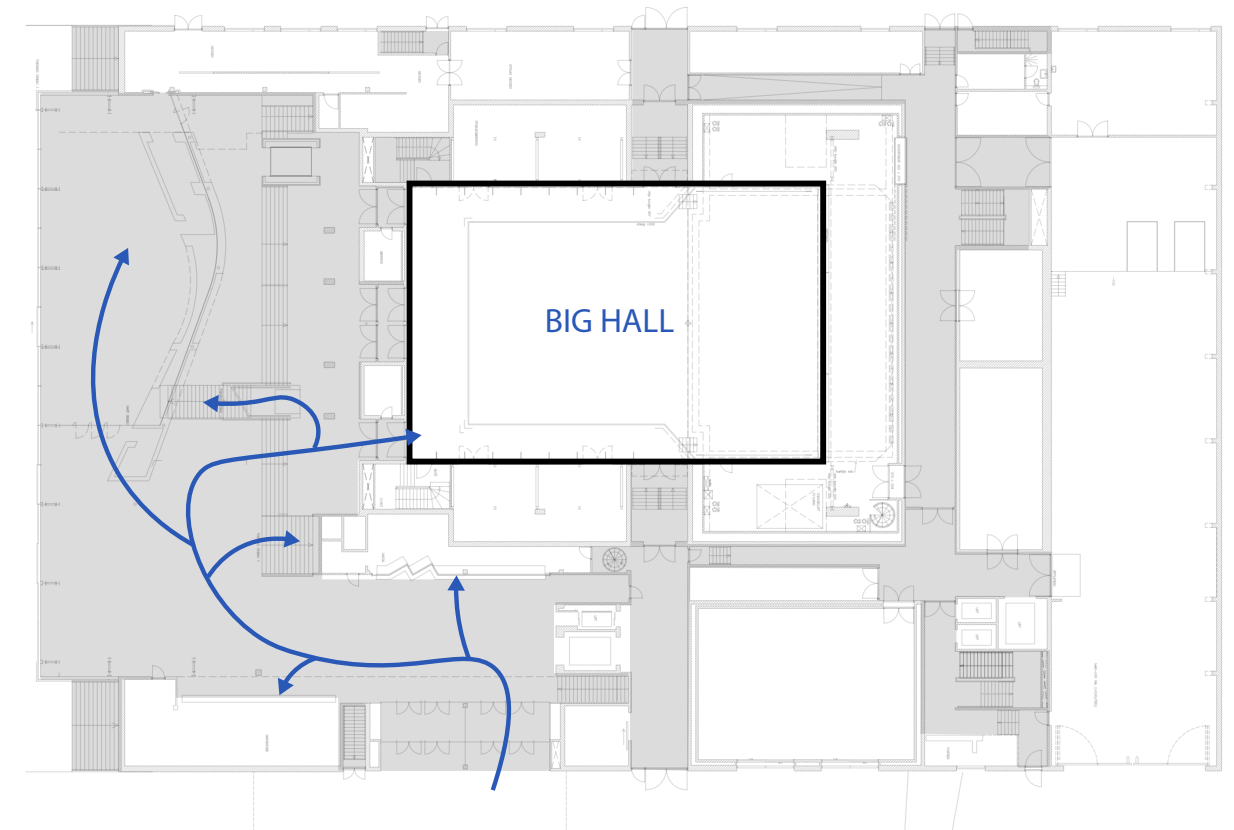
The circulation in the building is defined by the many different routes a user can take through the building. The big staircase next to the main hall is a defining factor in this experience. It takes you from ground level to the second floor level, where you can enter the building from the pedestrian bridge. The three foyer decks can be reached via their own set of stairs, which also

take you to the higher level entries of the main hall, as well as the entrance of the small room on the second floor. Indicated in the dark blue arrows are the several point where you can enter the building and the lighter blue lines show the flow of routes moving through the building.

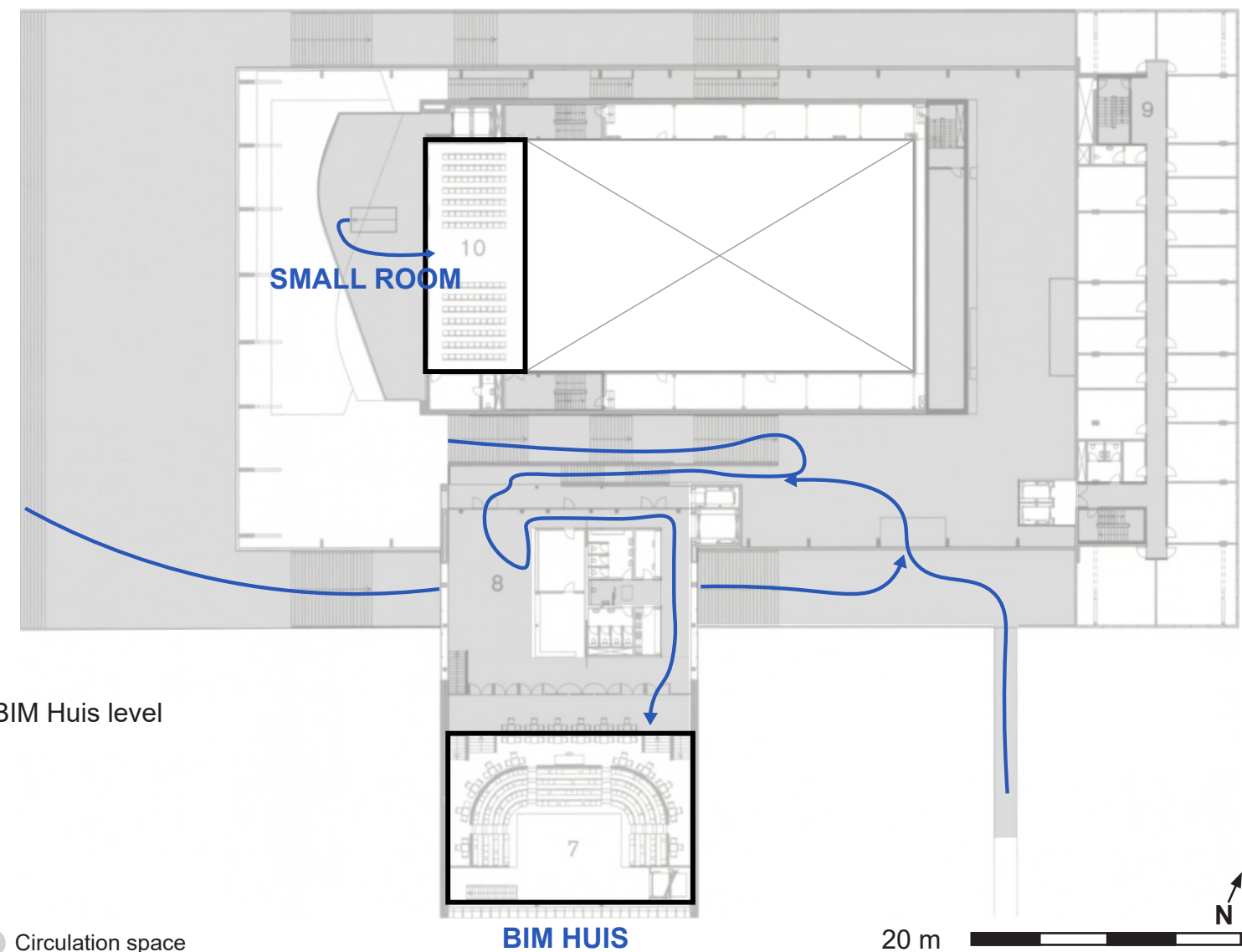
A majority of the space in the building is thus used for circulation. The spaces around the hall are not officially defined as venues for music, but can be transformed into such spaces. This is why it may seem that the building has a lot of leftover space, but it is just a very flexible, hybrid building. The foyer decks (a total of 3) can be used for dinners or parties, such can the space behind the big hall be used for events.



● Public Access
● Musicians Access
● Private Access



Ground floor level



BIM Huis level

● Circulation space

D.2

PROCESS DOCUMENTATION :
DESIGN JOURNAL

EGOCENTRIC ARCHITECTURE

DOCUMENTATION OF ACTIVITY

Below is a collection of thoughts, photographs , sketches, and screen-shots taken in the pre-concept phase of this project.

All this material is a product of the ambition to find that which is not subjective and ‘egocentric’ design.

ONE

First studio assignment - Personal understanding of the relations between the topics City, Connection, Culture.

TWO

Persona diagram from the site for Theory Research. Overlapping and fading impressions.

THREE

Different interpretations of the site according to the researched manifestos. Part of the Delineation Process.

FOUR

Site analysis of the Binckhorst. Empathy map for the Theory Research.

FIVE

Notational system - Chess pieces of the Binckhorst. The battle between Culture and Capitalist investment

SIX

The physical model of the Binckhorst.

SEVEN

P1 site presentation. Emphasis on the views ability to activate peripheral or focused vision by choice.

EIGHT

Preliminary sketch of the Music Marvel concept.

NINE

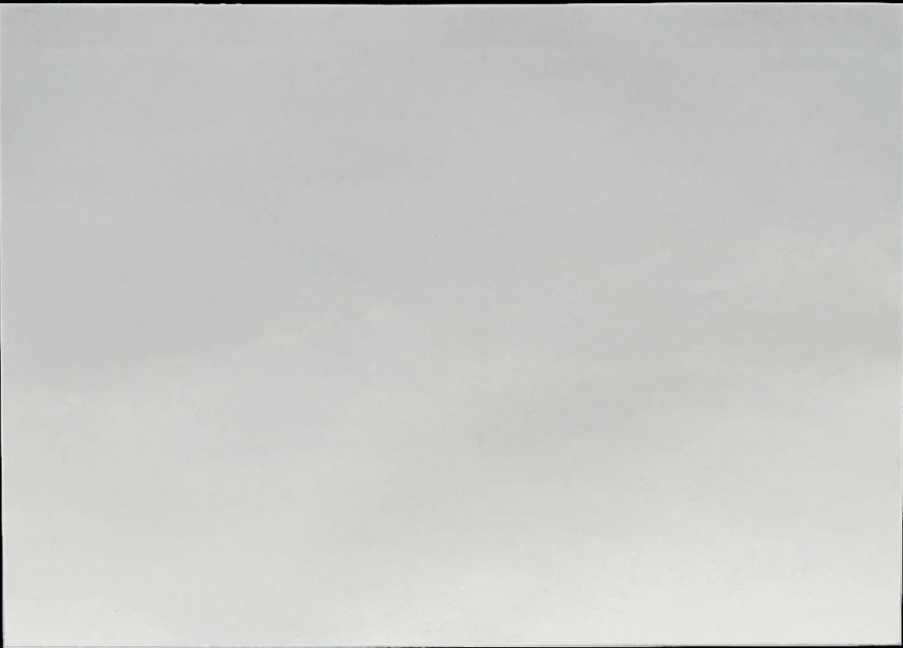
Preliminary spatial organization and form studies.

TEN

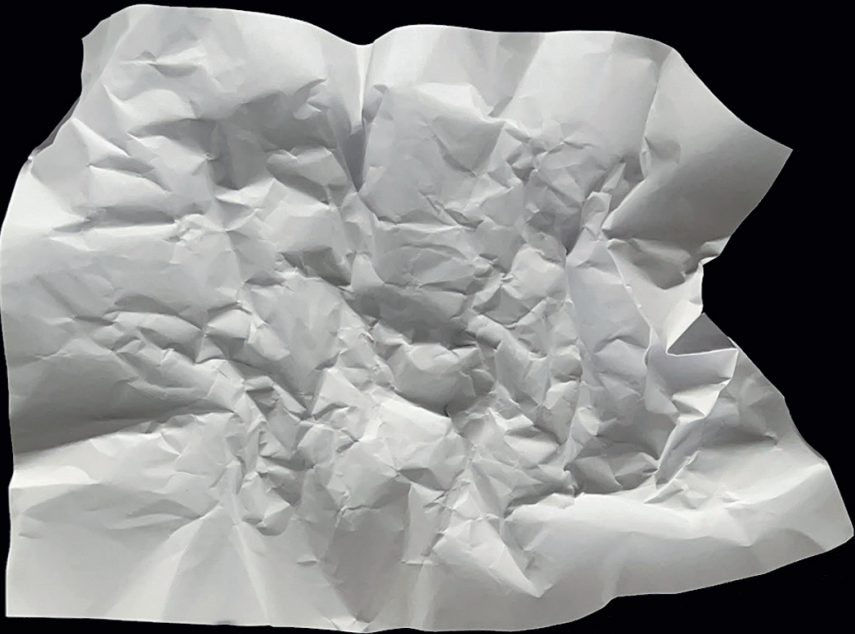
A Experimentation with the EEG (electroencephalogram) tool and measurement of brain waves.

B Initial scripting to create generative textures for the interior design using numerical values extracted from the brain waves as input.

ONE



city



connection
▼
city



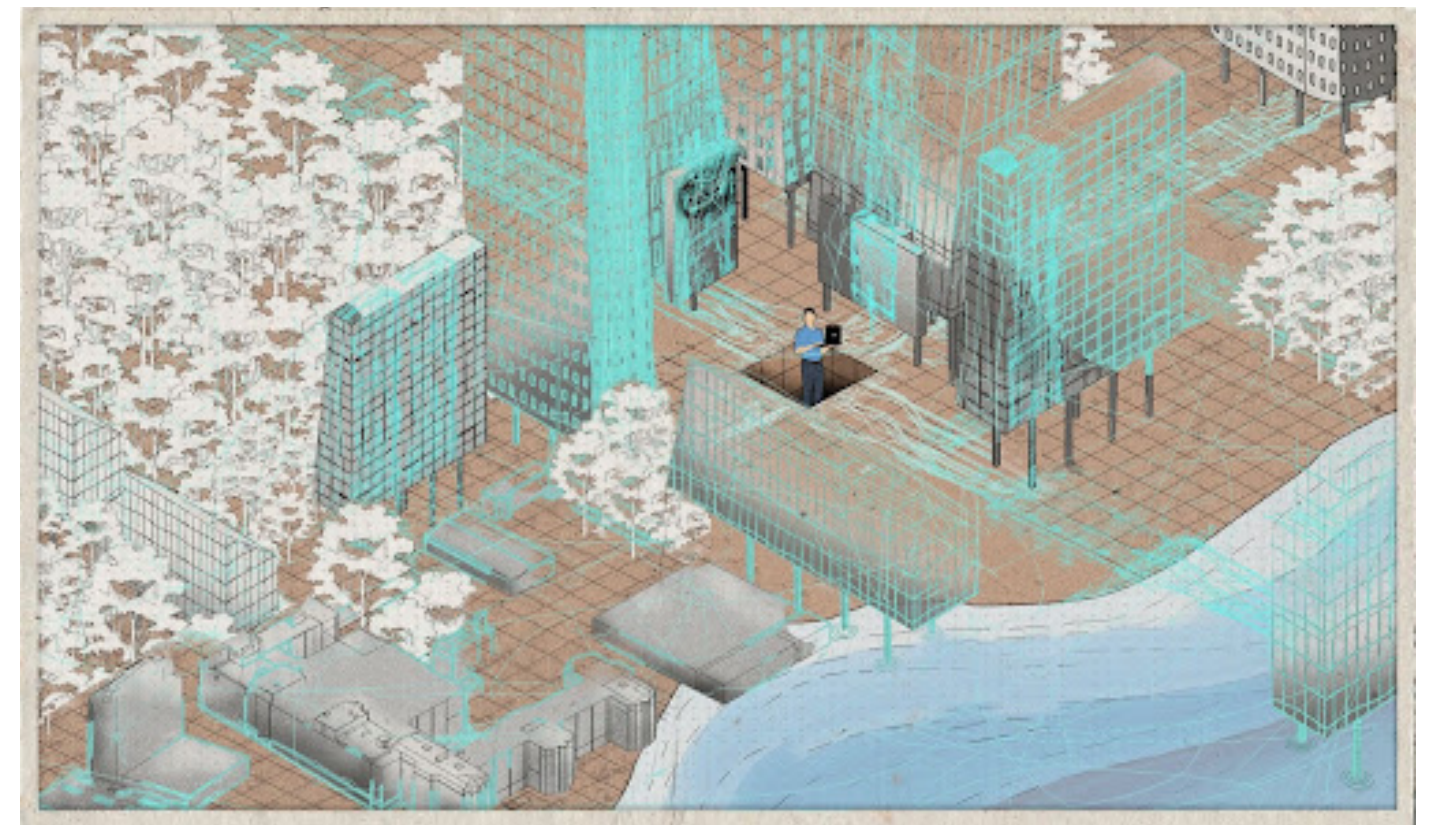
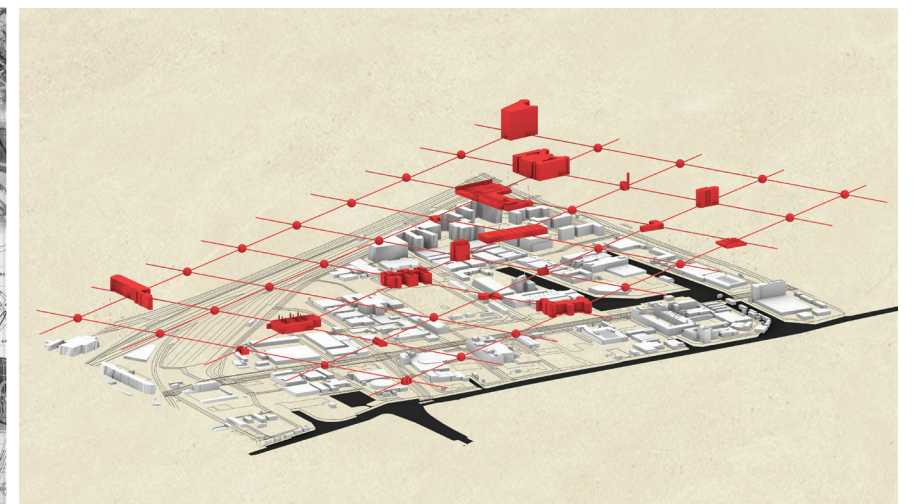
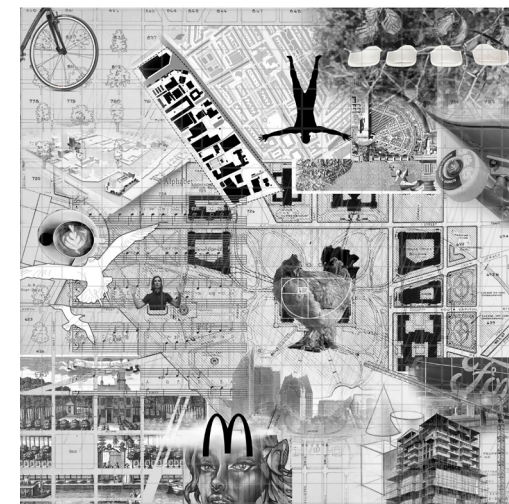
culture
▼
connection
▼
city

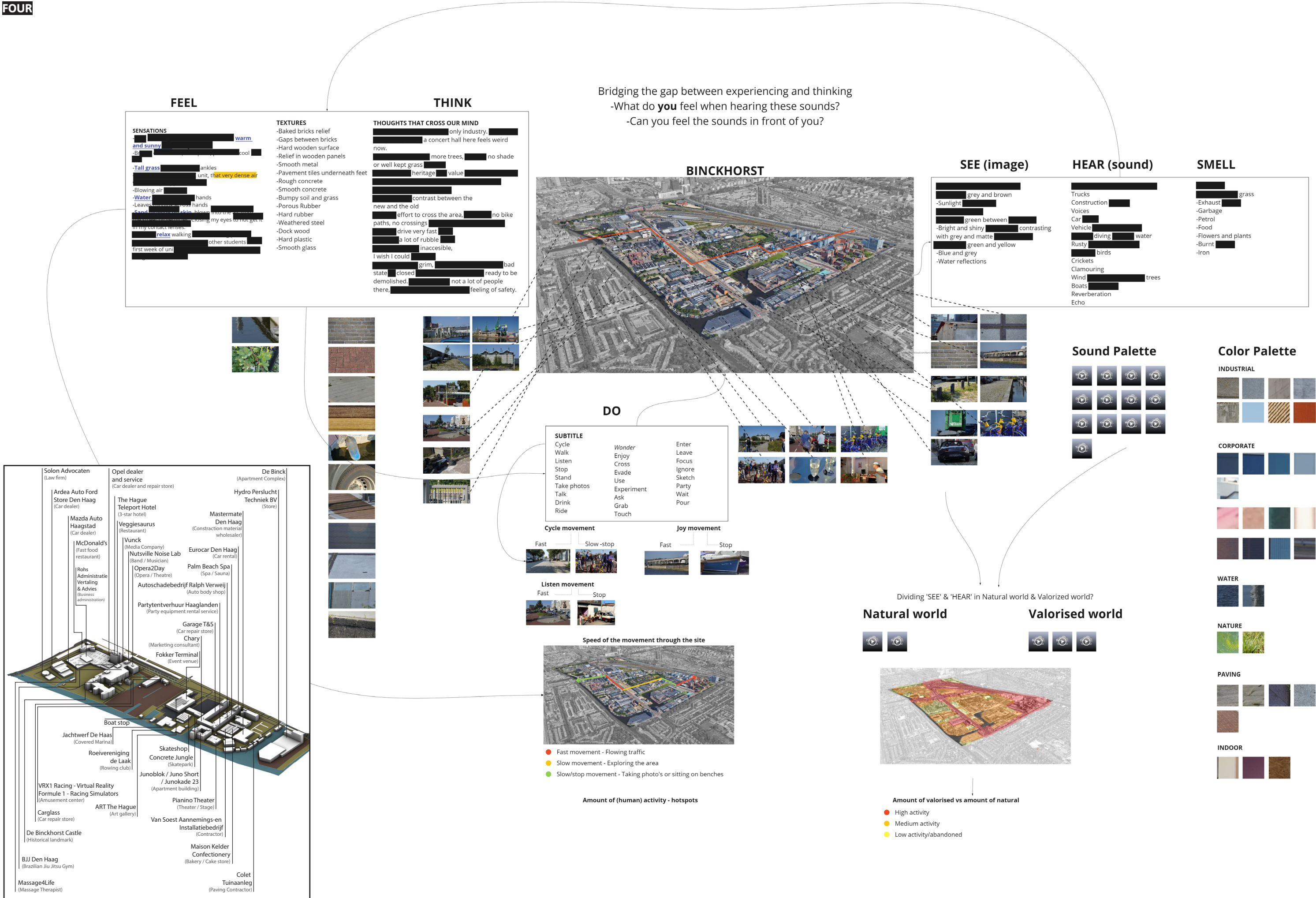
I like the idea of the new plan
adding a new green area
of the new master plan

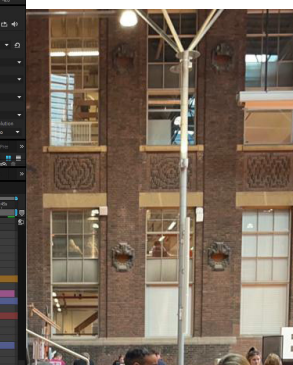
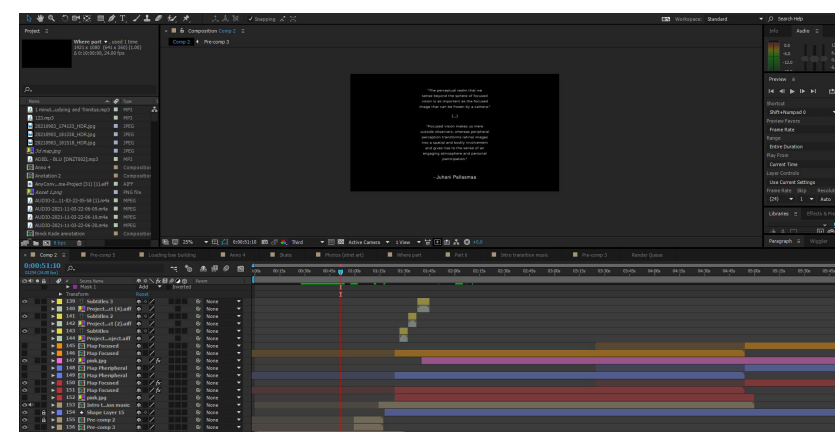
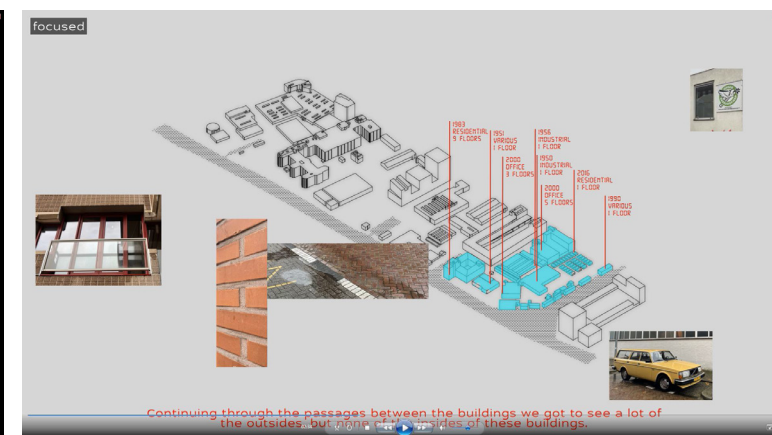
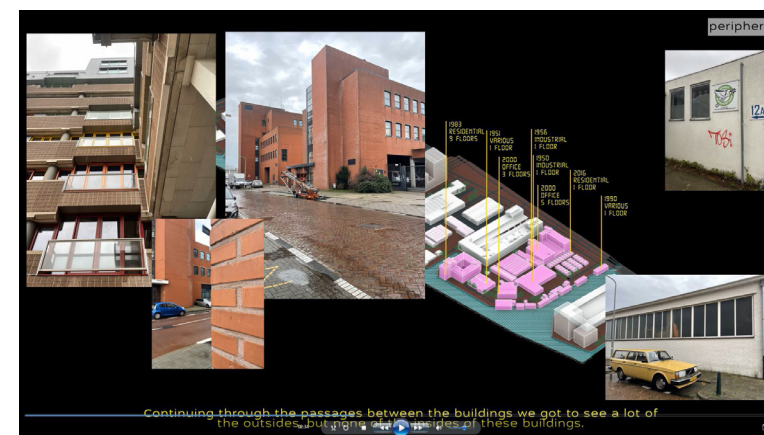
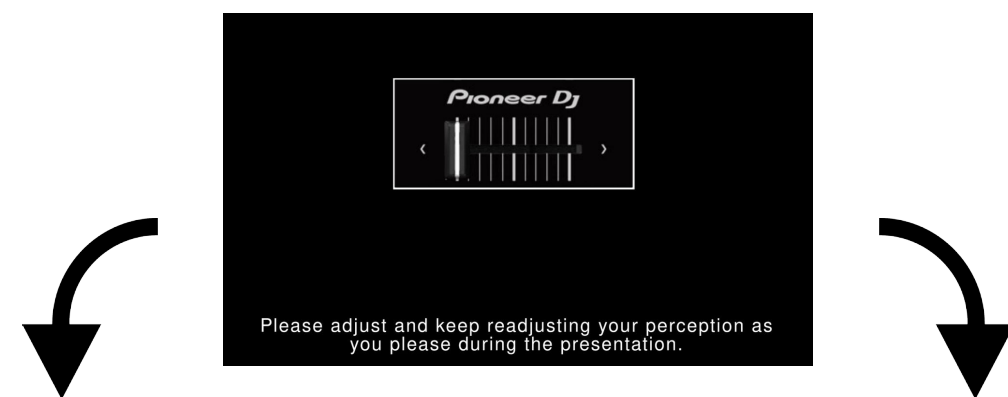
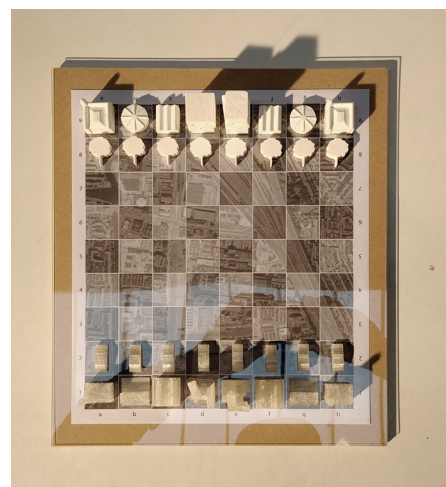
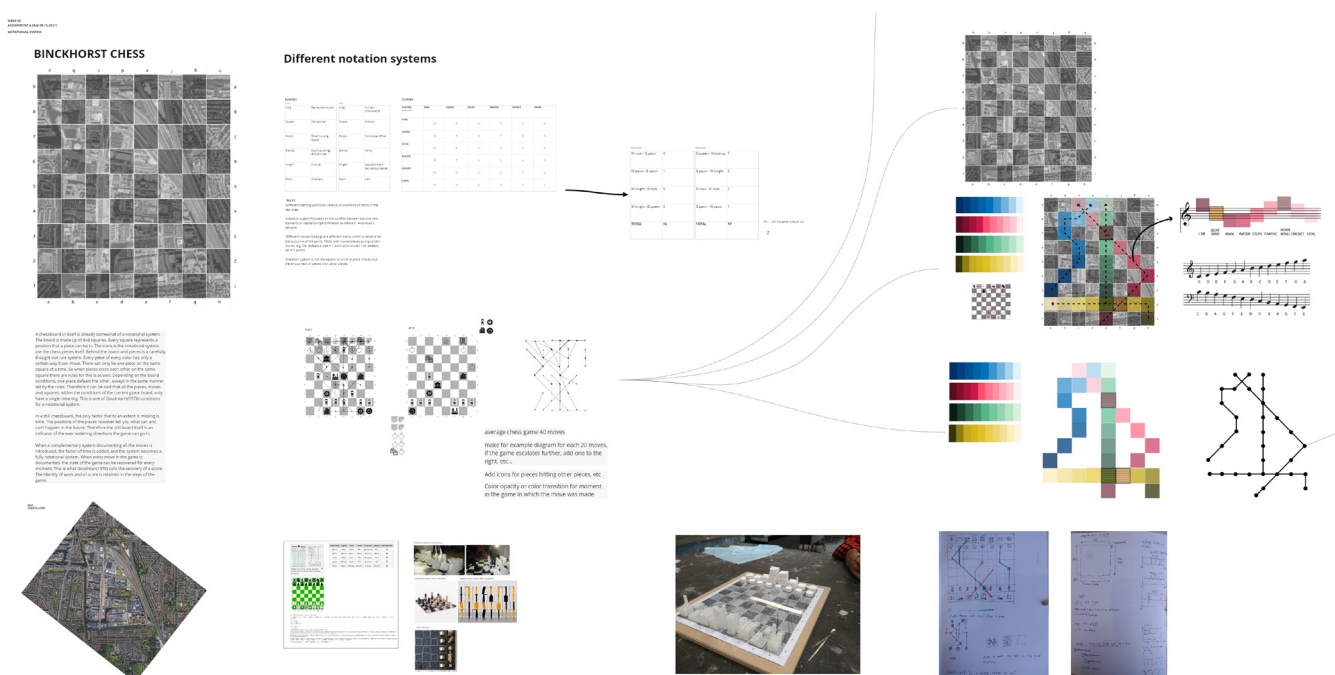
I wish the new master plan
could be done

I wonder if the new plan
could be implemented
like a new plan

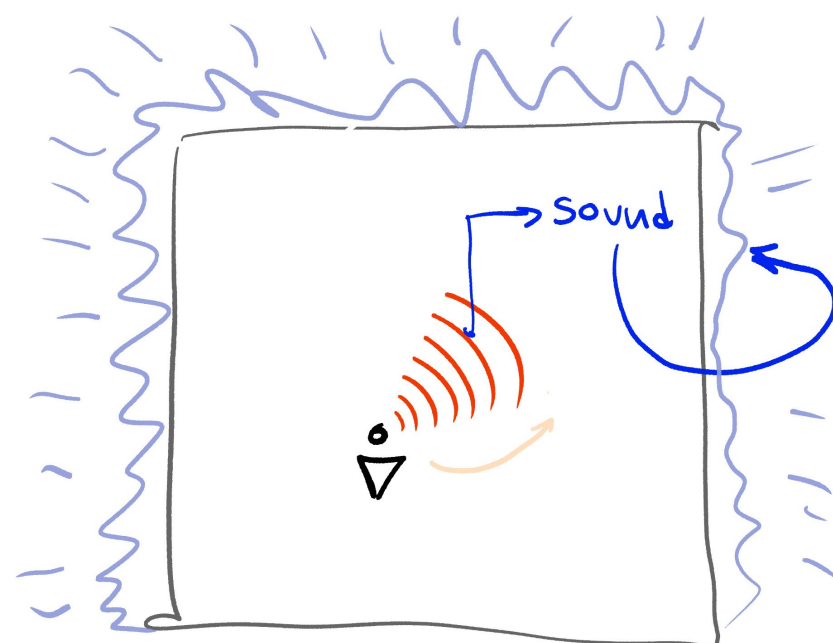
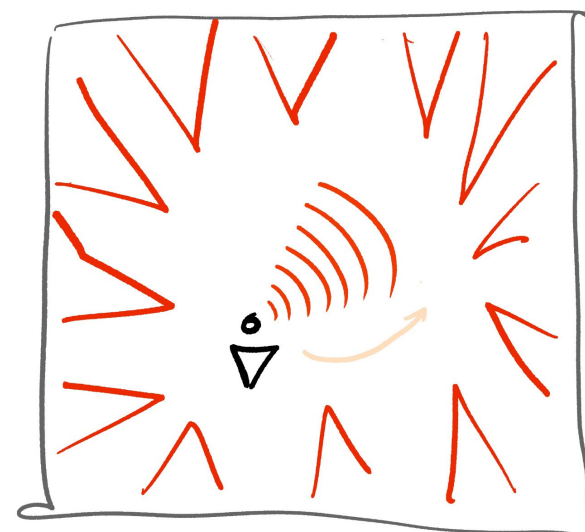
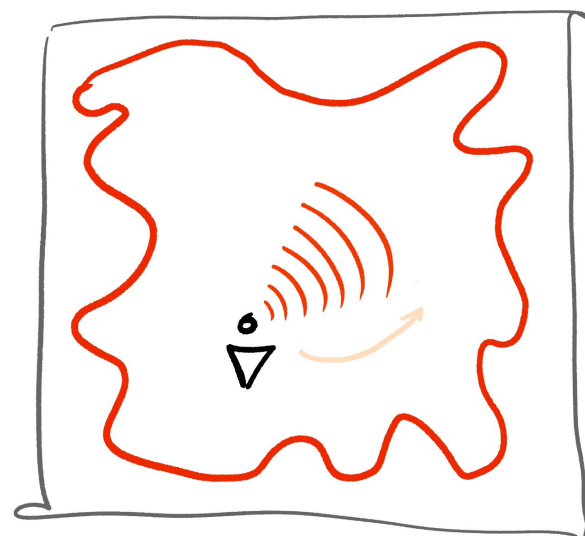
What if the new plan
could be implemented
like a new plan



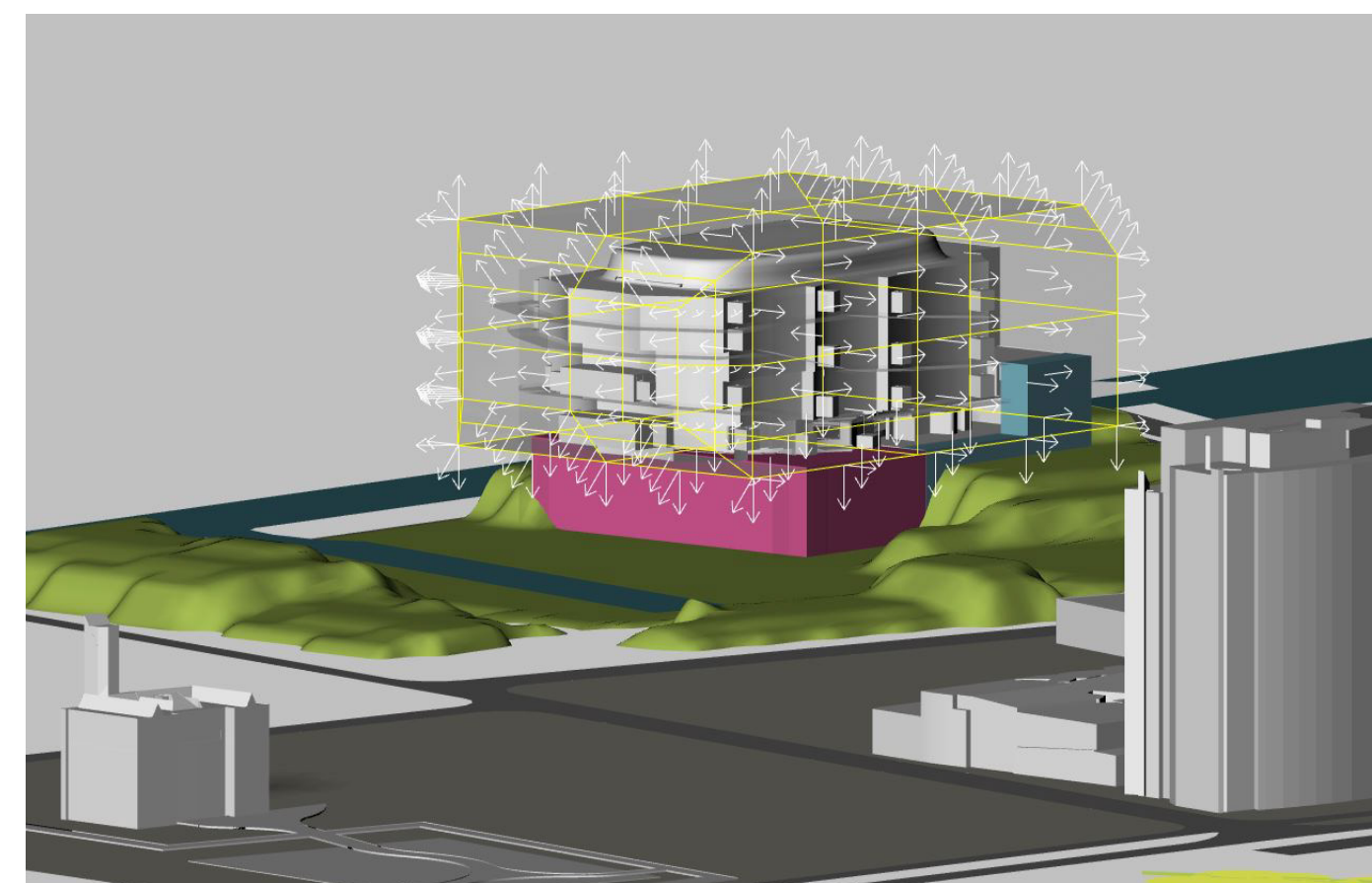
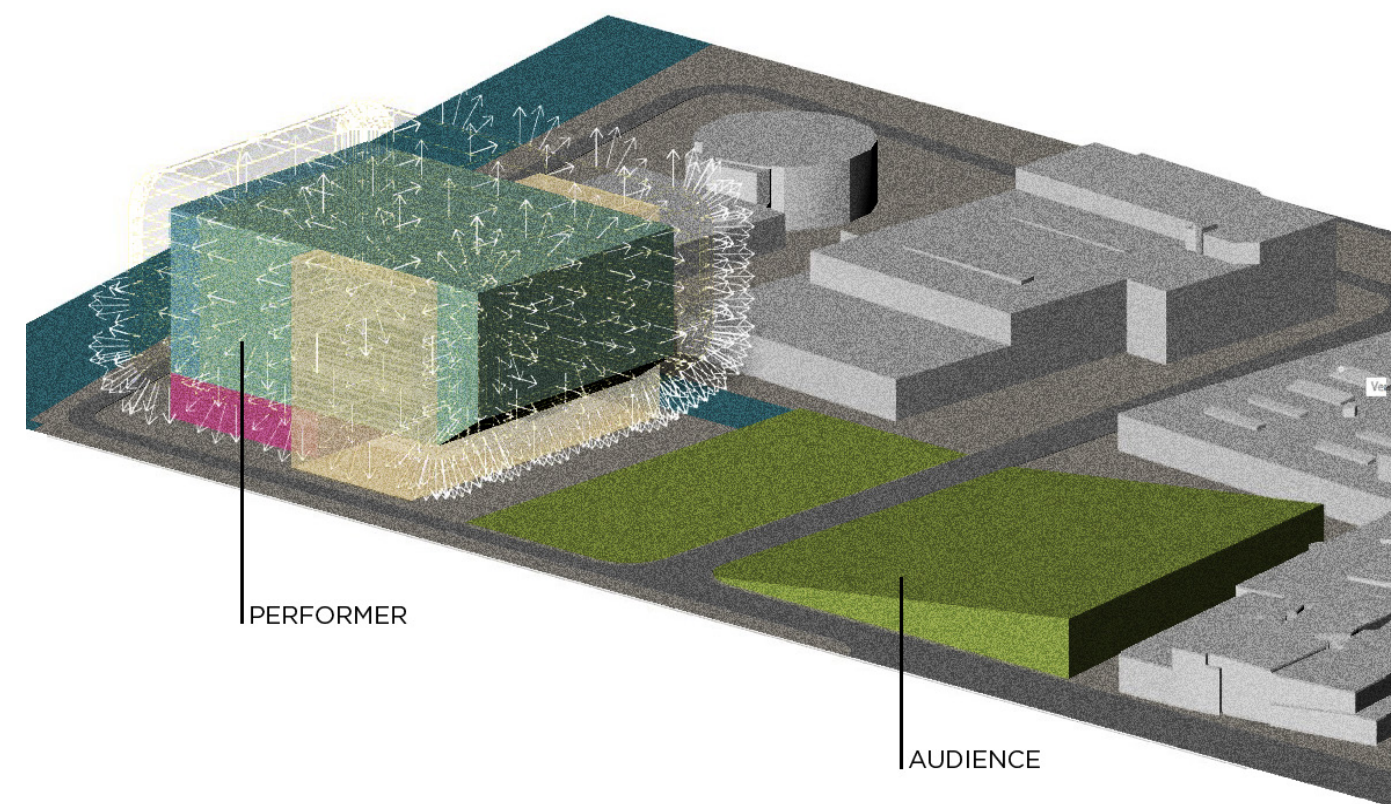


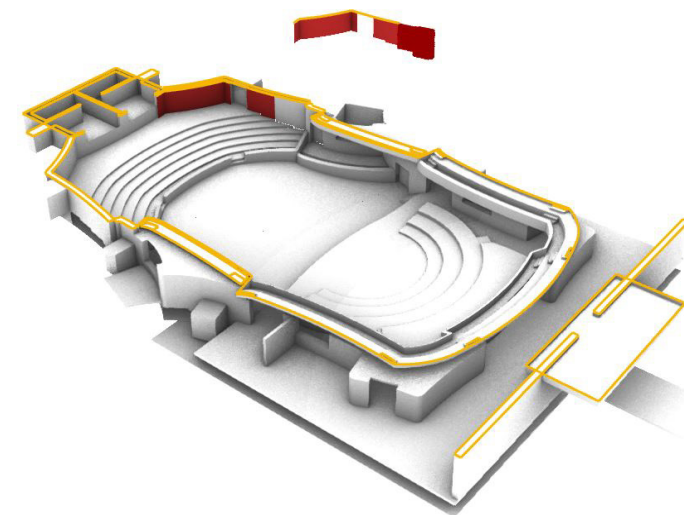
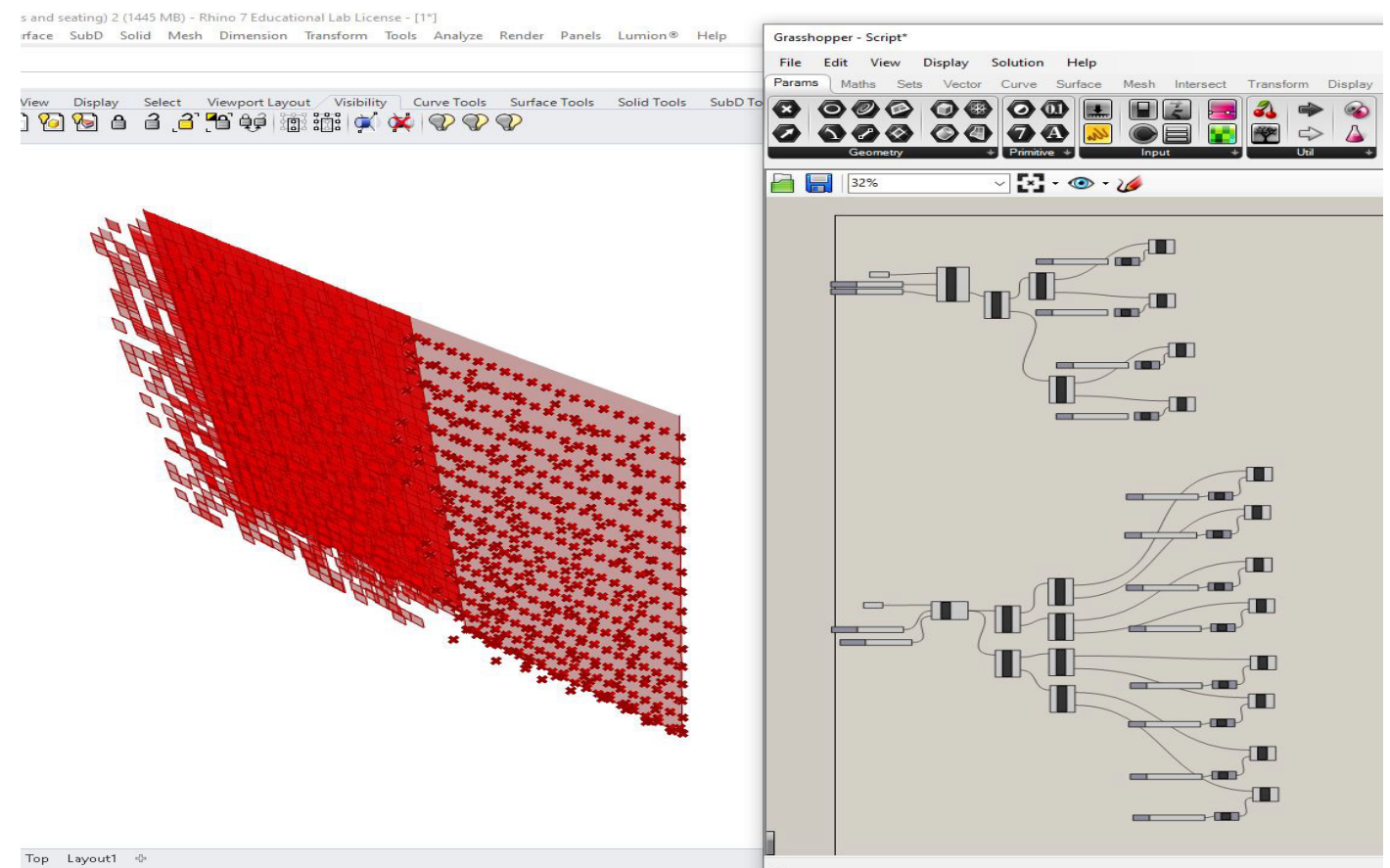
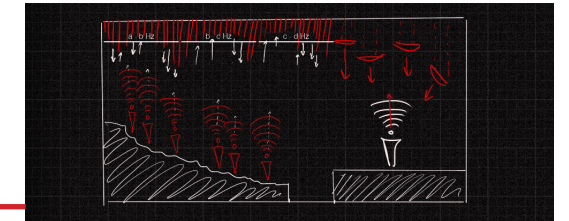
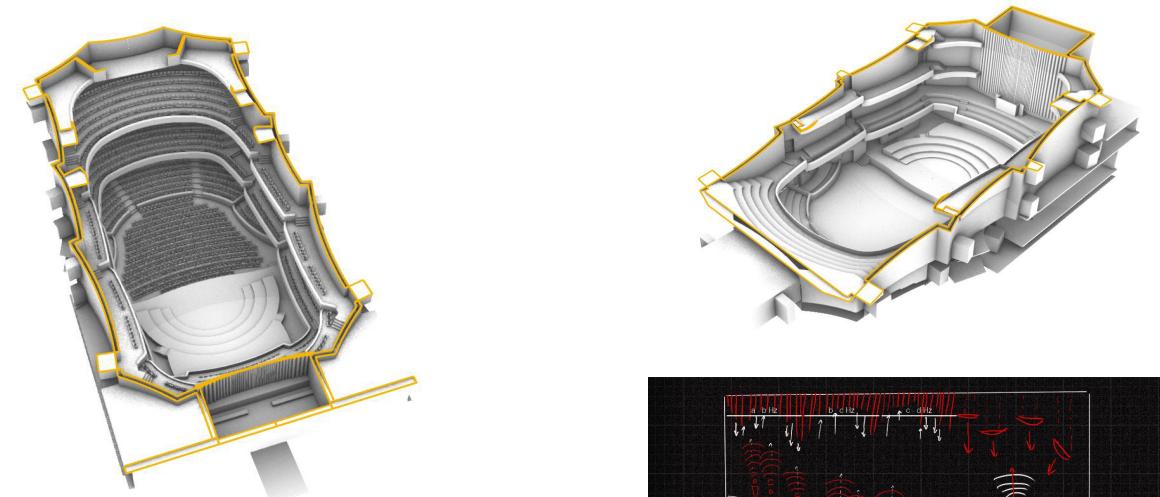
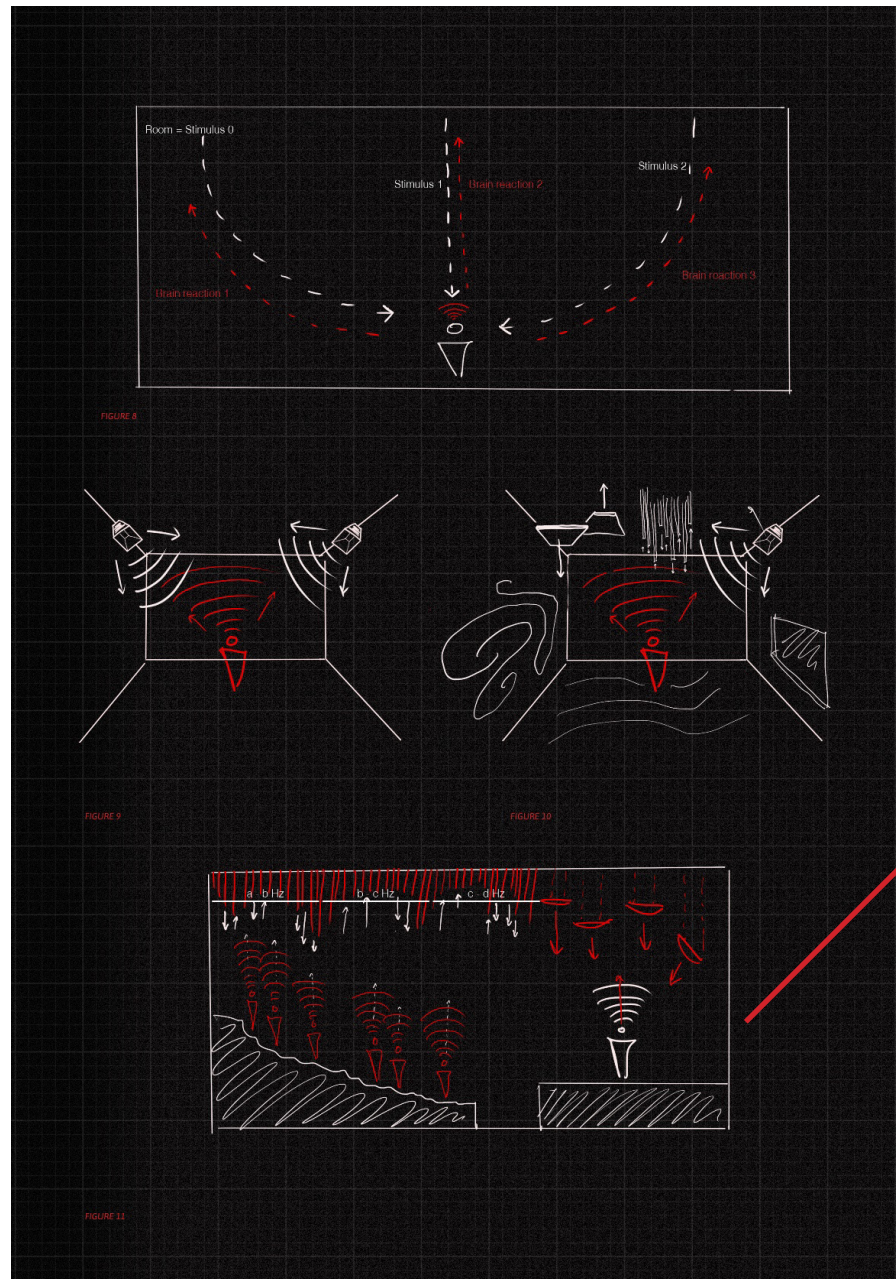


EIGHT



NINE





E.1

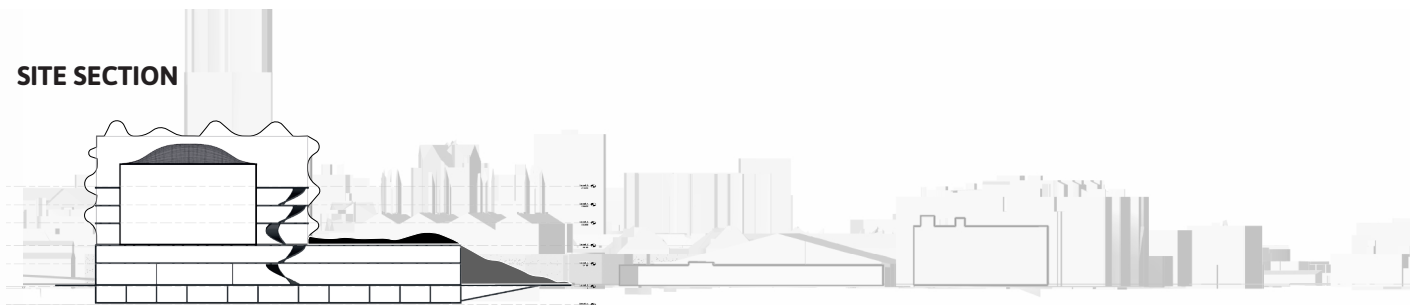
SCHEMATIC DESIGN

WHERE?

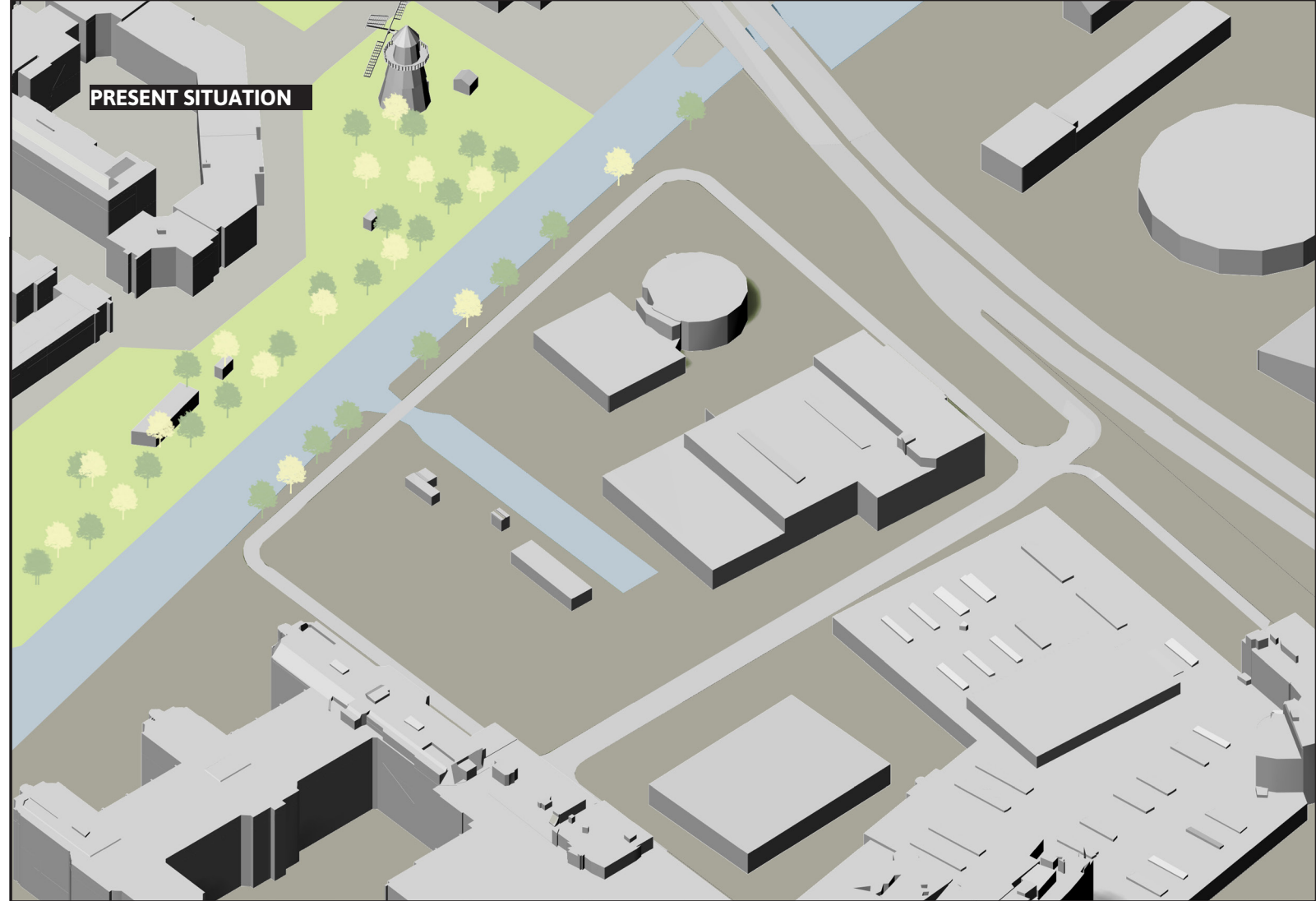
SITE PLAN



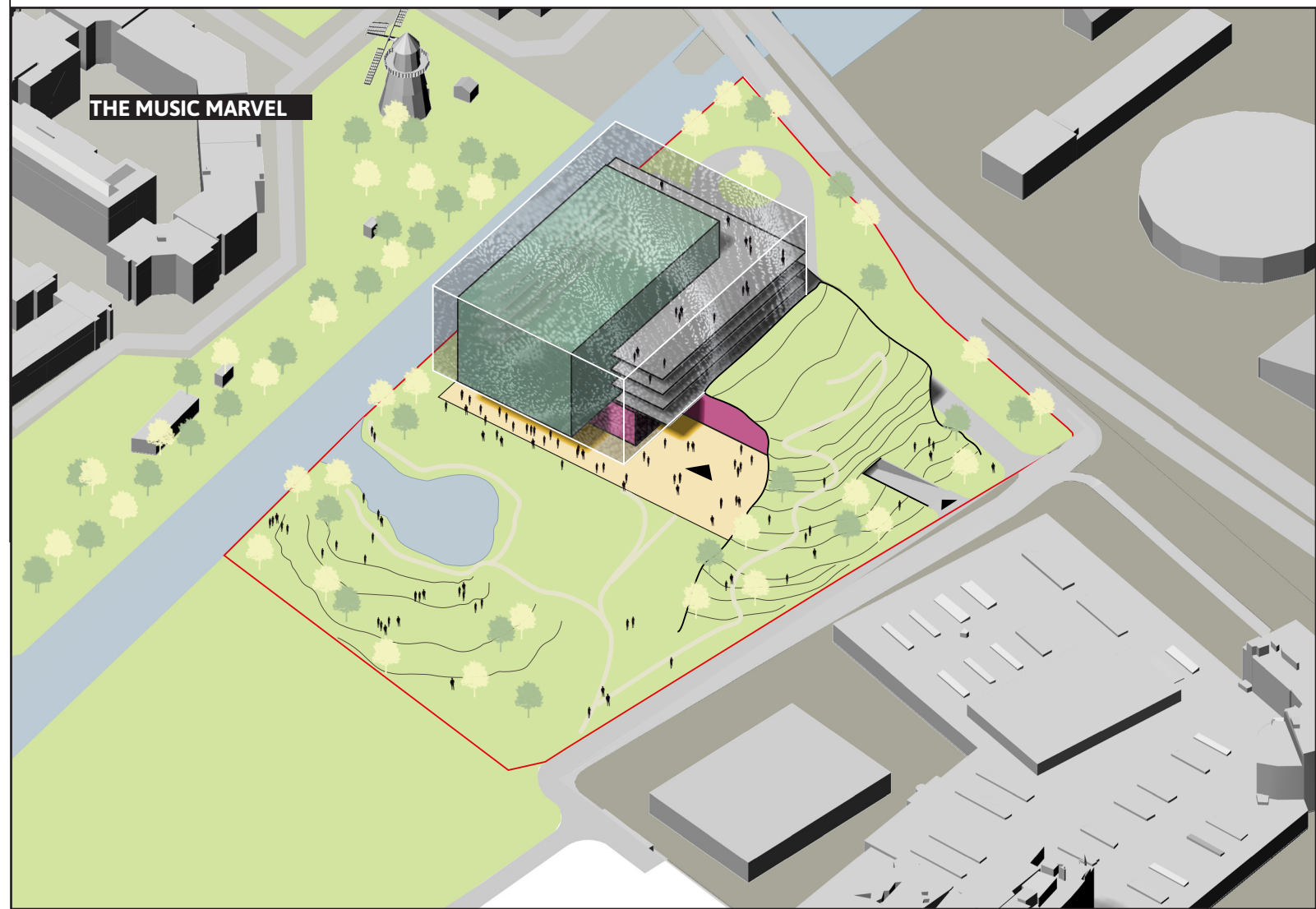
SITE SECTION



PRESENT SITUATION



THE MUSIC MARVEL

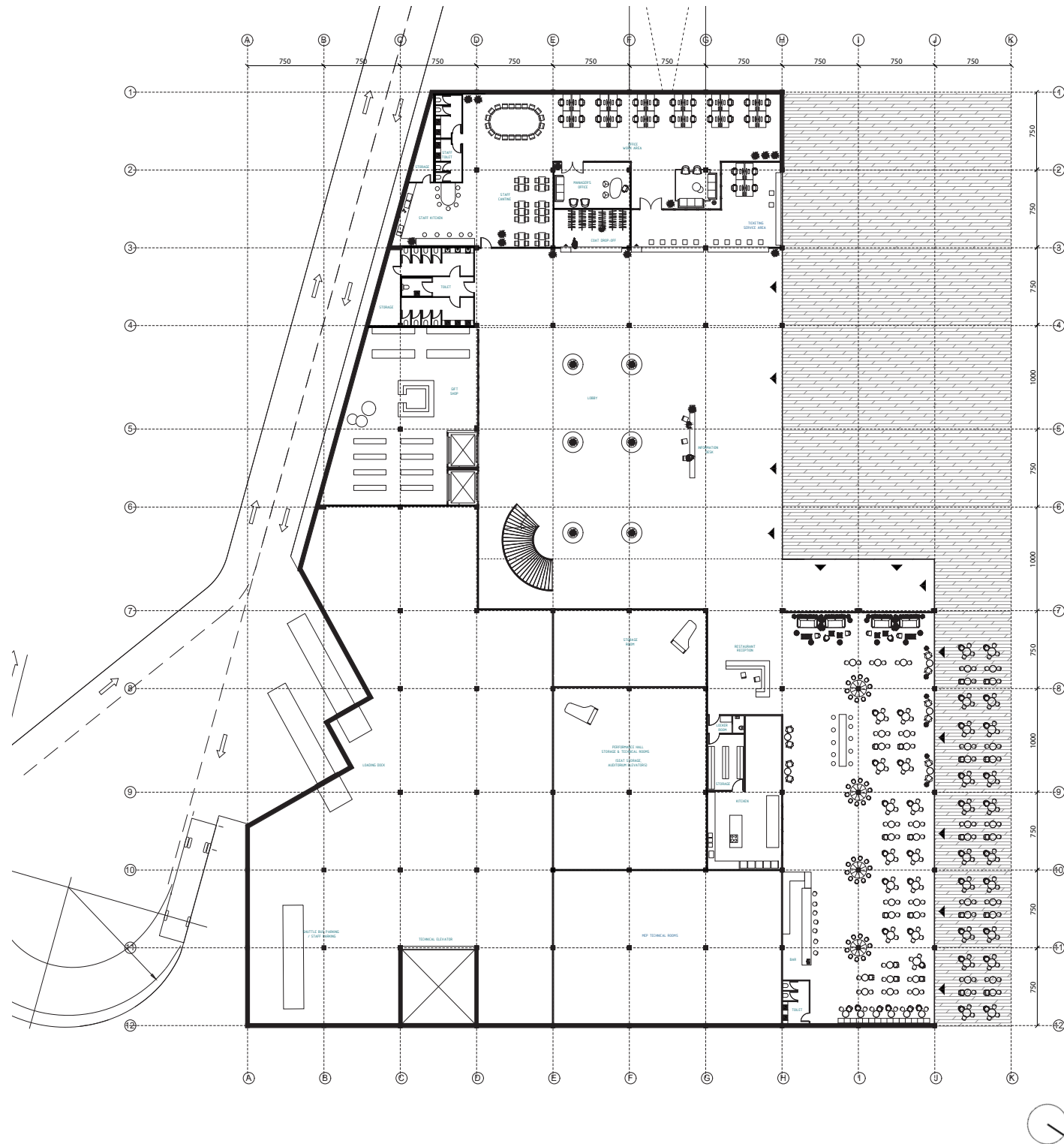


WHAT?

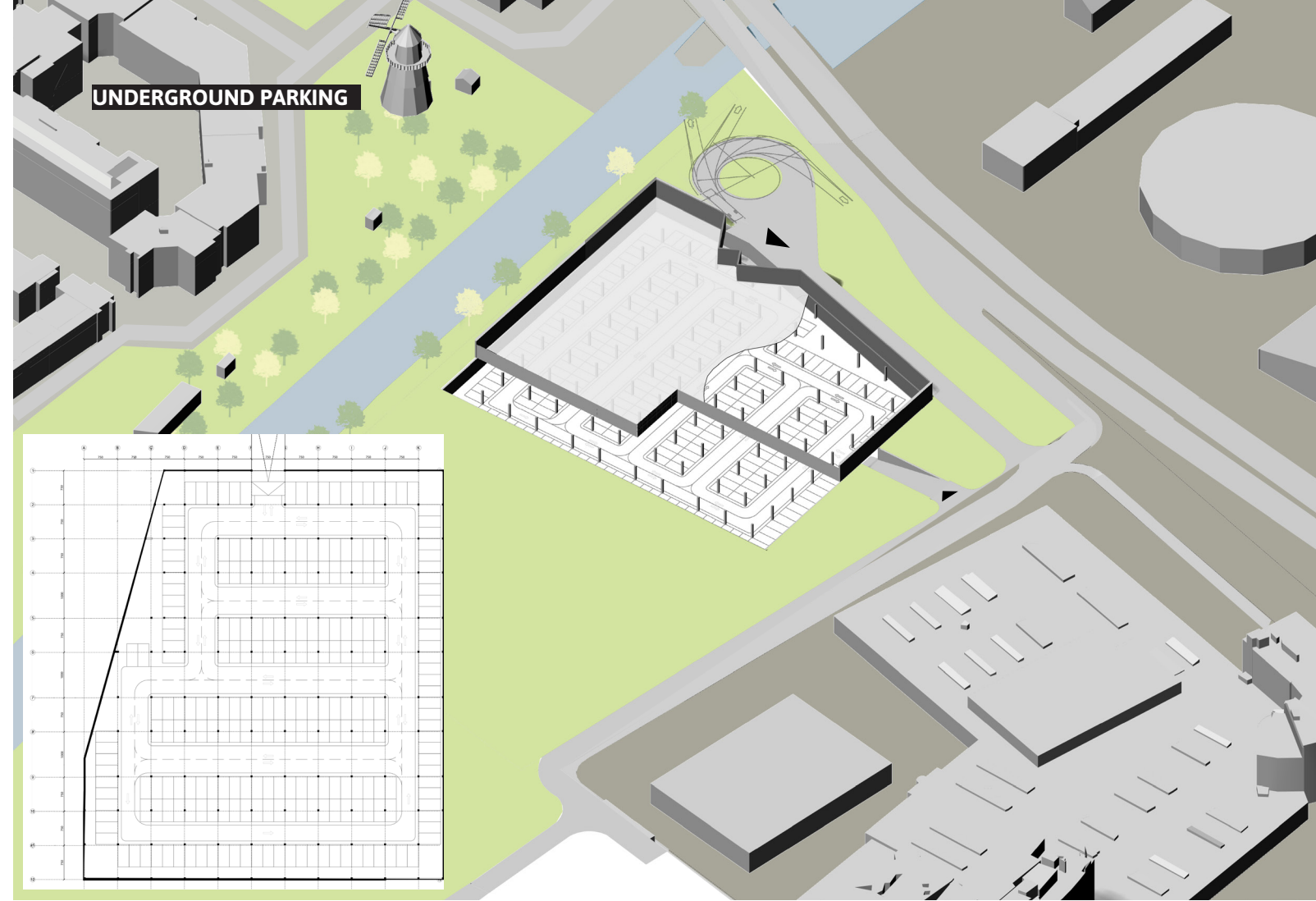
GROUND FLOOR

Areas:

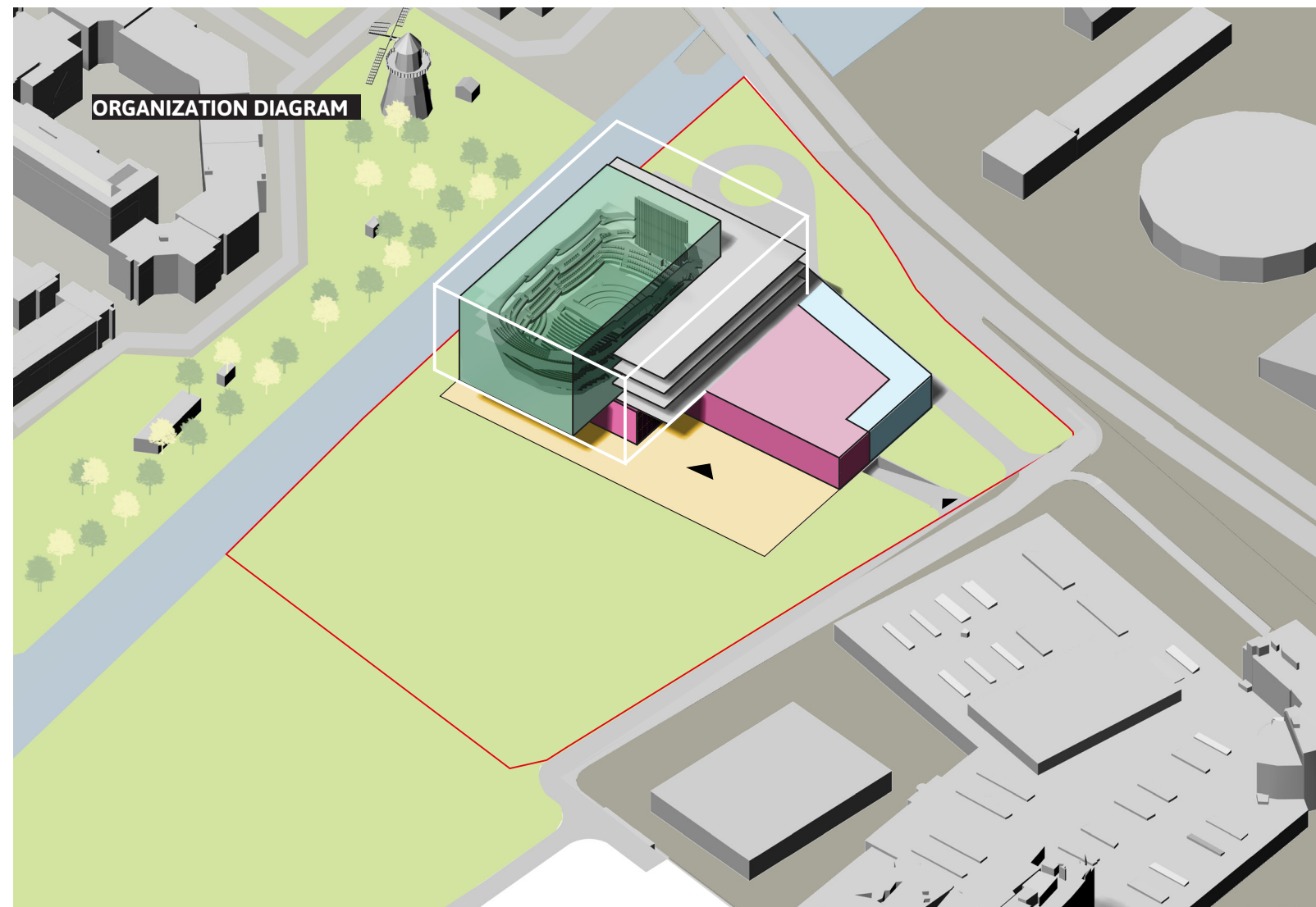
- Outdoor.....1350m²
- Public Shared Space.....1180m²
- Public Commercial Space (Retail + F&B).....990m²
- Staff / Office Space.....900m²
- Technical, BoH, Storage.....1850m²



UNDERGROUND PARKING



ORGANIZATION DIAGRAM



WHY?

SHAPE IN SERVICE OF DATA GENERATIVE DESIGN

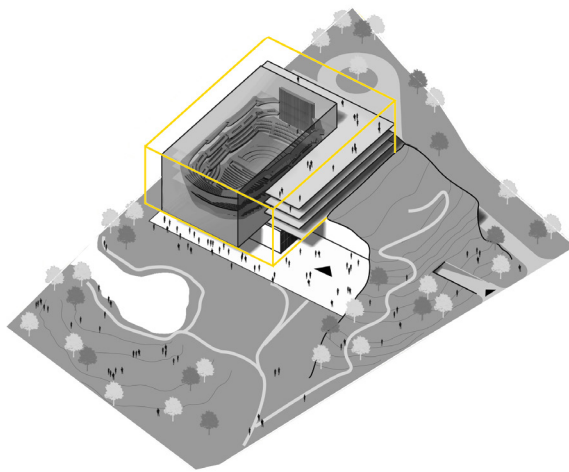
The Music Marvel shape and organization are influenced by the ambition to best carry out the message of the Manifesto through its architecture. In order to make it architecture of today more adaptable to the public demands, we must challenge 'egocentric' design. This requires new methods of architectural contemplation that produce strict mechanics/algorithms that create through data input. This will cause the shift of the creative aspect in architecture from the intuitive shaping of the building into the research and exploration of information and its translation into data that then itself produces the shape over and over again.

EMOTION TO ARCHITECTURE

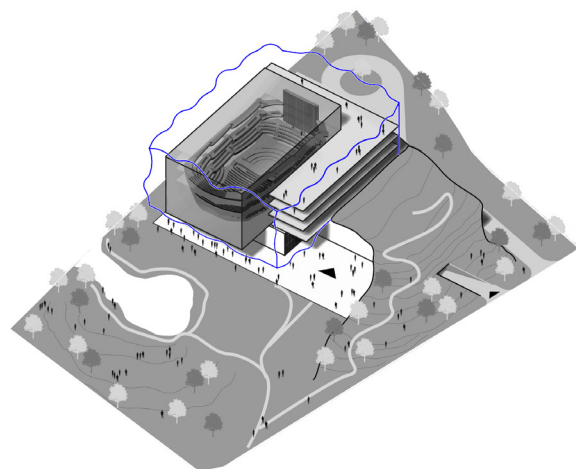
This venue is a place, like any other musical building, that effectively generates emotions through different performances. However, The Music Marvel is the only place that exploits these emotions as data in order to enhance the feelings of the audience and produce a more vivid scenography to follow any type of performance. Furtherly, the building uses the same data extracted from the emotions of the audience to power the algorithm that controls the movement of the buildings facade.

EXTERIOR TRANSFORMATION: 3D FACADE GENERATIVE DESIGN

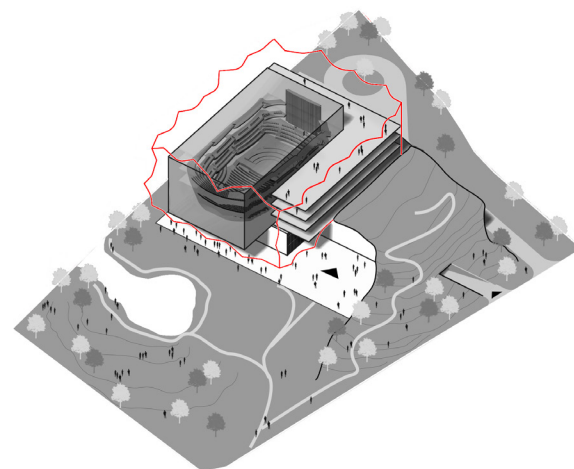
NO PERFORMANCE = MARVEL IS DORMANT



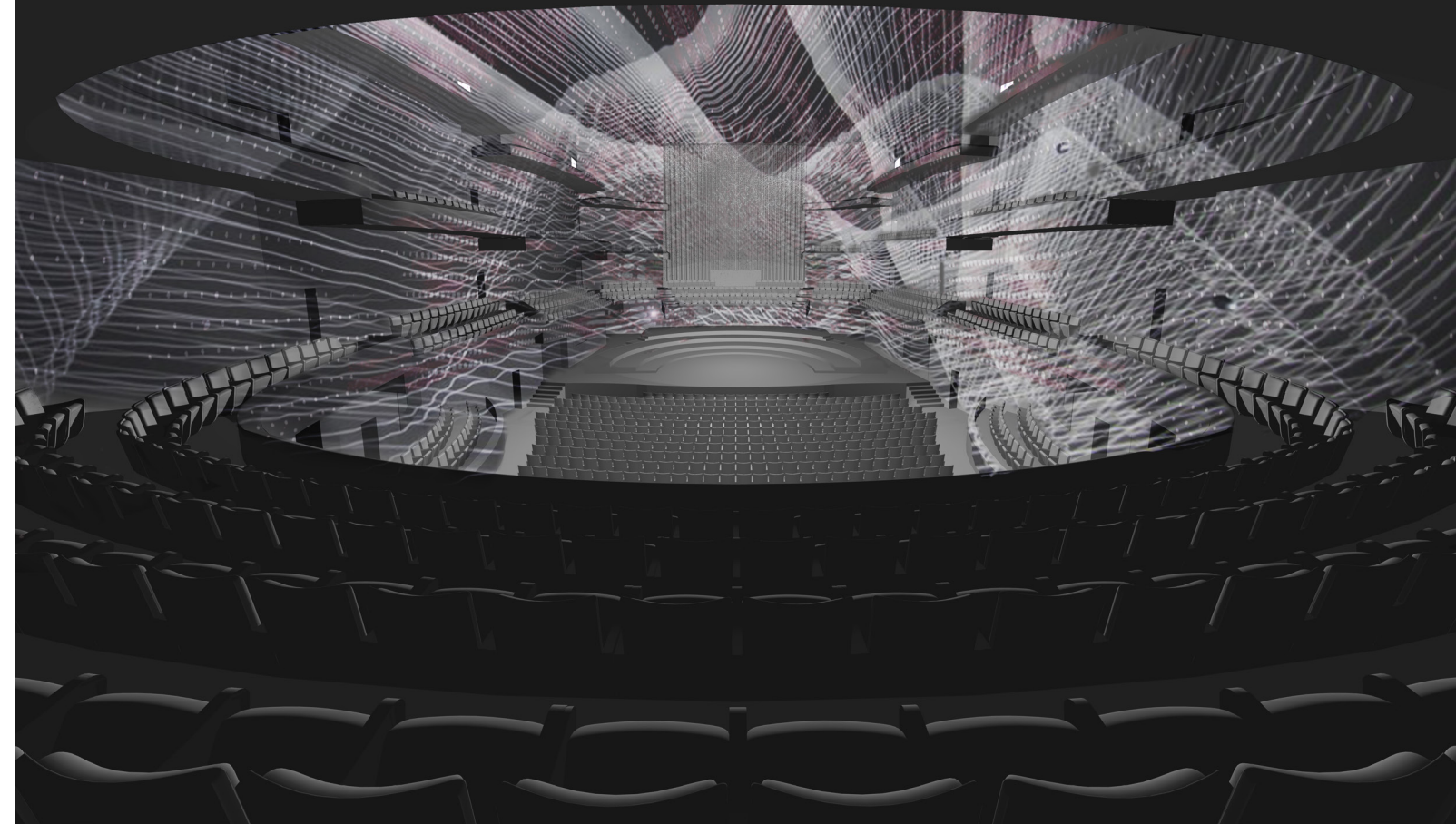
CLASSICAL MUSIC = REACTION 1



ROCK MUSIC = REACTION 2



INTERIOR TRANSFORMATION: LIGHT GENERATIVE DESIGN



INTERIOR TRANSFORMATION: 3D WALL GENERATIVE DESIGN

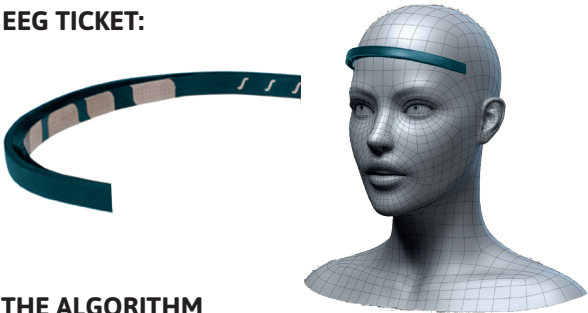


HOW?

READ MY MIND

This venue, like any other musical building, very effectively generates emotions within the audience through different performances. However, The Music Marvel is the only place that exploits these emotions as data in order to enhance the feelings of the audience and produce a more vivid scenography to follow any type of performance. The building uses the data extracted from the brain activity of each member of the audience to power the algorithm that controls the movement of the inside walls and generates lighting to form a unique atmosphere inside the hall. This brain activity is collected through an EEG (electroencephalography) sticker with 5 reception nodes that wirelessly sends data to the receiver. The EEG sticker is given to every guest as a ticket which they will apply to their forehead during the performance.

EEG TICKET:



THE ALGORITHM

All emotions are represented in all brain waves. However, only a specific aspect of each emotion is channelled in each of the 5 groups of brain waves. Neuro oscillations from all 5 spectrums occur in our brains at the same time and it is practically impossible to analyse them all in detail. Instead we analyse the changes that occur and so recognize shifts of attention caused by the music that will tell us which type of brain activity is the most dominant. These changes are noticeable in frequency amplitudes. Peak amplitudes that stand out show us that a significant change has happened in a certain moment of time and that it is time to change the scenography in order to emphasise this change and create an enhanced experience for the viewers.

TELEPATHY

This system allows us to directly influence our surroundings only by thinking. In order not to produce a clash of experiences certain restrains must be active at all times. These restrains allow the space to react only to the most dominant group of brain waves. Depending on the music, the dominant group may change every 30 seconds and allow the space to regain other abilities.

		θ	δ	α	β	γ
LIGHT DESIGN	Colors					
	Motion	very slow (imitating sunlight through trees)	slow (with sudden spikes of fading white light)		medium pace (following the terrain of the walls)	fast (linear light beams)
3D WALLS	Level of protrusion	3	2	1	2	3
	Motion	very slow (large sections imitating big slow waves)	slow (random, small and separate sections)	medium pace (linear ripple imitating loading effect)	medium pace (tetris / mondrian movement)	fast (sudden spiked shapes)

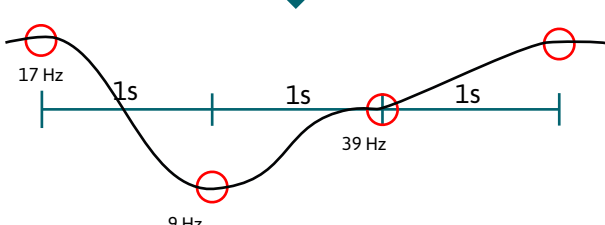
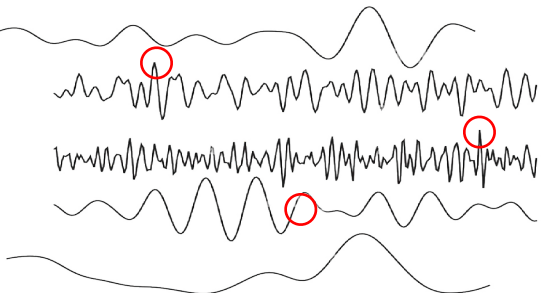
- γ waves** - Deeply focused state (30-100 Hz)
- β waves** - Thinking state (12-30 Hz)
- α waves** - Relaxed awake state (8-12 Hz)
- δ waves** - Daydreaming state (4-8 Hz)
- θ waves** - Deep sleep state (0.5-4 Hz)

Peak thinking state

Peak meditative state

Peak focused state

Peak altitudes transferred to numerical values in a time frame of 30 seconds (interior walls changes will occur every 30 seconds).

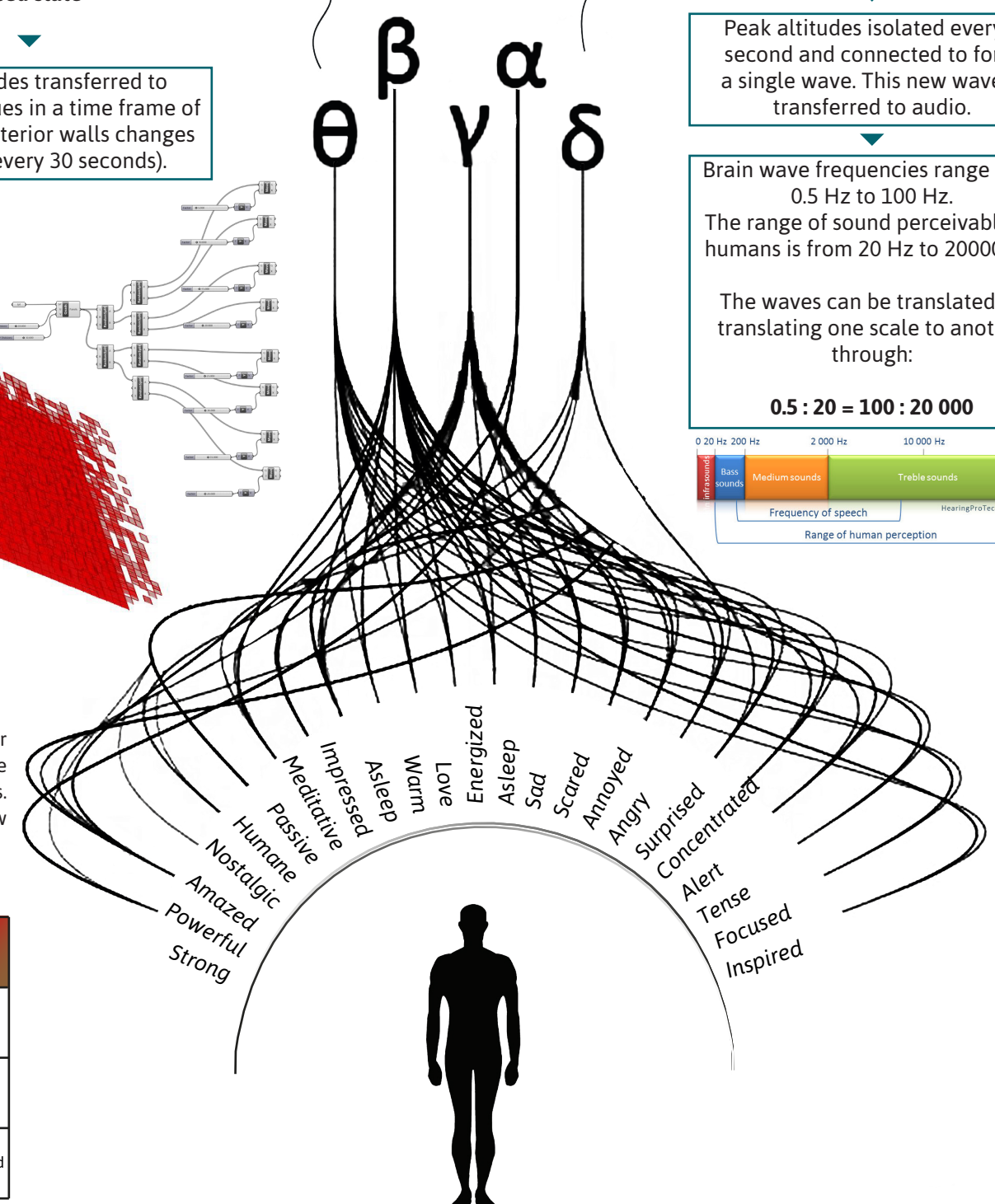
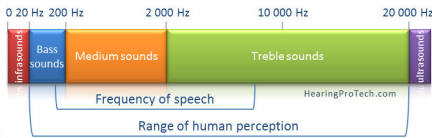


Peak altitudes isolated every 1 second and connected to form a single wave. This new wave is transferred to audio.

Brain wave frequencies range from 0.5 Hz to 100 Hz. The range of sound perceivable by humans is from 20 Hz to 20000 Hz.

The waves can be translated by translating one scale to another through:

$$0.5 : 20 = 100 : 20\,000$$



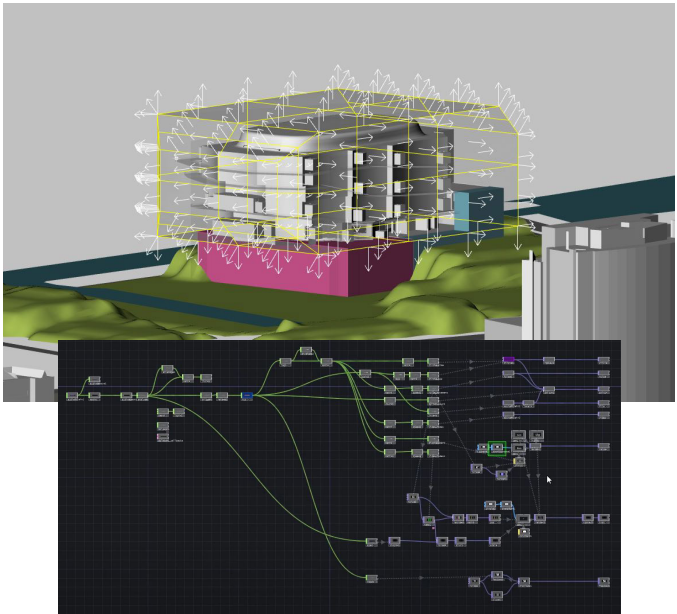
PERFORMING FOR BINCKHORST

The design of the building was made to primarily expose the performing character of the building. While a performance is happening on the inside, and while the interior of the performance hall is changing according to the audience, same brain wave data is being used to change the buildings facade.

In this way a building assumes the character of the performer for its neighbourhood and attracts people to see its unique ephemeral abilities.

THE ALGORITHM (2)

The facade acts independently from the concert hall, but is influenced by the same data source. Brain waves from the audience are deduced to the peak amplitude points in a time frame of 1 seconds that are connected and forming a new, simple brain wave. This brain wave is then translated into a sound wave that causes the audio responsive facade to act to the sound changes.



Source: Audio generative 3D structure script by bileam tschepe (elektronaut)

STRUCTURE & MATERIALITY

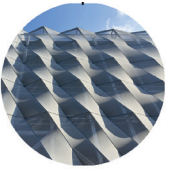
In respect to the acoustic requirements, all walls must be hard and solid surfaces. Finishes must be made of hardwood timber or similar materials to provide best acoustic reflection. With this in mind, the materialization of the transformable wall is limited. The wall could be made from small wooden tiles connected to the mechanism that pushes them out or pulls them in closer to the wall in a way that allows the effect of the pixelization of the space. This effect allows almost limitless number of combinations for spatial transfiguration.

The material of the facade needs to be flexible and stretched over the structure. Emerging from that structure are poles that will respond to the generated sound wave in order to create movement true to the experience of the guests inside of the building.

INTERIOR



FACADE



THIS SYSTEM USES MUSIC TO CREATE DATA FOR DESIGNING A BUILDING THAT CREATES MUSIC TO RECREATE ITS SHAPE.
- MUSIC FOR A BUILDING FOR MUSIC

F.₁

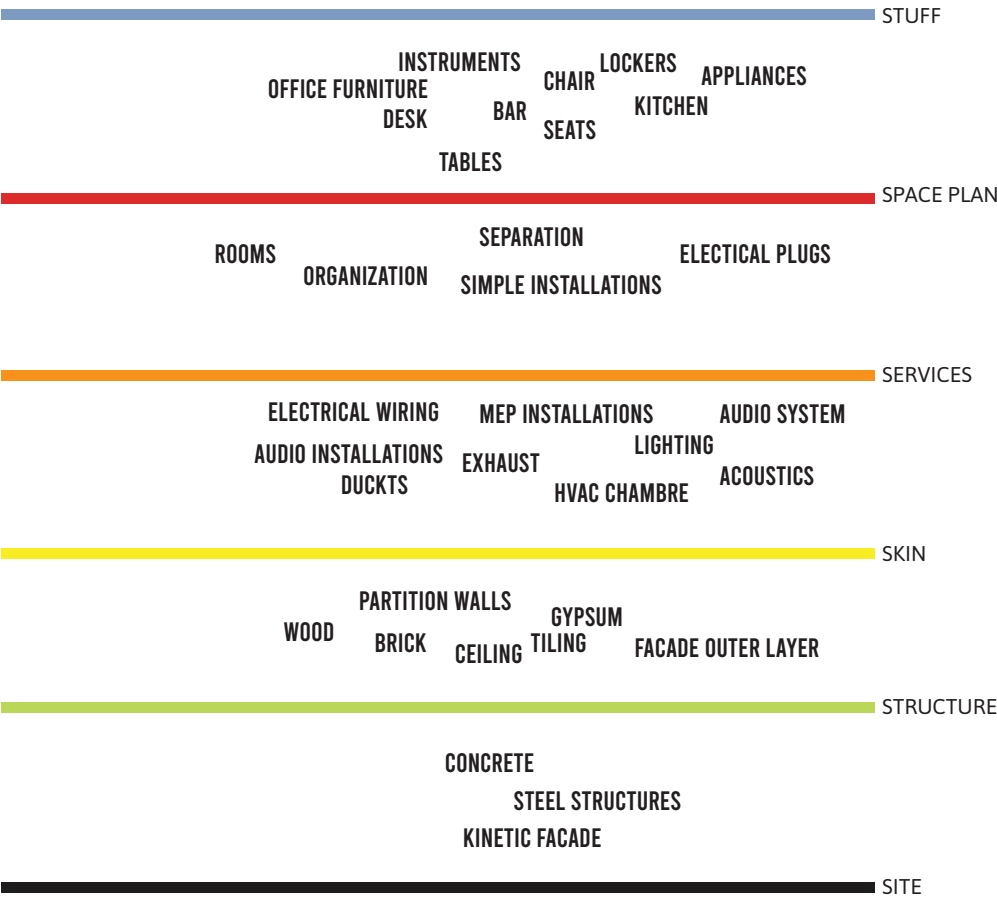
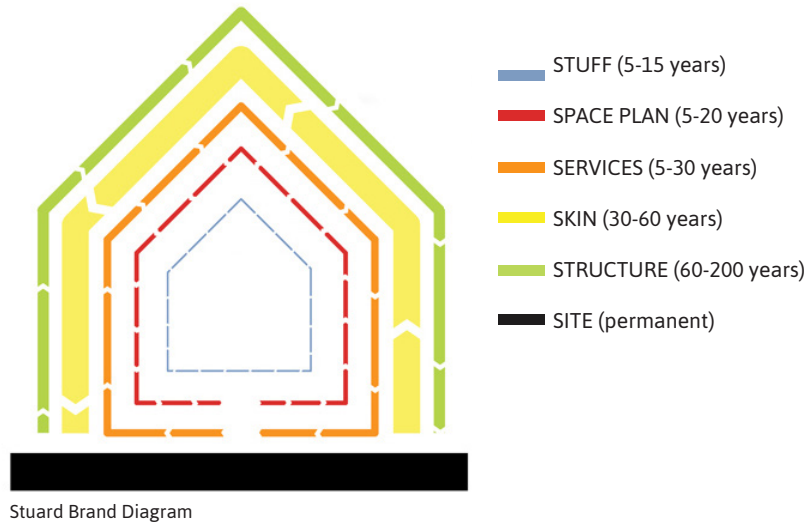
PARAMETERS TO CONSTRUCTION

CIRCULARITY

STUARD BRAND DIAGRAM

Below is the circularity diagram showing ‘Shearing Layers’ of any building that should be used as a template for architectural design of buildings fabric in order to allow for easy deconstruction and re-use of materials.

According to this diagram every element in the building should have its life span. Following Figure _ is the list is a circularity check of these same elements within The Music Marvel.



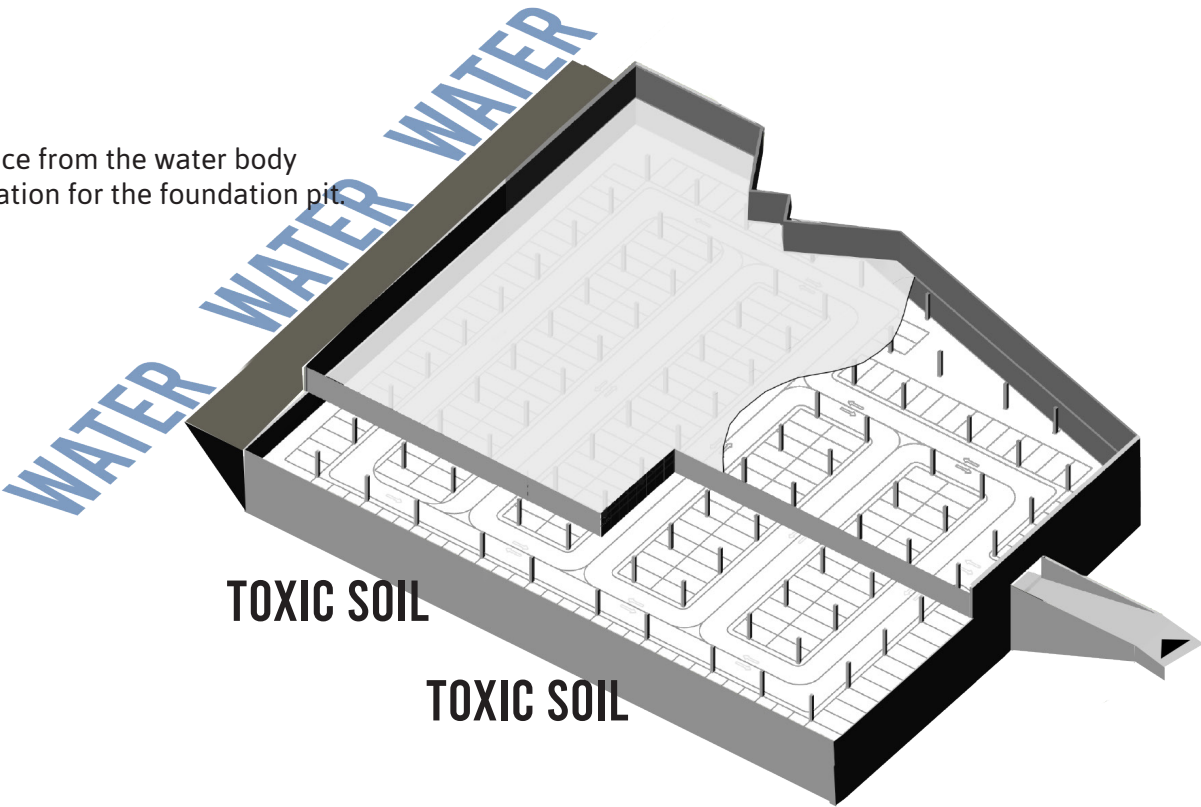
SPECIFIC SITE CONDITIONS

BUILDING IN THE BINCKHORST

In The Binckhorst, as for the rest of the country, same building regulations must be followed in the design before applying for the building permit. Any construction work must firstly comply with the Building Decree 2012 that contains technical regulations and minimum requirements for all buildings in the country. These requirements are related to safety, health, usability, energy efficiency and the environment. Furtherly, these regulations include guidelines that could be useful for designing in specific conditions such as those of the site for the Music Marvel. Proximity to the water body, inclusion of the water body in the site, usable and green roofs, and noise pollution are all addressed in the building decree.

All building sites in Binckhorst have a special condition of soil which is considered highly polluted because of its previous industrial use. Considering such conditions and the percentage of water surrounding the site it could be useful to secure the building structure with a foundation pit that allows de-watering, soil reinforcement and protection of moisture and toxic particles.

Secure distance from the water body before excavation for the foundation pit.



ENERGETIC ISSUES

ENERGY AND CLIMATE

The program of consists of zones that are rarely being used at the same time. These zones also vary in the density of people and function. Therefore we can also separate the building into two climatic zones + the non-heated zone (garage). Zone B (see diagram below) will serve as an in-between, naturally ventilated space that is a climatic buffer zone between the outdoors and the performance hall.

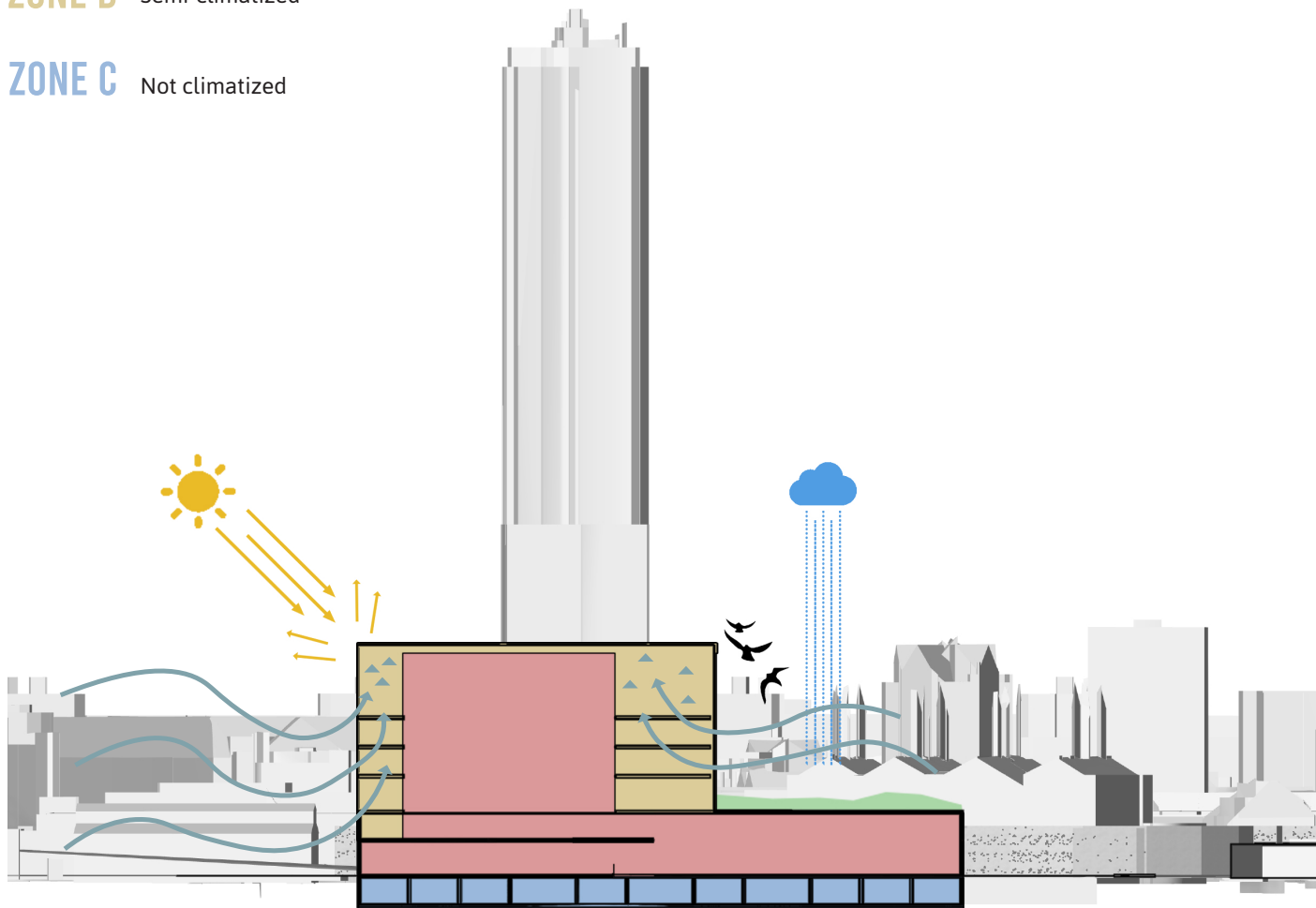
The texture of the facade of the building will allow flow of air when opened but will not permit any animals or insects to enter the building as well. Furtherly, it will minimize the heating effect of the sun even when the interior is open and exposed.

The green roof will serve as a rain water collector surface and will benefit the landscape. It will also protect the structure from the heating effect of the sun.

ZONE A Fully climatized

ZONE B Semi-climatized

ZONE C Not climatized

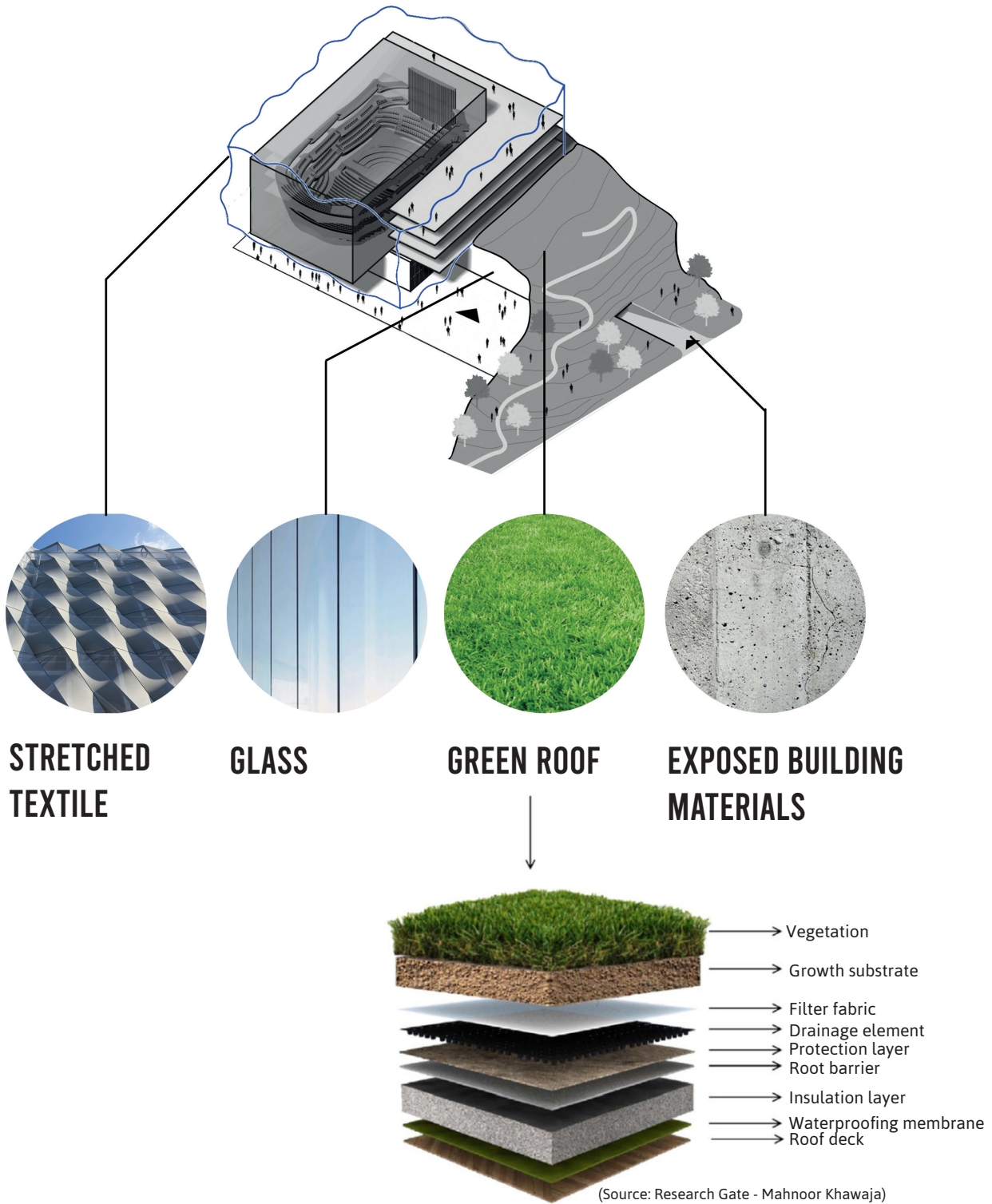


MATERIALITY

BUILDING IN THE BINCKHORST

In order to be able to perform as imagined in the concept design, the facade of the Music Marvel needs to be elastic and easily manipulated. For this reason the main material of the building covering almost 50% of the facade is a textile that is being stretched by the underlying mechanism that reacts to the brain waves in the building. This part of the building is the 'performer' and as any other it must not be overshadowed

by its surroundings. For that reason the rest of the building remains as simple as possible with the ambition of blending in with the surrounding nature. This will be achieved by covering the building with a green roof that will seem as an extension of the landscape. All façades will be glass in order to cause little distraction and any visible solid parts of the building will remain in its natural materials unless they require special treatment.



ACOUSTICS

SOUND ISOLATION

The performance hall will be completely sound isolated from the neighbourhood in order to provide a high degree of acoustic separation from the environment, but also from the rest of the building. The shell of the performance hall will be consisted of inner and outer layers (or inner and outer doors at the entrances that will form acoustic boxes as buffer zones). The inner wall must be concrete or solid, heavy masonry that is 200mm thick. The outer wall must be the same but 300mm thick. The ceiling of the hall must have two similar solid layers, each 250mm thick, with at least 2m of airspace buffer zone from the outside noise.

A low velocity, bottom-up displacement air system is planned for the ventilation of the performance hall as it has low noise levels.

MATERIALS - ACOUSTIC REQUIREMENTS

Wall and ceiling build-up materials must be massive to create little frequency channelling. Air cavities in build-up should be

avoided.

Seating must have hard reflective back and armrests supported on single or double pedestals to allow sound movement underneath the audience.

All floor finishing should be timber-hardwood with a matt finish seal that is bonded to a concrete slab.

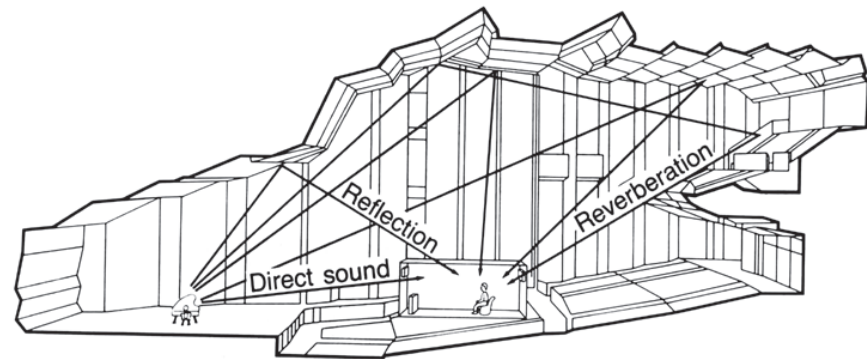
Balcony fronts and wall finishing should be hard (and subtle) structure to create sound reflecting performance.

SPECIFIC ELEMENTS

Reflectors must be of a solid material to provide appropriate reflection of sound at all frequencies so that all types of performance have same acoustics.

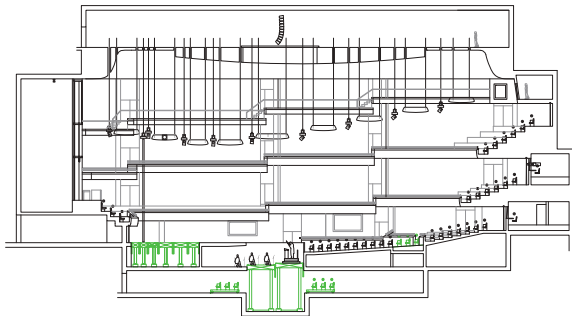
All exits and room portals must be covered with curtains.

Acoustic panels will be used for BoH rooms of the hall (control

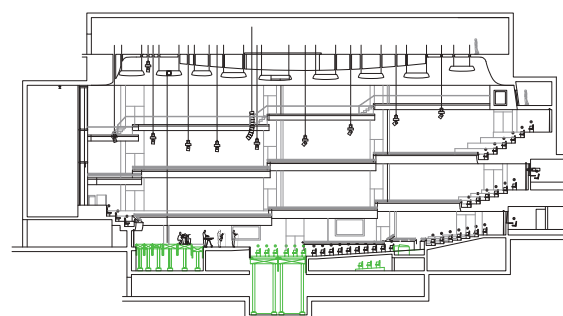


(Source: www.torgny.biz/)

5.3.7 Opera



5.3.8 Amplified music

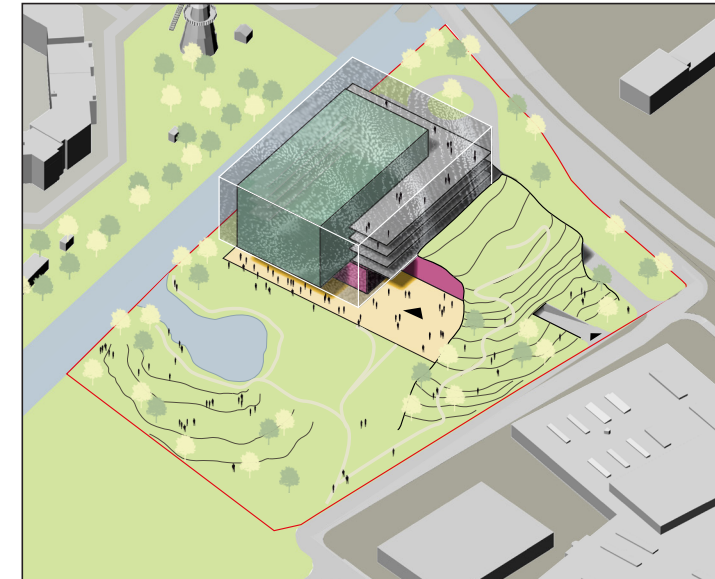


(Source: ARUP)

MULTIPLICITY

NO PERFORMANCE

DORMANT STATE

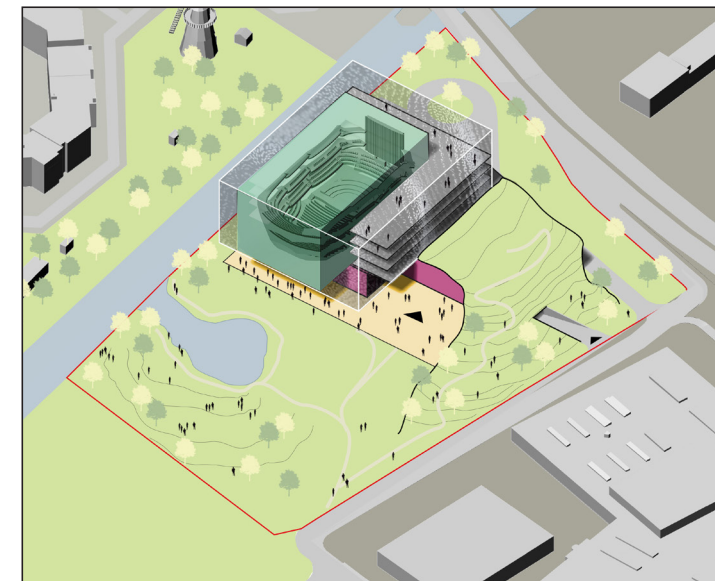


AMENITIES

- PERFORMANCE HALL
- CAFE / RESTAURANT
- GIFT SHOP
- LOBBY VENUES
- ROOF PARK
- FACADE PERFORMANCE
- OUTDOOR EVENTS
- PARK

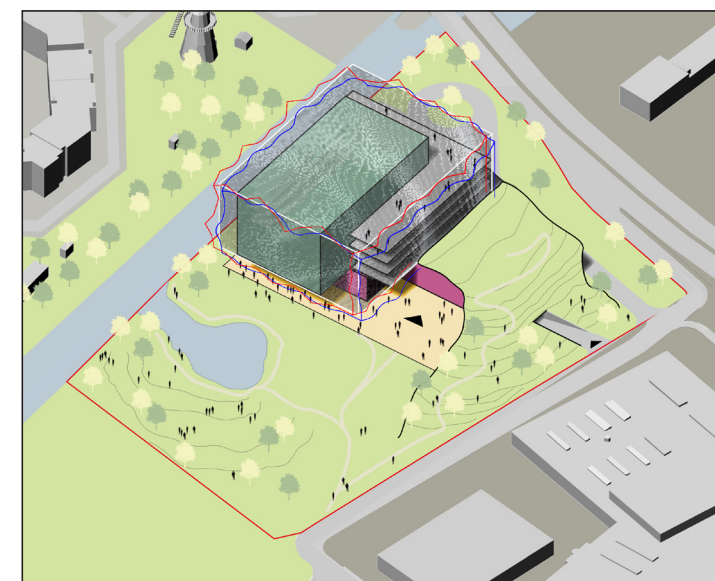
PERFORMANCE

INSIDE



PERFORMANCE

OUTSIDE



- PERFORMANCE HALL
- CAFE / RESTAURANT
- GIFT SHOP
- LOBBY VENUES
- ROOF PARK
- FACADE PERFORMANCE
- OUTDOOR EVENTS
- PARK