THE SPATIALITY IN STORYTELLING

Xiang Yu

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THE SPATIALITY IN STORYTELLING

A Dissertation Presented

by

XIANG YU

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE

May 2016

Department of Architecture
THE SPATIALITY IN STORYTELLING

A Thesis Presented

by

XIANG YU

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ABSTRACT

THE SPATIALITY IN STORYTELLING

MAY 2016

XIANG YU, B.Eng. CHONGQING UNIVERSITY
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Directed by: Professor Kathleen Lugosch

Theatre has always been played an irreplaceable role in people’s lives, even nowadays where people have multiple choices for entertainment. Some theater architecture has also become the symbol of the city, such as Paris Opéra and Sydney Opera House. By taking a close look at various case studies, one will understand how the theatre architecture corresponds with their city representing its history, culture and visions for the future.

The development of my thesis is based on the integration of the ‘space’ of storytelling and the space of design. Will the quality of space bring out the memories that have been stored with in it? How the space provide with most flexibility for its users? Explorations in acoustic and lighting design as well as the spectators’ experience in the space will be discussed. My attention is to create a design that will heighten perception and arouse the audience’s sensory experience even before the start of the show.
The relationship between nature and the architecture is also one of my attentions. Questions arise such as how to use a multidisciplinary approach to investigate the intersection of architecture and landscape. Should the architecture become a new definition towards the context or an expression that abstract from the landscape? This thesis explores the relationship between the performer and audience, and how the architecture space can contribute to the theater experience. The design for this project offers one solution for the whole site serving as a place for performing arts as well as a public space and a destination for the city of Boston.
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1.1 The Origin of Ideas

My deepest memory about theater space is from childhood. I spent my first couple of years with my grandparents in a rural area. The village was based on agriculture and the economy is undeveloped. Few televisions could be found in people's houses during the 1990s. People living in the village really didn't have much to do for entertainment after a long day's work in fields. But the village did have some events when a funeral or the annual town fair is going on. For a funeral, after the regular ceremonies, the wealthier families would invite a touring theatre troupe to put on some shows for all the villagers, some lasting several days. Most of the troupes are Yu Opera (Yuju) troupes. Yu Opera is the local opera form in Henan Province, and it’s also one of China’s famous national opera forms, alongside Peking opera, Yue opera, Huangmei opera and Pingju. People love it and when there is a show going on, people from near villages would come to see the play. The villagers gathered in front of the stage at the community space in the evening, bringing their own chairs or benches, eating snacks and talking to each other while waiting for the show start. When the performers started to sing, the crowds suddenly became really quiet and focused on the performance. Some parts they might already know well and they would hum along. The big crowd together with the sounds and music on stage made the show feels like a festival.
The stage space could not be more simple, the only permanent structure is the stage itself. During the day it functioned as a place for meetings or gatherings. When there was the show going on, people would put up the frame and hang the curtains, installing lights and backgrounds for the play. Actors will have their dressing rooms at the backstage. The band will be on one side of the stage, providing live music as well as the rhythms for the play. All the requirements for an adequate play were in their simplest form without too much decoration with one exception: the costumes. All the glamour from the costume shone even brighter under the lights as the performer moved on the stage. No matter the story being performed on stage is comedy or tragedy, the villagers were always having a good time. That is probably my earliest memories about how a story is told on a stage space. The connections between the audiences and the performers were pure and strong.

1.2 Definition

"Theatre or theater is a collaborative form of fine art that uses live performers to present the experience of a real or imagined event before a live audience in a specific place, often a stage. The performers may communicate this experience to the audience through combinations of gesture, speech, song, music, and dance. Elements of art and stagecraft are used to enhance the physicality, presence and immediacy of the experience. The specific place of the performance is also named by the word "theatre" as derived from the Ancient Greek θέατρον"
(théatron, "a place for viewing"), itself from θεάομαι (theáomai, "to see", "to watch", "to observe").

1.3 Types And Forms Of Theatres

Though the spaces for theatre vary for different kinds of performances, the idea always stays for the same: sharing live energy between the performer and the audience. Starting from the open-air amphitheaters of the Greeks and Romans, theatre buildings evolved to the multiple arrays of forms we see today. Though some particular forms work better for certain types of performance, there is not one universal stage of a theatre that can accommodate all kinds of performance. Drama, opera, play, concert, musicals, ballet, concert dance or modern dance, even circus or stage magic, and other performance art forms, certain type of theatre will not always suitable for other types of performances.

By looking back to the history of theater space, there are three basic theater forms: arena, Greek theatre, and proscenium theatre.

---

2 Silverman, Maxwell, and Ned A. Bowman. *Contemporary Theatre Architecture; an*
1.3.1 Arena Stage

![Diagram of Arena Stage]

**Figure 1: Arena Stage**

Arena is the oldest form and it can be traced back to primitive tribes gathering around dancers during their ceremonies or performances. This kind of form has developed into contemporary theatre form in rectangle or round, which can provide the most intimacy between audiences and performers.

Examples:

---

Figure 2: Arena Stage (1961), Washington, D.C.

Arena Stage (1961)
Washington, D.C.
Architect: Harry Weese & Associates

Figure 3: Berliner Philharmonie
Berliner Philharmonie (1963)

Berlin, Germany

Architect: Hans Scharoun

![Image of Berliner Philharmonie](image)

**Figure 4: The Ring Theatre**

The Ring Theatre (1950)

University of Miami, Coral Gables, Florida

Architect: Robert M. Little, Marion I. Manley
1.3.2 Greek Theater

Figure 5: Greek Theater

Figure 6: A drawing of an ancient theatre

The Greek theatre is the first truly architectural theater form. It has evolved as the performing world changes. The seating arrangements are in the shape of a semicircular tier and the performing area is in the center of the semicircular tier, surrounded by three sides of audience. The Greek theatres were originally built on a large scale to accommodate the large number of people both on stage and in the
audience. The designer of the theatre had to be able to create the acoustic system in a way that the actor’s voices could be heard throughout the entire theatre. At the mean time, audibility was enhanced by the architectural background, which also served as the scenic wall for the stage. Contemporary theatre versions combine the Greek seating plan with a thrust stage which extends into the seating area, surrounded by three sides of audiences.

1.3.3 Thrust Stage

A thrust stage is connected to the backstage by its upstage end.

![Thrust Stage Diagram]

Figure 7: Thrust Stage

Examples of thrust stage:
Figure 8: Wurtele Thrust Stage

Guthrie Theatre; First opened in 1963, rebuilt in 2006
Minneapolis, Minnesota
Architect: Ralph Rapson

Figure 9: Stratford Festival (1952)

Stratford, Ontario, Canada
Architect: Rounthwaite & Fairfield
1.3.4 Proscenium Theater

![Diagram of Proscenium Theater]

**Figure 10: Proscenium Theater**

The proscenium stage, also referred to as the picture frame stage, is the most common stage used in the West since the Italian Renaissance. The primary feature of the proscenium stage is the picture-framed large opening which also known as the proscenium arch.\(^3\) The audience views the performance through the proscenium arch. It developed from the Medieval Elizabethan Theater and from the Greco-Roman Theater plan, stimulated by the creation and production of opera as well as the increasing emphasis on illusionistic stage settings.

Examples:

Figure 11: Grady Gammage Memorial Auditorium (1964)

Arizona State University, Tempe, Arizona

Architect: Frank Lloyd Wright

Figure 12: Metropolitan Opera House (1966)

Lincoln Center for the Performing Arts, New York City, NY

Architect: Wallace K. Harrison of Harrison & Abramovitz
1.4 Contemporary theater

All the spectator-performer arrangement elaborations that have emerged from contemporary theater plans are variations or combinations of these three basic stage forms. There is also no ideal size for a theatre. The scale of a theatre will depend on aspects including the staging area required by the performance type and the size of the audiences to be housed.

Other stage forms, such as black box theatre, end stage, environmental theatre, promenade theatre, studio theatre and courtyard theatre are the theatre forms that emerged from the real world practice. One example of flexible theatre, Dee and Charles Wyly Theatre in Dallas, Texas, is a multi-purpose performance space that can transfer its form into different types of theatre space. Forms like site-specific theatre even goes further having more interactive influence than the conventional theatre does on the audience. A pioneer of immersive theatre, Punchdrunk, leads to a new level of experiencing the theatre. The ‘immersive’ theatre is related to the ‘promenade theatre’ in format, which means the audience is free to roam the performance site when the play is being performed.

For performance music, there are concert halls, recital halls, shoebox concert halls, vineyard concert halls and surround halls. The acoustic requirements of the hall determine its architectural features such as shape, volume, ceilings, seats and so on. As for dance theatres, they are not as identifiable as other kind of stage forms since the tradition of ballet is taken place in opera houses for the most of the time.
CHAPTER 2

CASE STUDIES

2.1 Guthrie Theatre, Minneapolis, Minnesota (2006)

Figure 13: Guthrie Theatre, Photo: Philippe Ruault

“At the heart of the city, the Guthrie is a machine for capturing and radiating the enveloping vistas. It condenses the landscape that unfolds around it.”

/Jean Nouvel

- Architects: Jean Nouvel

- Location: Minneapolis, Minnesota
Figure 14: Guthrie Theatre Floor Plan

Figure 15: Guthrie Theatre Section
The concept of the Guthrie Theatre respecting its history and origins captured my attention. The way that the architect had dealt with the historic footprint and how they address the views looking from the site are worth learning. Jean Nouvel wants people to discover within the Guthrie that theater is a type of industry, a production machine with sets and big trucks that is necessarily governed by a series of linked functions. “Theatre is a process about fabricating and presenting a spectacle; architecturally this process can be expressed with the industrial building.”
One of the most identifiable characters of the Dee and Charles Wyly Theatre is its flexible stage that can transform into any stage form as required. It is a flat floor when nothing is occupying the space, it also could be a studio theater and even become a fully equipped proscenium, thrust, or arena theater.
Figure 18: Dee and Charles Wyly Theatre Diagram 2

Figure 19: Dee and Charles Wyly Theatre Thrust Stage Floor Plan
The Dee and Charles Wyly Theatre does not occupy a large amount of land. It’s a medium to small size theater comparing with other performing art centers. The architects, REX + OMA put all the other spaces above or under the stage space, including backstage, working shops, storage spaces, recital hall and flytower, leaving the flexible stage space on the ground floor.

Figure 20: Dee and Charles Wyly Theatre Proscenium Floor Plan
2.3 Taipei Performing Arts Centre, Taipei, Taiwan (In Construction), OMA

"TPAC consists of three theatres, each of which can function autonomously. The theatres plug into a central cube, which consolidates the stages, backstages and
support spaces into a single and efficient whole. This arrangement allows the stages to be modified or merged for unsuspected scenarios and uses. The design offers the advantages of specificity with the freedom of the undefined.”

**Figure 23: Taipei Performing Arts Centre Section**

The Taipei Performing Arts Centre provide as a precedent for flexible theater space study. The space encourages the general public including those without a ticket to enter and experience. The arrangement of three theater spaces allows combination happen between two stages and become one super-stage form.

---

2.4 National Centre for the Performing Arts, Beijing, China (2007), Paul Andreu

Figure 24: National Centre for the Performing Arts

The National Centre for the Performing Arts (NCPA) by Paul Andreu is a magnificent and gigantic project finished and opened in 2007. The building is situated in the heart of political center in Beijing next to the Great Hall of the People and very close to the Forbidden City and Tian An Men Square.

Figure 25: National Centre for the Performing Arts Section
At the entrance, you will easily see the slowly sunken stairs spread out and drawing people from the street level. You can choose to go down to enter the building or go straight across the garden to the front edge of the reflecting pool. The pool is huge and it almost makes you feel like it's a lake. A thin layer of water is sitting on the top of the site, with the semi-ellipsoid structure floating in the center of the lake, covered by titanium panels and a strip of curved glass curtain wall. The transparent glass curtain wall is reflecting the sky and the daylight, the lake is reflecting the giant shell island, and the titanium shingles are diffusing the light from the surroundings. Those three elements together composed a ballad of light in reflection. During the night, the shell glows starlight in the dark while flickering.
inside spreads out on the lake through the curtain wall, the lighting coming from the bottom of the steel framing curtain wall makes it becoming a crystal palace for the night.

The exterior shell above the lake is intact, displaying a more defensive gesture toward the Great Hall of People that sits right next to it. The Tian An Men Square and and the Forbidden City are no more than 1600 ft away. By leading the circulation through a 260 ft long transparent underpass connecting the shore and the interior plaza space. This entrance leaves the exterior of the building without any openings. It is mysterious looking while providing the public with a passage from their daily world to the world of opera, fiction and dreams. Walking through the underground waterway pass is like experiencing the anticipation of certain rituals, in a very modern way. The thin layer of water ripples and waves above your head. You can almost see the sky through it, altered by the view through the water. The thin layer of the water is a like a layer of membrane dividing the world of opera, fiction and dreams from the daily world, leaving the dramatic world intact but separate from the outside world, connected only by a secret passageway which lies deep in the ground.

You then vanish behind a massive bronze door with golden dinosaur egg laid out on top of it, a circular hallway with strips of headlights distribute the public stream to different functional spaces. Going forward one enters into a sunken ellipse standing space with escalators on both sides leading up to the ground level of the interior plaza under the grand vault. Now, it’s the time for you to take a close look at the hall full of glories.
2.5 Guangzhou Opera House, Guangzhou, China (2010), Zaha Hadid

![Guangzhou Opera House Night View](image)

**Figure 27: Guangzhou Opera House Night View, Iwan Baan**

The Guangzhou Opera House is at the heart of Guangzhou’s Zhujiang new town, a cultural development for the city. The two theater space like two pebbles in stream and smoothed by the water erosion.

This precedent shows how the project integrates within its context. The architecture is like pebble belongs to the riverside. Fold lines in the landscape defined its territories and zones within the Opera House, cutting dramatic interior and exterior canyons for circulation, lobbies and cafes, and allowing natural light to penetrate deep into the building.\(^5\) The interior finish has a breathtaking quality when you walking in the spaces and enjoy the moment with in it.

2.6 Oslo Opera House, Oslo, Norway (2007), Snohetta

Figure 28: Oslo Opera House

“The sense of memory dominates the physical environment of a city. The memory of monumental experience is more relevant than the monument in its physical presence. This leads us to believe in the value of the non-hierarchal, the urban structure that can attain a morphological presence in the city.”

In Oslo Opera House, the architects try to bring “the wave wall”, “the factory” and “the carpet” into the design. The form of the architecture is like a giant carpet that arises from the water and runs all the way up to its rooftop. People can walk on the carpet to access everywhere: waterfront, main lobby, rooftop and so on.

---

Figure 29: Oslo Opera House, Site Plan and Section

This precedent shows how the architecture can become a part of the city border and gently extend it into the water. Both the Guangzhou Opera House and the Oslo Opera House have showed how the architects dealt the project with a waterfront situation and successfully turn it into a part of the context.
2.7 Maritime Theatre, Hadrian's Villa, Tivoli, Italy

The Maritime Theatre is not an actual theater for performance, it is one structure of the Hadrian Villa. It consists of a ring-shaped pool with a central island with supported pillars by round. During the ancient times, two wooden drawbridges are connecting the island and the portico. The island used as a retreat for the emperor from the busy life.

The ring-shaped pool is the key to isolate the central island with its surroundings. I was fascinated by the idea of the Maritime Theatre that entering the world of isolate and leaving the world behind. I have been working on this idea and taking it further into the design to make it happen.
Figure 31: Plan of Maritime Theater. A: entrance; B: walkways; C: atrium; D: tablinum or triclinium; E: 2 cubicola; F: bath complex
2.8 Danish National Maritime Museum, Helsingor, Denmark (2013), BIG

Figure 32: Danish National Maritime Museum, Rasmus Hjortshøj

Figure 33: Diagram of Danish National Maritime Museum
The Danish Maritime Museum sits in a historical site and the project has proven itself with an understanding of the context that where the Kronborg Castle Located. The Danish National Maritime Museum is a subterranean museum that sits in a dry dock. The process of the architect how to take the disadvantage of the site and make it into an advantage impressed me a lot. They way they placed the galleries in a continuous loop underground around the dry dock walls leaves dock become the centerpiece of the exhibition.
The MAXXI, Museum of Arts of the XXI century, is located in Rome. The completion was in 2009, about ten years after the project was initiated. As declared by the architect, the museum is 'not a object-container, but rather a campus of art', where flows and pathways overlapping and connecting in order to create an interactive and dynamic space.

Zaha Hadid intended ‘a new fluid kind of spatiality of multiple perspective points and fragmented geometry, designed to embody the chaotic fluidity of modern life.’
This precedent study is in common with the Oslo Opera House. I see it as an approach to integrate the architecture within the landscape and topography. In which way to say, respecting the landscape and topography is another way to accomplish the harmony of site and nature.

“It was a time when we started doing landscape and topography,” says Hadid. “I was interested in the morphology of the plan and the shift from the field to object, and back again to the field. The museum was a landscape field project, but not a field with just a single surface. It became a field with an object!”

It’s hard to see the whole building at one time when you are in front of it since it is so long and bent at an angle. The character of the building reminds me of a
poem by Su Shi (1037-1101), who lived in the Song Dynasty, “You could never have the whole view of Lu Mountain since you are right in it.”

From different cultural perspective for this project, the MAXXI triggered my immediate association with mountains, though a barren ones, without any vegetation. Not from the visual aspect, but more in a spiritual understanding of it.

Figure 38: Interior of MAXXI Museum, Iwan Baan

After you enter from the glass curtain wall entrance, you find the black staircases floating above the pure white atrium. The first visual impact of the suspended serpentine staircases are like rivers running up to the sky. In another aspect, the pure white and black composition reminds me of the traditional Chinese
ink and wash paintings. The curves of ink on white Xuan paper come into reality — ‘still waters run deep.’

This is the moment that the interior space captures the characteristic of what it stands for. People walking through these staircases appear to be fluid in motion. The circulation in the gallery contributes to the characteristic of this space. In the world of imagination, water is running from the sky down to the earth, and people are walking in between. What a scene!

Figure 39: Interior of MAXXI Museum, Iwan Baan

Open ceiling with filters catching natural light during the day. The long suspended concrete panel elements form it into a fluid canal-like ceiling, where the lights are running in between, lighting up the gallery space with natural light. There is also fluorescent light tube hidden behind the panels providing artificial light when
it is needed. This kind of light fixtures are also can be found at some other later works, such as Guangzhou Opera House.

Figure 40: Concept Drawing of MAXXI Museum

The designs grow from the typologies Zaha Hadid sketches. “Nothing is conceptualized on the computer in our office. The computer is a tool. We conceptualize by sketches done by hand.” Hadid continues. “There's a lot about the project, such as layering, that we have been interested in since the Peak days. That's more concentrated in Rome. The layering here is intertwined into the project, like archaeology and geology. Earlier we talked about the field, the stream, and liquid space, but at the time, we didn't know how to interpret it architecturally. We didn't know how to do it. Rome is a summary of those ideas, with complex intertwining fields. The idea of the campus works: it's like going through a landscape—you don't know quite where you are. It's linear, but not a linear process. The project and its
ideas are not very easy to pigeonhole. It's not beams, not boxes. The hope is that you explore the building on a path of discovery, and find yourself in an immersive experience that sets you up and conditions you for viewing art.”

Without any mimics or imitations of nature, this work strives to achieve the philosophy of cooperation between humanity and nature can also be something extremely simple and puristic.

‘All roads lead to Rome.’ I believe this could be one of them leading to the future harmony of the city.

Figure 41: Interior of MAXXI Museum, Iwan Baan
CHAPTER 3

SITE ANALYSIS AND BUILDING PROGRAM

3.1 Site Analysis

Figure 42: Boston Theatre District

After I did a study on the current theater situation in the city of Boston and I found out the fact that Boston has a large number of the top notch theaters and most of
them are from the early 1900s, lacking a contemporary theater space. Even the most recent one – Boston Center for the Arts, built in 2004, is limited to 400 seating capacity.

3.1.1 Theatre District History and Current situation

The Boston Theater District occupied an area along Washington and Tremont Streets to the east and south of Boston Common. Then it winds around Boylston and Stuart Streets toward Bay Village.

Theaters and most other forms of entertainment were banned in Boston by the Puritans until 1792. Since then the popularity the theaters increased and has remained a part of the city’s landscape ever since. Boston’s first theater opened in the year of 1793. In 1900, the Boston Theater District reached its peak of popularity, had 31 theaters, with 50,000 seats. Then in 1920 it started to decline due to the rise of movie industry. Since the 1980s, developers started to renovate some of the theaters.

The chart below shows a short version of histories of the main theaters in Theater District. Including with the seating capacity, the year of built and the date got renovated.
<table>
<thead>
<tr>
<th>Theatre Name</th>
<th>Seats</th>
<th>Year Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston Opera House (1909)</td>
<td>1901</td>
<td>1901, opened in 1909 (demolished in 1958. Northeastern University replaced the Speare Hall with a dorm)</td>
<td></td>
</tr>
<tr>
<td>Boston Opera House (1980)</td>
<td>2500</td>
<td>opened in 1928, originally built as a movie palace, rededicated in 1980 as a home for the Opera Company of Boston</td>
<td>$38 million renovation, reopened on July 16, 2004 with the Broadway production of <em>The Lion King</em></td>
</tr>
<tr>
<td>Colonial Theatre</td>
<td>1700</td>
<td>1900, the oldest continually-operating theatre in Boston.</td>
<td>1995, 2004 restored &amp; refurbish, In 2006, Emerson bought the Colonial building to use the upper floors for dormitories. Citi Performing Arts manages the theater, along with the Wang and Shubert Theatre.</td>
</tr>
<tr>
<td>John Galen Howard</td>
<td>1200</td>
<td>1903, Originally built for <em>theatre</em>, was converted to accommodate <em>vaudeville</em> shows in the 1920s, and eventually into a movie house in the 1950s until 1983</td>
<td>In the mid-1980s <em>Emerson College</em> purchased the theater and restored it to its original Beaux-Arts appearance.</td>
</tr>
<tr>
<td>Charles Playhouse</td>
<td>1839</td>
<td>erected as the Fifth Universalist Church, Asher Benjamin.</td>
<td>1863, becoming the first synagogue in Boston. Clubs, jazz... opened 1957 as theater</td>
</tr>
<tr>
<td>Modern Theatre - Suffolk University</td>
<td>2009-2010</td>
<td>first opened in 1876 as the Dobson Building, renovated in 1914 as a movie theatre</td>
<td>Suffolk University demolished the theater but retained the original facade of theatre, and constructed a new building on the site. Suffolk's new Modern Theatre opened on November 4, 2010.</td>
</tr>
<tr>
<td><strong>Orpheum Theater</strong></td>
<td>2800</td>
<td>1852, Boston Music Hall</td>
<td>served as home to the Boston Symphony Orchestra from 1881 until 1900</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Paramount</strong></td>
<td>596/15 0bb</td>
<td>1932, 1700-seat, single-screen movie theatre, closed in 1976</td>
<td>2005, Emerson College renovate, 2010 reopened</td>
</tr>
<tr>
<td><strong>Shubert Theater</strong></td>
<td>1500</td>
<td>1910</td>
<td></td>
</tr>
<tr>
<td><strong>Wang Theater</strong></td>
<td>3700</td>
<td>originally called the Metropolitan Theater, opened in 1925</td>
<td>later called the Music Hall(1962)</td>
</tr>
<tr>
<td><strong>Wilbur Theatre</strong></td>
<td>1913, opened in 1914</td>
<td>2008</td>
<td></td>
</tr>
<tr>
<td><strong>The American Repertory Theatre (A.R.T.)</strong></td>
<td>556</td>
<td>1960</td>
<td>Founded in 1980, the A.R.T. is affiliated with Harvard University’s Loeb Drama Center,</td>
</tr>
<tr>
<td><strong>Boston Center for the Arts</strong></td>
<td>372/23 5</td>
<td>2004, Stanford Calderwood Pavilion(372) + 235</td>
<td>Huntington Theatre Company</td>
</tr>
</tbody>
</table>
3.2 Site selection and Overview

Figure 43: Site Location

I have been looked through the map and found out on the waterfront of South Boston, there is a dry dock that haven’t occupied. Right next to the dry dock is the Blue Hills Bank Pavilion, a venue that most used during the summer for outdoor concerts.

The site is located on the waterfront and there is always enough sunlight and wind for the dry dock. Boston has a continental climate with maritime influence, and the city is in the transition zone from a humid subtropical climate to a humid continental climate.
Figure 44: Solar Study for the Site

Figure 45: Climate Graph of Boston
Figure 46: Enlarged Site Photo, the Dry Dock

Figure 47: Site Study
3.3 Site Study and Analysis

The waterfront of the South Boston is under a redevelopment. According to the Boston Waterfront Guide, the South Boston Waterfront has 55 restaurants, four hotels, and nine major attractions, and continues to grow.\textsuperscript{[10]}

The diagram below shows the amount of projects is currently going on in the South Boston including offices, hotels, apartments and restaurants. There are four existing cultural building in South Boston, and they are the ICA, The Children’s Museum, Blue Hill Bank Pavilion and Boston Tea Party Museum.

You can approach the site by walking along the Harbor Walk. Or if you are driving, Route 90 and Seaport Blvd from downtown all take you directly to the site.
3.4 Dry Dock Study

Figure 49: A Typical Dry Dock

“A dry dock is a narrow basin or vessel that can be flooded to allow a load to be floated in, then drained to allow that load to come to rest on a dry platform. Dry docks are used for the construction, maintenance, and repair of ships, boats, and other water craft.”

Figure 50: Interior of a Dry Dock
3.5 Building Program

The Program of this project is asking for contemporary theater spaces that will provide with less limitation for the various types of theater productions. The space itself will influence the actors’ performance and the audiences’ experience in a positive way. Public spaces will be provided both for the audiences and the visitors. The whole site should serve as a destination for the city of Boston.

The program will include a Main Stage theater space which providing 1,200 seating capacity, one Flexible Stage with 800 seating capacity and a dance studio with 120 seating capacity. Spaces such as rehearsal rooms, production offices as well as shops, workshops, storage rooms, loading area and other functional spaces for the theater offer the working area for productions. A visitor center will provide the public approaches to the center together with arrival area, main lobby, ticket box, coatroom, restrooms, gallery, stores, restaurants, bars and so on.

The ultimate goal for the project is to provide the citizen and visitors a public space for them not only to come to see a play but also to enjoy the environment that the whole site has presents. Public will have more chances to enjoy the performing arts. Children will learn more about theater culture, as an educational function is an important part of the project. Green spaces with views of the harbor and the city are crucial part for the landscape of the site. Outdoor performance spaces should be provided and integrated with the landscape design.
4.1 Conceptual Design

4.1.1 Design Concept

The watching behavior of audience arises from expectation, which is positive and selective, and the dynamism goes through the entire watching activity. The concepts for the design consist of three major steps that happen during the watching activity: bridging, connecting and merging.

4.1.1.1 Bridging

Figure 51: Star of India
Figure 52: World Map with Oceanic Trade Routes

The site is an abandoned dry dock, where a ship can be constructed, maintained and got repaired. Merchant ships sailing all around the world exchange goods as well as cultures. Two isolated places in the ocean simply connect by the ships going between them. The world is woven into a thick net by the routes of ships. From this aspect, the ships are mobile bridges for the cities scattered on the blue ocean.
4.1.1.2 Connecting

Figure 53: Interior of The Garage Theatre

The watching activity is the process where the connecting phase begins. The connection happens between an audience and the playwright’s imagined world by the actors’ dialogue and performance. The form of the connections is through audio-visual as well as other ways of perception during the upcoming story.

Figure 54: The Audience
4.1.1.3 Merging

![Figure 55: Process of Two Merging Galaxies](image)

What happens during a show is in someway like the merger of the galaxies. The audience entering the auditorium or the domain of theater is the start. After the house lights go down, everything is in darkness. Then the stage lights go up, the dialogue begins. Two perspectives of universes, one the spectator universe and the other, the performer universe, are participating in the storyline set up by the playwright. The internal connection is starting to grow and finally merging into one entity. Right before the curtain call, when the stage lights go down, the house lights go up, the dialogue ends. It might take hundreds of millions of years for galaxies to merge while it only takes the length of the show time for the delivery from the playwright to each individual in the audience. The whole story has been shared
between the actors and the audience within in the theater and without the theatre's existence.

In this way, the space of the theatre doesn't exist while the dialogue happens. However, the theatre provides everything to ensure the dialogue happens in the way it is supposed to be. The theatre space is attached to and isolated from the storytelling in two extremes of existence.

Having kept these ideas in mind, I started the exploration of concepts.

4.2 Concept Exploration

The concept explorations started from sketches.

Figure 56: Studies for Concept
I began with circulation studies and visual studies of Metropolitan Opera House and New York State Theater, Lincoln Center for the Performing Arts, both of them are proscenium stages. Images below show the Hopkins Center at Dartmouth College, Hanover, NH and the Spingold Theater at Brandeis University, Waltham MA. From the plans we can see each theater is providing as much as possible ways for visitors to access the theater. And the visual experience varies from the outside of the building, entering the lobby, pathway to the auditorium, in the auditorium. The view range is constantly changing while you walk through these spaces. Expectations of the theater experience begin with the purchase of the tickets and extend to the theater spaces.

Figure 57: Studies for Concept
Then I started to draw some sketches that based on the potential pathways that the visitors or audiences will approach the building. Blocks are showing the different theater spaces and leave the public space in between.

![Concept Sketch](image)

**Figure 58: Concept Sketch**

Since the program includes three indoor theaters, I tried to lay them out in a way that will allow the serving spaces such as custom shops, prop room, storage rooms... have a shorter travel distance to the stage area. Which is to say, the shops will server both of the Main Stage and the Flexible Stage at the same time.
4.2.1 Idea NO. 1

Sketches below show one version of the idea evolution. Ares with denser lines are suggesting different stage areas. Bubbles had been taken out from the grid represent the individual experiences that happened within the spaces. In this way, the main functional performance spaces are composed by individual parts while the site, at the mean time, evolve from one piece to wrap the performance space up responding the texture of the individual parts.

Figure 59: Concept Sketches
4.2.2 Idea NO. 2 Break the Darkness

From the sketch up above, the three void areas had been left out are representing the stages. The solid dark area is internal connecting space that will combine three stages into one entity. Three lines had been left at each one end of three different spaces into the darkness providing openings towards the darker spaces. Sharp lights like knives cutting the darkness letting people who standing in the darkness find hopes and leading them entering the world of theaters. The directions of the three theaters are facing different views as well: the ocean view, the harbor view and the downtown Boston view.
I have taken this idea further by transforming it into a physical study model shown below. Branches reaching out are standing for the solid part while what’s left out by the shape of the branches is the space for performance. In this model it has three void spaces in big, medium, small sizes. The area in the center could become the lobby that can access all three performing spaces. Trunks and branches can evolve into the structures for the building.
Another model shows the exploration of the volume and structural potential.
4.2.3 Idea NO. 3 Platform Park

For this concept, platforms are the basic elements of the design. Platforms on different levels are connected by at least two staircases with the platforms around. Performance can happen on each platform simultaneously or not. This order of stage form is perfect for interactive theatre or immersive theatre spaces where audiences wandering around in the platforms finding their own pathways to experience the play.

Figure 64: Concept Model for Platform Park
4.3 Schematic Design

4.3.1 Idea NO. 4 Overlaid Space and Time

I have always been fascinated by the idea of how one space has been occupied by so many layers of stories within a single timeline. Once a word has been spoken, the sound wave spreads out to be heard by the people within the room. Then it is absorbed by the floor, wall, furniture and even human bodies... everything in the room as well as the earth under it. The energy of spoken words continuously exists both mentally in people’s mind and physically in the surroundings of it. The sound waves got absorbed and stored by the solids and keep fainting forever. From the law of conservation of energy we know that energy can neither be created nor destroyed; rather, it transforms from one form to another. Ongoing spoken words kept becoming one more history layer of the space itself as the time goes by. Then I stared wondering, is there a kind of machine that can extract those faint wave storages and amplify them so we can go back in time at the same place where it happened. Furthermore, taking about the architecture, will the quality of the space bring out the memories that have been stored within it? Especially for the theater, so many stories happened on and off stage, starting with the sharing experience with it’s own audience. How can the narrative space tells its own story in an eternal way?
The study model of this concept started with horizontal beams and vertical columns in the core and then added freeform structures onto it, finishing up with transparent lines jumping from one point to another connecting the corner and enclosing more space within the existing order of structures. The visibility of the spaces in this model that presents is the quality I tried to bring out from this idea.

Figure 65: Concept Model for Overlaid Space and Time
Figure 66: Study Site Model

After this version of modeling, I made another one that rise up from the whole site trying to figure out the outline of the whole structure and how it will take up the spaces on the site. This model helped me foresee what the site is trying to express and how can I bring that gesture out. Next is the third version concept model and it taking the whole site to start and finish its growth cycle.
By using the same method of making techniques from last two versions, I brought more material like wires and metal tubes to add more structural quality to the space. The whole model started from the columns of the Main Stage. Then it grows into volume and expanding from one end to another end. The skeleton goes down to bottom the basin reach out to one side of the dry dock and then clime up to another side of the dry dock.

By taking this version of the physical model into Rhinoceros, and more details has added to it, the site started to become a real infrastructure project.
CHAPTER 5

DESIGN DEVELOPMENT AND FINAL DESIGN

5.1 Design Development

Figure 68: Site Plan

The picture above is showing the design in the context of the site.

The name of this design will be Boston Maritime Theater Center.
Figure 69: Rendering 1

Figure 70: Section 1
Figure 71: Plan
5.2 A Walk-through Experience of the Boston Maritime Theater Center

Figure 72: Ground Floor Plan

When you approach the site by walking, one thing you will not miss is the amphitheater sitting at the front of the dry dock. This outdoor amphitheater is the beginning of your journey to the Boston Maritime Theater Center. Six radially laid out staircases will lead you going down and approaching the center stage. Since I was fascinated with the environment had been created the Maritime Theater in Hadrian’s Villa, I brought the ring of the water to the center stage here. Then the round stage of the amphitheater is surround by a ring of water. When the stage is
being used, the back half of the ring will be covered with decks providing walking surface. Otherwise, the ring of the water will stay as a reflecting pool.

The very front structure on the site right is the Visitor Center and the ticket box. The front desk area with automatic ticket machine is open 24/7. Front desk will be available during the working hours. Behind the front desk, clear glass curtain wall is showing the visitor center behind. Sliding doors will be provided for entering the Visitor Center. In Visitor Center, an information desk will serve as a public inquire service as well as for educational purpose. The space will provide a gallery showing general information about the Boston Maritime Theater Center. Maps and brochures will be available here. On the left side of the hall is glass curtain wall facing the basin of the dry dock where will become a terrace park. And the amphitheater is on your left if you look out to enjoy the view. Upper level observation deck will become the shading device for the curtain wall.
Figure 73: Second Floor Plan

A grand staircase on right of the hall leads to the second floor restaurant. An observation deck is available here with tables and chairs. The restaurant also has a bar seating area on the other side. Kitchen and restrooms are at the back on the plan. The kitchen has its own elevator and staircase for loading. Two more staircases are available on both ends of the restaurant for egress. You also can take the elevator in the visitor center hall to get to the restaurant.
Figure 74: Lower Level Floor Plan

Going forward you will see doors on the end of the hall. After you went through the door, wide staircase leads you down to the sightseeing corridor, with glass curtain walls on left side and a bar restaurant area on the right. Tables and seats will be provided along the left side, having more angles of views for the terrace park. Direct elevator allows you reach down to the bottom of the dry dock.

Then, what’s in front of you is the Flexible Stage. Less restriction in space means more potential for types of performance. The Flexible Stage is basically a flat floor, providing with trap space under the floor and flying system above the stage area. Movable seating modules will allow most stage forms to be achieved in this space, such as arena stage, thrust stage, end stage, and so on. Different stage forms is not the only flexible part of it, the space also can change into other theater forms
based on what the type of play is going on here, environmental theater, promenade theater, black box theater, courtyard theater... All of them can happen when the scenery and the seating order are working together. The Flexible Stage has the potential for most of the kinds of play. Big industrial sliding door on the back of the theater connecting to the scene shop; four double doors on both sides providing the main exit for the high volume of the people flowing before and after the show. More single doors are available on corners of the theater allowing actors to have more options entering the stage during a play. These doors also could be used as egress during an emergency. Green rooms are provided at the back of the theater for actors to use as waiting room before and after a performance. Restrooms are next to the greenrooms.

Storage for the seating modules and other equipment will be next to the trap under the lobby. The trap for the Main Stage also stays on this level, as well as the mechanical rooms for the whole building. Below this level is the basement parking garage.

On the other side of the theater the corridor connects both sides of the Flexible Stage on the outside, allowing people pass the Flexible Stage and having access to the Main Lobby. Though the main entrance for the Main Lobby is the Grand Staircases with ramps inbetween on one side of the dry dock. Multiple drop points are available on the ground floor near the main entrance.
Cars driving through on the ground level can access the basement parking garage by the going into the entrance on the end of the driveway.

An information desk and a ticket box are located in the center of the lobby. Coatroom and restrooms are at the back of the lobby. Sliding doors on left side of the lobby are the entrance to the Main Stage auditorium. The dimension of the stage is 70 x 50 feet, the height of the stage and the grid in total is 90 feet. Left wing, right wing and backstage are provided. The scene shop is next to the backstage behind the left wing, with industrial doors open on both sides connecting to Main Stage backstage and Flexible Stage. Loading dock is available on ground floor, material can be delivered through the elevator next to the scene shop.

The staircase on left side of the lobby leads you up to the second floor to go to the auditorium balcony seating. More restrooms have been placed on this level as well. At the back of the corridor, an observation spot with glass curtain wall is facing the Downtown Boston. This lobby is great for intermission relaxing and enjoying the night view of Downtown Boston. Control room is located at the back of balcony seating.
Figure 75: Main Stage Balcony Level Floor Plan

The basin part of the dry dock has turned into a terrace park, with elevators and staircases on both ends, allow you getting down to the park from the ground level and getting up from the bottom of the park to the sightseeing corridor. Each level of the terrace has a height difference of two feet, staircases are provided for walking between different levels. One section of the terrace will become the backdrop for the amphitheater. Storage space will be available under the surface of the terrace with doors opened to the amphitheater stage, decking parts, lighting fixtures and sound system can be stored in here.
Figure 76: Terrace Park Plan

The lowest level of the terrace park is under the sightseeing corridor, an outlined area can be used as the stage for band playing. A long ramp runs along on one side of the inside wall of the dry dock allows accessibility for wheel chairs go to different levels. Grass will cover the surface of the whole terrace park and trees are providing shades for during the sunny days. More benches will be installed on each level of the terrace. Mobile food carts selling drinks should be available during the daytime in the park. The terrace park is a great place for outdoor gathering, for the visitors to hang out and enjoy the scenery. And it is also a great place for people work nearby to take their lunch breaks. This basin of the dry dock will become a three-dimensional green space for the public, with enormous view of the landscape as well as the architecture.

Following pictures are the elevation of the design.
How the idea works

On the exterior, the architecture celebrates the memory of the Age of Discovery. The smooth white aluminum panel that pulling and connecting by white steel wire is in a way addressing the blown up sails towards the wind. The façade composed of white steel tubes of the structure, the white panels and the white steel wires becomes the symphony of softness and sharpness, delineating the outline, the structure and the texture of the architecture. Some parts extended and forming into a canopy that made out of white canvas. Most of the shading panels are white
canvases that allow to taking off in winter season to get more sunlight. Then the volume of the architecture is changing during different seasons.

Figure 79: Elevation 3

The white panel is the membranous skin for the delicate structure. Solid and void spaces are the first layer on the architecture. Glass curtain walls are used along the corridors providing views towards outside. Transparency from interior to the outdoor blurs the boundary of the architecture with nature and adding another layer of space quality at the same time. Looking out through the window having the open view of the harbor makes you feel like you’re right above the water. With the water surface reflection on the ceiling, the architecture has invited the water into the interior, adding one more layer of texture on the appearance of the architecture.

One rooftop observation deck will be opened offering the view towards the Downtown Boston. The all-white façade is the perfect screen for lighting show during the night like projection mapping. The pattern and color of the exterior lighting will correspond with the color tone of the ongoing play inside of the grand white canopy.
Figure 80: Elevation 4

The Dance Studio sits on the end of the dry dock. This space offering a poetic crystal geometry for dancing performance. Translucent roof with shading devices provide natural light for daily practicing and at the same time the transparent walls allow public look through the wall for rehearsals. Custom curtains will be hanging up if the play asked. In the dance studio, dressing rooms and restrooms are right behind the mirror wall. When looking from outside, the solid wall still keeps invisible. During the night, the lights for the dance studio keep this crystal geometry glowing like a lantern, shining above the waterfront area. When looking from a further distance, whether from downtown Boston or from the harbor, the dance studio becomes a beacon at the harbor, the lights outreach the darkness, drawing people’s attention while they are far away.

Glowing lights in darkness always bring people hope. The dance studio sitting at the front end of the dry dock glowing every night is the beacon for the downtown city life. Let art be the delight comforts to your daily life. Go to a place
that allows you release the burden that lies on your shoulder and enjoy a peaceful moment of your mind. Arts probably won’t solve the problem but it allows you have a refreshing attitude when you get back to it.

**Figure 81: Section 2**

This section shows the different levels of people’s activity: on the bottom of the amphitheater; on the staircase of the amphitheater; on the terrace park; in the sightseeing corridor; above the sightseeing corridor; on the ground level of the dry dock; in the visitor center; at the restaurant outdoor deck; on the observation deck... Everywhere people walk to, it becomes a stage for himself or herself, as well as for others as spectators.
**Figure 82: Section 3**

This section shows the relationship between ground level and Flexible Stage level. It shows the trap and storage space under the Flexible Stage. It also shows the volume of Flexible Stage towards the Main Stage comparing with the volume of the Dance Studio on the left.

**Figure 83: Main Stage Section**
This is the section for the Main Stage theater space. Sound reflecting panels are hanging above the auditorium in an order that in correspond with the exterior. Four catwalks will be provided for lighting between sound panels. The front of the balcony also has the place for lighting fixtures. The space under the auditorium will accommodate the mechanical rooms for the whole building.

Figure 84: Interior Rendering

The rendering above shows the view from standing in front of Flexible Stage in the corridor looking back to the terrace park, with amphitheater on the end. Space on the left is part of the sightseeing corridor, where you can find a bar-restaurant and some tables and seats along the curtain wall.
Figure 85: Rendering

This rendering shows the view when you just entering the site and about to start your own adventures, standing at the top edge of the amphitheater, looking at the whole Boston Maritime Theater Center. Down in the center is the round stage of the amphitheater, with a ring of reflecting pool around it. Doors will open on the backdrop of the stage area, having access to the storage space under the terrace park. One observation deck is available on the upper left connecting to an elevator and a staircase going down to the terrace park. Another elevator and staircase are available at the end of the park with direct access to the corridor in font door of Flexible Stage. The sightseeing corridor with curtain wall on one side is shown in greyscale runs from visitor center to the Flexible Stage, offering indoor access to the main lobby. The roof of the corridor is walk-friendly, with railing along the walk, connecting the ground level on both sides. Another even higher observation deck of
the restaurant is shown on the upper right corner, connecting with the walkable roof of the corridor. Stage area for outdoor band playing is available at the bottom level of the terrace park against the side wall of the basin.

The reason why I placed a regular shape of amphitheater at the beginning of the adventure rather than an irregular shape of structure is that I try to use one symbol, for someone who happens to be on the site, this symbol will instantly draw back all the memories he had about a space for performance or theater. And that is the amphitheater. Even someone just walk by the site and had no idea what it is, as soon as he saw the amphitheater, he knew the place must have something to do with performance. The contrasts of a traditional structure to an unconventional structure will excite the eager desire to explore the spaces hidden in there. Actually the amphitheater really takes advantages of the shape of the dry dock, and the amphitheater is gaining great reverberation for the sound experience. The radiant staircases got translated into the radiant starting line for the terrace by the ring of water. And the terrace is growing and repeating the rhythm of the architecture, which also determined the trend that how the corridor run.
5.3 Conclusion

The design approaches for this project has been taken in a wide range of experiments. The final design has the spatial quality in the way that tends to bring out the potentials and metaphor of site and recall the hidden memories of a certain space. Flexible theater spaces have been explored for different kinds of plays and performances. Functional spaces and mechanical systems for scenery, lighting and sound as well as modular seating are provided to allow certain type of the stage order happens smoothly in this space. Flexible Stage is not a space that ‘one for all,’ but the space allows more potentials and experiments to happen inside of it. Circulations have separated or overlaid for different flows, such as general-public, ticket-holders, performers, workers as well as for vehicles, loading trucks and so on.
The architectural gesture of the design is a celebration of maritime adventures. When looking at the architecture together with the site, they start to become a vessel, carrying all the wonderful stories, like a dream factory sailing on the big blue ocean. In another way, the pureness, the delicacy and lightness in the architecture also push the space for performance to break the space limits for performing arts.

The Boston Maritime Theater Center is the place where the story once happened and then reappeared like we going back to the timeline to let the story happen one more time. It keeps adding layers to the spatial domain while the time keeps rolling. When the house lights go down, the stage lights go up, extracting the memories along the storyline, it’s yesterday once more.

Let’s run away from reality for a while and entering the world of dreams.
APPENDIX

FINAL REVIEW BOARDS

The final thesis presentation was held on April 1, 2016. The size of each board is 108' x 36'.
BIBLIOGRAPHY


