

2011

Pendulum Performing Arts Center: Adaptive Reuse Design of the Historic Court Square Building in Springfield, Massachusetts

Lindsay M. Schnarr

University of Massachusetts Amherst, lschnarr@art.umass.edu

Follow this and additional works at: <http://scholarworks.umass.edu/theses>

 Part of the [Historic Preservation and Conservation Commons](#)

Schnarr, Lindsay M., "Pendulum Performing Arts Center: Adaptive Reuse Design of the Historic Court Square Building in Springfield, Massachusetts" (2011). *Masters Theses 1911 - February 2014*. 641.

<http://scholarworks.umass.edu/theses/641>

This thesis is brought to you for free and open access by the Dissertations and Theses at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses 1911 - February 2014 by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

**PENDULUM PERFORMING ARTS CENTER
ADAPTIVE REUSE DESIGN OF THE HISTORIC COURT SQUARE BUILDING
SPRINGFIELD, MA**

A Thesis Presented

By

LINDSAY M. SCHNARR

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 2011

Architecture + Design

**PENDULUM PERFORMING ARTS CENTER
ADAPTIVE REUSE DESIGN OF THE HISTORIC COURT SQUARE BUILDING
SPRINGFIELD, MA**

A Thesis Presented

By

LINDSAY M. SCHNARR

Approved as to style and content by:

Joseph Krupczyski, Chair

Kathleen Lugosch, Member

Michael Cottom, Member

Ray K. Mann
Graduate Program Director
Architecture + Design Program
Department of Art, Architecture, and Art History

William T. Oedel
Chair, Department of Art,
Architecture, and Art History

DEDICATION

To the beauty that connects architecture and dance and
all that has given me the opportunity to explore both.

ACKNOWLEDGEMENTS

I would like to acknowledge my academic advisors for their role in the development and success of this project. First, I would like to thank Michael Cottom, of the Theater Department at UMass Amherst, whose extensive experience and knowledge of theater and set design has been an invaluable resource, offering both richness of design and courageousness of spirit. I want to also thank my faculty advisors from the Architecture and Design Department at UMass: Joseph Krupczynski, the Chair of this research project, whose attention to detail and dedication to his students continuously propelled this project forward; and Kathleen Lugosch, who reminded me of my love for dance and the beauty it could bring to this project.

I want to pay tribute to the deeply missed David Dillon, who sculpted my understanding of what architecture is and how to explore it. He reminded our class that manifesting a thesis is much like sailing, that moving with the shifts in direction would lead to the most fulfilling, albeit circuitous route. Above all, David impressed upon us the knowledge that only when we are excited about what we do will others be excited by it. It was David who led me to work for Kuhn Riddle Architects, a talented and creative group of designers who have afforded me the opportunity to learn the professional face of architecture, and inspire my continued work in this dynamic field.

I wish to express my appreciation to my friends and family who have been a continuous source of patience, strength and inspiration throughout the past three years of this graduate program. A special thank you to my loving husband, who has kept me well fed and clothed while I have pursued my dreams, and brings joy to my world every day.

ABSTRACT

PENDULUM PERFORMING ARTS CENTER ADAPTIVE REUSE DESIGN OF THE HISTORIC COURT SQUARE BUILDING SPRINGFIELD, MA

MAY 2011

LINDSAY M. SCHNARR, B.S., UNIVERSITY OF CALIFORNIA SANTA CRUZ

M.ARCH, UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Joseph Krupczynski

Drawing from the ongoing revitalization efforts in the Western Massachusetts post-industrial city of Springfield, Massachusetts, this adaptive reuse project aims to bring the public back to the city center by providing a common space for cultural connections. Sensitivity to preservation of the historic fabric of the existing Court Square Building is blended with the transformative potential of introducing architectural expressions of dance theory to create a school and theater for the performing arts. The study of balance between opposing, yet complimentary forces, as they exist in architecture and dance, creates a conceptual interplay that guides the design of this project. Viewing the existing historic building as a dance partner to the proposed contemporary addition, leads an exploration in the tectonic translation of form, rhythm, weight, movement and breath, as elements of dance theory that are developed to represent the building envelope, structure, materials, circulation and openings. Ultimately, the adapted building creates a dialogue for the past and present city of Springfield, simultaneously honoring its unique cultural heritage and future potential in serving as an icon for successful urban transformation.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF FIGURES	viii
CHAPTER	
1. PRELUDE: ADAPTIVE REUSE.....	1
1.1 Introduction.....	1
1.2 Reclaiming Urban Spaces	1
1.3 Principles of Sustainability and Preservation	3
2. BACKSTORY: AN INDUSTRIAL ERA	6
2.1 Massachusetts Gateway Cities	6
2.2 Setting – Springfield, MA.....	8
2.3 Scene – Court Square Building	10
3. PROGRAM: PERFORMING ARTS CENTER	14
3.1 Community Engagement	14
3.2 Visibility	16
3.3 Features.....	19
4. STORYBOARD: ARCHITECTURE IN MOTION.....	21
4.1 Performance v. Experience	21
4.2 Stage to Audience Relationship	22
4.3 Movement in Space and Time	24
4.4 Tectonic Language.....	25
5. DANCE THEORY & SPATIAL TRANSLATION.....	27
5.1 Movement Study.....	27
5.2 Balanced Forces	28
6. TRANSFORMATION: FROM 1890 TO 2011	41
6.1 Site Approach.....	41
6.2 Sight Lines Guide Footprints	43
6.3 Pas De Deux of Elevations	51
6.4 Future Vision	54
BIBLIOGRAPHY.....	55

LIST OF FIGURES

Figure	Page
1. Al-Azhar Park; Cairo Egypt.....	2
2. Original Amherst Cinema Building; Amherst, MA.....	5
3. Adapted Amherst Cinema Building; Amherst, MA	5
4. Historic Memorial Bridge; Springfield, MA	6
5. Memorial Bridge; Springfield, MA	7
6. Downtown Springfield Site Map	8
7. Court Square Redevelopment Map.....	10
8. Chronological Perspectives of the Court Square Building	11
9. Drive-In Cinema Screen & Brick Infill	12
10. Era of Elegance Court Square Park Entrance	12
11. Historic Architectural Plans	13
12. Fountain at Court Square	15
13. Original Theater Entrance.....	16
14. Movement through the Site.....	17
15. Views from Main Street.....	18
16. Visibility Diagram	19
17. Program Diagram.....	20
18. Exposed Performance Arts Schools.....	22
19. Renovated Guthrie Thrust Stage Theater.....	23
20. Stage Configurations.....	23
21. Mobius House	24
22. Milwaukee Art Museum	25
23. Koolhaas/OMA – The Promenade.....	26
24. Stretto House.....	26
25. Sightline Intersections.....	27
26. Primary Sightlines.....	28
27. Sketches of Shifting Sightlines	29
28. Form: Light v. Shadow	30
29. Form Drawing.....	30
30. Form to Envelope Translation	31
31. Rhythm: Anticipated v. Accented.....	32
32. Rhythm Drawing.....	33
33. Rhythm to Structure Translation.....	33
34. Weight: Grounded v. Lifted.....	34
35. Weight Drawing.....	35
36. Weight to Materials Translation	36
37. Movement: Framed v. Fixed.....	36
38. Movement Drawing	37
39. Movement to Circulation Translation.....	38
40. Breath: Held v. Released.....	39
41. Breath Drawing.....	39
42. Breath to Openings Translation	40

43. Site Plan	43
44. First Floor Plan	44
45. Lobby Atrium & Theater Entrance	45
46. Second Floor Plan	46
47. Third Floor Plan	47
48. Fourth Floor Plan	47
49. Balcony View of Theater	48
50. Fifth Floor Plan	49
51. Sixth Floor Plan	49
52. East-West Section	50
53. North-South Section.....	50
54. East View from Court Square	52
55. North View from Schoolhouse Lane	52
56. West View from State Street.....	52
57. South View toward Theater	52
58. Court Square Perspective.....	53
59. State & Main St. Perspective	53

CHAPTER 1

PRELUDE: ADAPTIVE REUSE

1.1 Introduction

The urban threads that contain our past and present are carried through the buildings we keep. History is told by the cracking stone and weathered door handle, worn steps and sinking window glass. We keep time with the rhythm of our transforming surroundings. Revolving seasons and sunlight guide evolution; continuously shifting to remind us of that which was and is yet to come. Structures become rubble, and rubble structure. As Einstein proved, we do not create matter, we simply redefine that which always has and will exist. Adaptive reuse of the built environment then, as a practice, is something quite established, ingrained even. Gathering remnants is part of our heritage and ultimately our survival. It should then be instinctive to draw upon our existing built environment to envision architectural innovation.

1.2 Reclaiming Urban Spaces

Defining a building's purpose is central to its survival in our developing world, and much like its surrounding environment, buildings must have the potential to evolve. With the continued population trend of city centers dispersing into an ever-sprawling suburban landscape, cities face a serious challenge to retain vibrancy, and space for development. People are attracted to the affordability, safety and convenience of the suburbs. Despite their many amenities, suburban areas rarely contain the flavor and richness unique to the city. This lack is largely due to the fact that historical sites are concentrated in urban centers, where we are invited to remember or discover the events

unique and significant to our cultural history. By preserving and adapting historical structures, we allow their function, both in terms of energy performance and programmatic significance, to meet complex and often changing social needs. Historical sites and buildings have the potential to inform the public of the physical, historical and cultural qualities unique to the specific location of a given place. In turn, preservation and sensitive adaptation of historic buildings have the power to gather interest within a community, and by extension, engage people in stories their cities tell.

Al-Azhar Park in Cairo Egypt is a powerful example of the potential social, economic and environmental benefits gained by reclaiming urban space through adaptive reuse projects.



Source: Aga Khan Trust for Culture - www.akdn.org

Figure 1: Al-Azhar Park; Cairo, Egypt

Until the Aga Khan Trust for Culture led restoration project began in 1984, the abandoned 74-acre site was a 500-year-old landfill in the inner city. By 2006, pressing needs for open space resulting from the dense urban growth of Cairo were answered with

the transformation of this derelict space into a multifaceted public park; introducing restored cultural landmarks, recreational facilities, gardens, amphitheaters and museums. The project has received several awards for its novel approach and success in restoring a public connection to the cultural and architectural history of Cairo, including global recognition as one of the world's sixty great places among by Project for Public Spaces.¹

1.3 Principles of Sustainability & Preservation

Reclaiming buildings that occupy prime real estate in urban areas extends the model of sustainable building practices beyond the prescriptive guidelines established for new construction by green building industry standards, such as LEED, into the often overlooked realm of upgrading and maintaining existing construction. With current rate of technological innovation, responsible architectural design requires the ability to upgrade buildings as performance standards continue to climb. Not only is outdated construction a problem related to historic structures, but an general concern for the building industry at large, as we grapple with the issues surrounding fuel costs and resource limitations. The embedded energy and historical narrative of public buildings are economic and cultural investments in our built environment that will continue to serve the community as long as the priority of maintaining and upgrading the form and function of our buildings is as valued as the practice of engaging in new construction.

In addition to conserving land and resources, introducing methods of restoration for failing buildings has the potential to energize economic vitality and overall real estate value of existing business districts. Throughout the country, former industrial hotspots have been abandoned, leaving behind infrastructure that fails to function at the current

energy efficiency standards, charging businesses that move into these old buildings operating costs that will are likely continue to grow in the coming era. Updating historic buildings is critical to the financial success of businesses occupying post-industrial urban zones. Adaptive reuse design has the potential to improve the curb appeal of business districts, attracting customers and driving up the market value of real estate. Maintaining the architectural condition of the city is a visual indicator of success that promotes the longevity of business inventory, securing economic vitality and strengthening the entrepreneurial fabric of cities.

A local case study that exemplifies the potential of adaptive reuse to revitalize the local economy is the success of the Amherst Cinema Building in downtown Amherst, Massachusetts. Before 2006, what exists today as a thriving complex of local business was merely an abandoned block of late 1800s masonry buildings that had seen their prime come and go. With stiff competition from neighboring movie theaters, Amherst lost its only movie house in 2001, along with the business and social activity it promoted. The multi-use conversion of this unoccupied site resulted from the investment of local developer and commercial general contractor, Barry Roberts, who saw this opportunity for adaptive reuse as “a great opportunity to preserve a part of the town’s past while bringing in some new businesses.”² By diversifying the businesses housed in this building and gaining commitments from retailers to become tenants, Roberts found incentive in the promise of a new cinema, retail shops, restaurants and office spaces to bring a renewed vibrancy to downtown Amherst.

Issues surrounding adaptive reuse design often call into question issues surrounding preservation and the value inherent in the history of a particular site. Many

factors play a part in the decision to preserve a building, ranging from the economic prospects for redevelopment to the integrity of the physical structure. Perhaps most critical to the success, and in turn priority, of redeveloping a particular site is its cultural significance. Centrally located historical landmarks extend beyond civic monuments, to buildings and sites that embody the unique history and qualities that define character of a community. Activating culturally significant sites through adaptive reuse design sets the stage for revitalization of urban areas by giving the public a recognizable destination.



Source: Kuhn Riddle Architects

Figure 2: Original Amherst Cinema Building; Amherst, MA



Source: Kuhn Riddle Architects

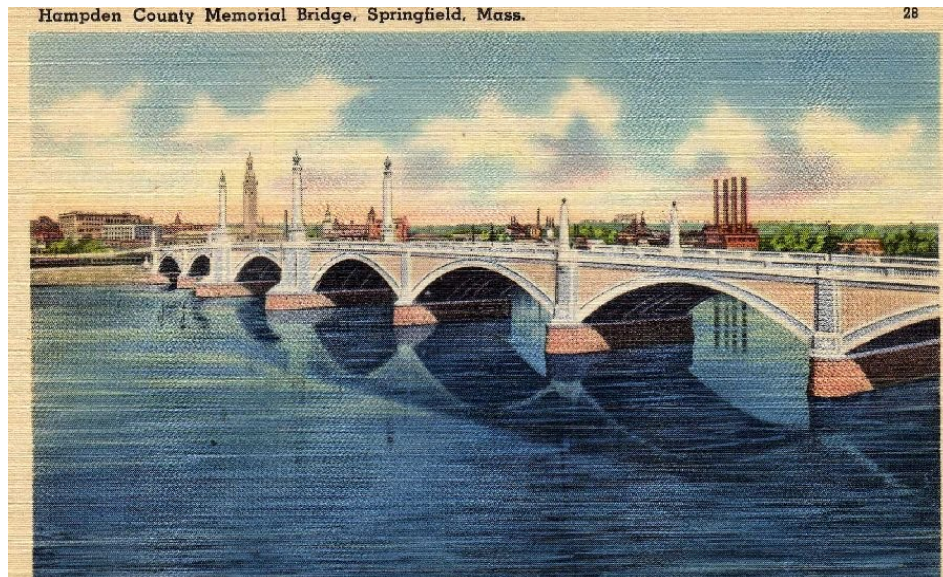
Figure 3: Adapted Amherst Cinema Building; Amherst, MA

CHAPTER 2

BACKSTORY: INDUSTRIAL ERA

2.1 Massachusetts Gateway Cities

Engaging community interest in the stories of our shared cultural history is central to the revitalization of urban centers and is particularly relevant to the city of Springfield, Massachusetts. As one of the eleven “gateway cities” in the state, the post-industrial flight of residents moving from the city center toward surrounding neighborhoods has gradually disintegrated the social and economic fabric of this metropolitan area. These economically fractured gateway cities are distinguished from other postindustrial cities by their population range from 35,000 to 175,000, distinguishing them from larger cities, such as Boston (population of 617,594). The gateway cities account 134,000 manufacturing jobs that were lost between 1900 and 1950, resulting in the massive empty square footage of abandoned factories, mills and civic infrastructure that occupy the prime real estate of these once prosperous cities.³



Source: Exploring Western Massachusetts

Figure 4: Historic Memorial Bridge; Springfield, MA

Fruitful revitalization efforts require sensitivity in responding to the shift in economic stability and social demographic of the gateway cities, and of Springfield specifically. While the lack of retail and market rate housing can readily be identified as a deficit to the city's financial recovery, introducing retail where consumers are not shopping and market rate housing where people do not want to live is a problem that must be carefully addressed. This struggle was successfully managed in one of the northern gateway cities, Lowell, MA.

“The originators of Lowell’s postindustrial experiment took an integrative approach to reinventing the city. They intentionally began to blur the lines between museums, classrooms, tourism, art, festivals and other local celebrations, recreation, economic development and the cityscape itself and found new ways to yoke public and private investment together in aid of turning the city’s fortunes around.”⁴

Ultimately, the success of Lowell’s post-industrial revitalization rested upon the integration of community interests with the services offered by existing infrastructure, an approach that has promise for the other gateway cities that hold unique value in the character and potential redevelopment of historic buildings.



Source: Photographer Ronald C Saari

Figure 5: Memorial Bridge; Springfield, MA

2.2 Setting – Springfield, MA

Home to a number of local attractions including the Springfield Symphony, City Stage, the Museum Quadrangle, Basketball Hall of Fame, and the MassMutual Civic Center, Springfield is the largest city in Western Massachusetts and the fourth largest city in New England with a population of 153,060.⁵ The rich history of the city began in 1640, founded by William Pynchon, and was the original site of the National Armory, and the location of Shay's Rebellion. Initially a large weapons depot, the manufacturing capacity of the city became rapidly diversified in producing automobiles and aircraft. As the birthplace of basketball and home to the poet commonly known as Dr. Suess, the city retained unhindered commercial growth until 1936, when a series of disasters (two sequential floods in 1936 and 1938) fell on the heels of the Great Depression, crippling the local agricultural and residential base and setting in motion a series of events that eventually stripped the city of its early prosperity.⁶

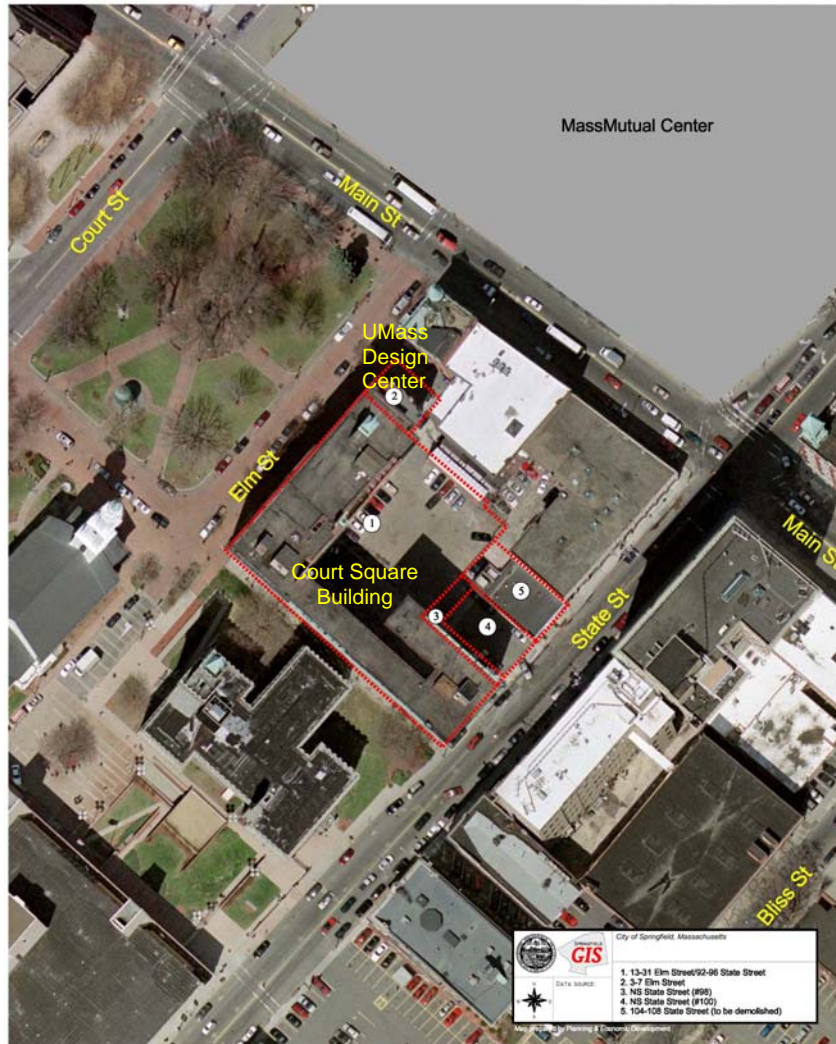


Source: Google Earth

Figure 6: Downtown Springfield Site Map

The economic tide of Springfield has wavered since 2004, a point when the city formed a financial management board, the SFCB, to oversee and restore the financial stability of Springfield. Only two years later, a Zimmerman/Volk housing study stated that the city could support up to 750 market-rate units, a striking percentage considering subsidized housing still claims approximately 80% of the downtown Metro County market. By 2007, the Springfield Redevelopment Authority issued an RFQ for redevelopment of five adjacent parcels located in the historic Court Square District, on heavily traversed State St. and Main St. intersection in downtown Springfield. Two of the parcels included in the RFQ are home to historic buildings listed on the National Register of Historic Places.

In response to redevelopment efforts, the oldest building in downtown Springfield, erected in 1835, located at 3-7 Elm St., was successfully renovated and reopened in 2010 as the UMass Design Center. This building, situated along the historic and beautifully maintained Court Square Park, houses faculty and staff affiliated with Landscape Architecture, Regional Planning, and Architecture at the University of Massachusetts, Amherst. The Design Center acts as a beacon for the future vision of the city by offering a space to showcase the University's commitment to ongoing revitalization efforts in downtown Springfield. Continued redevelopment in the Court Square district has been slowed since 2008, due to the sweeping economic recession that halted plans to move forward with plans for restoring the second and largest historic building along this block, the Court Square Building, at 13-37 Elm St., which houses a total of 115,266 square feet, and has remained vacant for over 15 years.⁷



Source: Springfield GIS

Figure 7: Court Square Redevelopment Map

2.3 Scene – Court Square Building

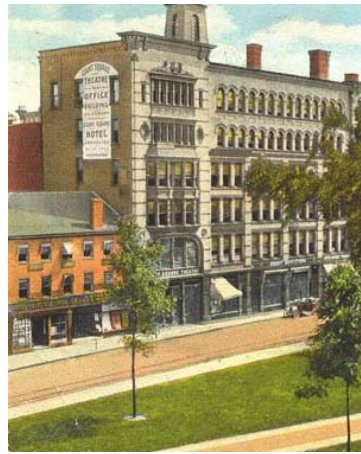
The Court Square Building, located at 13-31 Elm Street on parcel 18C1, was designed by Frederick Newman and built in 1892 and served primarily as a hotel and office space for local attorneys during the approximately 100 years during which the building was occupied before closing its doors in the early 1990’s due to economic decline. From archived photographs of the building, it is possible to identify the early transition of the building from a 5-story building that stretched only Court Square Park

(or Elm Street), to include the a sixth story and second wing addition built in 1900, extending from the main façade toward the now heavily traversed State Street.



~ 1890

Source: www.springfield-history.com



~ 1900

Source: www.explorewesternmass.com



~ 2010

Source: Google Earth

Figure 8: Chronological Perspectives of the Court Square Building

This building, originally the Court Square Theater Building, once stood as a centerpiece to the city’s cultural heritage, inviting visitors to watch a show at the theater, shop along Court Square Park and socialize amongst the many attorneys, who in addition having offices housed in this building, frequented a multi-story bar that occupied the State Street corner of the building. Early architectural drawings (Figure 11) confirm the presence of this historic theater space that occupied the inner corner of the building and sat 1,080 patrons until, sadly, the theater portion of the building was demolished in 1956 and converted into a parking lot. This trend of making way for parking and highways was rampant in the 1950s, paving over large areas that connect the city of Springfield to the Connecticut River and historic landmarks. The lot has retained some of the memory of the original theater, as it was used as a drive in theater for a couple of decades, the screen for which remains a memory of the tumultuous past of this building in its now desolate parking lot.⁸ The dual exterior character of this building demonstrates its rich

and transformative history with copper patina window frames and limestone masonry lining an elegant façade toward Court Square Park, and choppy red brick infill facing State Street, where the theater once stood. (Figures 9 & 10)



Source: 2010 – Lindsay Schnarr

Figure 9: Drive-In Cinema Screen & Brick Infill



Source: 2010 – Lindsay Schnarr

Figure 10: Era of Elegance Court Square Park Entrance

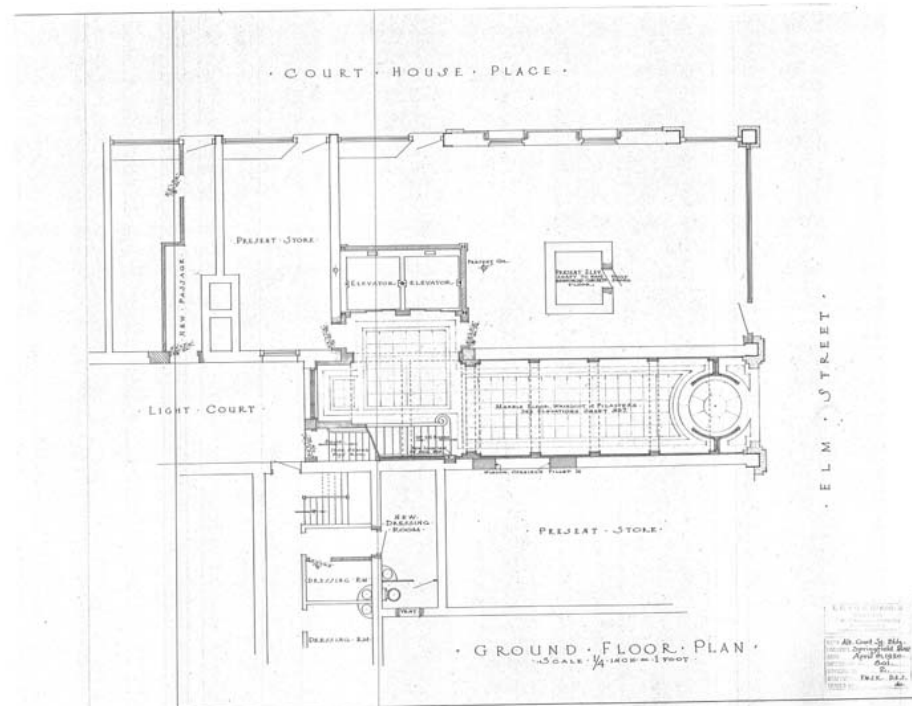
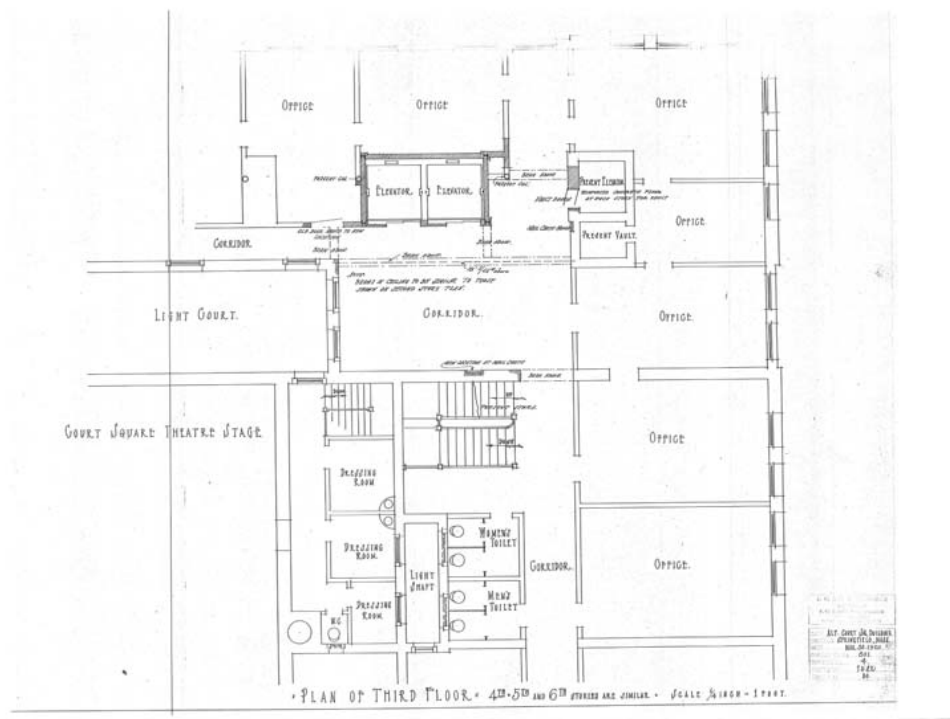


Figure 11: Historic Architectural Plans

CHAPTER 3

PROGRAM: PERFORMING ARTS CENTER

3.1 Community Engagement

Preservation and restoration of the Court Square Building has been a pressing priority for city officials from the Planning Department the past few years and has recently gained significant momentum with the 2007 RFQ. Despite delays due to the recession, the tide appears to be changing again, as the Pioneer Valley Planning Commission recently received a \$4.2 million dollar HUD grant for sustainable development of nearby post-industrial cities. A media release issued October 20, 2010 posted on the PVPC's website states:

“The grant will help fund engineering and design for several “catalytic projects” to support sustainable urban core redevelopment projects in Springfield, Chicopee, Holyoke, and several urban locations in Connecticut. In Springfield, the Court Square Center project will focus on renovation and substantial rehabilitation of the 120,000-square-foot historic Court Square building for mixed use.”⁹

Preservation and attuned planning for the adaptation of the Court Square Building in downtown Springfield offers the potential for a catalytic response in the revitalization of the city. Design solutions that aim to achieve truly “sustainable” urban development must address the lack of existing support for new retail outlets and market rate housing. If Springfield does recover from its multi-decade long depression, it will need to overcome the transition. Redevelopment of this historic building speaks highly of the city of Springfield, not only for its dedication to the reuse and retrofit of its historic buildings, but also of its dedication to fostering a vital community. Restoring the Court Square Building must be approached with similar sensitivity as the revitalization of downtown Springfield. Initiating development with retail and market-rate housing

cannot be sustainable without sparking public support and interest. The place must come to life for people to begin to notice Court Square or Springfield again. Successful redevelopment of the Court Square building may act as a micro-scale example of how revitalization in Springfield may occur at large. The building, not unlike the city, has been quietly abandoned, with black boards lining the ground floor. If reinvention is to occur, it must start with getting public to notice, and offering a reason to care.

Visual impact is about the magnetizing quality of walking through a park and seeing people gathered around a street performer and deciding to stop. We are drawn to activity, especially in our cities. We want to know that there is life happening that we can watch and ultimately, take part in. We want to be activated by our cities. Good architecture has the ability to do this, to strike a pose, so to speak. Sculpture has a place in public parks because they bring attention to the place where they stand. They provide a focal point and a sense of inquiry that is derived from the fantastical qualities of art. Imagining sustainable development of downtown Springfield involves igniting the presence of a social focal point, catching people's eye and getting them involved.



Source: 2010 – Lindsay Schnarr

Figure 12: Fountain at Court Square

3.2 Visibility

The presence of the Court Square Building along the historic Court Square Park is inherently eye catching. Adding to the prominent and rhythmic series of copper patina framed windows that march along the Court Square façade, the entrance to the building is unmistakably pronounced. Despite having boarded up windows and doors along the ground floor, the original grand theater opening is visually apparent. With arched bay windows that stack from the first to the sixth floors, and a tunnel that carves through the ground floor, the northwest corner clearly anchors of the public face of this building.



Source: 2010 – Lindsay Schnarr

Figure 13: Original Theater Entrance

Visitors may alternatively approach this building from State St. along the southern route, exposing themselves to a very uninviting glance at the historic structure. Such views would likely shed a sense of darting uncertainty for the onlooker. With its

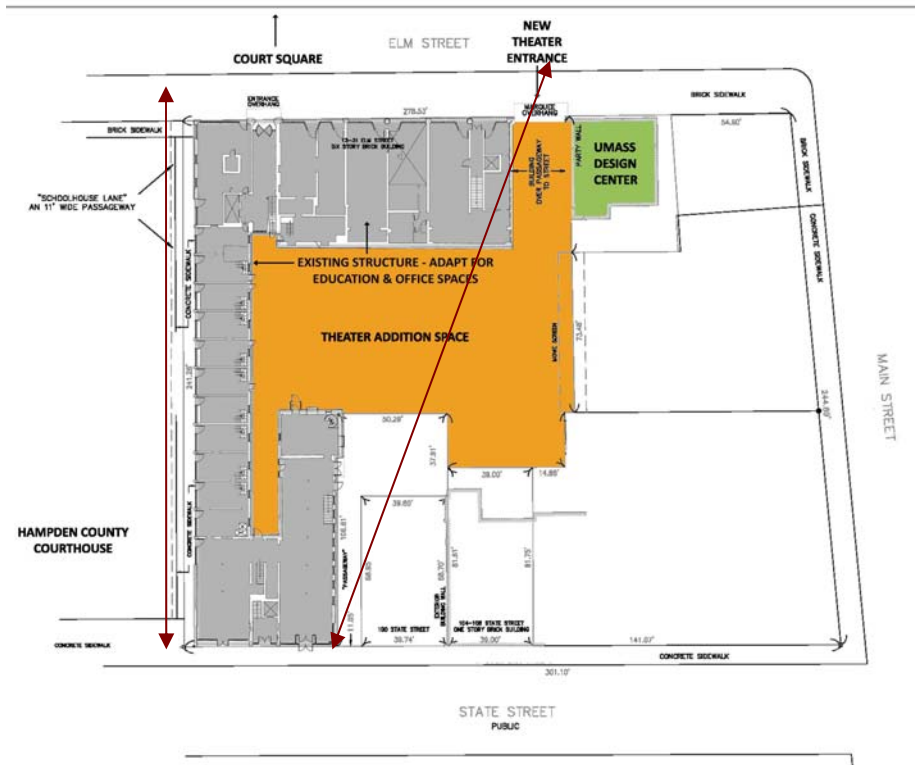
characteristic red-brick infill, this side of the building is clearly underemphasized. Importantly, however, the city has invested recent funds in improving the experience of the pedestrian and vehicular traveler along this major thoroughfare that connects I-91 and such tourist attractions as the Museum Quadrangle, located north of Court Square Park. It is from this angle, that the façade along State Street begins to gain importance in designing the renewed face of the Court Square Building. In addition to this perspective, views can be captured from vehicular onlookers along Main St. as they sweep past Court Square Park, and along Schoolhouse Lane as pedestrians snake between the western façade of this building and the neighboring Courthouse Building.



SCHOOLHOUSE LN.



STATE ST. VIEW THROUGH ORIGINAL ENTRY



Source: 2010 – Lindsay Schnarr

Figure 14: Movement Through the Site



Source: Google Earth

Figure 15: View from Main St. looking South

By considering the vantage points from which this building is most clearly viewed by vehicular and pedestrian traffic, the prime real estate value of this parcel comes into focus. The importance of this building in bringing life to the downtown city center is clear given its direct access to the public along the newly improved State Street passageway and the well established and maintained Court Square Park. The zones of visibility established from this analysis can be summarized to include the primarily vehicular view from State Street, the definite pedestrian presence along Court Square, and finally, the interior view of the occupants residing within the building out toward the existing parking lot, the space that is being considered for a new theater addition.

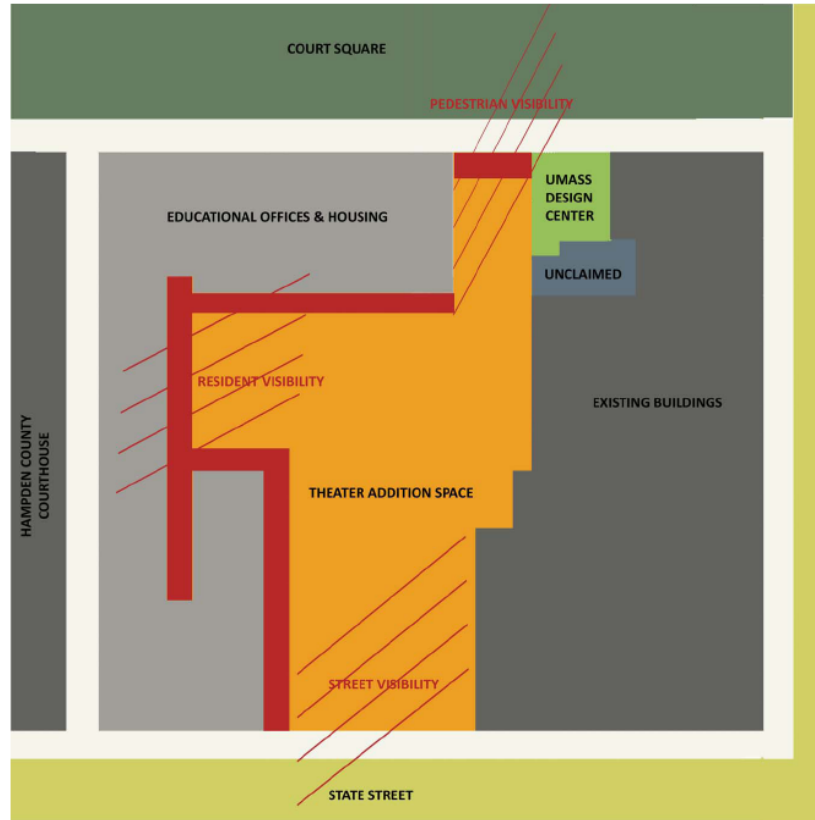


Figure 16: Visibility Diagram

3.3 Features

This proposal sets in motion the potential for a rebirth of the city center by reopening the existing Court Square Building as a performance art center that houses Five College faculty and students from theater and dance departments, and reintroduces a theater where the original Court Square Theater once stood, along the State Street edge of the existing building. Working from the presence that the Design Center has established for UMass faculty and students in the downtown area, the design of this performance art school will provide immediate and lasting activity to the site that is not directly influenced by the fluctuations in the commercial market. The program proposed for this plan consists of four main zones: retail space on the ground floor spaces adjacent to the

park; educational studios, classrooms education and office spaces; theater auditorium and support; and student/faculty housing. The performance art practice studios located in the existing building will be housed where maximum visibility may be achieved from on-lookers along Court Square and from the inside of the building addition.

PROGRAM LAYOUT

- RETAIL / MARKET
- EDUCATION / OFFICES SPACES
- PERFORMING ARTS SCHOOL & THEATER
- HOUSING – STUDENT/MARKET RATE

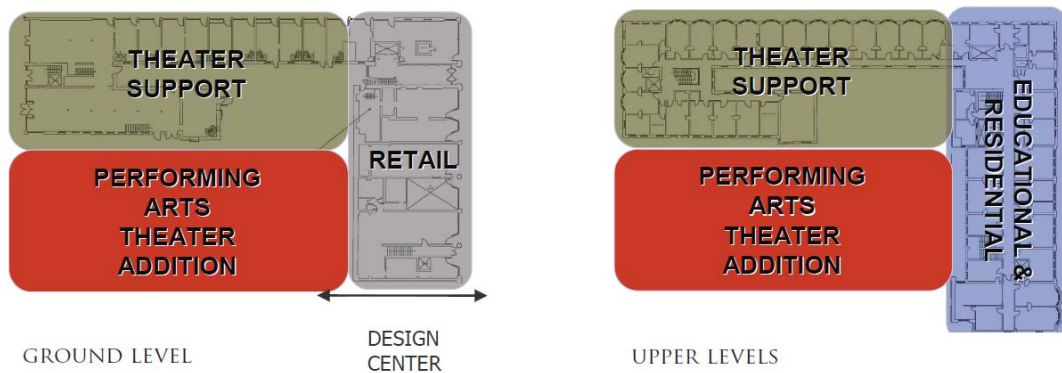


Figure 17: Program Diagram

CHAPTER 4

STORYBOARD: ARCHITECTURE IN MOTION

4.1 Performance v. Experience

As a building that has been unoccupied for over 15 years, the success of renovation depends largely on the appearance of this site as being refreshed, alive, and activated. Reuse projects tend to introduce new elements to existing buildings, through enhancing or transforming certain features. The prominent windows along the Court Square side of the building give purpose to the space within, making it a prime location for studios, such that people passing through the park may see the activity of performers practicing inside. A similar relationship may be developed along the State St. side of the building, where the presence of a new theater addition may be eye catching upon quick glances from a vehicular perspective, signaling that a new life has been breathed into this building. Finally, along Schoolhouse Lane, the 11-foot wide pedestrian passageway that connects State Street to Court Square, theater support shops, for costume and stage prop design may occupy the ground floor spaces. Ultimately, it is the visibility of the activity inside the building that will invite the public to revisit, review and renew their appreciation and interest in this historic site.

Examples of ways in which this enhanced level of visibility has been introduced to performance arts schools are clearly demonstrated by the newly redesigned Julliard School of Dance at the Lincoln Performing Arts Center in New York City. Here, we can see the audience is essentially transformed from those inside the theater to the traffic flow outside. The practice spaces are highlighted by a glass wall that appears like a screen, projecting the silhouettes of dancers practicing out toward the street. The experience of

watching a stage performance transforms from the classical proscenium configuration of a two dimensional, almost video-like production, to an exchange of activity, where the audience becomes an array of people living and moving through the city. This simultaneous activity sets up a new relationship between the performers and the audience that begins to consider how movement happens on and off stage.



JUILLIARD DANCE SCHOOL –

Source: <http://new.lincolncenter.org>



LINCOLN CENTER

Source: <http://new.lincolncenter.org>



ALVIN AILEY DANCE THEATER

Source: <http://www.alvinailey.org/>

Figure 18: Exposed Performance Arts Schools

4.2 Stage to Audience Relationship

Introducing a performance arts program into this building allows for the concept of visibility and views to extend beyond perspectives into and around the site. The relationship established by the traditional proscenium theater configuration tends to flatten the images created by the performers on stage. For some theater productions this is not a problem, however, contemporary set designers and choreographers frequently prefer to have performance spaces that allow the stage to become integrated with audience space, to create a more dynamic and intimate experience to the stage house. Such configurations may be achieved by pulling the stage toward the audience and creating an amphitheater arrangement to the seating, as scene in the recently renovated Guthrie Theater. This space is designed with a thrust stage that allows the performers to utilize the presence of the traditional backstage area, where ease of access on and off

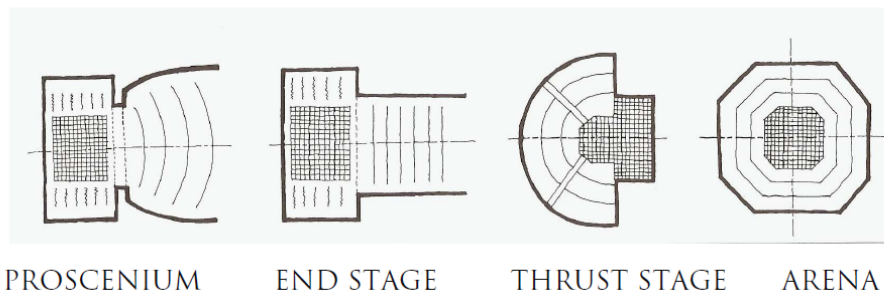
stage is available, while creating a flexible quality to the space in the auditorium by inserting the stage into the audience space. This is especially powerful for dance, in which the continuous movement, lines and relationships created by dancers can be viewed more completely by having a multi-dimensional stage that captures a similar quality of experience as surrounding an arena stage.



Source: <http://www.guthrietheater.org>

Figure 19: Renovated Guthrie Thrust Stage Theater

RELATIONSHIP BETWEEN PERFORMERS & AUDIENCE



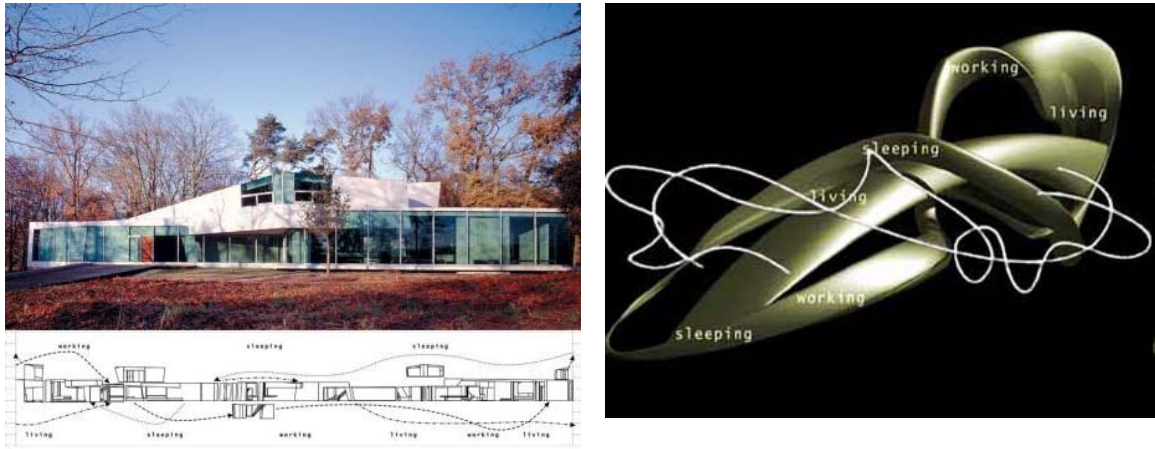
Source: Armstrong, *Space for Dance*

Figure 20: Stage Configurations

4.3 Movement in Space & Time

Exploration of the way in which movement may be translated into architectural forms unearths unique projects, such as the Mobius House, designed by UN Studios in the Netherlands. The house represents two people living in one house, forming two separate but overlapping trajectories of motion over time, forming a mobius strip of circulation patterns. The concept may be best described in the following excerpt:

“The idea of two entities running their own trajectories but sharing certain moments, possibly also reversing roles at certain points, is extended to include the materialization of the building and its construction.”¹⁰



Source: Birkhauser, *The Flying Dutchman*

Figure 21: Mobius House

Architecture clearly employs certain principles of motion fundamental to both buildings and dance, such as balance, rhythm and memory, and in some cases directly infuses the sense of motion into the design of a space. We may observe the Milwaukee Art Museum in which architect, Santiago Calatrava, designed the brise soleil to open and close like wings at the opening and closing hours of the public gallery. This engineered system signals to the public that the museum is alive and in accord with its viewers, conveying information and responding to the same conditions that affect the public. Similar to

architecture, dance speaks to its audience by interpretation and manipulation of forms, referencing shared physical responses to our surroundings and forces inherent to the human experience, like natural rhythms of breath, waves and sunlight.

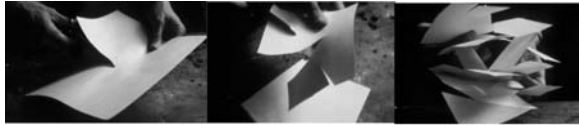


Source: <http://studiothrisur.files.wordpress.com/2011>

Figure 22: Milwaukee Art Museum

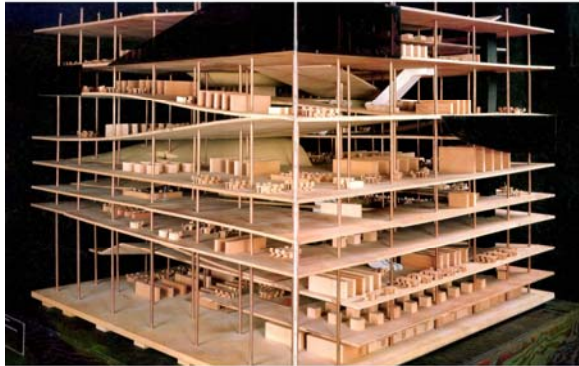
4.4 Tectonic Language

Although architecture and dance clearly share communicative properties, seldom does a structure or performance afford its viewers the opportunity to interact with these forms of expression. Audience members may be stirred to overwhelming elation during a show and feel their connection to the way in which the dancer moves, yet remain bound still to the seat. Similarly, the occupant of a building may be compelled to move through the space in a way that is suggested by the architecture, like the circulation that unfolds in Jussieu campus library in Paris, where architects OMA/Rem Koolhaas provoke movement by layering continuously tilted planes that guide sightlines and ultimately visitors through the building.

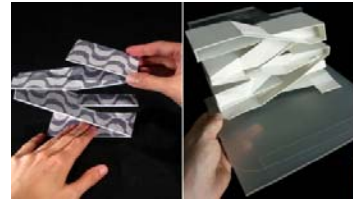


Esquema das dobras dos pisos
FONTE: El Croquis 59/73

“The formal solution generates activity by architectural means, as the tilted planes provoke the visitor to keep moving.” - Jormakka, *The Flying Dutchman*



Maquete da biblioteca
FONTE: El Croquis 59/73



TWO LIBRARIES FOR JUSSIEU UNIVERSITY
Koolhaas/OMA, Paris, 1992 Competition

Figure 23: Koolhaas/OMA – The Promenade

The Stretto House designed by architect Steven Holl in 1991, translates the composition of a “stretto” in music, in which each transition begins with the notes carried over from the preceding phrase. This continuous stream of notes is expressed tectonically in the roof forms and walls of the Stretto House. The overlapping roofs act like the music, branching one room to the next. Holl echoes this physical expression into the landscape of this project, where a stream is divided into a series of ponds that allow water to flow between defined spaces.



“Powerful flows of rhythmical divisions and irregular tensions made time seem to stand still or to rush forward with irresistible momentum.”



Source: Javier Sánchez Merina, *Stories of Houses*

Figure 24: Stretto House

CHAPTER 5

DANCE THEORY & SPATIAL TRANSLATION

5.1 Movement Study

The unique features of this site and the importance of its visibility from various vantage points along both Court Square and State St. give rise to a series of studies that use sightlines to investigate how to approach the redesign of this building. Initially, the points where most traffic would be centered to observe the building were identified. Each of perspective was modeled as red pyramidal projections that intersected the building from each vantage point. Horizontal sections were then cut to explore how these intersections may begin to affect the space at each floor plate of the existing structure.

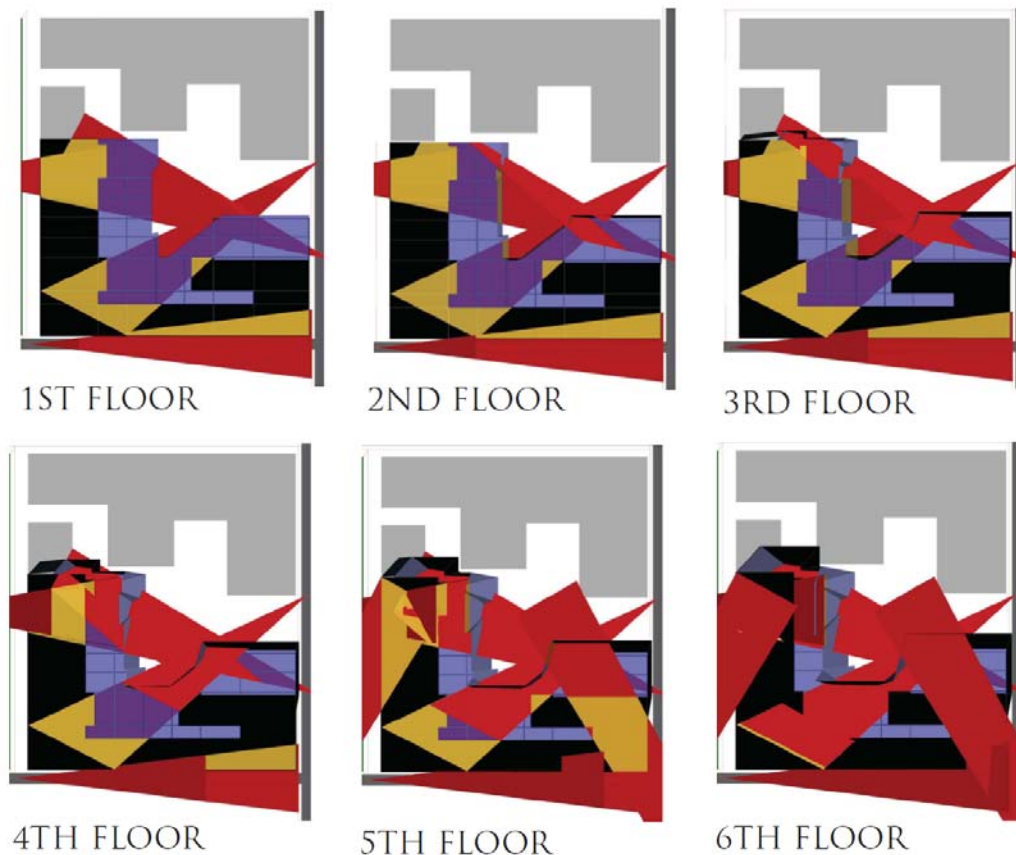


Figure 25: Sightline Intersections

Further investigation of the continuous shifting of sightlines and depths of perception from various perspectives, including vehicular, pedestrian and occupant points of view, was carried out and uncovered the complexity of studying views as they happen along moving trajectories. This analysis was diagrammed in the following sketches, and was later simplified to reference the primary vantage points located at the center of Court Square (1), at the intersection of Elm St. and Schoolhouse Lane (2), and along State Street, traveling west toward I-91 (3), and traveling east from I-91 (4).

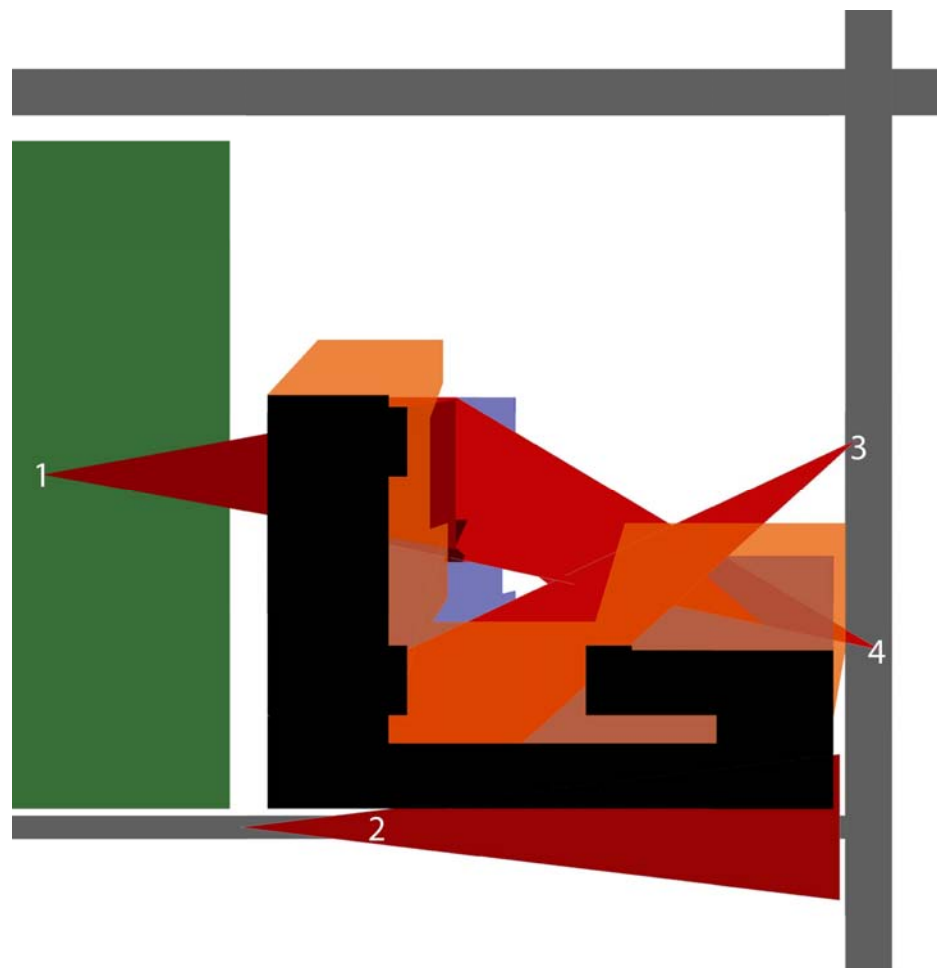


Figure 26: Primary Sightlines

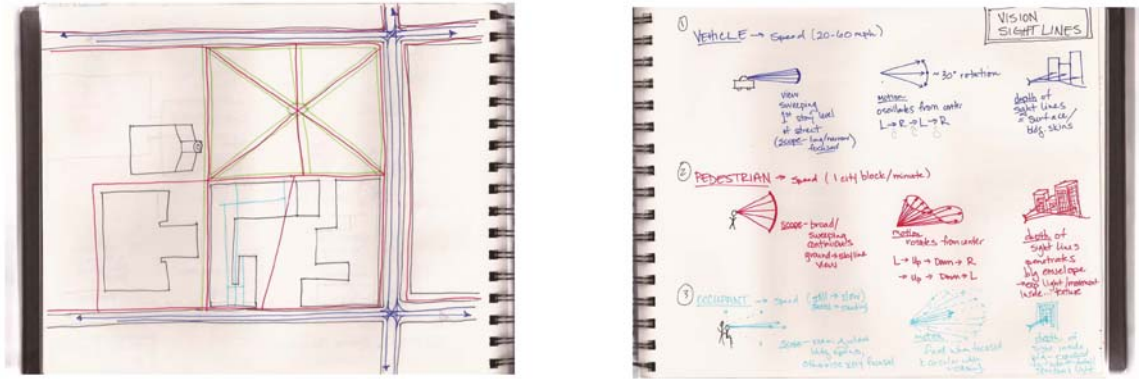


Figure 27: Sketches of Shifting Sightlines

5.2 Balanced Forces

Vantage points around the building and through the site began to shape the design approach; however, the pivotal point of discovery in this process took place when the existing structure and the new addition began to be understood as dance partners that could respond to each other, balancing the complimentary nature each element embodies. This dual relationship of new verses old construction was extended to all aspects of the building design. The concept of opposing yet complimentary forms and forces is integral to dance and is commonly expressed in traditional ballet works referred to as the “pas de deux” or dance of two. Images of such partnering in dance were collected and deciphered to identify five primary elements of dance theory that include complimentary opposing forces. The elements explored include form, rhythm, weight, movement and breath. Each element was then considered for its inherent complimentary composition.

The nature of form is comprised of the combination of light and shadow. Where there is shadow, form falls away into darkness, and where light hits a surface, form is created. The image that best demonstrates this quality in performance art is shown below, along with the drawing composed to interpret this relationship. Here the negative is essentially drawn from the original image, where the light incident upon the dancers’

bodies is the area that becomes imprinted with ink on the drawing. This study essentially shows the way in which the parts of an object covered by the shadow disappear, and only that which reflects light is made visible.



Source: <http://www.cedarlakedance.com>

Figure 28: Form - Light v. Shadow



Figure 29: Form Drawing

The element of form, comprised of light and shadow, was then extended to study the envelope of the building design. The shadow of the existing building onto area of the site nested within the two arms of the building (the current parking lot visible from State St.), was measured at the summer and winter solstices. The shadow lines that fell upon the ground during the winter and summer solstice were identified as the base and crown of the building addition. In the following image, the blue area adjacent to the existing structure (shown in black) is the winter solstice shadow line, and the orange area is the summer solstice shadow line. These areas essentially became the top and bottom outlines for the addition as it connected to this edge of the existing building.

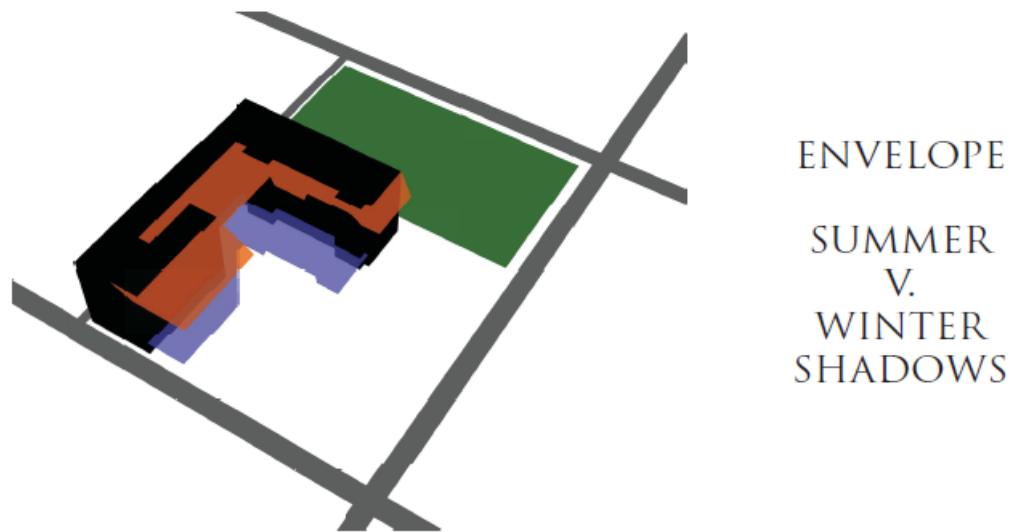


Figure 30: Form to Envelope Translation

Rhythm was the next element considered for its combination of regular and spontaneous beats. The dual nature of these two paces can be seen as processes that involve anticipated action based on a series set in motion, or an unanticipated action, one that strays from the series. The image identified to embody this relationship in dance

references the regular or symmetrical stage prop in the background that is balanced by two mirrored forces touching the ground. Here, one is referenced in the other, or one anticipates the other. In the dancers' partnering framed by the prop, the balance of forces is irregular, accented by the female dancer's departure from the male's supporting gesture. The dancers, unlike the prop, achieve a balance of rhythm that is responsive to one another, not reflective. In the drawing, rather than capturing the aspects of rhythm described in the image, another approach is taken, in which a dance turn sequence is broken down as steps move across the floor. The notations indicate moments where the dancers move in sequence and identify the points in time when the sequence breaks from the anticipated routine and is accented with an unexpected step.



Source: <http://www.nycballet.com/aod/calatrava>

Figure 31: Rhythm - Anticipated v. Accented

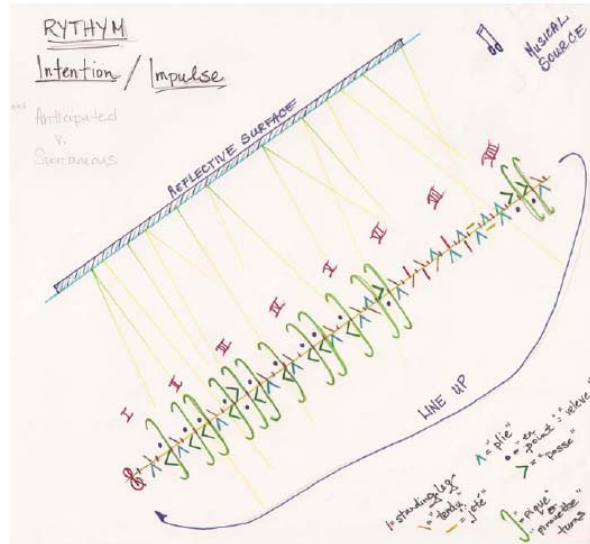


Figure 32: Rhythm Drawing

Rhythm then, and its composition of anticipated verses accented moments in time, was translated to understand the structural relationship between the existing building and the proposed addition. Where the existing structural system is based on orthogonal symmetry and each element is anticipated from the series preceding it, the new addition is supported by a system of angled columns. These angled columns connect the top and bottom outlines of the new envelope as constructed from the form study.

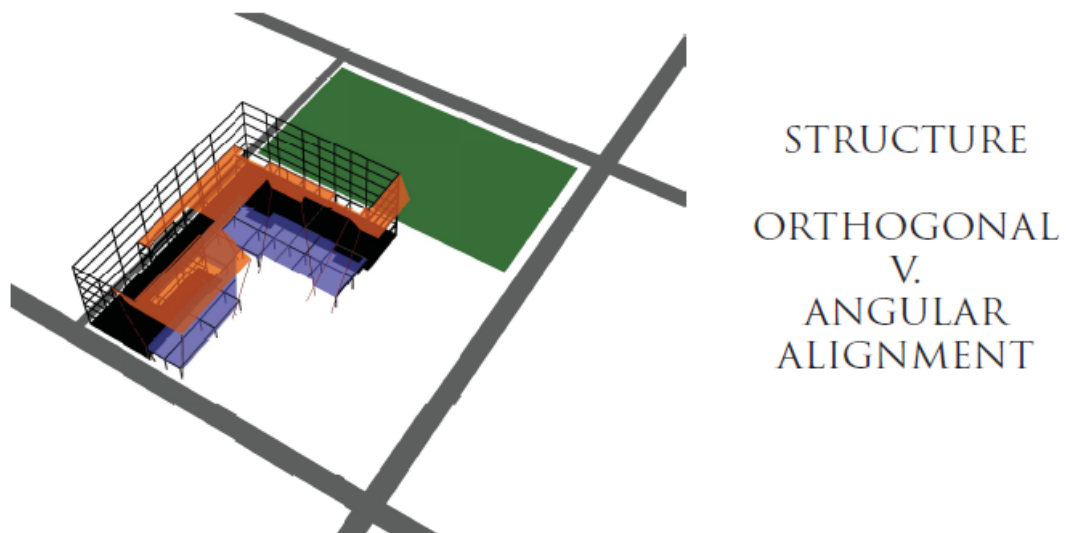


Figure 33: Rhythm to Structure Translation

Weight, as an element of dance theory, was studied in its dual qualities of supportive and lifted counterparts. Any lift in dance, or physics, must start with an anchor, or a grounding force. This is seen in the image shown with the male figure connected heavily to the ground and the female dancer suspended from touching the ground. The dual roles of each of these dancers in this relationship seems obvious from first glance, however, as the drawing shows, looking closely at the force vectors in each dancer's body, there are aspects of lifting in the male and similarly, aspects of grounding in the female. By representing these lines of force with increasing darkness to represent grounding forces and lightness to show lifting spaces, the exchange of these two components of weight becomes more complex and interwoven.



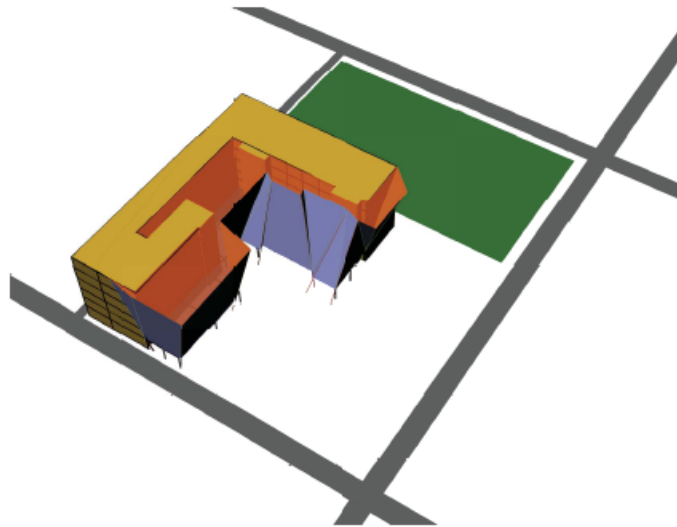
Source: <http://lakakau.blogspot.com>

Figure 34: Weight - Grounded v. Lifted



Figure 35: Weight Drawing

The complimentary components of weight in dance partnering can be expressed in terms of architectural materials, in which the existing building, composed primarily of heavy masonry, acts as an anchor to the new addition, designed in a light steel and glass framework. This duality serves multiple purposes, namely to physically acknowledge the transition in technology and construction materials over the past century since the building was initially designed, and again, to optimize the visibility of the activity within the new theater addition along State St. In the diagram below, the yellow volume represents the existing masonry structure that connects to the new glass façade, shown in blue, that stretches between the envelope base and top outlines (from the form study) and along the angled columns (from the rhythm study). Programmatic elements of support and lift are also introduced in the next chapter where the existing building houses the support spaces for the publicly “elevated” programmatic zones.



MATERIALS
MASONRY
V.
GLASS

Figure 36: Weight to Materials Translation

Next, movement was studied as another element that may be examined for its dual qualities of framed and fluid lines of expression. Fluid motion can be seen in dance when a series of steps are connected and the lines of the dancers' movement are viewed like tracings in space. Framed motion is often crystallized in time and space by moments when the dancers' movement is held in position, emphasizing the lines that become fixed in time. The image shown here exemplifies the form of a female dance whose body, although captured in a photograph can be seen as in motion. Her position is transitioning from being held by the male dancer's grip and toward the space beyond framed stance.



Diana Vishneva and Vladimir Malakhov
perform Bigonzetti's "Kazimir's Colours"
Photo © OCPAC

Figure 37: Movement – Framed v. Fixed



Figure 38: Movement Drawing

Spatial translation of framed and fluid motion relates back to the movement study originally explored to identify the primary sight lines entering the site from neighboring passageways. The red pyramidal volumes that intersect with the building in the diagram shown below represent the position of the views captured from vehicular and pedestrian traffic. The lines generated from where the views intersect with the site, and the building, were generative in organizing the site approach, landscaping and planometric space making within the building. As discussed in the future chapter on the final building design (Ch. 6 – Translation), the fixed sight lines established the primary circulation within the building, while rotating the angle or sweep of the sight line allowed for variation in the circulation path when there was reason to alter the primary, or fixed lines.

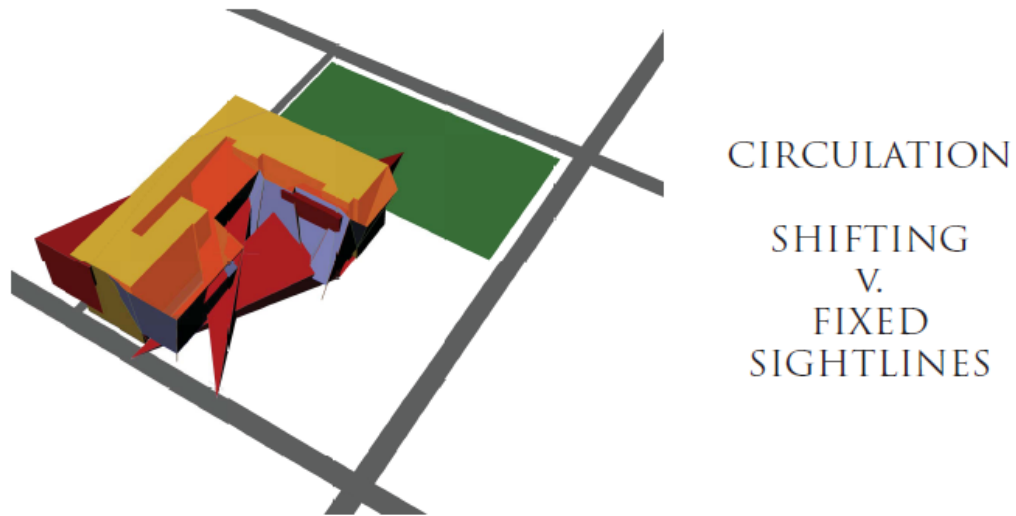


Figure 39: Movement to Circulation Translation

The final element of dance theory employed to organize the relationship of the existing building to the new addition, is breath. The areas in a building where occupants are drawn to collect within a space can be compared to a hold in the breath, phrasing or tension of a dance piece. Conversely, spaces that direct people to move readily through them, transitioning from one area to another, may be related to the release of breath (or comparable expression) in choreography. The story told by the dance is often guided by the rise in tension followed by a break or release according to the intent of the director. Similarly, moving through a building begins to unfold the contents of the program is it was consciously arranged by the architect.

The arrangement of rising and falling action within the building was approached by selectively carving away the existing building shell, using the intersection of sight lines with the existing building as a guide. Introducing the theater addition along the “back” of the building creates an interim zone between the existing structure and the new addition that is delineated by the red brick infill wall along this side of the building. This brick layer begins to act as a membrane between the new and the old volumes, where the

wall is selectively carved away or preserved, depending on how it relates to the adapted programmatic zones.



Source: <http://www.cedarlakedance.com>

Figure 40: Breath – Held v. Released

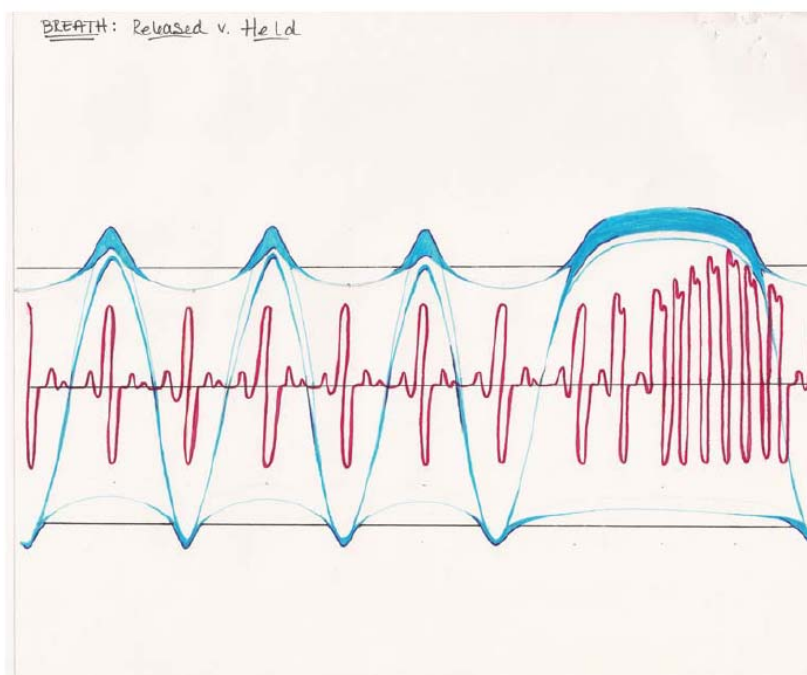
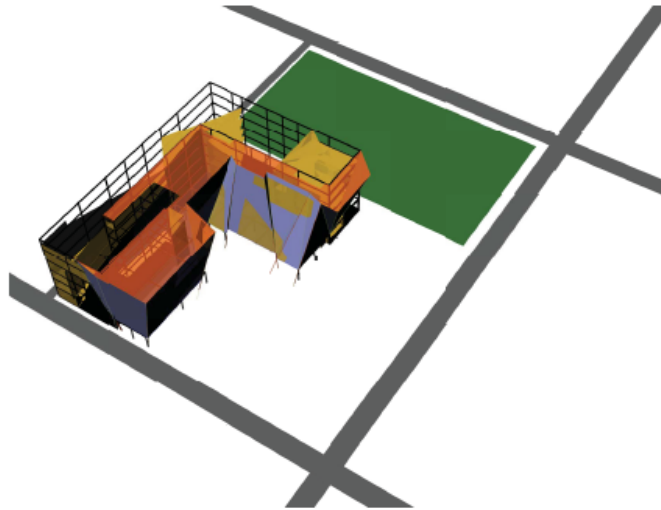


Figure 41: Breath Drawing



OPENINGS
PRESERVED
V.
CARVED
SHELL

Figure 42: Breath to Openings Translation

CHAPTER 6

TRANSFORMATION: FROM 1890 TO 2011

6.1 Site Approach



Figure 43: Site Plan

The unique features of this site stem largely from the location of the Court Square Building within the larger context of the historic civic plaza that is the Court Square

District. Delineated by red brick sidewalks, the heart of historic Springfield is clearly identified in the zone surround the Court Square Building. Neighboring buildings include the Hampden County Courthouse, located directly southeast of the building, across from Schoolhouse Lane. This edge of the building enjoys the most direct sunlight and a soft edge of grass and tree covered landscape, allowing pedestrians that pass between Court Square and State Street the luxury of enjoying some shade under a tree nested between the two public buildings.

To the east, vehicles passing along State Street are invited to view the transformed glass façade that hugs the southern edge of the historic Court Square Building. Onlookers traveling by car inevitably catch a glimpse into the voluminous theater wing of the building, situated directly on the State Street corner of the building, and pedestrians will be drawn toward the newly articulated courtyard, that uses an extension of the historic red brick walkways to guide visitors into the entry lobby area along the primary sightlines. A rain garden is introduced to enhance the natural beauty of the new courtyard. This area is pocketed by the new addition, capturing rain water as it flows from an introduced green roof on the 6th floor of the building down through copper flashing along the windows. The copper will patina to reference the aging of window frames unique to the historic façade of the existing building, and to keep time with the rhythm of the transforming surroundings.

To the north, this building is exposed to the back of existing semi-occupied office buildings, and so is sheltered somewhat by introducing a couple of trees to the site along this edge. More importantly, however, is the presence of the recently renovated UMass Design Center, occupying the humble historic building situated alongside the Court

Square building, sharing its northern wall along Court Square. The physical connection of these two buildings is emphasized by allowing interior passage between the two at the ground floor level. To the west is Court Square, the park that collects visitors and residents of Springfield who come to see a game at the MassMutual Civic Center (to the north), or a show at Symphony Hall (located opposite the Court Square Building through the park). Business folks enjoy a break from the offices housed in the stately City Hall building, shaded by the old growth oak and maple trees lining the park. Finally, the city's oldest church, Old First Church, stands like a New England icon at the center of the park, beckoning arrivers to slow down in reverence of the city's cultural heritage.

6.2 Sight Lines Guide Footprints

Entrance into the ground floor level of the adapted Court Square Building happens from the Court Square Park through the original theater entrance. The passageway entering the building is emphasized by cutting away the red brick sidewalk and introducing a stone ground cover that follows the lines of sight into the building from the perspective identified from the center of the park. From this entrance, visitors are guided through a performance gallery channel and released into the main box office and first floor lobby area. This is ultimately the "back side" of the building, which becomes the front of the new performance arts center for visitors entering from State Street.

Retail spaces line the Court Square side of the building, allowing the potential for commercial support to become active on the ground floor level of this building once again. The Schoolhouse Lane ground floor spaces along the southern edge of the building become activated by introducing theater support spaces, where production

shops, including set and costume design, to become visible to pedestrians passing by, and give support staff opportunity to move freely inside and out, enjoying the shaded park-like setting along this side of the building. A historic bar that was frequented by local attorneys who used to hold offices in this building, is preserved, and acts as a social gathering space for people coming to see a show, passing through, or looking to grab a bite to eat or a drink in this restored historic site.

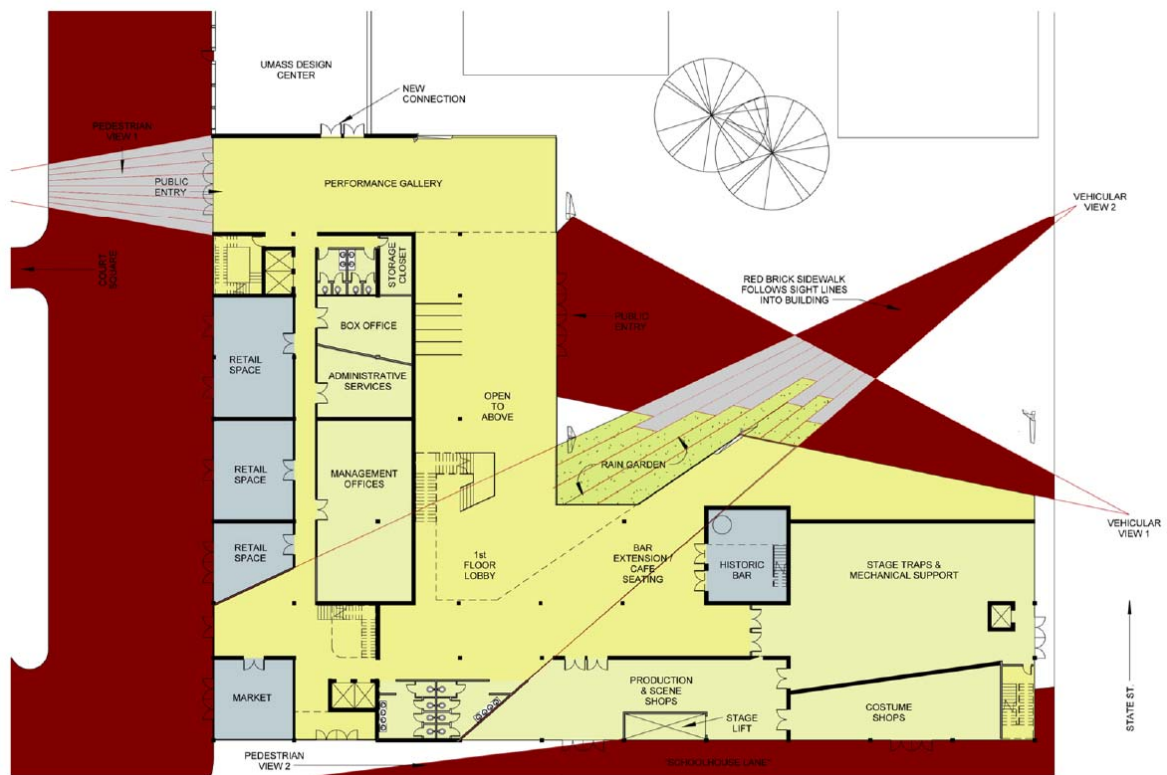


Figure 44: First Floor Plan

From inside the ground floor level, visitors are led up a winding grand staircase toward the main lobby to the main theater space on the second floor. It is on this level that the separation of program between the existing building and the new addition become clear. Along the existing building edge (the southwestern side), the service areas are housed. The new space, located mainly along the northeaster edge of the building,

houses the primarily public zones, with the theater addition anchoring the State Street corner of the building. At the second floor, educational spaces are introduced, facing court square for maximum visibility from the park. These spaces include rehearsal studios and offices for students and faculty. Along the public side of the building, visitors are led into the main entrance to the theater space, comprised of a thrust stage raised three feet above the second floor level that can be easily converted into a traditional proscenium stage with hung curtains and moveable stage parts. The risers are intended to be flexible, allowing approximately two-hundred seats in the orchestra seating, which is accessed at stage level from the second floor. The top of the orchestra seating is accessible from the third floor, which rises up from another winding grand staircase wrapping around the theater volume, and hovering over the large open atrium space created by introducing the new glass façade around the historic red brick infill wall.

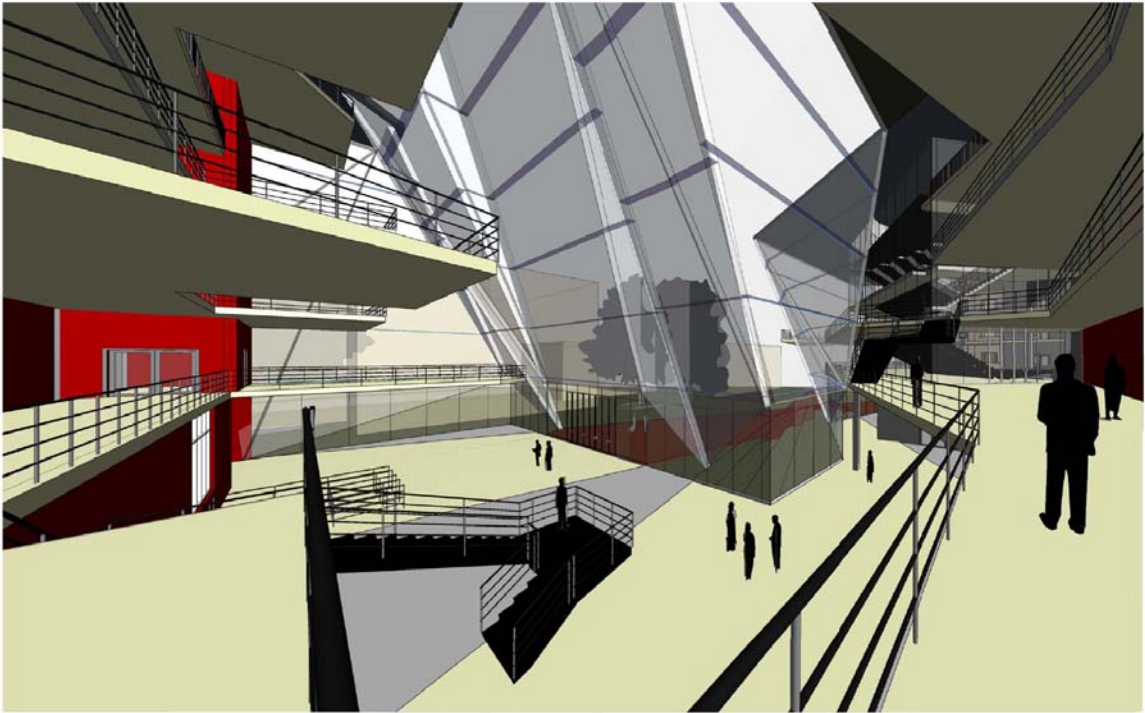


Figure 45: Lobby Atrium and Theater Entrance

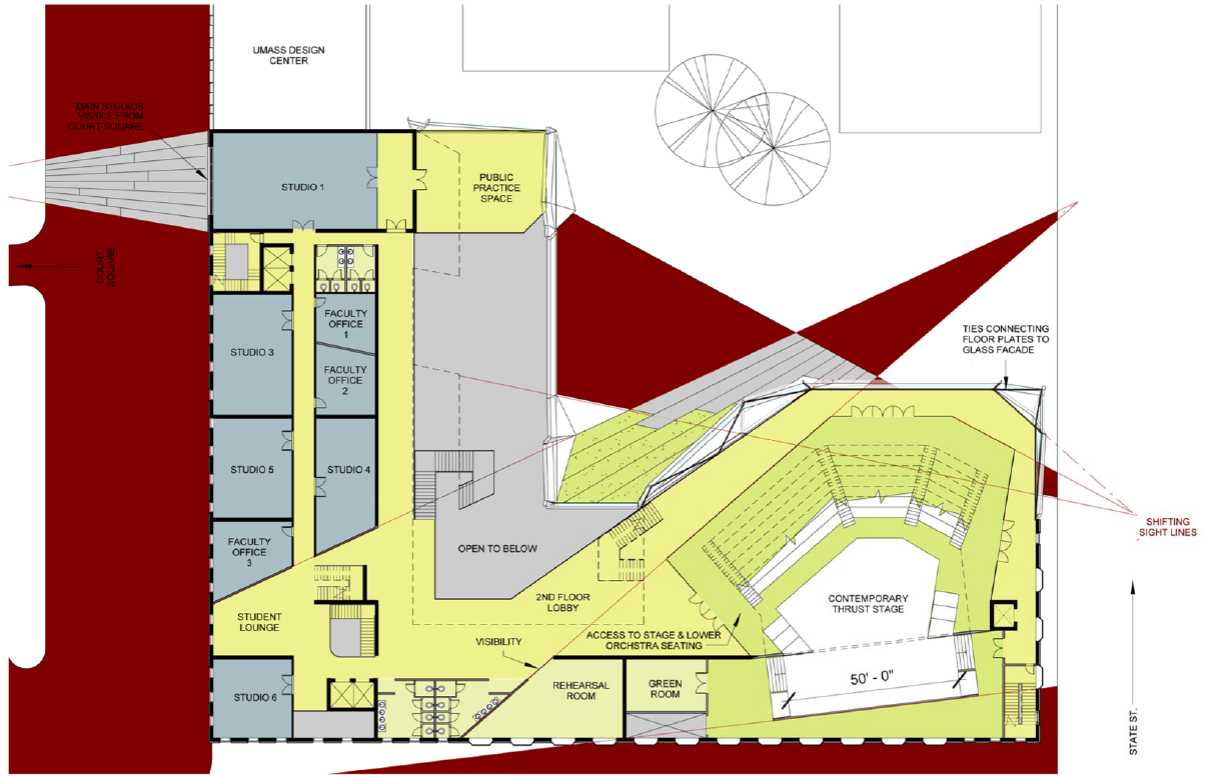


Figure 46: Second Floor Plan

The existing red brick infill along the southwest side of the building was selectively carved away where the new structure was allowed to intersect the old along the sightline trajectories established. This selective carving of the existing brick façade provided a datum, or a membrane between the old and the new, where people inside the new space could experience the shell of the original building, yet gain greater access through it where openings were created to enhance circulation and visibility through the building. Where areas needed to be extended or compressed, the sightlines were shifted, or rotated from their original vantage point, to accommodate for the change in geometry needed. This shifted sightline is delineated by a red dashed line, versus the fixed sightline which is shown as a solid red line.

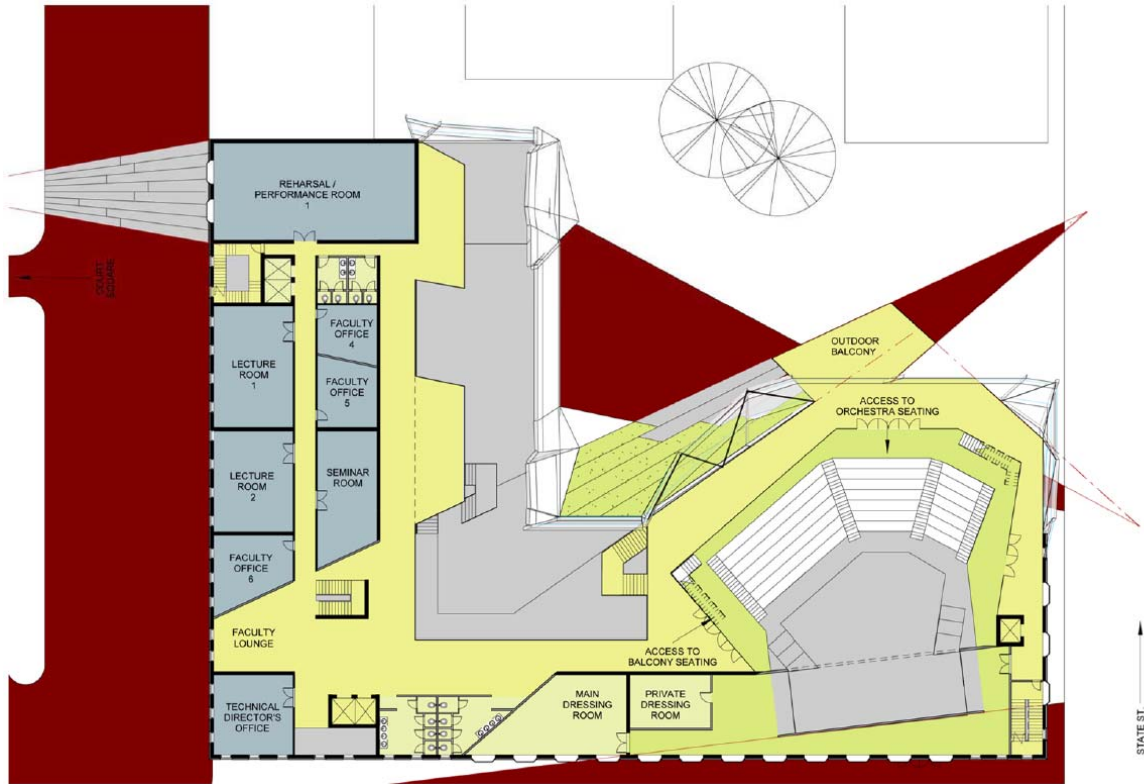


Figure 47: Third Floor Plan

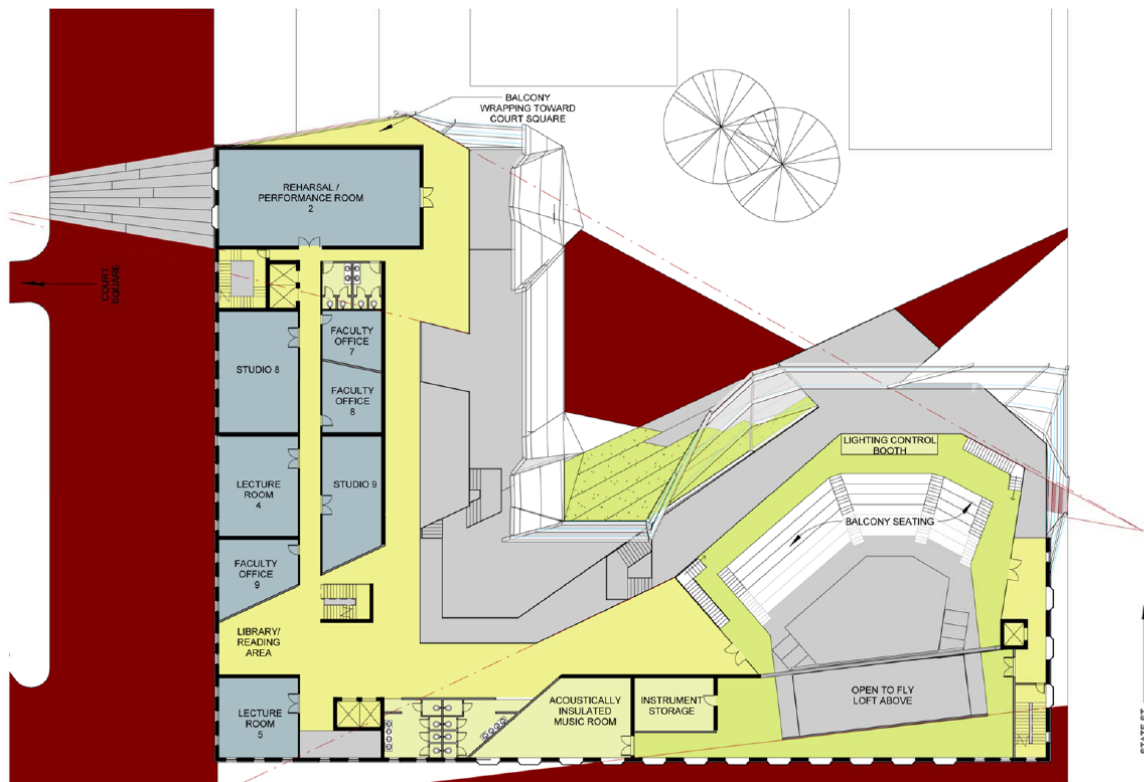


Figure 48: Fourth Floor Plan

Educational spaces and studios are slotted along the Court Square wing of the building from level two through four, above which, this primarily original architecture becomes apartment lofts for students and faculty. The theater space is designated to fixed orchestra seating, accessible from the fourth floor, above which are acoustic ceiling tiles, offset to allow for lighting control from a series of catwalks that are accessed from the fifth and sixth floor levels. At the sixth floor, a green roof terrace is designated as an extension of a top floor café. This green roof acts as a channel for water that collects along the copper flashing that seals the windows leading down toward the rain gardens below.

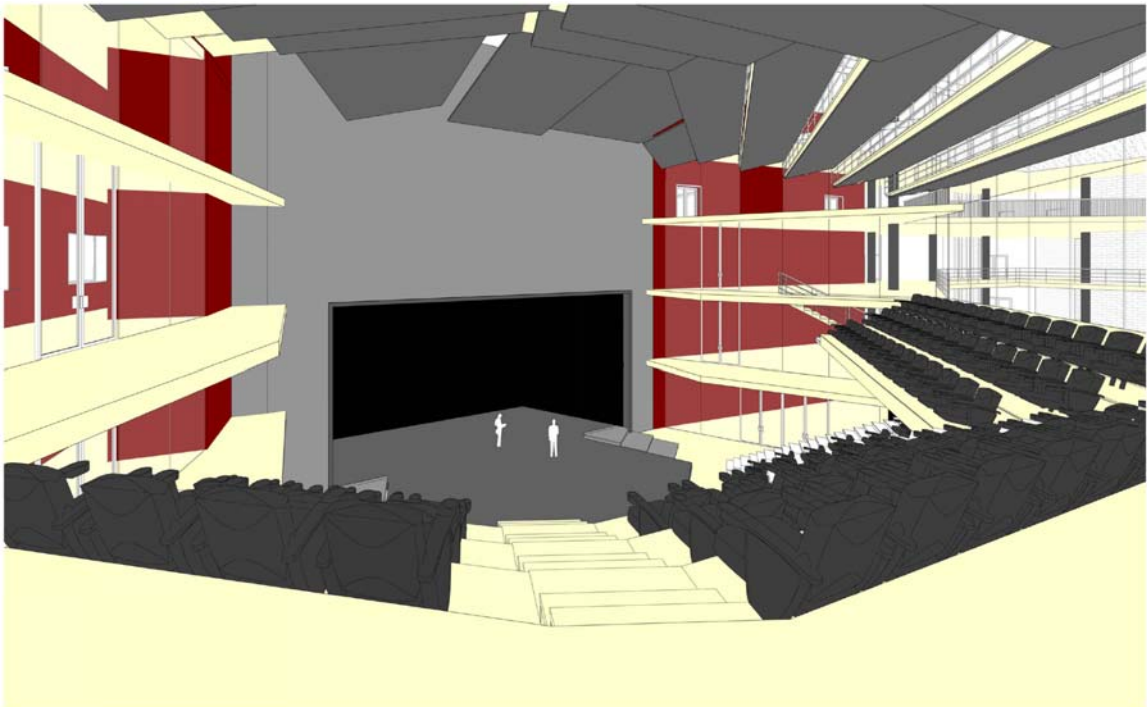


Figure 49: Balcony View of Theater

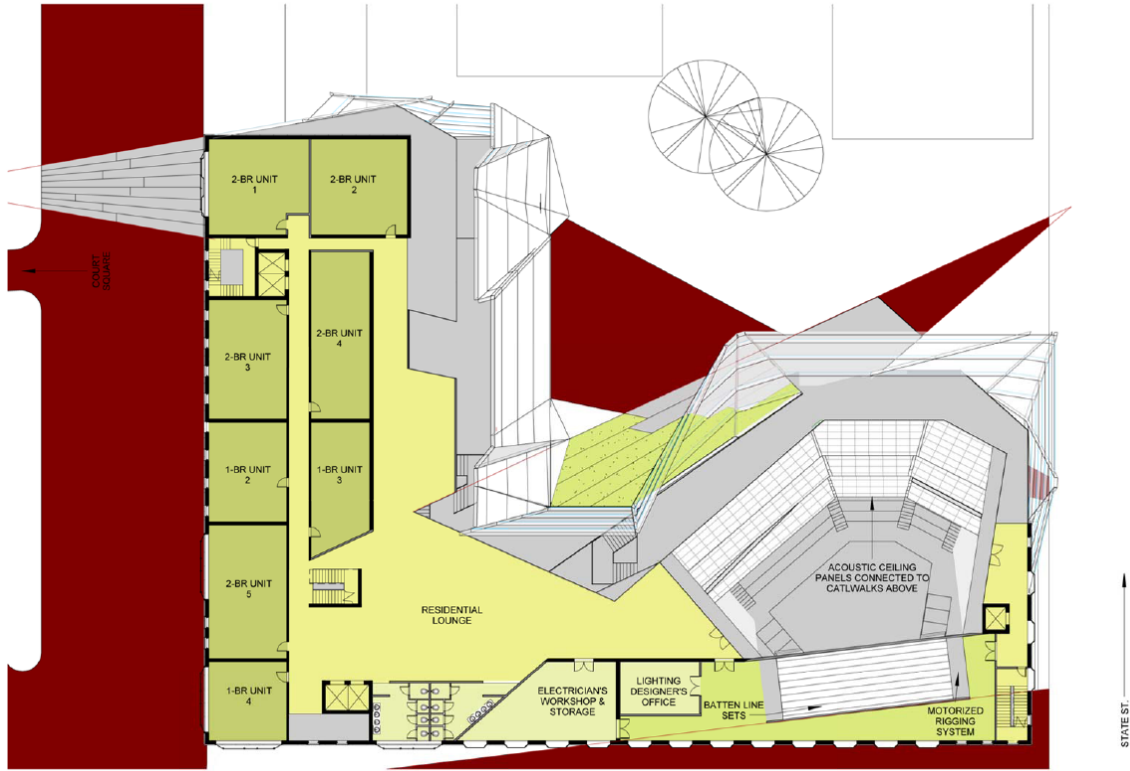


Figure 50: Fifth Floor Plan

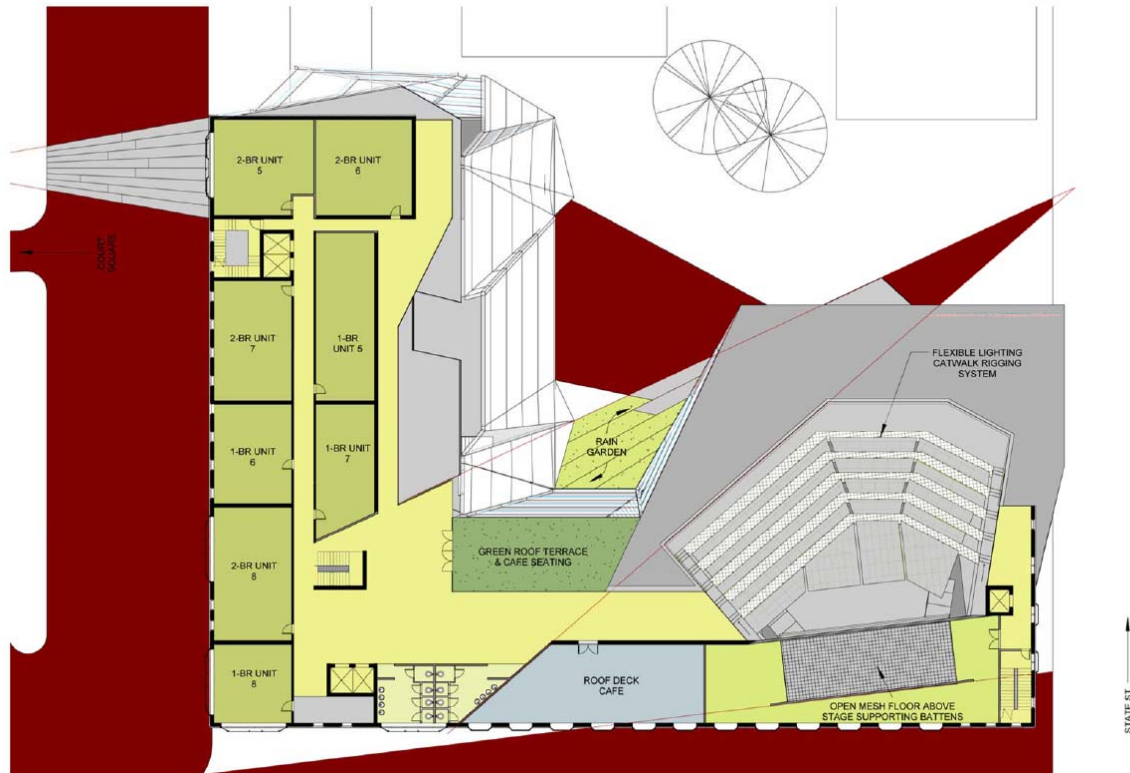


Figure 51: Sixth Floor Plan



Figure 52: East-West Section

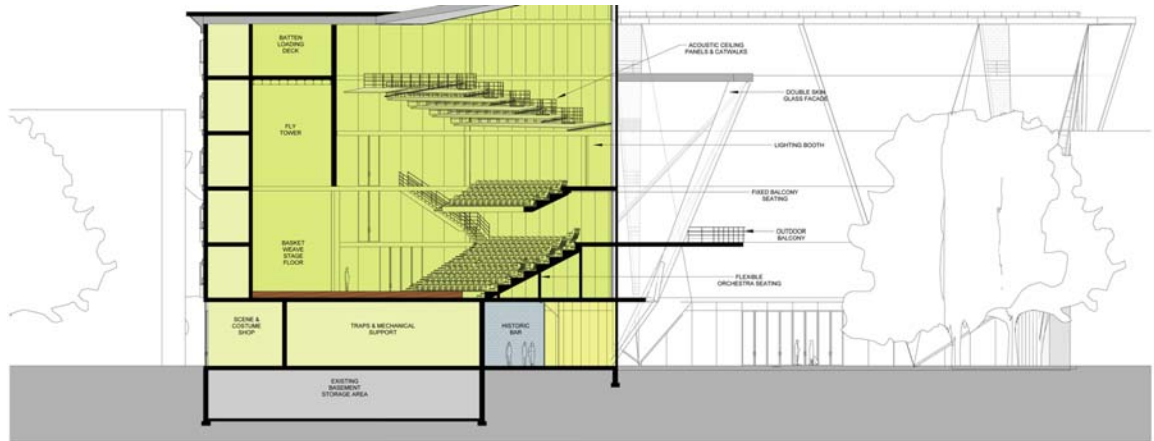


Figure 53: North-South Section

The sections show the program organization where supporting spaces, including educational, residential and theater support areas, are housed primarily in the existing shell of the building, and public spaces, including the main circulation into the performing arts center and through the theater is housed in the new addition. This relationship references the theory of weight described in the previous chapter, in which the existing building, is not only the anchor of the new form through materials, but in its

designation as support space. The addition is designed to extend from the existing and is represented this way through materiality, form and programmatic distribution.

6.3 Pas de Deux of Elevations

Preservation of the historic façade, and the partnering of old and new architecture was paramount to the adaptation of the existing building, approaching the redesign of the building elevations had to be handled sensitively. Highlighting the reawakening of this building, from its fifteen year slumber under blacked out windows and doors, requires ensuring that the transformation of the building is visible from all angles. However, given the historic significance and protection of the façade along Court Square Park and Schoolhouse Lane, the treatment of the elevations looking east and north had to be treated differently than the elevations captured when looking west from State Street or south from the existing parking lot.

The solution to this diametric condition was to purposefully showcase the new glass façade surrounding the theater and public lobby area along the southwestern edge of the site, inviting visitors and renewed perspectives into the building from State Street. Honoring the historic facade, that already retains rich aesthetic allure along Court Square, was achieved by preserving the entire shell along the north and east side of the building, yet allowing the new life of the building to be visible by gently wrapping the glass skin along the southwest edge of the building around the northern and southern corners of the existing building to meet the historic façade.



Figure 54: East View from Court Square



Figure 55: North View from Schoolhouse Lane



Figure 56: East View from State Street

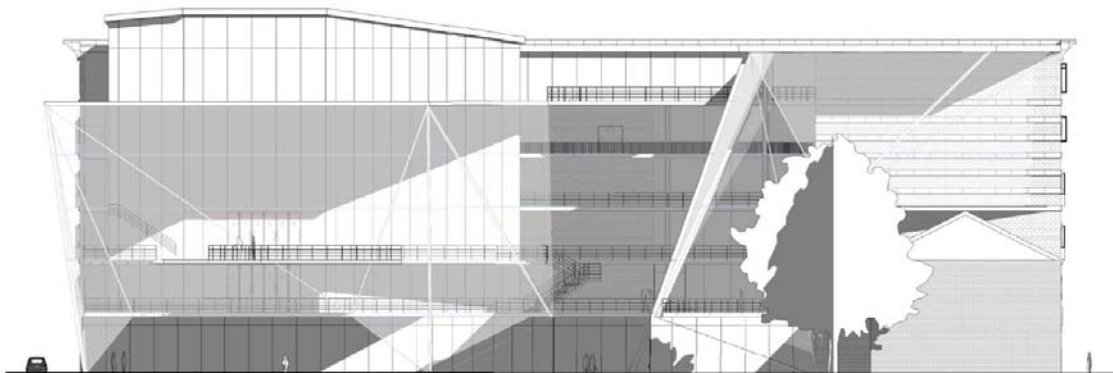


Figure 57: South View toward Theater

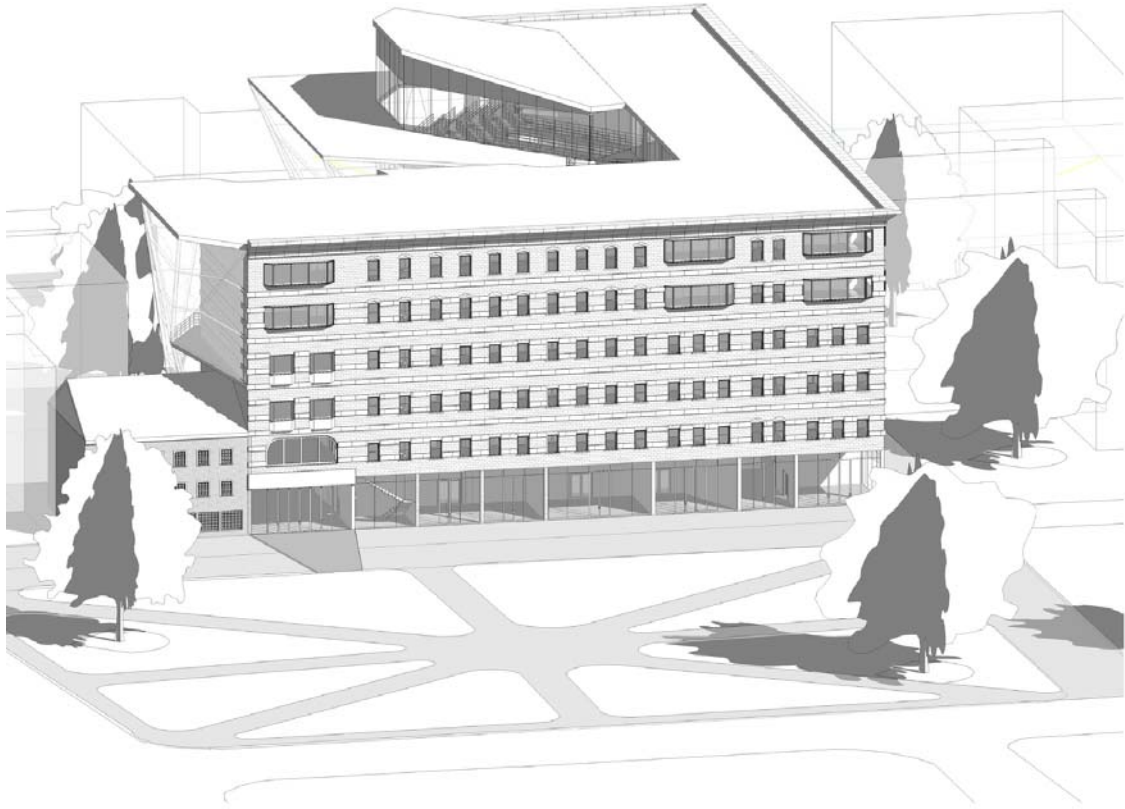


Figure 58: Court Square Perspective

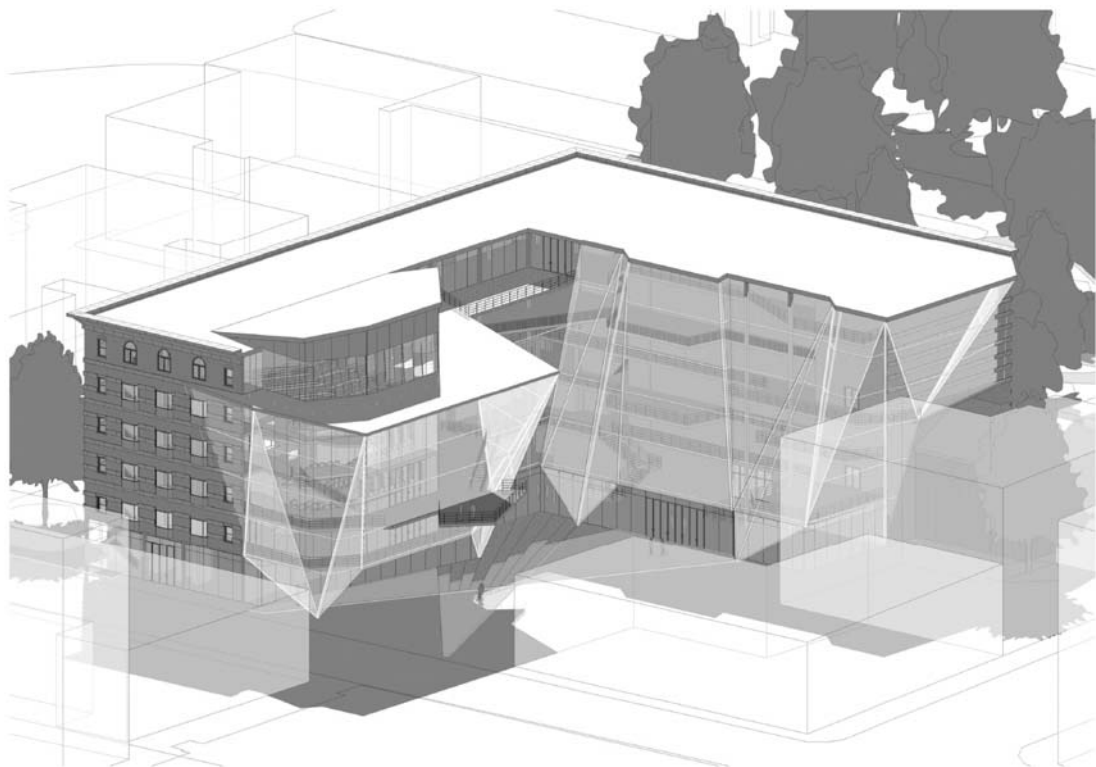


Figure 59: State and Main St. Perspective

6.4 Future Vision

As we look to the future of our post-industrial cities, and consider how to revitalize their once thriving economies and energetic streetscapes, architects may find renewed hope in the opportunities existing architecture provides to guide visitors back to the city center. In each design problem, a given set of constraints must first be established to move forward with decisions about how to develop a project. With the growing population trend moving to suburban areas, the tendency to develop new towns that mimic one another by following generic formulas for construction and commerce threatens to devalue the potent cultural richness that characterizes the cities that define our country's heritage. By recognizing the work done by previous generations to massage the urban landscape into places people want to visit and understand, architects inherit a unique set of guidelines to steer redevelopment projects for future generations.

The historic city center in Springfield, Massachusetts is home to a number of striking civic buildings. Attracting social activity that will serve to support local retail and encourage community engagement begins with ensuring that the buildings in the Court Square District are living up to their potential as advocates for the power architecture has in providing common spaces for cultural connections. Like great architects, great buildings continuously reinvent themselves, carrying the success of each era forward to excel under new conditions and constraints. By preserving the dialogue between new and old infrastructure, architects enter into a dance that balances the forces of a continuously transforming built environment. In Springfield, the conversation between preservation and adaptation continues with the reuse design of the Pendulum Performing Arts Center at Court Square.

BIBLIOGRAPHY

-
- ¹ http://www.pps.org/great_public_spaces
- ² O'Brien, George. "Amherst Cinema Screen Gems: Barry Roberts look to direct a happy ending for a downtown landmark." *BusinessWest*. May 2, 2005.
- ³ Schneider, John. "Gateway to the Future: Rethinking the Mill Cities of Massachusetts." *Architecture Boston*. Summer 2009, p. 26.
- ⁴ Stanton, Cathy. *The Lowell Experiment: Public History in a Postindustrial City*. University of Massachusetts Press, 2006, p. 5.
- ⁵ <http://2010.census.gov>
- ⁶ <http://www.springfieldcityhall.com>
- ⁷ <http://coursquarespringfield.com>
- ⁸ <http://explorewwmass.blogspot.com>
- ⁹ Brennan, Tim. "Pioneer Valley Planning Commission Lands \$4.2 Million HUD Sustainable Communities Regional Planning Grant." Pioneer Valley Planning Commission Media Release. October 20, 2010.
- ¹⁰ Jormakka, Kari. *The Flying Dutchman*. Birkhauser Publishers for Architecture, 2002.
- ¹¹ Goodridge, Janet. *Rhythm and Timing of Movement in Performance: Drama, Dance and Ceremony*. Jessica Kingsley Publishers, 1999.
- ¹² Franklin, Eric. *Dance Imagery for Technique and Performance*. Human Kinetics, 1996.
- ¹³ Armstrong, Leslie & Morgan, Roger. *Space for Dance: An Architectural Design*. Publishing Center for Cultural Resources, 1984.
- ¹⁴ Martin, Elizabeth. *Architecture as a Translation of Music*. Princeton Architectural Press, 1994.
- ¹⁵ Louppe, Laurence. *Traces of Dance: Drawings and Notations of Choreographers*. Editions Dis Voir, 1994.
- ¹⁶ Glerum, Jay. *Stage Rigging Handbook*, 2nd Edition. Southern Illinois University Press, 1997.