THE MUSIC BUNKER
COMMEMORATIVE SPACE

complex projects

INDEX

Uijeong Lee

TU Delft

INTRODUCTION

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01
INTRODUCTION

The Sustainable Future of Performing Arts Center

The graduation project "Music Bunker, Commemorative Space" proposes a direction where complex performing arts centers proceed in the 21st century, where they are being enlarged and complexed. This project suggests the adaptive reuse of historical remnants to design a contemporary performing art center as a socio-culturally and environmentally sustainable solution for designing a new cultural landmark in Berlin. It explores the spatial sequence of the performing arts center with a link to embracing and healing the historical trauma of World War II in Berlin with performing arts. Additionally, the design proposal focuses on the logistics of designing an urban living room as an extended foyer to create a commemorative public space and harmony of different flexible and intimate performance spaces, which can make people participate better in live music performances in their daily lives.

Keywords: performing art center, adaptive reuse, urban trauma, locality, commemorative space, urban living room, publicity, intimate theater.

History of Wound in Berlin

Berlin, which used to be the capital of Nazi Germany, was one of the significant sites of World War II and was subjected to 363 air raids during the Second World War. (Taylor, Chapter "Thunderclap and Yalta," Page 216) A large part of Berlin was destroyed due to a massive amount of aircraft bombing attacks in 1941 and 1945 when British bombers dropped 45,517 tons, and American aircraft dropped 22,090,3 tons of bombs. (Bomber command)

Over 300,000 Berliners and 80,000 Red Army soldiers were sacrificed until 2 May 1945, when Hisiler had fallen in battle. According to the article "Remembering the Battle of Berlin: The Soviet War Memorial at Tiergarten," "Once considered the most beautiful and technologically modern of all European capitals, Berlin was razed to rubble, as women were targeted for gang rapes, businesses, and stores, were looted, and civilians carved up the corpses of dead horses killed in the streets for meat." (Malloryk)

Figure 1 : Reichtag after World War II. 1945.

Figure 2 : After the defeat of World War II

After the war, the Berlin Wall, which was built to divide East and West Germany, psychologically affected the local people around it. According to Müller-Hegemann, people who lived closer to the Berlin Wall suffered from the syndrome named “Wall disease” and reported experiencing various inexplicable physical symptoms and delusion or even committing suicidal behavior. From this point of view, Berlin became a city where a modern wounded history of division lies.

When the Berlin Wall fell in 1989, and the country reunified, the syndrome was replaced as a disease called "the wall in the head." It affected people all over Germany. According to Claus-Christian Carbon, a psychologist who surveyed eighty-three people to estimate psychological distances between German cities, the participants overestimated the distance between western cities and the eastern, consistently feeling the presence of the previous Berlin wall.

The history of war and division by the Berlin Wall continued to impact even after the reunification of West and East Germany. In light of this historical perspective, it is evident that it still affects the current situation in Berlin and should be reflected when designing architecture in this urban historical context.

Figure 3 : West Germans look over the Berlin Wall, around 1970.

Based on this historical perspective above, the following initial questions are raised: What if contemporary performing arts space in a historical remnants site heal the wound of the past?

Inequity in Cultural Participation and its relation to health

The barriers to cultural participation: lack of interest, low education attainment, and low-income quintile Even if performance art has entered the public sphere enough, there is still an invisible barrier due to the gap between income and education. These barriers make it difficult for some people to participate in live performances, which affects their health negatively, lowering their life satisfaction. According to "Cultural Participation during the Previous 12 months by a Low Level of Education Attainment 2015," people with lower secondary education or less have more than 20 percent lower participation rate than those with higher tertiary education. Moreover, people in Germany tend to attend live performances more frequently when they are in the higher income quintile. Apart from these two main reasons, the biggest reason for not participating in cultural activities was the lack of interest.

Cultural participation and life satisfaction

So how does the architectural design of

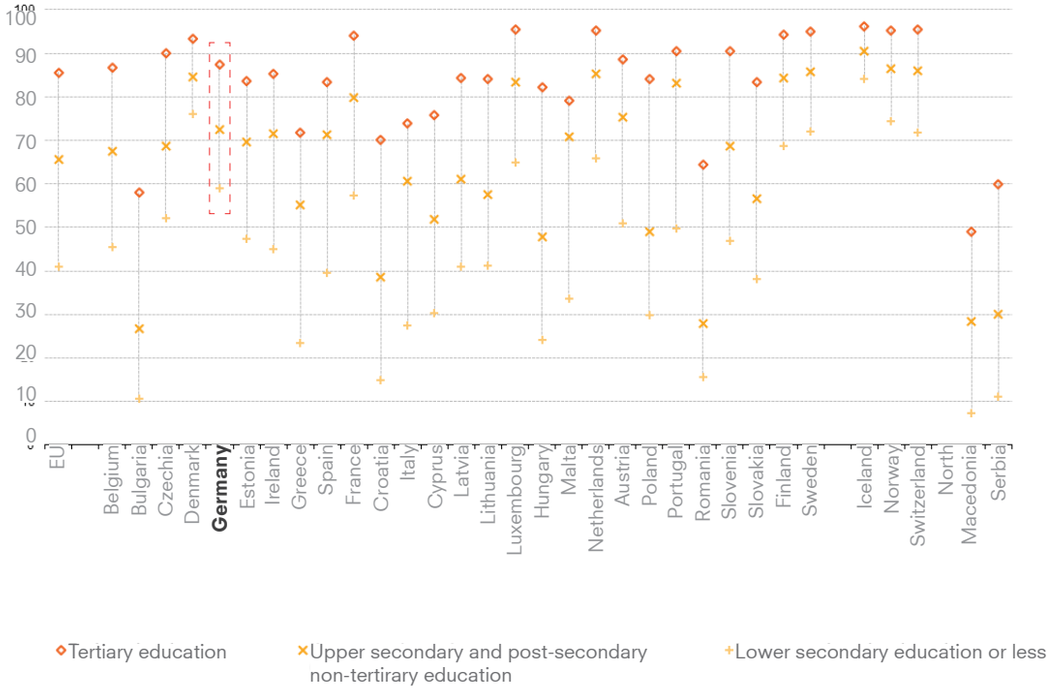

Figure 4 : Cultural participation during the previous 12 months by a low level of education attainment, 2015

performing art center allow people in cities to be more interested in and participate in performing art, and by extension, become part of their lives? As a solution, by planning the future through traces of the past, we can reflect on what the contemporary performing arts center in Berlin should be like through Berlin's unique urban historical context. Therefore, this study intends to solve the performing arts center design by applying an adaptive reuse of a bunker, the remnant of Berlin's division history. In this context, reusing the historical bunker in Berlin to form a performing art venue, commemorative space, and public space could promote people's cultural participation, giving them a shared memory and a sense of place in the city.

Problem Statement

The series of studies above boils down to two major problems that will be suggested in this project. The first point is Berlin's historical trauma about the city's wounds of the Second World War era. In addition, the second problem to be addressed is the inequality of cultural participation, which directly correlates with human health and life satisfaction, which is indirectly linked to this trauma.

Research Question

This research question reflects the history of Berlin, the resulting trauma of the city, its relation basis of health and cultural

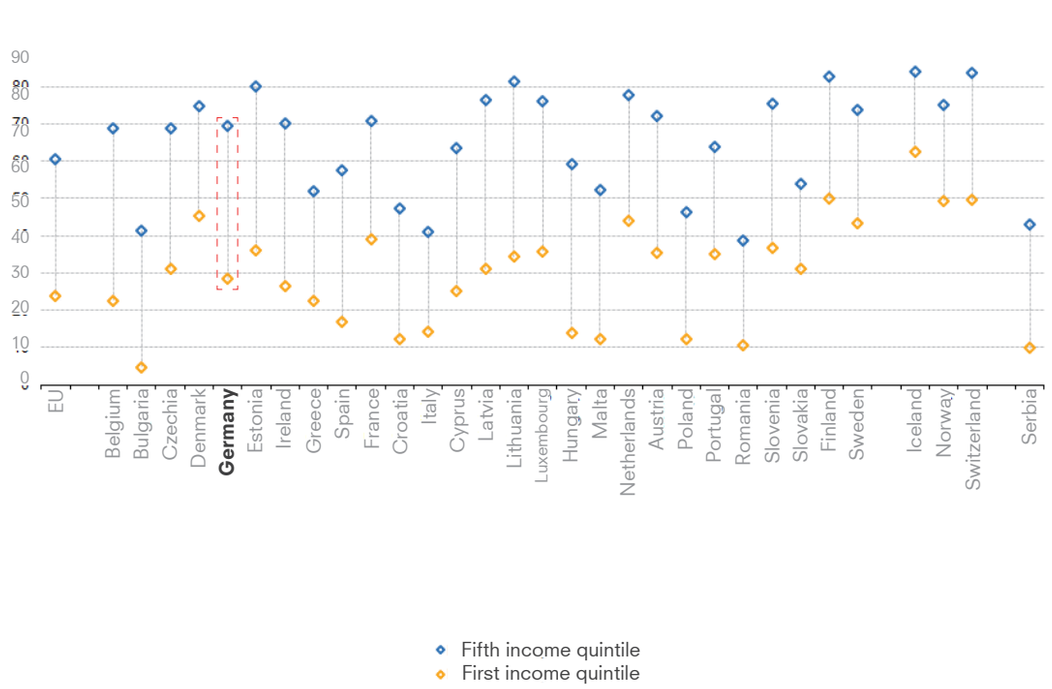

Figure 5 : Cultural participation of live performances during the previous 12 months by income quintile, 2015

participation, and the status of the performing arts in Berlin mentioned above. As a result, this research hypothesizes that using historic remnants could be a successful strategy for a performing arts center in Berlin. It aims to determine how to form a spatial sequence for a cultural experience and commemorate the city's history using historical bunker space.

The following would be the main research question :

How can a bunker turn into a performing arts venue to heal Berlin's historical wounds by reusing historic remnants of the city?

It involves investigating the optimum criteria in a project of adaptive reusing a bunker to heal Berlin's history of trauma. To achieve this goal, the following sub-questions regarding actual design arise.

1. Performing Arts and Trauma
How the performing arts and its space is related to the historical trauma of the city?

2. Theater form and acoustic
Which type of theater is the most effective for creating a catalyst to link the historical context and the building on it, and what should be considered to attain sufficient acoustic conditions?

3. Extension design scheme
What kind of logistics in mass design and program arrangement should be used when designing by adding additional mass to existing bunkers?

4. Public comemorative space
How to make a public commemorative space through the spatial experience to contribute to the publicity of the music bunker?

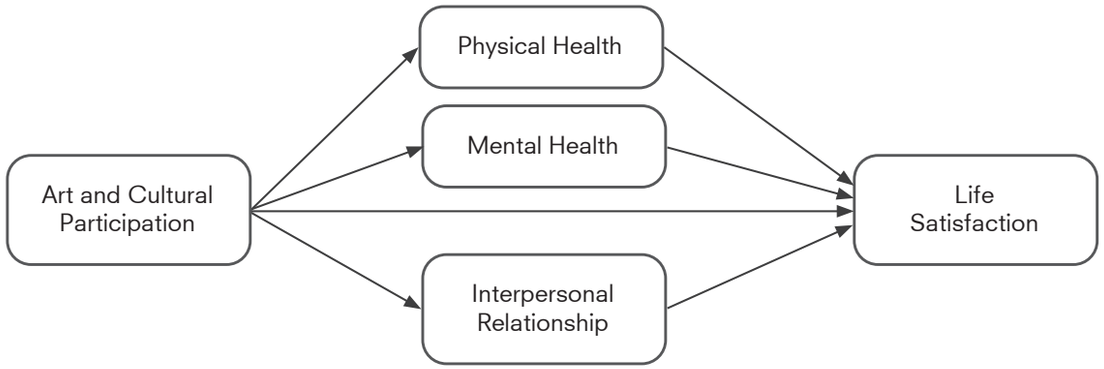

Figure 6 : Art and Cultural Participation and Life Satisfaction in Adults: The Role of Physical Health, Mental Health, and Interpersonal Relationships

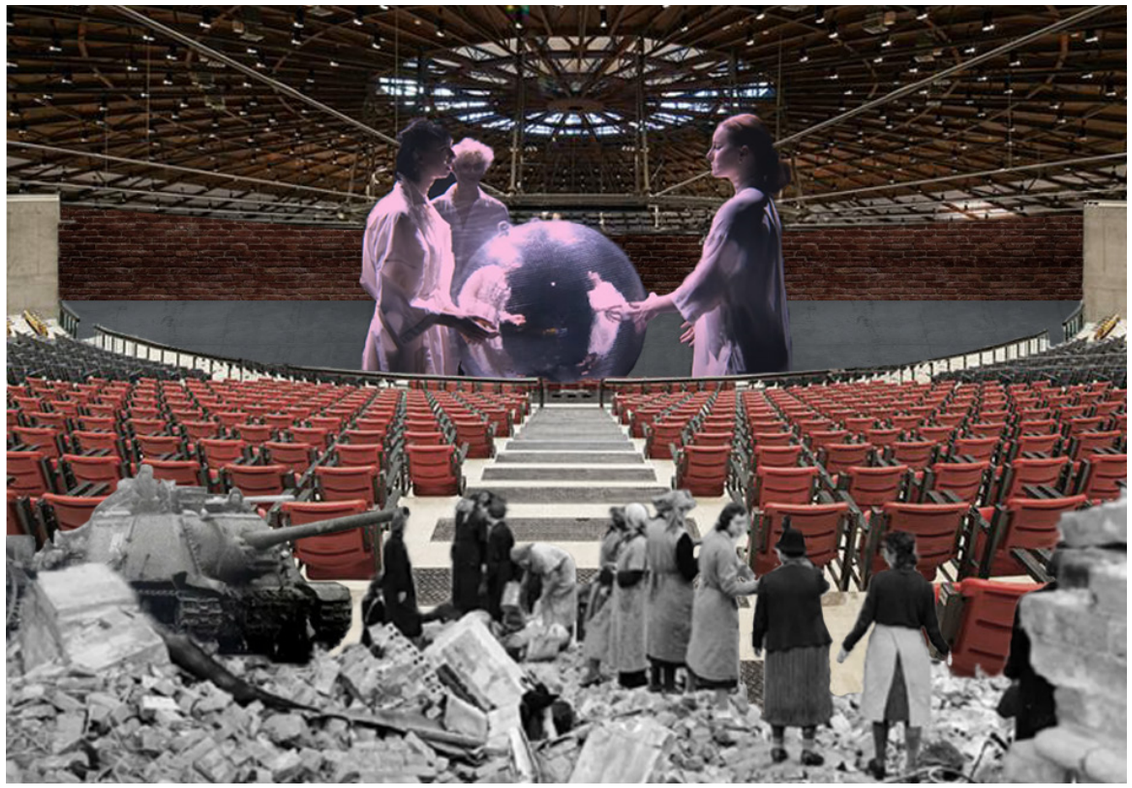

Figure 7 : Collage : What if heal Berlin's historical wound with performing arts?

RESEARCH FRAMEWORK

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RESEARCH ROADMAP

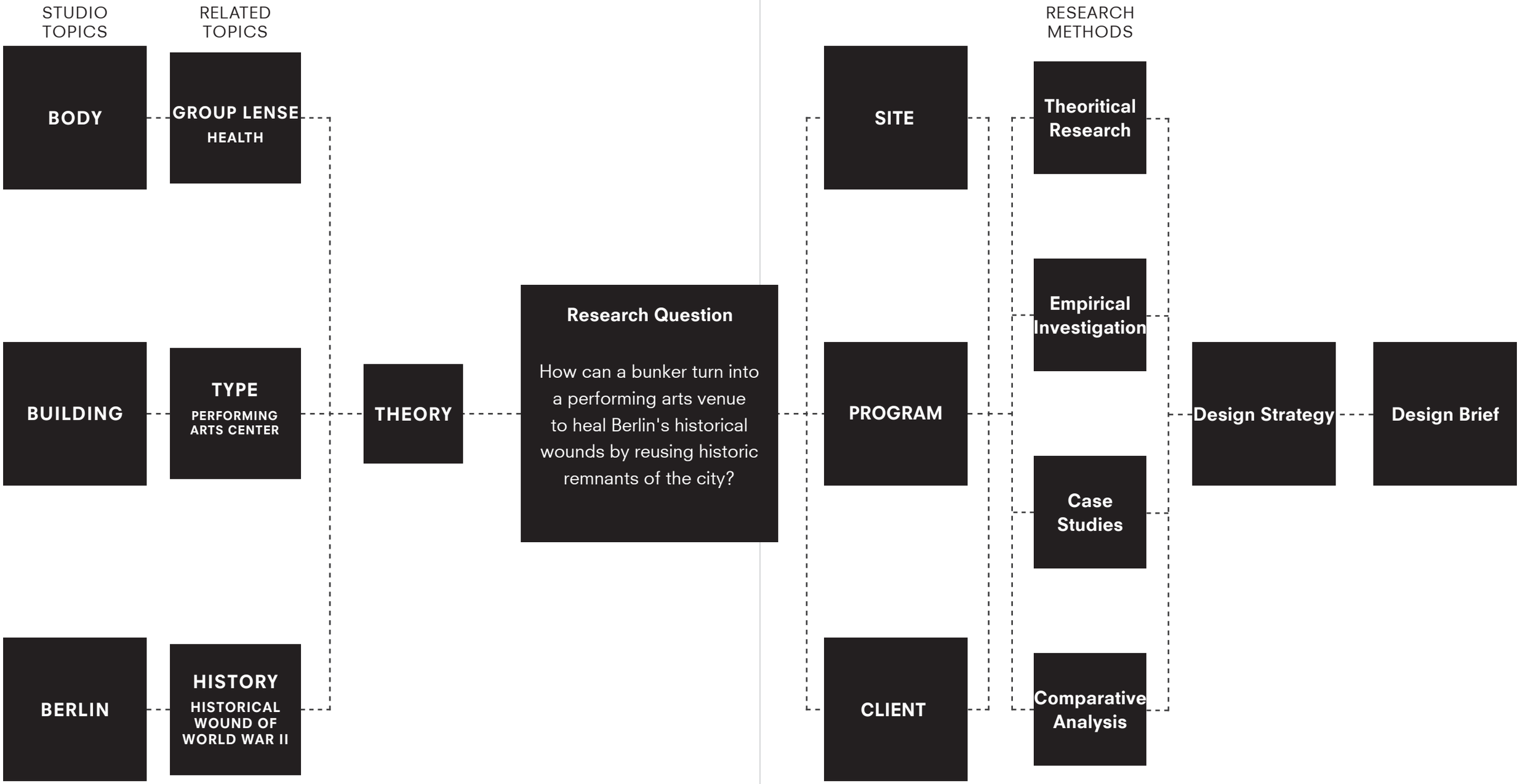


Figure 8 : Research Roadmap

02
RESEARCH FRAMEWORK

This paper explores how to adopt an adaptive reuse of a historic bunker into a performing arts center and what kind of design strategy should be defined. With that goal, it is crucial to form a theoretical framework to figure out which type of theaters and their potential combination are the most effective to achieve the goal of healing and commemorating the historical wound of Berlin. The theoretical framework starts with defining the relation between performing arts and trauma.

Theoretical Framework

Performing Arts and Trauma

Judith Herman asserts that these traumatic events call into question essential human relationships. They breach the attachments of family, friendship, love, and community. They shatter the construction of self that is formed and sustained by others and undermine the belief systems that give meaning to human experience. On top of that, they also violate the victim's faith in a natural or divine order and cast the victim into a state of existential crisis. (Judith)

On the other hand, to heal this traumatic event, performing arts could be one of the most efficient forms of art among every other type of art. Duggan clarifies that the kinaesthetic and visceral connection between body and body, spectator and performer, could create a catalyst to re-embody traumatic experiences in a theater. (Duggan)

From a broader perspective, the link between cultural participation and human health and life satisfaction is proven in the field of physiological study. A study, 'Art and Cultural Participation and Life Satisfaction in Adults', indicates that art and cultural participation affect physical and mental health and interpersonal relationships, resulting in life satisfaction. In this regard, performance art centers are undoubtedly related to human health, affecting their social, mental, and physical health.

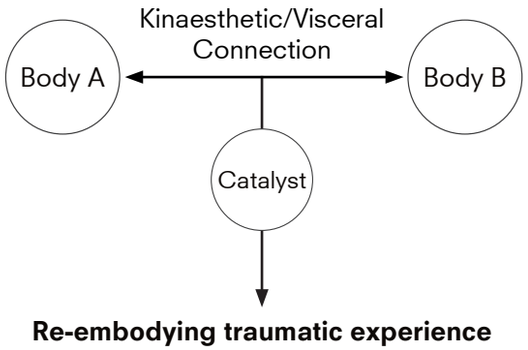


Figure 9 : Diagram of mechanism in creation of catalys to re-embody traumatic experience

Theater form and acoustic

Figure ~~~ shows six common forms of audience and performer arrangements. Each form has a different level of intimacy and flexibility. (J.Paul Guyer, 2014) As mentioned earlier, to re-embody traumatic experiences in a theater, the surround form of theater arrangement with maximum intimacy and a black box type with the most flexibility are the most suitable forms to achieve the project's goal.

Furthermore, incorporating an auditorium's artistic and functional complexity necessitates acoustic optimization through a substantial spatial and surface material configuration, which directly influences the reverberation time within the enclosed volume of the space. Thus, functional efficiency needs to be prioritized in order to fulfill the basic requirements of an auditorium.

A research article, "The case for widely variable acoustics," has been selected as a cornerstone for investigating optimal reverberation time for the utmost quality of sound and comfort in auditoriums with diverse volumes. It further delineates preferred acoustic ranges tailored explicitly for various performing spaces, ranging from a cinema to an opera house, where the suitable reverberation time has been identified as 1.3 – 1.8 seconds, and occasional allowances up to 2.2 seconds for romantic classical performances. (Steve Ellison,2010)

Extension design scheme

The two primary theoretical references are identified in "Site and Sound": Oslo Opera House and Elphilharmonic. The selection

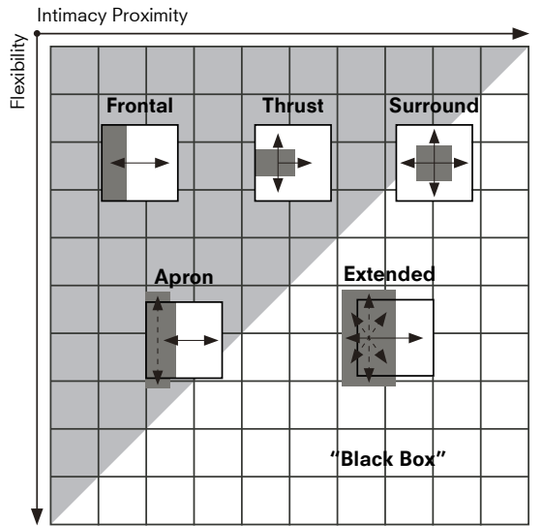


Figure 10 : Program and mass comparison diagram

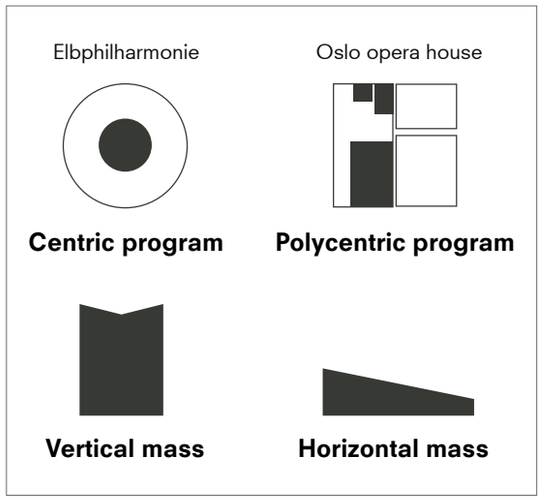


Figure 11 : Program and mass comparison diagram

of these two references is based on the program arrangement and the mass, which in combination result in the essential foundation of the research.

Elphilharmonic depicts the character of a centric program with a large vertical mass. In comparison, the Oslo Opera House showcases a polycentric program with a horizontal mass. These distinctive yet comparable features enable the dual analytical approach that clearly highlights the advantages of each reference through an extensive comparison, discovering and extracting the outcome of each design decision. The project explores various extension options including the advantageous design features of these references.

Public comemorative space

In this research, theoretical reference is framed to identify how to form a commemorative space with the historical bunker to affect the publicity of the performing art center. The design strategies are explored to honor the historical bunker through projects that have renovated previous historical remnants. Furthermore, these features will be explored through theoretical multilateral analysis. For example, “Constructing the Public Concert Hall” contains an investigation into the strategy to build public concert halls, emphasizing publicity. (Smith, Neil, Thomas,.2021) The theatrical experience is not an experience of a single concert hall, but it is an experience of a spatial sequence. Figure ~~ shows an adjusted diagram of a spatial sequence of theater that starts from the point of arrival and is connected through reception and information, foyers, restaurants, merchandising, lobbies, and auditoriums. The diagram also shows the idea of an urban living room, which is an extended foyer for everyone.(Strong)

Relevance

The theoretical framework outlined above forms the basis of an empirical investigation into the validity and effectiveness of utilizing historical remnants in the spatial design of the Berlin Performing Arts Center and aims to provide valuable insights into the intersection of cultural heritage, architectural design, and performing arts by integrating concepts of cultural memory, spatial aesthetics, and historical context.

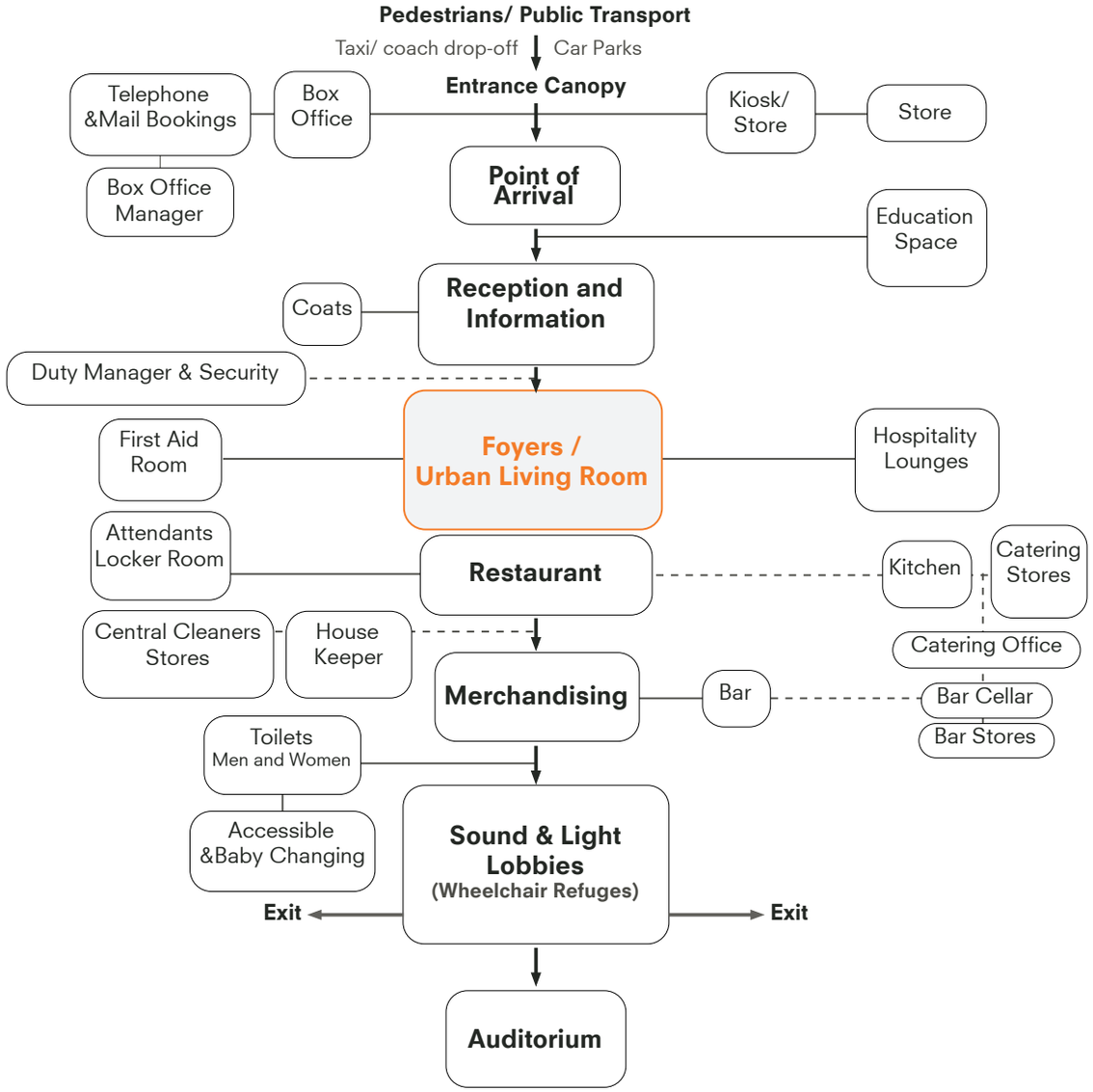


Figure 12 : Spatial sequence diagram

RESEARCH METHODS

03

03
RESEARCH METHODS

Research Methods includes three aspects of program, client, and site. Each topic has its methodology to conduct further research for the design brief.

Site

The fundamental urban planning history and contexts of Berlin to be referred to for this project are well written by a period in “Berlin Urban Design: A Brief History.”

Since this project aims to reuse a historic bunker site, site selection is one of the most essential parts, and there should be logical criteria to compare existing bunker sites. The research method for the site is to create a map of historical remnants in Berlin to compare data for site selection. Based on the map, a final site is selected in accordance with three criteria about its current use: group theme health and comparison of the contextual conditions. Figure~ shows the specific procedure of the site selection criteria and scale to be applied on each step.

In addition, information on bunkers in Berlin is planned to be obtained through information already presented on the website of “The Berlin Underworlds Association.” Furthermore, several articles and books can supplement the general history and information about bunkers.

Program

Diverse methods can be conducted to frame the program, such as case studies and theoretical literature. For the case study method for the program, four steps are used to select the reference projects for the most in-depth analysis. First, the base was built with over 50 reference projects with general information, including project names, type of concert hall, built year, and capacity. Among them, 18 relevant projects were selected along to the time era. Also, after comparing relevance to the concept of the research project, two contemporary performing arts centers, two concert halls, and one opera house of Oslo Opera House(completed 2007), Casa de Musica(completed 2011), Elbphilharmonie (completed 2017), and National Kaohsiung Center for the Arts (completed 2017) are chosen to further analysis.

The analysis of the five buildings contains the comparison of the building footprint, gross floor area, and program bar divided into public space, auditorium, back of house, technical, core, and other area. Also, the percentage per each building’s gross floor area is calculated and shown in the program bar. For a more in-depth analysis, two projects are selected. One of them is the Oslo Opera House, which was selected for having common concepts about publicity such as “togetherness,” “Joint ownership,” and “easy and open access.” On the other hand, Elbphilharmonie was chosen because of the significance of its meaning as a most famous renovation project. Further research of program breakdown and program relation schemes of the reference projects will be used to estimate the area for each function of the rooms and the program arrangement of the project’s building.

The available area within the bunker building will be calculated as a part of the empirical investigation, and how much the stage and auditorium area will fit in it will be verified. Afterward, based on the estimated program area of the program breakdown bar, how much area needs to be extended will be determined.

Client

As the performing arts centers need a big budget and have complex stakeholders, case studies from previous projects and investigating local organizations to collaborate are used for client research methods. Additionally, a theoretical study about the basic client structure of architecture projects is conducted in parallel. In detail, It is crucial to figure out who the clients related to the government and senate musical group and how these complex stakes would affect the project’s planning.

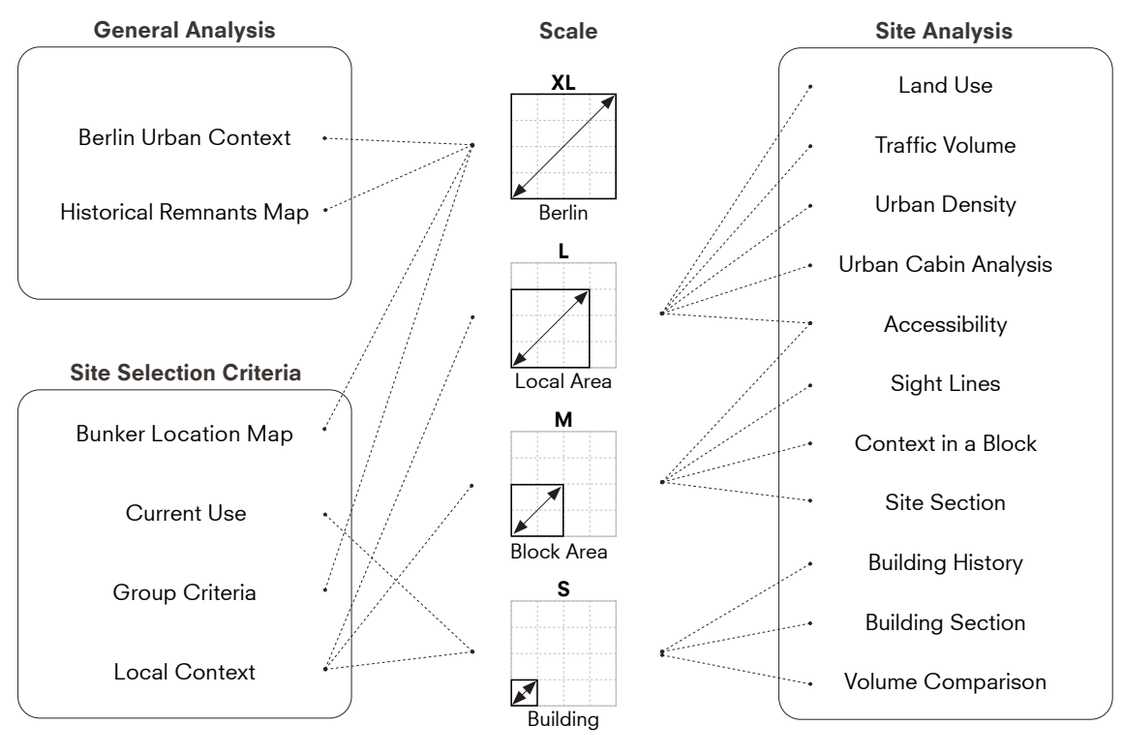


Figure 13 : Site selection analysis scheme

DESIGN BRIEF

04

04
DESIGN BRIEF

Site

Site Selection Criteria

Site selection is testified according to the criteria utilizing the berlin historical remnants map mentioned in the previous research method chapter. The historical remnants map in figure ~~~ contains an empirical investigation of historical contexts such as memorial sites, information from surrounding contexts, and the location of historical bunkers in berlin.

First, we checked whether the bunker candidates are currently using it, and bunkers already being used for specific purposes were excluded from the site candidates. Figure~~~~ shows that among the ten significant bunkers in berlin selected at the beginning, bunkers numbers 1, 4, 5, and 6 are currently used for specific purposes, so they can be excluded at this stage.

Subsequently, the site research is explored regarding a group research topic, “health,” and noise pollution, air pollution, and thermal burden maps are overlayed to define over-stimulated areas in berlin. Following site selection criteria about health, the building site should be within this highly stimulated area. The over-stimulated area map overlaps with the historic remnants map to identify if the site candidate is in an area with high pollution. Consequently, two site candidates remain within the area.

The final two candidates are hochbunker pallasstraße and fichte bunker. The last criteria would reflect various factors, including accessibility through public transportation, existing performance halls and potential collaborative facilities, and public land in a block of the site plot. Based on the comparison regarding the factors mentioned earlier, the fichte bunker is selected as a final site due to its optimal location concerning neighboring performing arts facilities, better accessibility, and the potential to create the public realm in a region.

The selected site is “fichtestraße 6, 10967 berlin,” where fichte bunker is located. The selection was conducted based on historical preservation value and the possibility of reusing the bunker as an auditorium depending on the urban and historical context of the bunker space.

Site Analysis

The fundamental site analysis was done about the traffic and urban density, land use, accessibility, sight lines of the plot,

Figure 14 : Hisotrical remnants map_ Bunker location

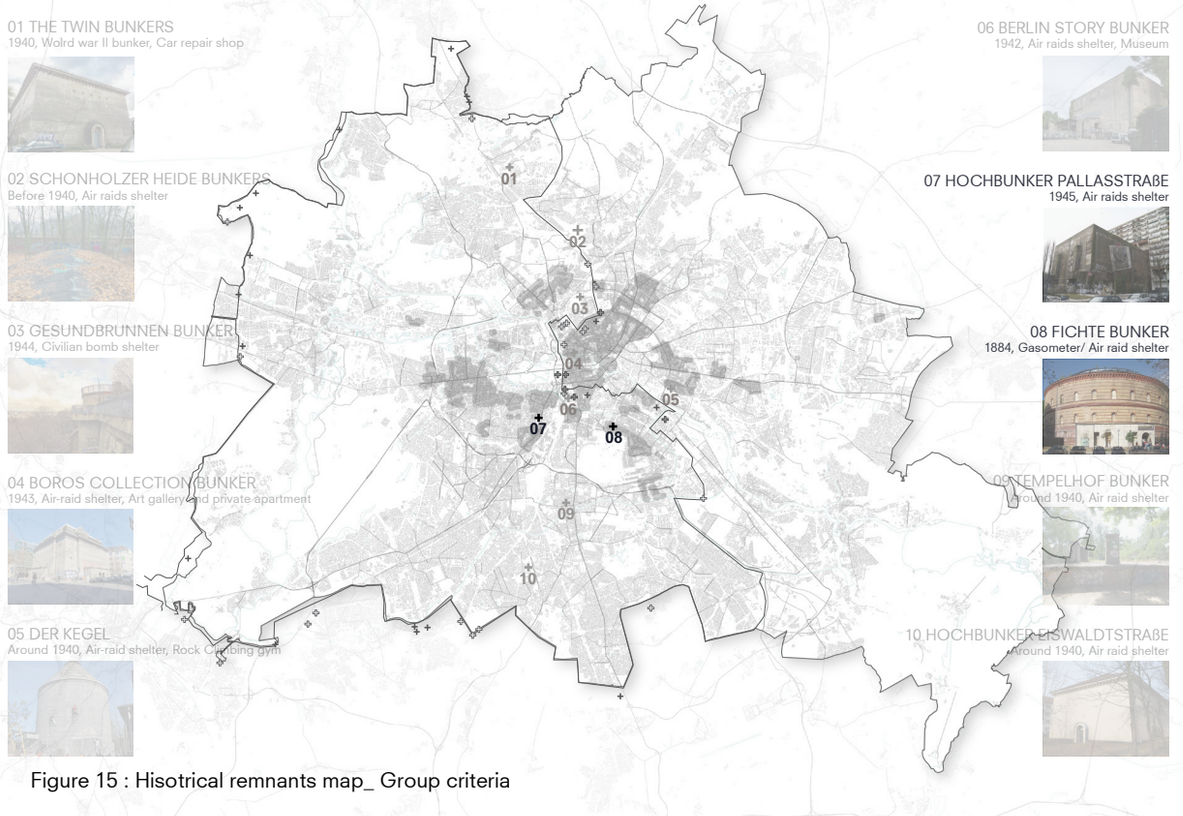


Figure 15 : Hisotrical remnants map_ Group criteria

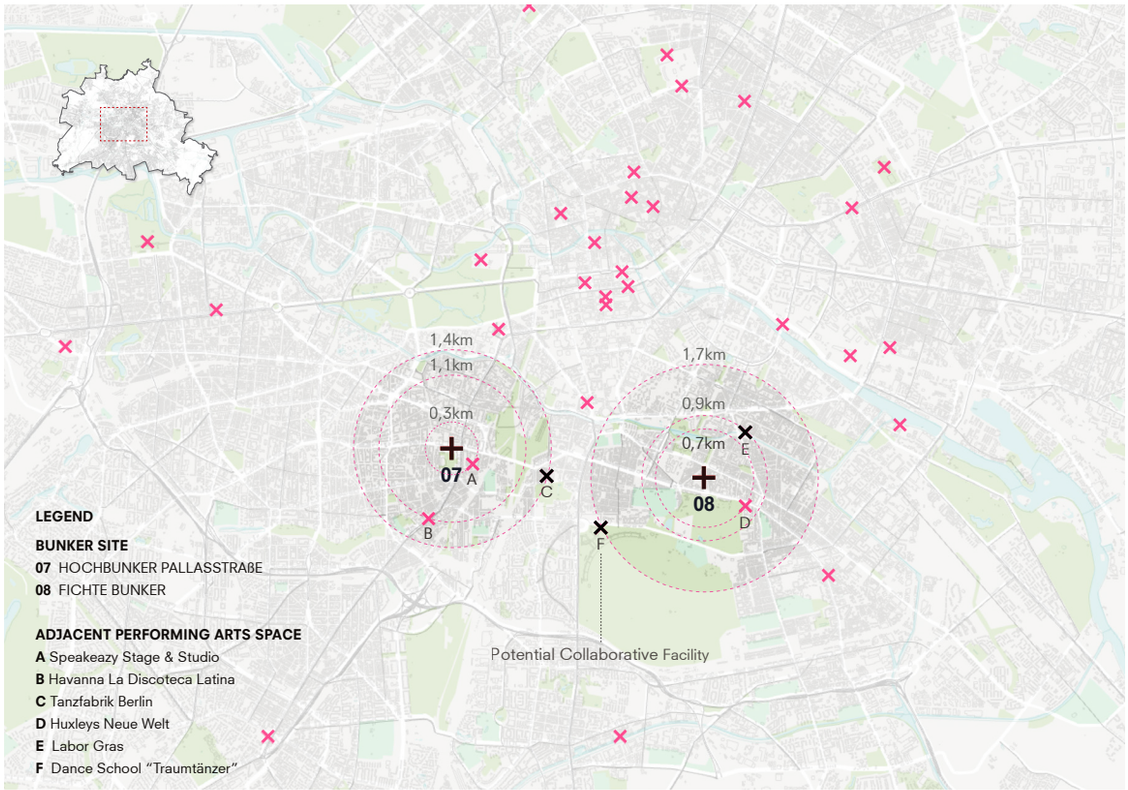


Figure 16 : Local context comparison

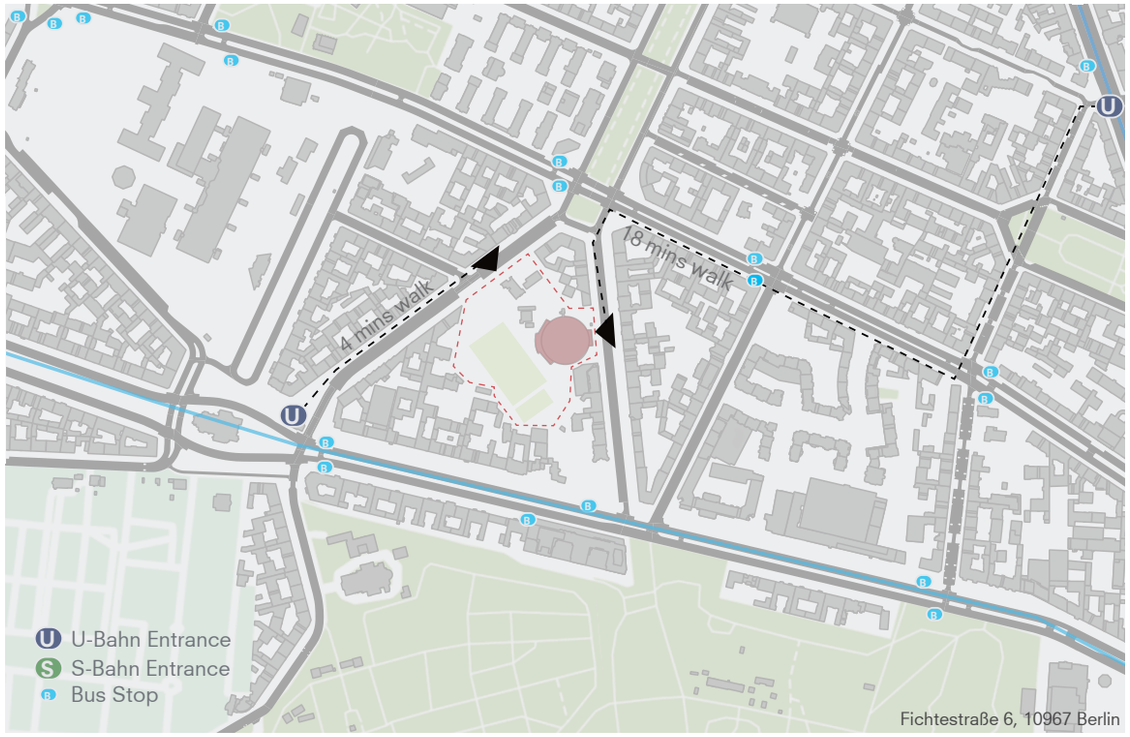


Figure 17 : Accessibility map

and the internal and external measurements of the building. The site-building has been reconstructed based on existing drawing images and information from references (figure~)

The results of the site analysis show that when the site building is reused as a performing arts center, it can play a role as a public space in the area and positively influence the lives of the local people.

First, the site was located in a low and medium-rise residential area and had compliance with public transportation access, so it had the potential to serve as an urban living room for the people of the area around fichtestraße.

In addition, it can have links with open public spaces in cities such as volkspark hasenheide and landwehr canal, creating a synergy effect with them as public spaces in the city. After vertical extensions due to the surrounding middle and low-rise buildings, it could also function as a landmark observatory.

Above all, the historical value of the bunker on the site dates back to the history of the gas meter as well as the wounds of world war II, and it is a building worth remembering and preserving with the historical identity of the area.

By selecting the site and preserving and reusing the Fichte bunker, **this project sets the direction for future performing arts centers as landmarks. It shows how such architecture can respect and embrace local history and contribute to the local community.**

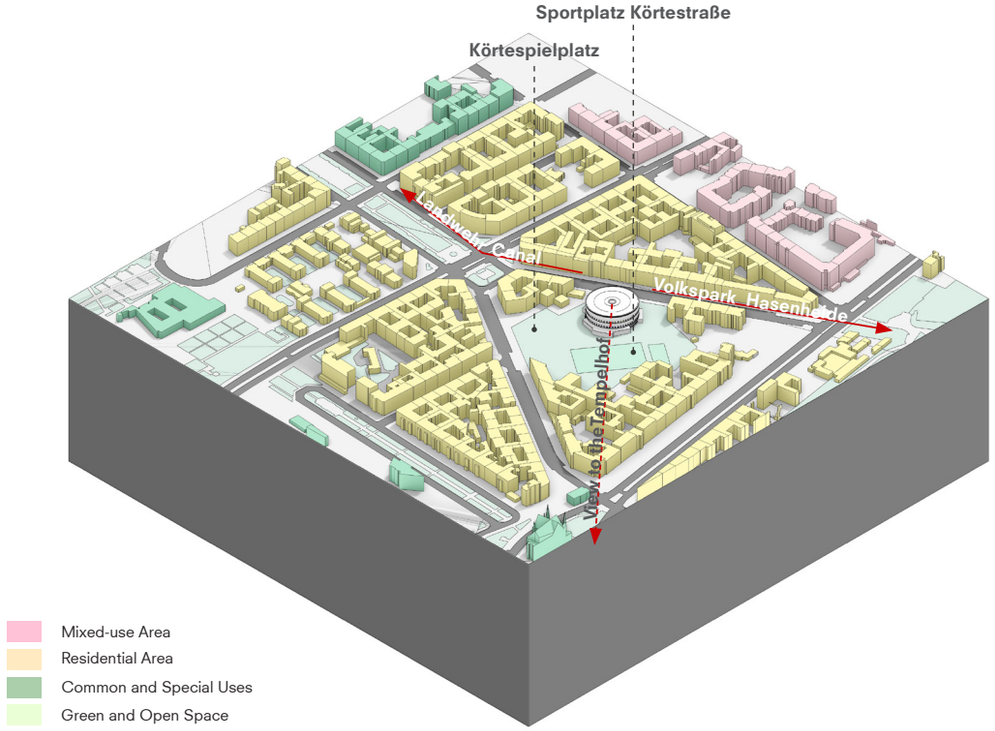
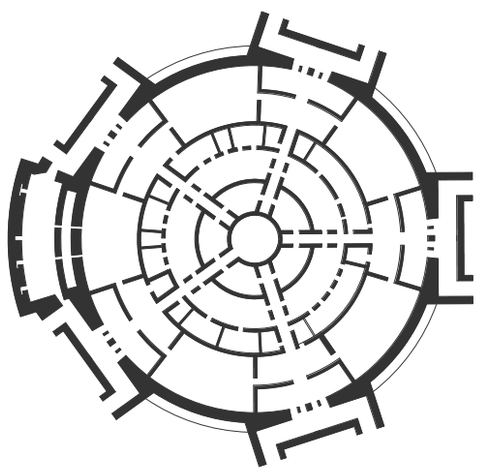


Figure 18 : Site analysis

Figure 19 : View from the site

Figure 20 : Fichte buneker image



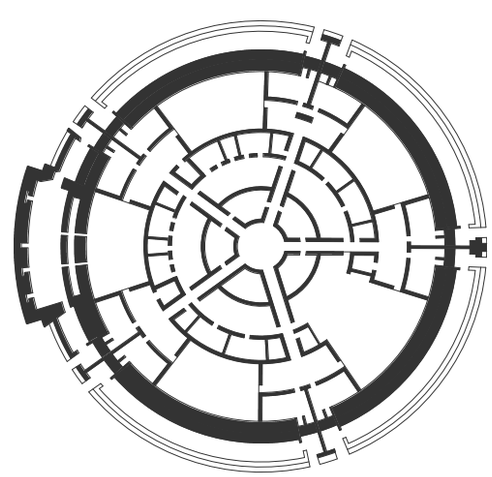
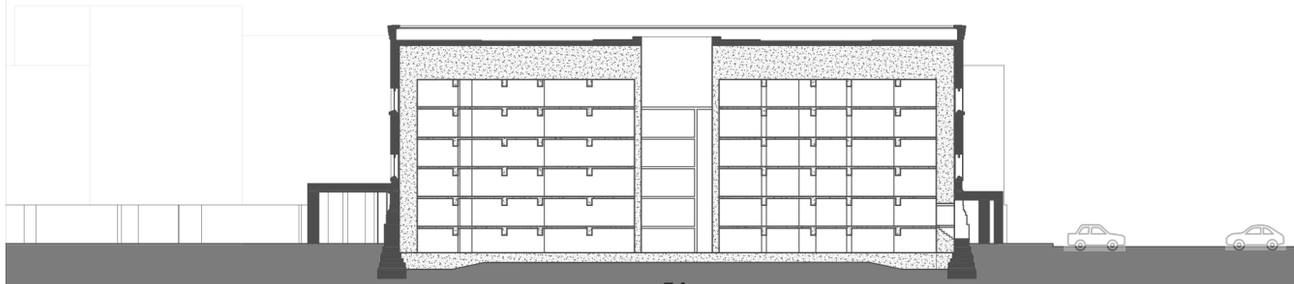


Figure 21 : Fichte buneker basement floor plan (left), Figure 22 : Fichte buneker ground floor plan (right)
Figure 23 : Fichte buneker section (below)



Program

This chapter includes topics such as program ambition, GFA, program breakdown, program relation scheme, and key space. The basic strategy for the initial program scheme is benchmarking one of the reference projects. Oslo Opera House was selected for the final reference project because of its ground plan footprint(19.740m2), which is similar to the bunker project's estimated ground plan footprint(17.880m2). Also, considering the publicity in the city of the Oslo project, the central concept is more or less overlapped with the bunker project.

The program breakdown and program relation scheme from the reference projects will be used to estimate the area for each function of the rooms and the program arrangement of the building.

Program Bar

The entire GFA area is divided into five fundamental functions: public space, auditorium, back of house, technical room, and core/ circulation area. For the initial program scheme, 3,8 percent of public space is added to include extra layers of the public realm, such as an urban living room to the bunker project. Additionally, the auditorium area is increased by 5,2 percent to have a diverse purpose of auditorium halls. While back of house area decreased by 8,7 percent to still maintaining more than the average percentage area of five selected reference projects. Lastly, technical and core areas are adjusted less than 1 percent.

Theater Types

Theater types of the two main theaters were determined among theater types of figure ~~~ according to the characters of the theater forms affecting the interaction and social aggregation between performers and spectators and the circumstantial context of Berlin's performing arts. The black box theater for the contemporary performing arts and the vineyard-style concert hall for classical concerts collaborate in the Music Bunker performing arts center.

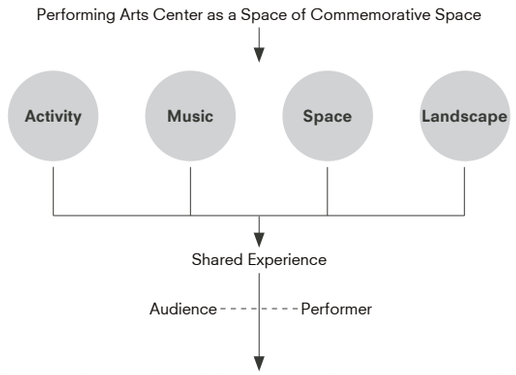


Figure 24 : Theater interaction diagram

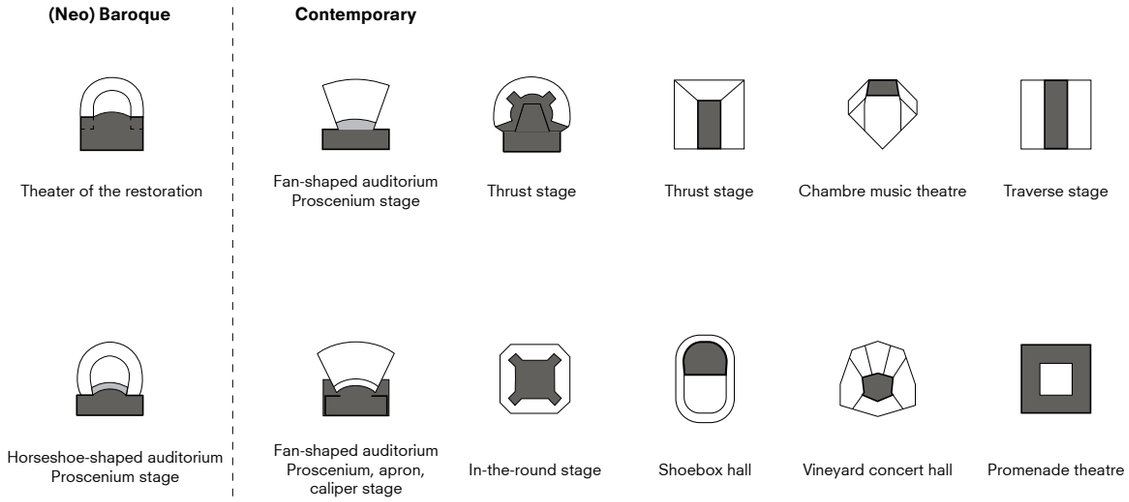


Figure 25 : Theater types diagram

Program Breakdown

The auditorium area comprises 27 percent of the whole GFA and consists of a black box theater, a stage and auditorium area of a concert hall, and one multi-purpose hall. Public space processes 22,4 percent and has several multi-purpose rooms, an assembly hall, a foyer area, and urban living room space. Also, the back-of-house area, which is not enterable to general audiences, is 28 percent of the entire area and mainly consists of administration and dressing rooms, soft workshops, and hard workshops. The rest of the parts are mainly the circulation area and technical room.

Relation scheme diagram

The relation scheme diagram of figure~~~ shows the relative area of each program. In the entrance, there is an urban living room and a foyer, which are open to the public and connect the front of the house to the back of the house: each concert hall and back of the house area create multiple centers in the arrangement of the program scheme.

Mass Studies

Moreover, the usable area inside the bunker was calculated, and the internal program was set mainly for the performance space. Subsequently, the amount of extension needed for the program area was defined. Through this process, mass alternatives of various shapes and arrangements can be confirmed through figure~~.

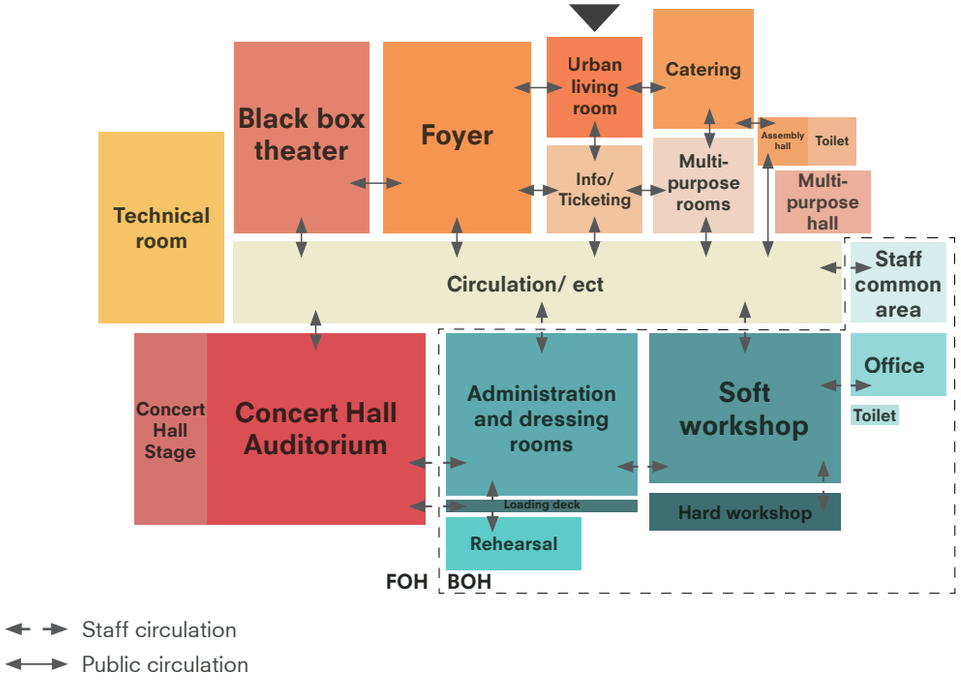


Figure 26 : Program relation scheme

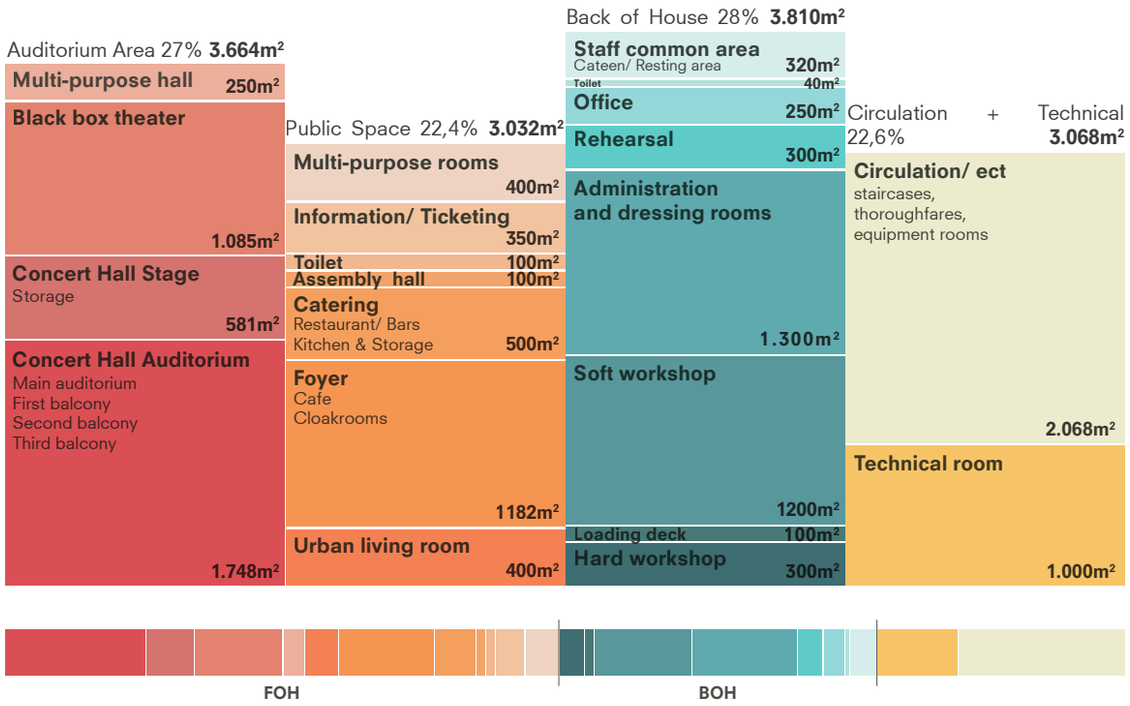


Figure 27 : Program breakdown bar

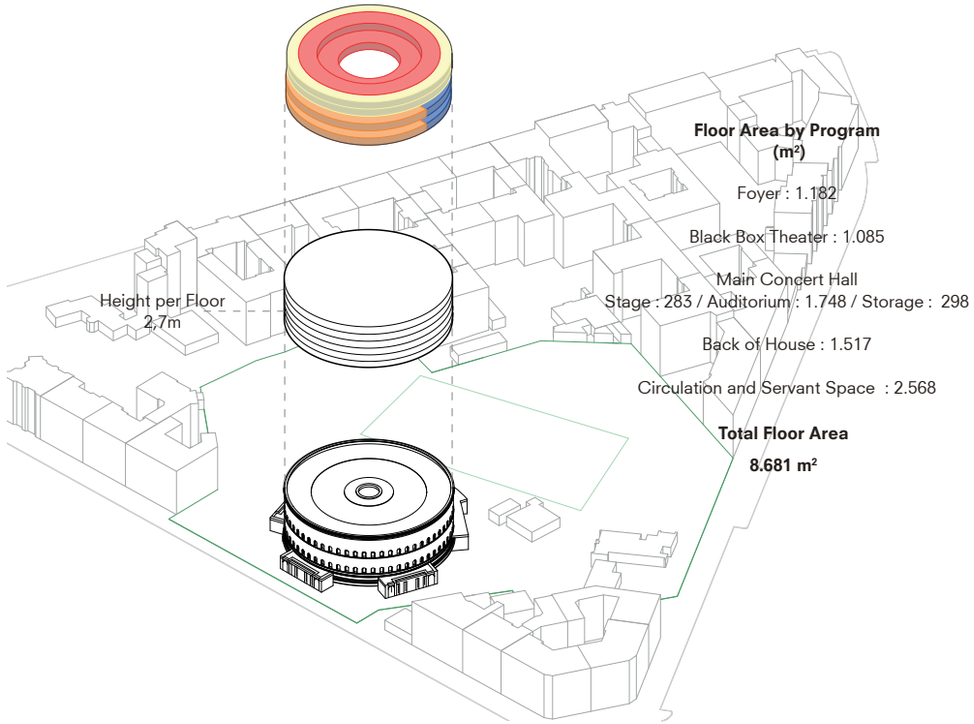


Figure 28 : Program area in the bunker diagram

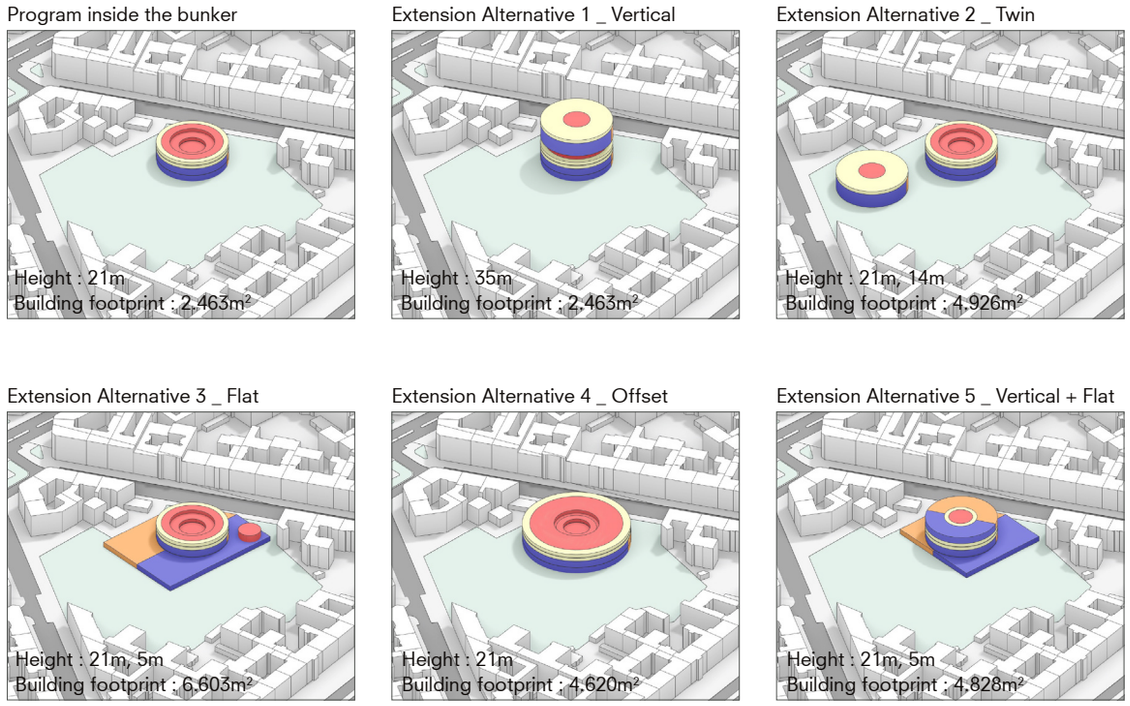


Figure 29 : Program area in the bunker diagram

Client

Since the complexity of the performing arts center project, the clients have three parts: the main stakeholders, relevant stakeholders, and the main users.

The main stakeholders are a primary cultural and art organization in Berlin and two government organizations. As the project may involve public funding and infrastructure development, the Federal Government Commissioner for Culture and Media and the Senate Department for Culture and Social Cohesion are the main government stakeholders. Also, the Berliner Philharmoniker is the last main stakeholder since the classical concert hall is the main theater of the project.

In addition, the main stakeholders will conjunctly cooperate with the relevant stakeholders to successfully transform the bunker into a performing art center, respecting its historical context. Berlin Underworlds Association, which is a non-profit organization that works to promote research, document, and preserve Berlin's underground structure, and the LAFT Berlin, which is an organization of Berlin's professional independent performing arts artists, are the crucial relevant stakeholders of the project.

Furthermore, the audience group, Berliner Philharmoniker, the LAFT Berlin, artists, performers, locals, and local dance institutes are the main users of this project.

Investment decision maker

Die Beauftragte der Bundesregierung für Kultur und Medien

Federal government commissioner for culture and media

Senior responsible owner

BERLIN

Senate Department for Culture and Social Cohesion

Project sponsor

Berliner Philharmoniker

Berliner Philharmoniker

Figure 30 : Main stakeholders

Figure 31 : Berlin underworlds association

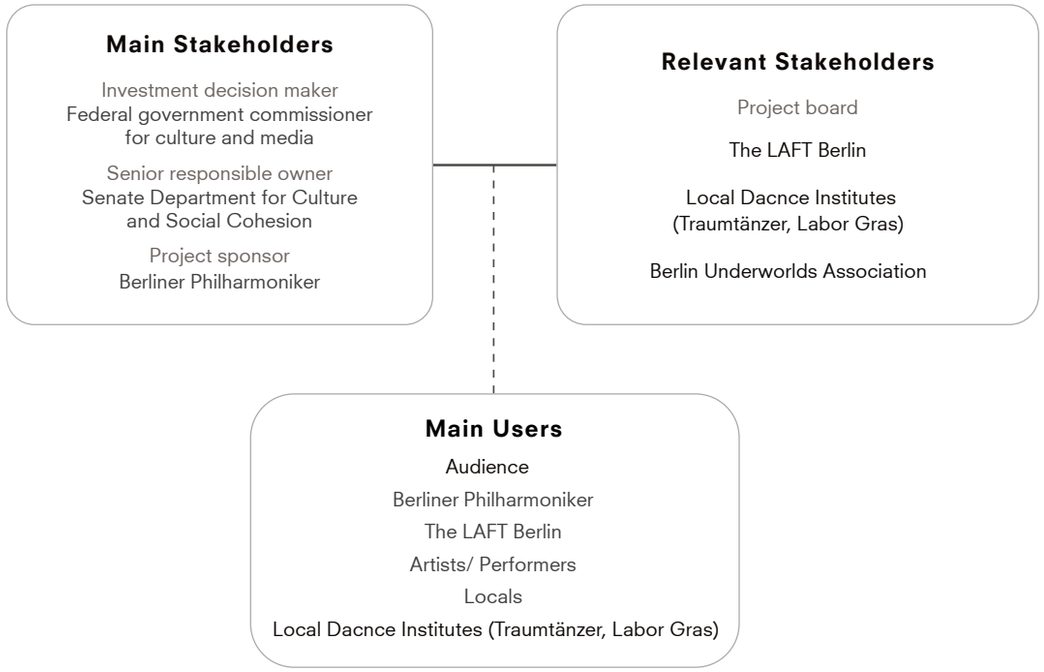


Figure 32 : Clients diagram

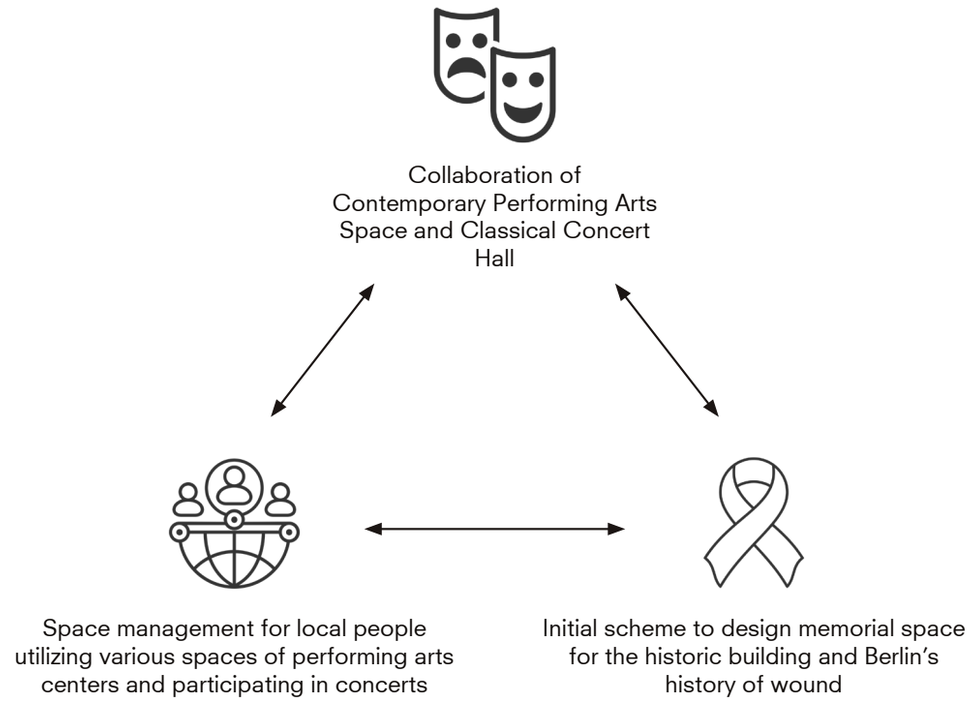


Figure 33 : Client goal

This project involves investigating the optimum strategy or criteria in a project of adaptive reusing a bunker. The following design strategies arise along the subject of this project. The main goal of the design phase is to create design solutions that meet these subjects.

1. Adaptive Reuse of Historical Remnants

Adaptive reuse of historic remnants is the main design strategy of the project. Deciding what to remain and what to demolish is the crucial point for the project.

2. Extended Foyer With Natural Light

One of the key spaces of the project is an urban living room, an extended foyer with natural light. This space is open to local people with the minimum physical and visual barriers from the street.

3. Experience of Spatial Sequence to Commemorate History

Through the experience of the spatial sequence of the performing arts center, people reminisce and commemorate the history of Berlin, linking contemporary architecture with its historical context.

4. Flexible and Intimate Performance Spaces

Not only creating commemorative space, but the performing arts are also another tool to heal Berlin's historical wound. For the intimate and lively theatrical and musical experience, intimacy and flexibility of performance spaces are considered essential in designing the theaters.

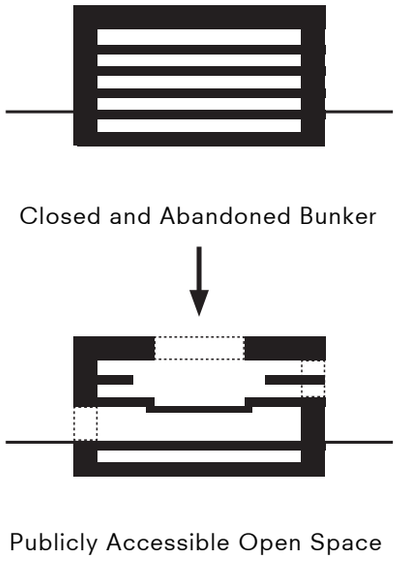


Figure 34 : Project ambition diagram

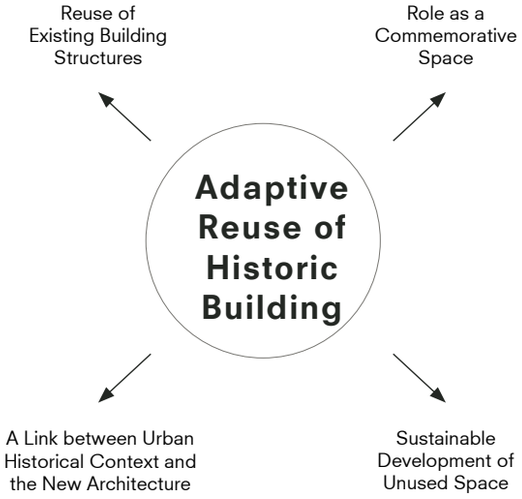


Figure 35 : Adaptive reuse diagram

Figure 36 : Project ambition collage

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Figures

Figure 1
https://namu.wiki/w/베를린%20공방전

Figure 2
https://namu.wiki/w/베를린%20공방전

Figure 3
https://www.newyorker.com/culture/annals-of-inquiry/do-walls-change-how-we-think

Figure 4
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_statistics_-_cultural_participation

Figure 5
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_

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Figure 6
Lee, Chia-Wen, et al. “Art and cultural participation and life satisfaction in adults: The role of physical health, mental health, and interpersonal relationships.” Frontiers in Public Health, vol. 8, 21 Jan. 2021, https://doi.org/10.3389/fpubh.2020.582342.

Figure 7
Own production

Figure 8
Own production

Figure 9
Own production base on Duggan, Patrick Gerald, Who’s Who, 2007

Figure 10
Guyer, J. Paul. An Introduction to Architectural Design: Theatre and Concert Hall Acoustics and Communications. CreateSpace, 2014. p.8

Figure 11
Recreation based on Strong, Judith. Theatre Buildings: A Design Guide. Routledge, 2010. p.45

Figure 12
Own production

Figure 13
Own production

Figure 14
Own production

Figure 15
Own production

Figure 16
Own production

Figure 17
Own production

Figure 18
Own production

Figure 19
Own production with google map street view

Figure 20
https://de.wikipedia.org/wiki/Gasometer_Fichtestra%C3%9Fe

Figure 21
https://de.wikipedia.org/wiki/Gasometer_Fichtestra%C3%9Fe

Figure 22
https://de.wikipedia.org/wiki/Gasometer_Fichtestra%C3%9Fe

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Figure 24
Own production

Figure 25
Own production based on Izenour, G. C. Theater Design: With Two Essays an the Room Acoustics of Multiple-Use by V.O. Knudsen and R.B. Newman. McGraw-Hill, 1977.

Figure 26
Own production

Figure 27
Own production

Figure 28
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Figure 29
Own production

Figure 30
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Figure 31
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Figure 32
Own production

Figure 33
Own production

Figure 34
Own production

Figure 35
Own production

Figure 36
Own production