

ABSTRACT

Title of Thesis: INTEGRATING ARCHITECTURE FOR A
LIVE-WORK LIFESTYLE
A design exploration of a Mixed Used
Development in Lower East Side, NYC

Prakruti Anupama Hoskere, Master of
Architecture, 2016

Thesis Directed By: Professor Garth Rockcastle, FAIA, School of
Architecture, Planning and Preservation

Urban centers all around the world are striving to re-orient themselves to promoting ideals of human engagement, flexibility, openness and synergy, that thoughtful architecture can provide. From a time when solitude in one's own backyard was desirable, today's outlook seeks more, to cater to the needs of diverse individuals and that of collaborators. This thesis is an investigation of the role of architecture in realizing how these ideals might be achieved, using Mixed Use Developments as the platform of space to test these designs ideas on. The author also investigates, identifies, and re-imagines how the idea of live-work excites and attracts users and occupants towards investing themselves in Mixed Used Developments (MUD's), in urban cities.

On the premise that MUDs historically began with an intention of urban revitalization, lying in the core of this spatial model, is the opportunity to investigate what makes mixing of uses an asset, especially in the eyes to today's generation.

Within the framework of reference to the current generation, i.e. the millennial population and alike, who have a lifestyle core that is urban-centric, the excitement for this topic is in the vision of MUD's that will spatially cater to a variety in lifestyles, demographics, and functions, enabling its users to experience a vibrant 24/7 destination. Where cities are always in flux, the thesis will look to investigate the idea of opportunistic space, in a new MUD, that can also be perceived as an adaptive reuse of itself. The sustainability factor lies in the foresight of the transformative and responsive character of the different uses in the MUD at large, which provides the possibility to cater to a changing demand of building use over time.

Delving into the architectural response, the thesis in the process explores, conflicts, tensions, and excitements, and the nature of relationships between different spatial layers of permanence vs. transformative, public vs. private, commercial vs. residential, in such an MUD. At a larger scale, investigations elude into the formal meaning and implications of the proposed type of MUD's and the larger landscapes in which they are situated, with attempts to blur the fine line between architecture and urbanism. A unique character of MUD's is the power it has to draw in people at the ground level and lead them into exciting spatial experiences.

While the thesis stemmed from a purely objective and theoretical standpoint, the author believes that it is only when context is played into the design thinking process, that true architecture may start to flourish. The unique

The significance of this thesis lies on the premise that the author believes that this re-imagined MUD has immense opportunity to amplify human engagement with designed space, and in the belief that it will better enable fostering sustainable communities and in the process, enhance people's lives.

INTEGRATING ARCHITECTURE FOR A LIVE-WORK LIFESTYLE

by

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Professor Garth Rockcastle, Chair
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Preface

*“We owe it to the fields that our houses will not be the inferiors of the virgin land they have replaced. We owe it to the worms and the trees that the buildings we cover them with will stand as a promise of the highest and the most intelligent kind of happiness”
 , Alain De Botton, The Architecture of Happiness*

Foreword

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List of Abbreviations

MUD Mixed-Use Development

LES Lower East Side

CHAPTER 1: Introduction

Introduction

Overview

To begin to comprehend the complexity of the subject of designing MUDs, it is important to understand the reasons for its renewed emergence and success in cities today. It is also important to understand the characteristics of successful MUDs from a collaborative standpoint of all the involved stakeholders. This chapter aims at providing the framework to define a reimagined MUD for a particular mindset of users. The chapter also discusses why the author advocates positively for and reinforces the need for deeper architectural intervention and involvement in such MUDs. It focuses on MUDs in dense urban areas, and looks to first understand and clarify it from the perspective of architects, planners and real-estate developers.

Definitions

Mixed-Use Developments:

In a search to break down the definition of MUDs, after surveying definitions from different organizations, the most coherent definition is from the ULI which defines MUDs as having three core qualities:

- Three or more significant revenue-producing uses (such as retail/entertainment, office, residential, hotel, and/or civic/cultural/recreation) that in well planned projects are mutually supporting
- Significant physical and functional integration of project components (and thus a relatively close-knit and intensive use of land), including uninterrupted pedestrian connections
- Development in conformance with a coherent plan (that frequently stipulates the type and scale of uses, permitted densities, and related items)

The Harvard School of Design simply defines MUDs as three uses in one building, where no component makes up more than 60 per cent of the overall space.

Other definitions from a general survey characterize MUDs to have the following:

A mixed-use development is a real estate project with planned integration of some combination of retail, office, residential, hotel, recreation or other functions. It is pedestrian-oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression and tends to mitigate traffic and sprawl. Then arises the question of how one may judge the MUDs success?

Multi-Use Developments:

When the development lacks in density and tends to be spread out, as per the ULI, they are distinguished as “Multi-Use Developments”.

Sustainable communities:

The US National Research Defense Council states that sustainable communities share a common purpose: places where people thrive to enjoy good health and create a high quality of life. A sustainable community reflects the interdependence of economic, environmental, and social issues by acknowledging that regions, cities, towns and rural lands must continue into the future without diminishing the land, water, air, natural and cultural resources that support them.

Different professions, different perspectives:

A planner's perspective:

The planning author Grant¹ summarizes the need for mixed use as follows: Mix creates an urban environment active at all hours, making optimum use of infrastructure. Smaller, post-baby-boom households can have a greater range of

¹ Hirt, Sonia. "The mixed-use trend: Planning attitudes and practices in Northeast Ohio." *Journal of architectural and planning research* (2007): 224-244.

options (rather than just detached homes). He advocates for mixing house types as to increase housing affordability and equity by reducing the premium that exclusive, segregated areas enjoy. By providing housing near commercial and civic activities, planners could reduce the dependence of the elderly and children on cars. Enabling people to live where they can shop, work, or play could reduce car ownership and vehicle trips, increase pedestrian and transitional zoning.

On a similar note, the author Rowley² defines success of MUDs based on the right scale of the mix, i.e. within individual buildings (i.e., fine-grained mix); within building blocks; within the street or other public spaces; and within neighborhoods (less fine-grained mix).

A Real-estate developer's perspective:

In K Kaufmann's article³, Morgan Dene Oliver⁴, said that "being successful at mixed use means getting the right mix of uses at the right location—which, in most cases, means high-density urban areas. "

Kaufmann's article brings one to wonder about the inherent inefficiencies that exist in aligning these uses. More importantly, how could architecture contribute in alleviating this functional inefficiency from the start? The article also repeatedly tied

² Rowley, Alan. "Mixed-use development: ambiguous concept, simplistic analysis and wishful thinking?" *Planning Practice and Research* 11, no. 1 (1996): 85-98.

³ ULI Magazine Published on November 04, 2011 in [Fall Meeting](#)

⁴ CEO of OliverMcMillan(A Commercial Real Estate Development Firm) in San Diego

in the success of any mixed-use project lies with its ability to draw and connect people.

Reoccurring facts from several real-estate magazines affirm that successful MUDs required careful thought to the following:

- Parking
- Delineation of service cores
- Open Spaces
- Connection to public transportation
- Design for human engagement
- Flexibility
- Surrounding Context

The Expanding Role of Architects in Designing Mixed Use Developments:

It is hard to find a clear delineation of the role of the architect in MUDs. The way the author sees it is as follows: The multi-disciplinary nature of the architect is increasing now more than ever. In the area of MUDs, architects are now further assisting in the process of resilience, holistic design and fostering sustainable communities. The intrinsic value architects can provide is that they think of urban improvements at a human and urban scale, include cultural constructs from local inspirations to make

place, and subtly enhance human engagement by providing layered programmatic functions to open spaces.

Cities are growing denser, requiring them to build upward more effectively. Taller buildings are providing opportunities to increase people's physical engagements with the built environment.

The author believes that it is the architect's role to strongly advocate the functional, social, and ecological benefits of mixed use. With this in mind, the thesis looks to strengthen spaces of mixes of use programmatically, with a focus on the functional and ecological benefits of such MUDs.

Related Attributes

The below diagram aims to synthesize the characteristics of a desirable MUD, that is coherently inclusive of the different definitions and perspectives discussed so far.

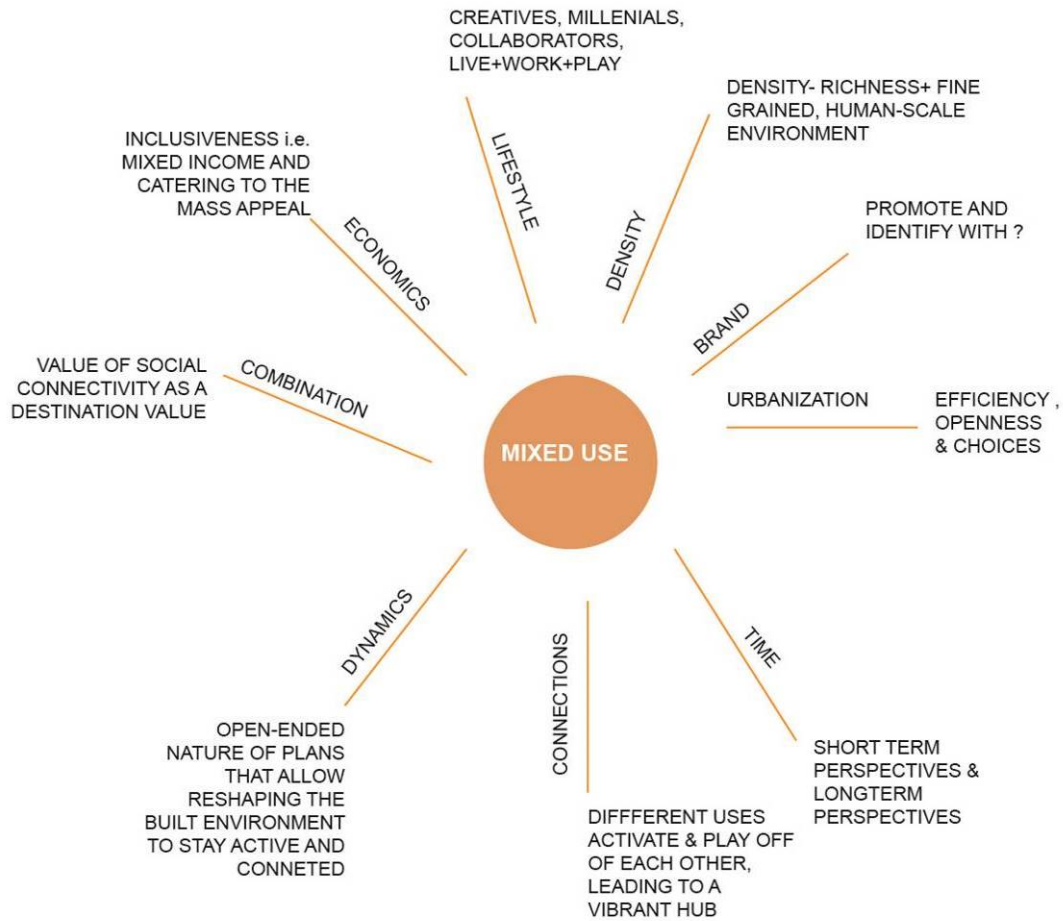


Figure 1: Attributes Diagram for Mixed Use Developments, (source: Author)

Scales

It is imperative to understand the intertwined nature of a site with its neighborhood and its city. This implies that design of the MUD will have social, ecological and environmental consequences at all these scales. It then is important to understand the minimum role and responsibility of the architect at each scale.



Figure 2: The stylized spatial pattern of a city indicating spatial fractals, or sub-systems, such as neighborhoods within the urban fabric¹

Michael Batty in his *Building a science of Cities* aptly says, “In short, cities are more like biological than mechanical systems and the rise of the sciences of complexity which has changed the direction of systems theory from top down to bottom up is one that treats such systems as open, based more on the product of evolutionary processes than one of grand design. During the last half century, the image of a city as a ‘machine’ has been replaced by that of ‘organism’ but the origins of these ideas remain firmly embedded in past developments.”⁵

The diagram below attempts to delineate the architect’s roles at the different scales.

⁵ Batty, Michael. "Building a science of cities." *Cities* 29 (2012): S9-S16.

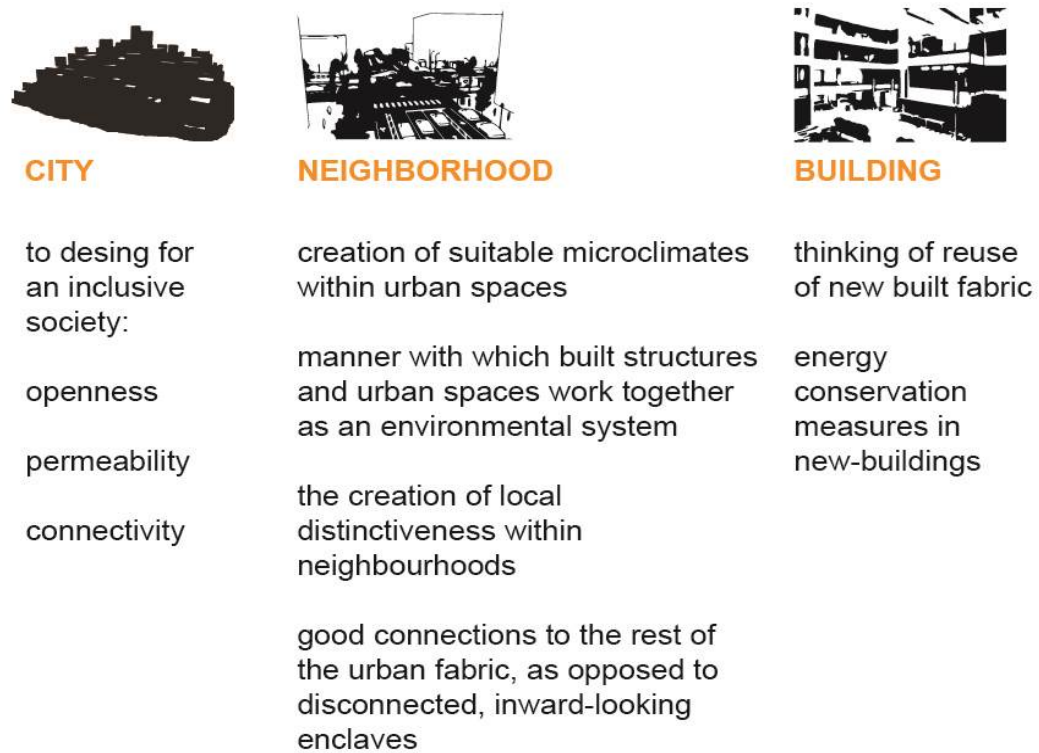


Figure 3: Differentiating the role of the architects at three scales (source: Author)

Process of design

The diagram below is an attempt to understand a holistic view of scope of design work. It enabled the author to keep track of the process, being a constantly evolving

diagram.

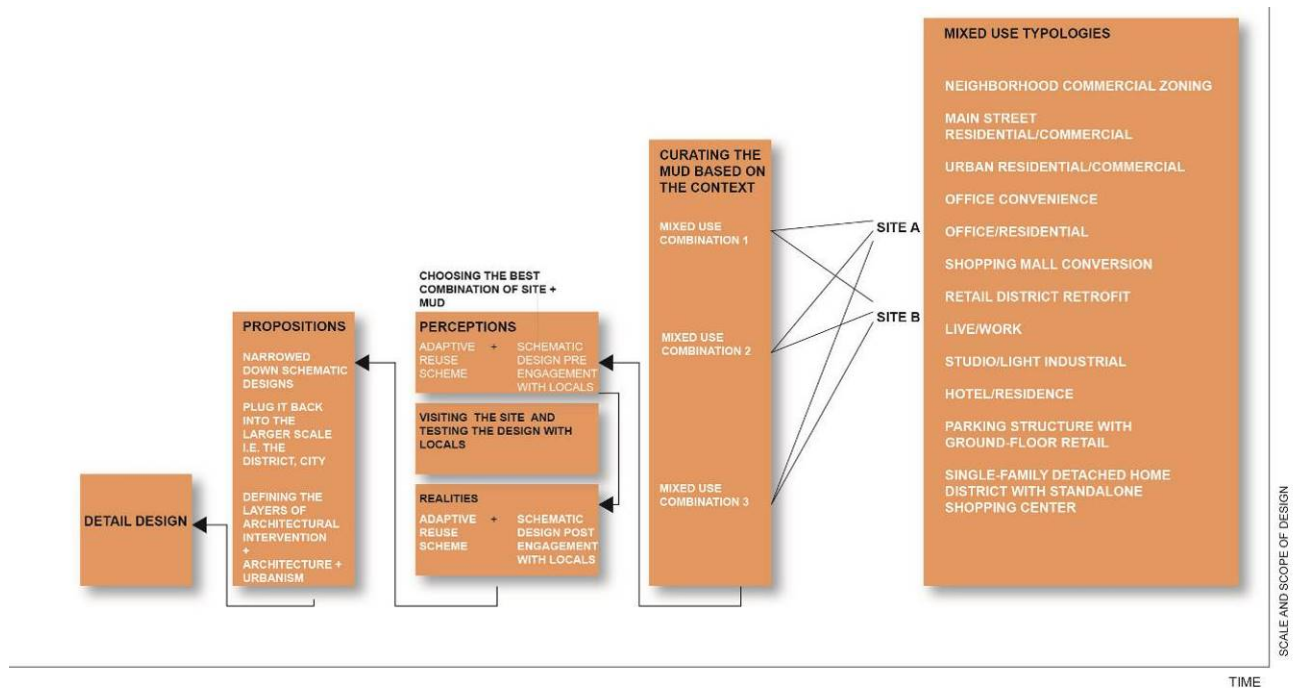


Figure 4: Diagram showing the design process overview, (source: Author)

History of MUDs in the US

Timeline

The diagram below illustrates the history of MUDs in the US over the past century.

What we can clearly understand is that the idea of having mixed uses in a space was something that was intuitive and was the norm in the United States. Only with the advent of industrialization and emergence of factories did there arise a need for separation of uses. MUDs had always been thought of as a practical investment for urban revitalization due to its capacity to bring in people on a daily basis. It was a successful model as a center of energy for a neighborhood. With the lifestyle trends

of the Millennials and those in creative positions and professions, and with the plethora of amenities MUDs have to offer, the author believes that there is a necessity for a thoughtful investigation into understanding and identifying the spaces that make MUDs such lively and desirable urban centers.

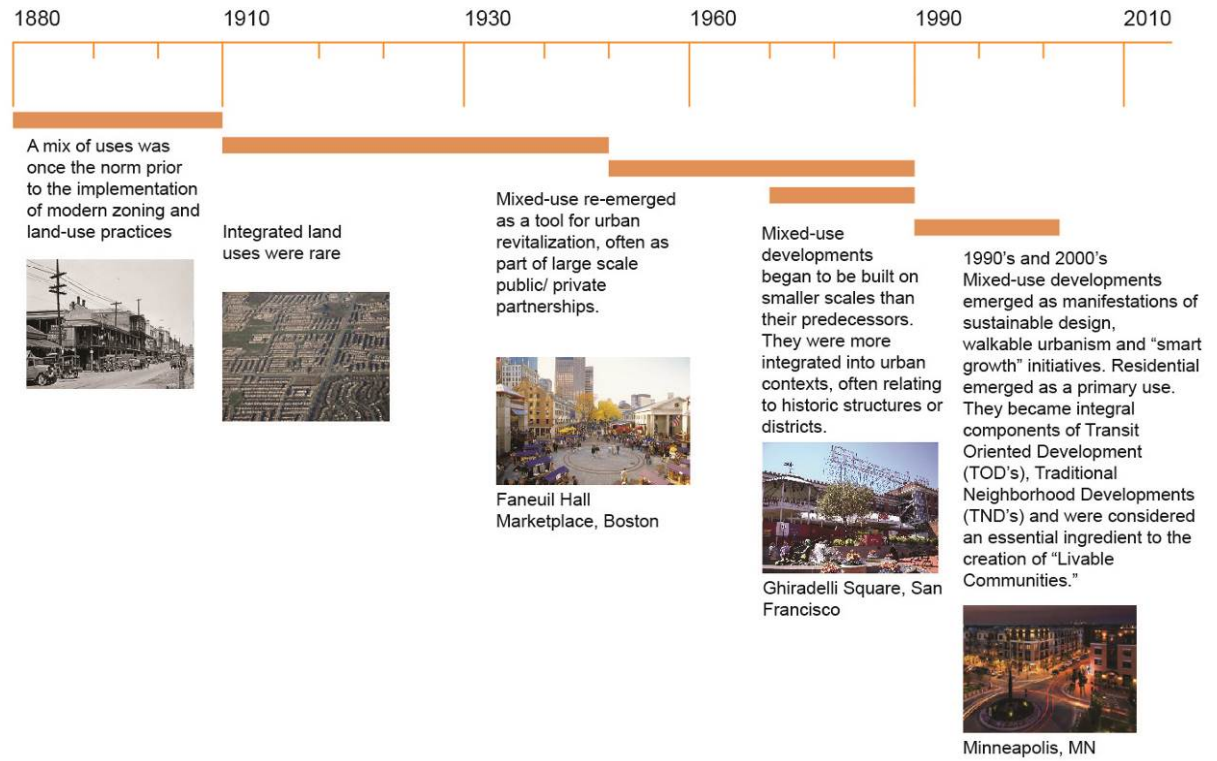


Figure 5: Timeline showing important moments in the History of MUDs in the US in the past century, diagram by author

In Conclusion

What is all this hype behind MUDs? What is it that makes these buildings in the cities desirable to live in, and vibrant, especially while looking at a live-work lifestyle? The next chapter that will look into precedent analysis of such buildings, will identify this layer of space, its design, and what makes it so desirable.

CHAPTER 2: SITE SELECTION AND ANALYSIS

The initial thought for site selection was to find two to three compelling sites, plug –in a mixed use development, and unravel where the development would flourish the most, for its final selection.

But on looking back to what the concept that is driving the thesis which is more a programmatic exploration of a mixed use development, rather than the site selection process, the Author went forward in the direction of locating a single site, based on certain criteria set forth below. Although these criteria are nowhere exhaustive, they set up the basis for the type of urban environment, the author is looking to plug-in the final building into.

Criteria for selection

Urban city block(s)

Access to public transport

Proximity to predominantly travelled streets

In need of an economic/ cultural/ urban uplift

Deserving location to mark an innovative concept of a MUD

Proximity to recreation, parks and open space

The Site

The site includes underutilized parking pads, in the Lower East Side of Manhattan, that span over four city blocks. It is a terminus location for all traffic from the Williamsburg Bridge into Manhattan. Over the past 400 years, it has experienced immense physical, social, cultural, economic, lifestyle change leaving behind fascinating and eclectic urban fragments that are calling out for design attention.

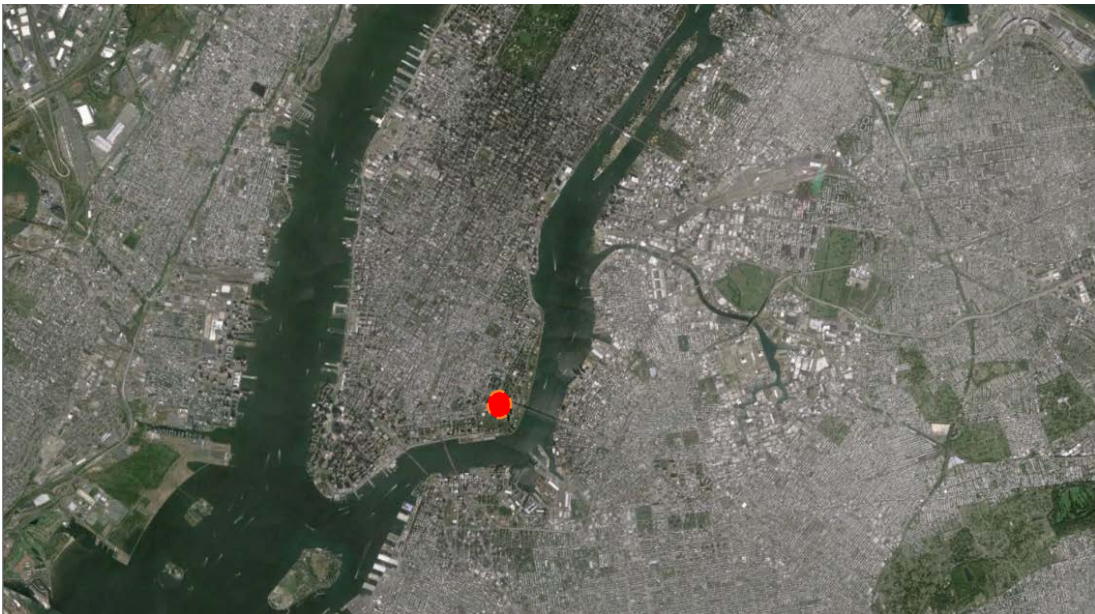


Figure 6: Location of the Site in the Regional Scale (source: Author)

The aim of the site analysis is to dissect the different membranes, layers, weaknesses and opportunities, to that the final design intervention may understand and appreciate these life-sources and attempt at solving the existing problems on one hand, and breathing new and fresh life into it, on the other.

- Transportation
- History

- Hydrology, topography and climate
- Social, cultural, economic
- Building Code
- Parks and Open Spaces
- Urban Fabric

Site Panoramas:

The site panoramas help in understanding the general context of the site.



Figure 7: Panoramic view of Delancey Street, Source: Google Images



Figure 8: Panoramic view of the site, Source: Google Images



FIGURE 9: Panoramic view of access to the Williamsburg bridge, Source: Google Images

SITE ANALYSIS

Transportation

Located in the Lower East Side, Manhattan, New York, the site experiences a special urban condition of being located at the West end of the Williamsburg Bridge.

Examination of urban fabric in this area led to a discovery of similar unsettled urban fabric on both ends of this massive transportation corridor.



Regional Scale:

Figure 10: Main transportation corridors and access (source: author)



Figure 11: Special Urban Condition (source: author)

The site has been chosen to be well connected by public transport subway system. It has immediate connections to bike paths, bus transit, 30-minute walk from the financial district to the south and 30-minute walk from Union Station to the north.

The most predominantly used vehicular access to the site is from Bowery Street, Delancy Street, Clinton Avenue and the Williamsburg Bridge. Highlighted in the image are the prominently used corridors to gain access to the site.

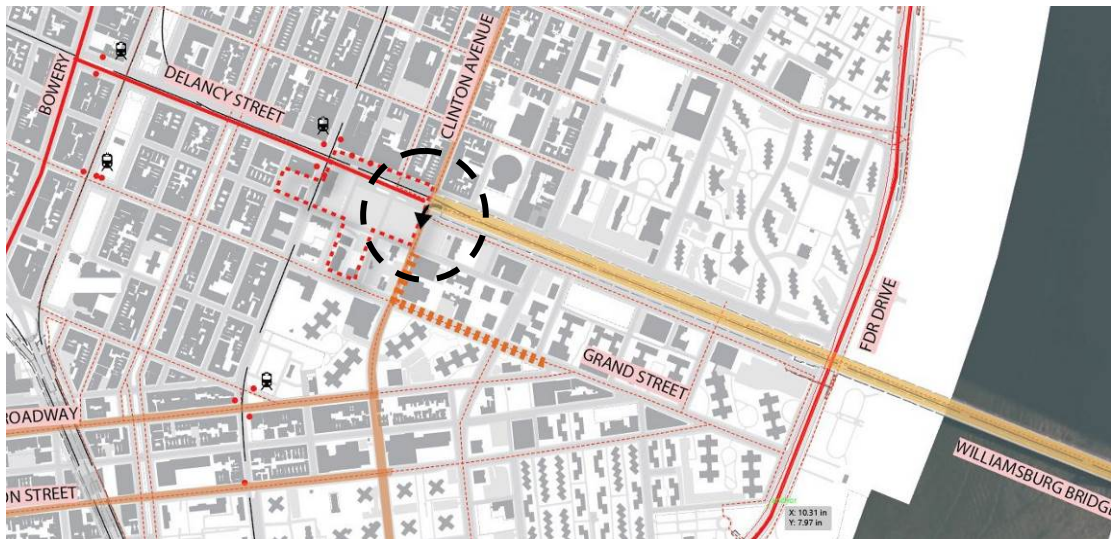


Figure 12: Important intersection (source: author)

Further zooming into the site, what becomes evident is the scale of the Bridge and the importance and scale of the Delancy transportation corridor. At the corner of Clinton and Delancy is where the pedestrian and bike access to the bridge is located and where the vehicles exit onto ground level.

History

Figure 13: Timeline by author showing flux of uses over time

From the history layer, the author was able to understand the roots and soul of Lower East Side of the past. It is important to know this to be able to intensify positive past and existing themes and to add to the understanding of the kind of destination the site can be.

Origin of the Urban Grid:



Figure 14: Historical analysis diagram by author

The traceable history of this site goes back to the late 1500's where Delancy relocated themselves to Manhattan in 1572 after the scare of the St. Bartholomew's Day Massacre during the medieval war. He owned all the land from Houston Street to Division Street in the South. Division Street got its name as it was in fact the dividing line between Delany's land and the later entry of Rutgers and his family, in 1690's.

Delancy established his grid (by 1766) and first leased land out to artisans, investors and craftsman. The grid was established as to gain frontage along the prominent Bowery Street to the west and to the Hudson River in the East.

Rutgers were a brewing family, He established his property from division street south down past Cherry street to the River. The current street East Broadway, was at the time called Love Lane. It had been gaining popularity as to be the closest rival to Broadway Street, as an E-W shopping corridor.

Rutgers son Henry, was the father of the Revolutionary War Colonel. Unlike the Delaney's, he wanted to longer term leases within his grid and introduced restricted covenants. This restriction in time, had a better impact on the long term maintenance of the houses here.

One block south of E Broadway, on Cherry Street was a series of one of the nation's first store + loft concepts, in 1818, by the Brooke Brothers. They had a dry goods and tailor store.

Site Context

The site context layer will highlight important landmarks in the immediate vicinity of the site. The diagram below shows the Site context as to how it may tie into other programs existing on site.



Figure 15: Site Context Diagram by Author

Landmarks

The sheer number of destinations and historic landmarks near the site call attention to this region to be branded, and offers an opportunity in the creation of a place with the new proposal as a central node.



Figure 16: Diagram highlighting important landmarks and important streets, by author

Hydrology and Topography

Figure 17: Map showing 500 year flood plain for LES⁶

From the Figure it is clear that the site is clear from flooding and is safely beyond the 500 year flood plain. Then again, the proximity to the river edge and height of the water table must be considered during the design process and while considering having multiple levels of basements. In terms of topography, the site is 20 feet above the Mean Sea Level. In general, the site itself is flat land.

Zoning

This Chosen site for the thesis is zoned as C6-2A that is defined by the NYC Planning

Authority as the following:

⁶ Source: The Lower East Side, Existing Conditions Report, December 2013, Pratt Fundamentals of Planning Studio Fall 2013

In conjunction with the proposed zoning text amendment described below, the C6-2A district --like the R8A-- would permit a maximum FAR of 7.2 for residential use if affordable housing units were provided, 6.0 for commercial use, and 6.5 for community facility use. For residential development that does not include any affordable housing units, the maximum FAR would be limited to 5.4. C6-2A is a contextual district that requires a street wall between 60 and 85 feet and limits maximum building height to 120 feet. The contextual building envelope regulations would apply to all types of development, regardless of use or density.⁷

This site is also falls under an innovative arts bonus district— the first in the City — to

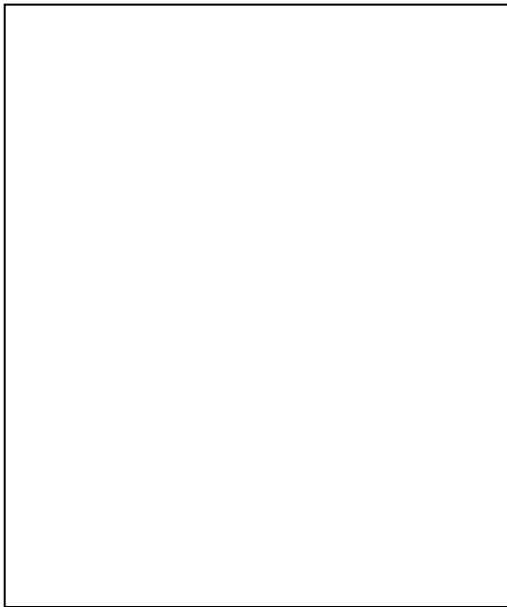


Figure 18: Image showing Prototypical Buildings: C6-1 to C6-2A⁸

provide an incentive http://www.nyc.gov/html/dcp/pdf/evles/model_c62a.pdf for the creation of nonprofit visual or performing arts spaces.

⁷Source: <http://www.nyc.gov/html/dcp/html/evles/evles3.shtml>

⁸ Source: <http://www1.nyc.gov/site/planning/zoning/districts-tools/special-purpose-districts-manhattan.page>

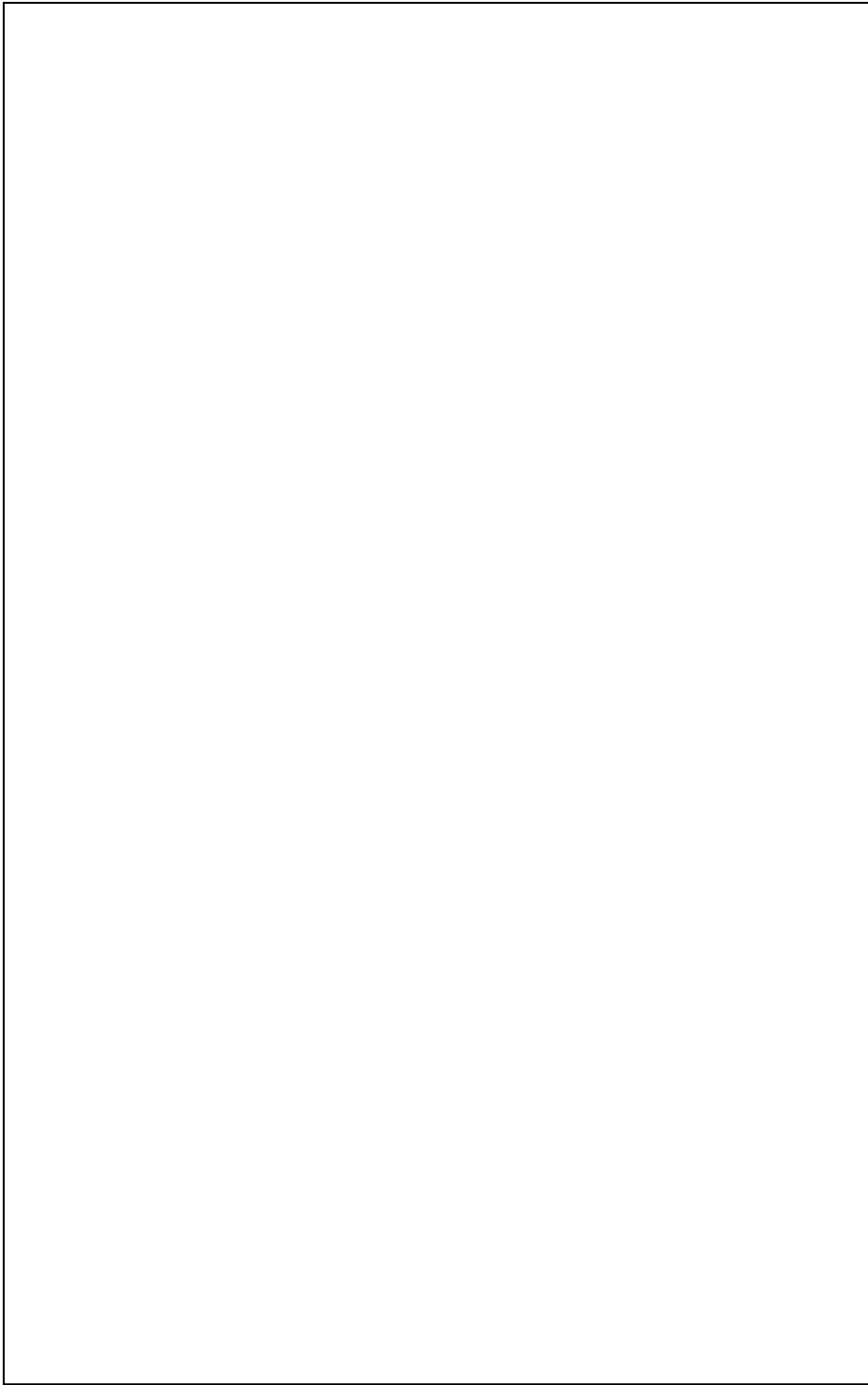


Figure 19: Changes in Zoning (source: NY City Planning Commission)

The site, borrow 12 c of Manhattan, was Zoned Residential (R7, R8) till 2008, after which it was zoned partially residential and commercial (C 61) It was historically fields. It is also a Business improvements district. Currently it is zoned as Mixed Use.

Open Spaces

The nature of development in the LES is currently leading to a shrinking of the amount of open space. Being a densely developed neighborhood this is a concern.

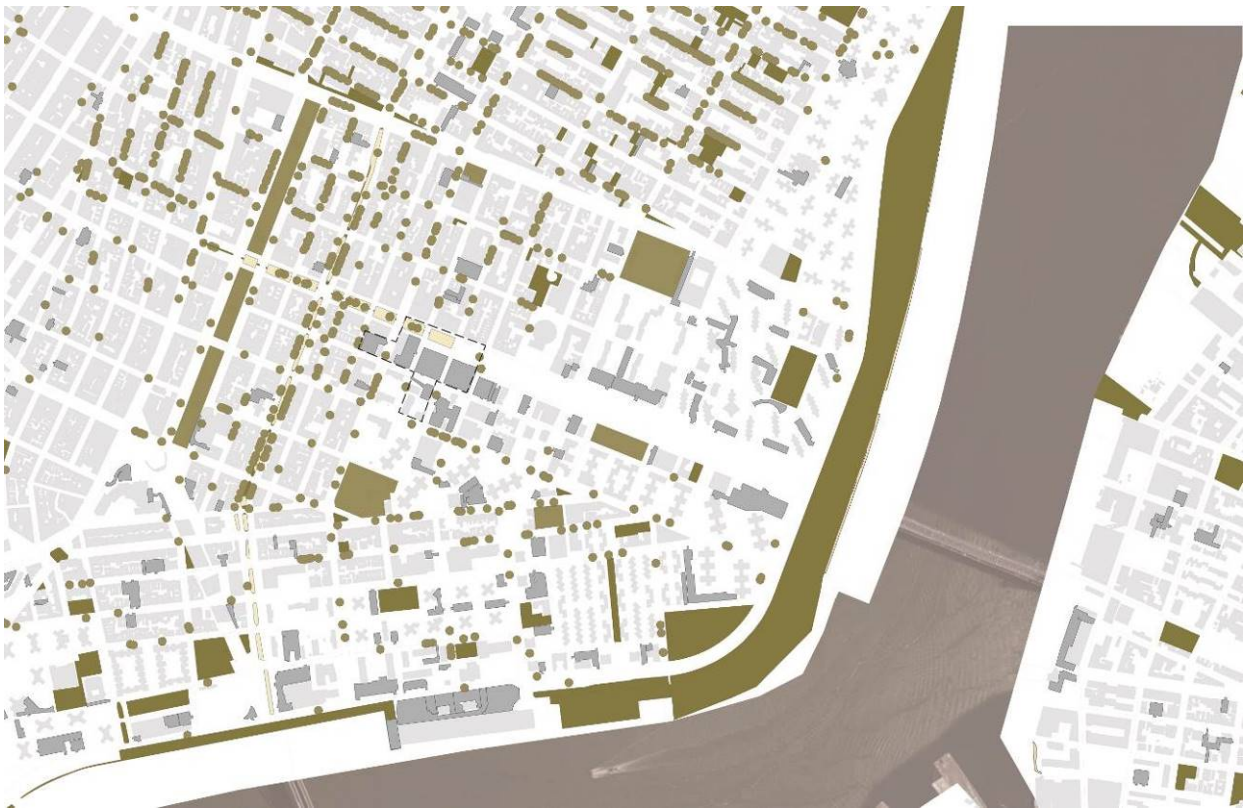


Figure 20; Diagram highlighting open spaces, community garden patches and trees in the LES Source:

Author



Figure 21: Community garden beds on the LES - photo courtesy of G. Tiarachristie⁹

Precedent analysis for Building codes:

Blue: Midrise residential and commercial tower, Lower East Side

This precedent was chosen for the sake of its immediate adjacency to the author's building site, to understand the important codes that come into play during design.

For a reference of scale, the building occupies a city block and the thesis site is currently 4-5 city blocks.

What is also trying to be understood by the author here to determine how the codes affected the design process and where was there room for play?

⁹ Source: The Lower East Side, Existing Conditions Report, December 2013, Pratt Fundamentals of Planning Studio Fall 2013

It is important to note that this is a building whose form was purely generated off codes and draws no connection to its surroundings, in design.

The problem being dealt with in this precedent is the response to the residential zoning codes and the commercial constraints of the developer. In the design, the base of the building occupies a lot zoned for residential, and cantilevers over, and adds to an existing commercial lot in the front.

There were various options of the form of the cantilever, and aim was to maximize floor area on the top floors for residences and to obtain views back to the river.

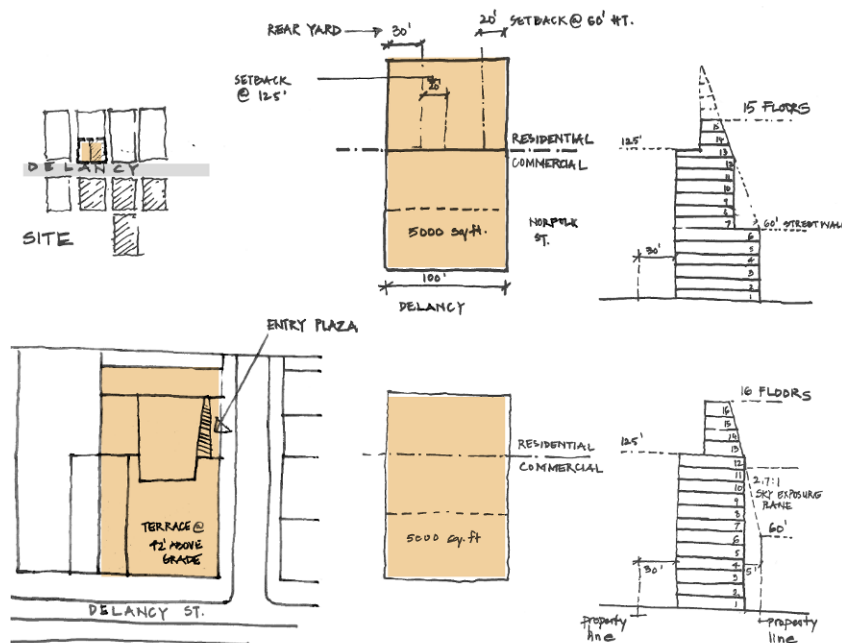


Figure 22: Figure represents the main codes that were being played around with, as a simple generator for the building form- Part 1 (Diagram –Author)

Some of the code constraints identified were:

- Required amount of open space for the residents

- Setbacks- front and rear yard, additional setbacks required as the building height increases
- FAR and Height restrictions
- Sky exposure plane
- Top floor restrictions
- Floor to floor height

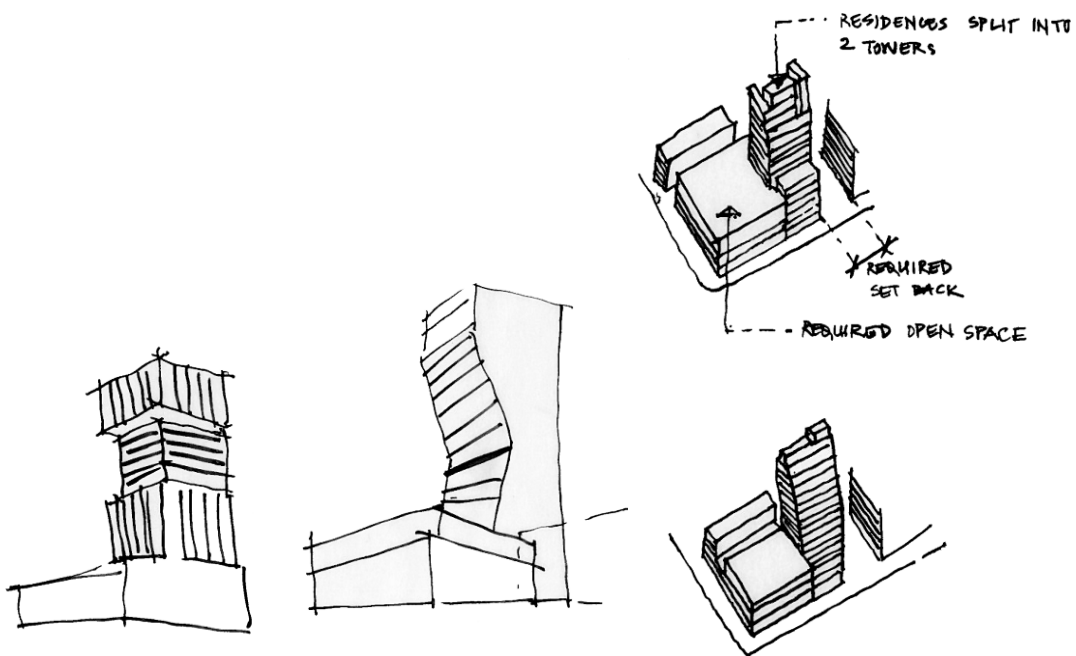


Figure 23: Figure represents the main codes that were being played around with, as a simple generator for the building form- Part 2 (Diagram –Author)

While this building may have achieved maximum floor area and efficiency for a developer's perspective, in design it is simply a closed loop with no response to the community and surroundings, which is what the author wants to avoid in the process of design.

CHAPTER 3: MUDs – PRECEDENT STUDIES

Precedent studies for program:

For the purpose of comparative analysis, the author identified a programmatic break down of a MUD simply into two parts:

- a. The Residual Space
- b. Built Space

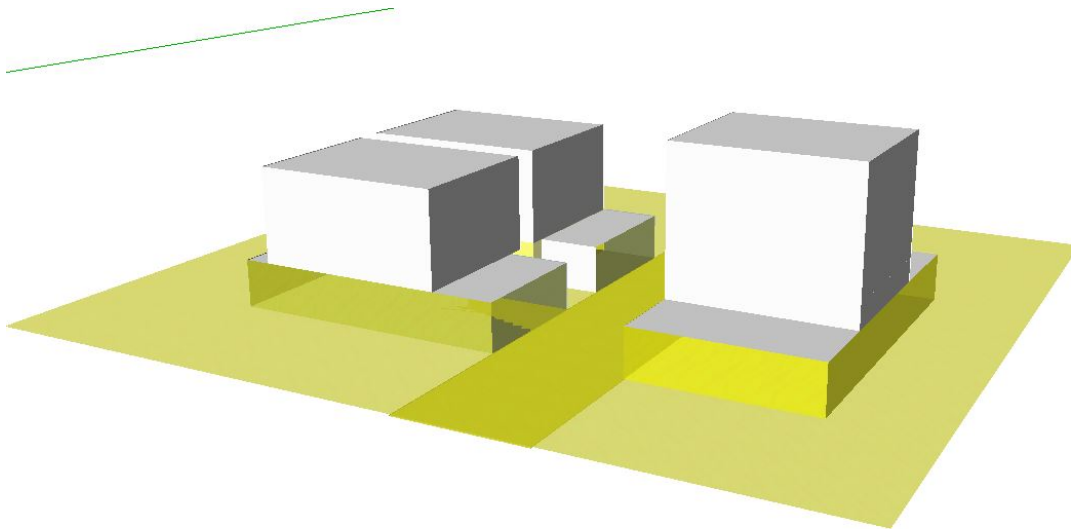


Figure 24: Showing Basic Break Down (source: Author)

Five precedents of varying building uses and scales have been selected to study separately the functional aspects of the residual and built spaces.

Residual Space:

Before we get into the individual projects themselves, the following explains the criteria for analysis and what the author is looking to understand from separating the layer of the residual space.

What are the spaces identified as residual?

The residual space is reasoned out and highlighted for study. Residual spaces are commonly formed in the following places:

- Ground floor of MUD
- Plaza and open spaces
- Entrance/ exits
- Lobby and elimination of corridors
- Gathering spaces
- Site + street interface
- Site + public transport
- Parking
- Where two or more use groups meet
- Facades interacting with the streets

They seem to arise as a result of spaces of

- Conflict, tensions, excitement, surprise,
- Permanence vs. transformative nature

- Public meets private
- Spatial moment where two or more uses meet / transition

The Residual space in MUDs when designed well, have the capacity to reflect vibrance and excitement in experiencing the space primarily due to the massive number of social, cultural, transport related, chance occurrences, reaches and interactions that occur in these spaces.

How is the design of residual space conceived?

The author conceives the design of residual space as an opportunity to amplify and excite this otherwise under-utilized space. Learning from the precedent study, the author will look to implement in the design proposal, methods that can further integrate amenities, activities and context into this space.

Redefining the key issues with regard to The Residual Space

At this point it is important to take a step back and redefine the key issues that are driving the design forward with respect to the identified layer of *The Mix*.

- **Human engagement:**

The author looks to design spaces for situational engagement of the occupants,

space that provides opportunity to gather, perform, at small, medium and large scales.

- **Flexibility/ stability in the mixture**

To investigate flexibility and stability in terms of the purpose and function of the residual spaces

- **Openness/ justice**

The aim here is to design keeping in mind the importance of social justice, providing general access to all, during acceptable hours of the day and not compromising security, in the residual spaces

- **Synergy**

It is first important to understand the meaning of the word synergy and its connotation in this document.

Common definitions are as follows:

1650s, "cooperation," from Modern Latin *synergia*, from Greek *synergia* "joint work, a working together, cooperation; assistance, help," from *synergos* "working together," related to *synergein* "work together, help another in work," from *syn-* "together" (see *syn-*) + *ergon* "work" (see *organ*). Meaning "combined activities of a group" is from 1847; sense of "advanced effectiveness as a result of cooperation" is from 1957.

Buckminster Fuller coined the word synergetics- "Synergetics informed Fuller's social analysis of the human condition. He identified "ephemeralization" as the trend towards accomplishing more with less physical resources,"¹⁰

The design proposal would require careful coordination of programming of residual spaces to lead to the kind of synergy that thoughtful architecture can provide.

Process of Analysis

It is to be noted that all the selected precedent buildings are Mixed Use Developments situated on one to five blocks on a medium to high density city grid.

The first analysis will be of the residual spaces followed by the built up space.

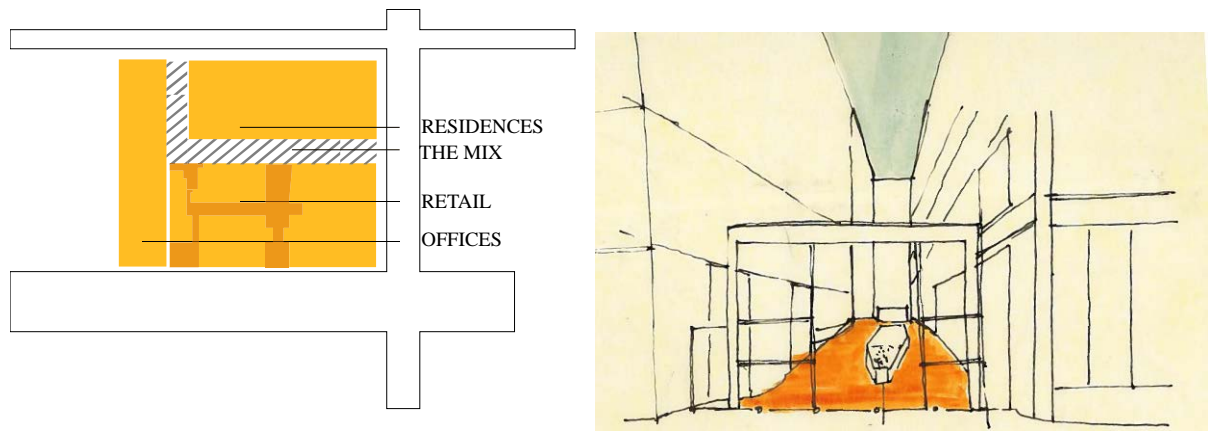
The author first disassembled the precedent building down into its conceptual blocks and identified the zones of residual space. Once the layer was identified, the next step was to look at nodes that attached themselves to this layer which included entrances, exits, corridors, lobby spaces. What was then noted were the extent to which the residual spaces were porous, and connected back to the surrounding streets and public transport. It then identified what programs occurred in this layer and to what extent the programs were transformative over time (day and night). Any other special design moves that would amplify this spatial layer have been identified.

¹⁰ [https://en.wikipedia.org/wiki/Synergetics_\(Fuller\)](https://en.wikipedia.org/wiki/Synergetics_(Fuller))

PRECEDENT STUDY- Revealing seminal elements to design MUD podiums that respond well to the immediate urban context

Market Square, San Francisco

The Market Square was designed as an adaptive reuse of an old art deco building, The Market square is a good mix of residential, office and retail buildings that opens up at the ground level and brings the streets into an L- Shaped pedestrian plaza during the day and an outdoor seating space, dining, fire pit and special lighting space at night. It



is operational in all four seasons. Below is the simple parti of the building.

Figure 25: Left to Right: Parti Diagram, perspective looking into the residual space (Diagram: Author)

As a part of the renovation, the lobby spaces were expanded and connected, to create new interior plazas that would function during the day. The drawbacks that the author saw with this development was that the residual space although meant to

be a thriving 24/7 public plaza for all, was in fact heavily restricted in its hours of use and had gated entries, suggesting it was really only meant to be used by its daily occupants and some chance exceptions.

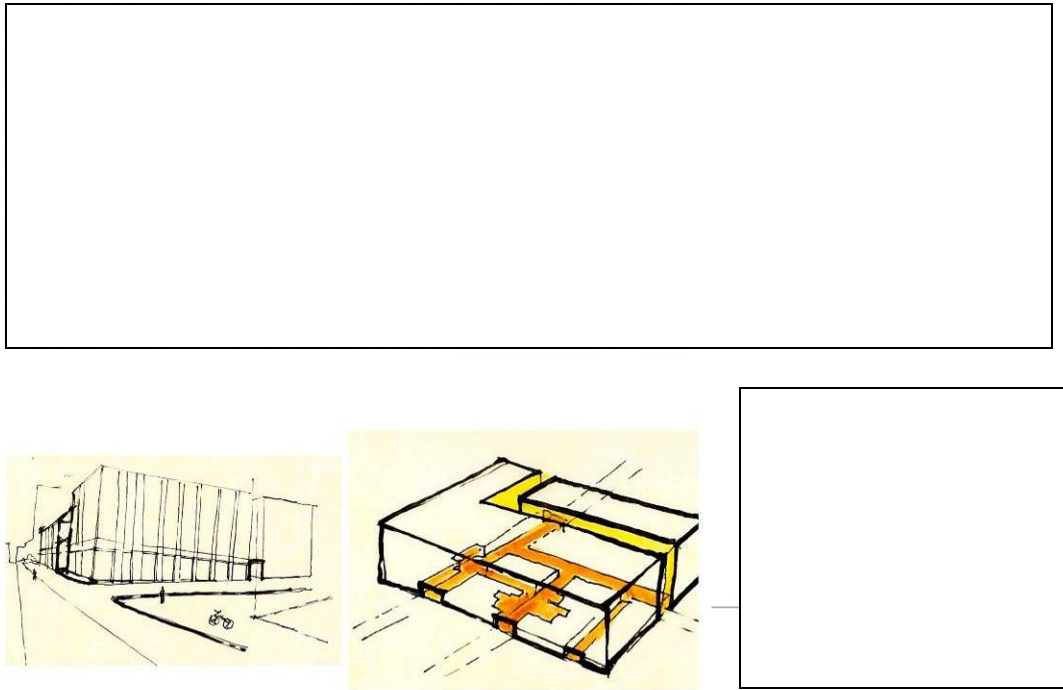


Figure 26: Left to right: Diagrams source: Author, Images Source: ULI Case Studies: Market Square—San Francisco)

The Rose, Minneapolis

In this project, the layer of the residue is a rectangular quasi-courtyard space between two residential blocks. Although this is a primarily residential development (80% residential), it is interesting to note the simplicity of the parti diagram that immediately indicates that it is bringing the community into the layer of The Mix. Also, this courtyard space is successful in functioning with multiple programs including a lawn space, play area, rain garden, patio, grill, community garden and storm water management.

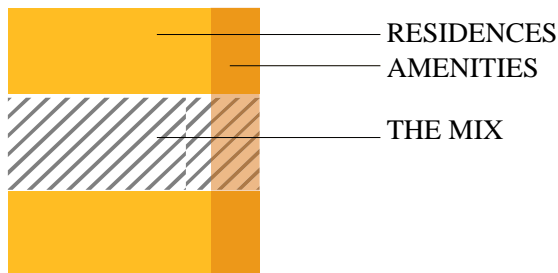


Figure 27: The Rose: Parti Diagram. Source: Author

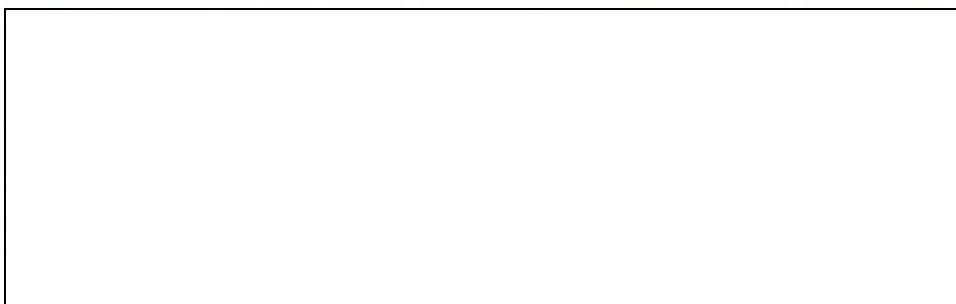


Figure 28: The Rose, View of the transformative space, aerial view. Source: ULI Case Studies

Almatrack-Dresden, Germany

This MUD is located just south of the historic downtown core in Dresden in the old market square. The place is historically known for its retail sector. The new design for this development consists primarily of retail, with some offices, and hotel. What is interesting to note from this precedent is the responsive design of the residual spaces to the surrounding streets and pathways and also how these spaces are reflective of the material character of the city of Dresden, which is generally brightly lit, with stone, wood and stainless steel.

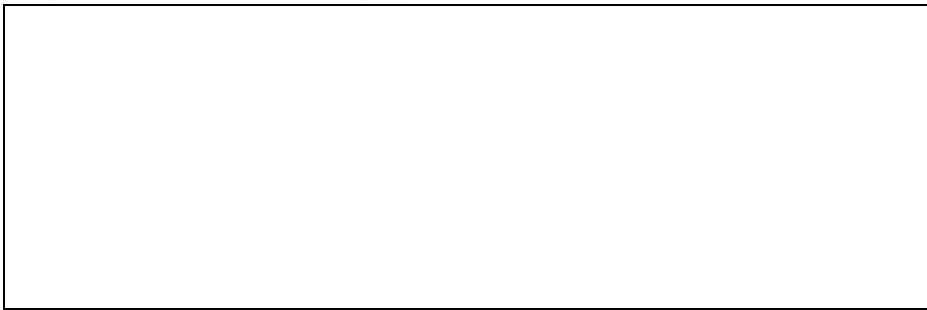


Figure 29: Amlatrack-Dresden Germany, plan and aerial view. Source: ULI Case Studies

_Viola Boston, MA

Location: Intersection of Mass Ave and Hereford Street, downtown Boston.

Gross Square Feet: 390,000-square-feet.

The design vision for the Viola is to repair the physical, social and economic breach presented by the railroad and the Turnpike's cut through Boston. The ground plane of the new public plazas extends into the MBTA stations along both Mass Ave and Boylston Street opening the block to active, public uses through all seasons, with a diverse mix of retail, public transit, hotel and residential uses that will keep the new urban magnet energetic across the daytime and into the evening. This project is to be noted for its big moves in built form, and its dynamic response to the urban conditions, successfully amplifying the activities in the residual spaces into the design of the development.

Figure 30: View from the Intersection of Mass Ave and Boylston Street showing the drawing in of the built form around the corner to make way for public space Source: New England Real Estate Journal, November 15th, 2015. Article titled 'The Peebles Corp.'s 'The Viola' receives unanimous board approval for Parcel 13'

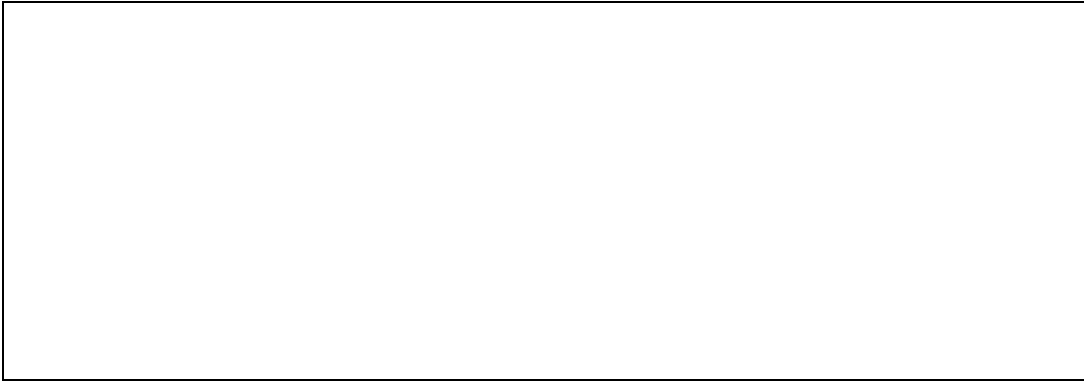


Figure 31: Viola, Ground Floor Plan showing the street entering into the building, aerial view
Source: www.peeblescorp.com/portfolio/viola-back-bay-Boston/

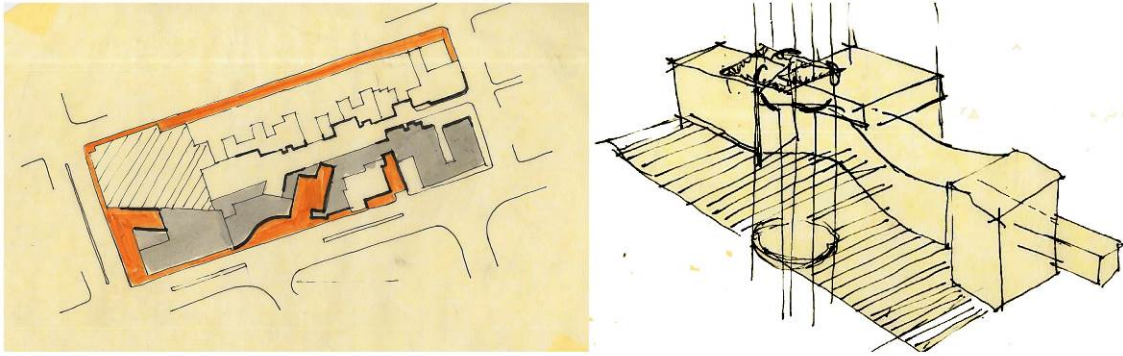


Figure 32: Viola, highlighted residual space, view highlighting core vertical shaft of space where multiple building uses converge into a common open space

_Via-Verde NYC

What: Via Verde, a mixed-income residential development

Where: New York City

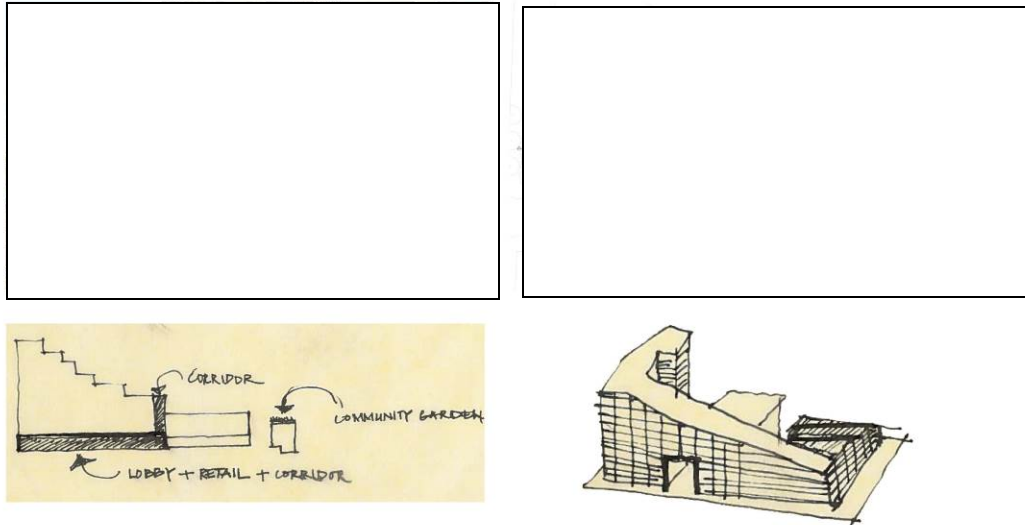


Figure 33: Top two figures Source: ULI Case Studies, Bottom Two figures showing separation of community activities from residences spatially (left), step down built form for Via Verde (right)

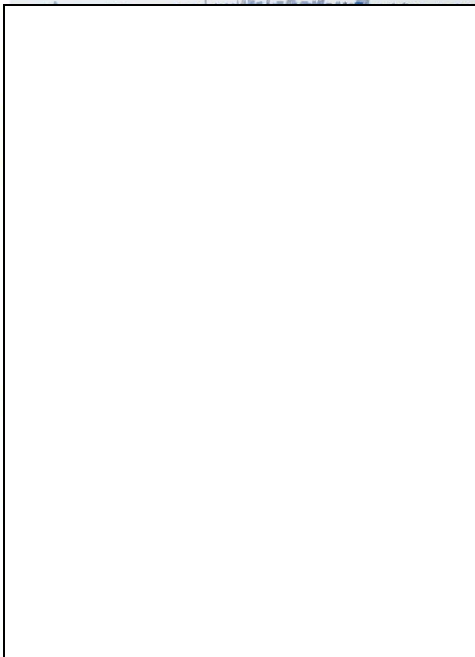


Figure 34: Aerial view of Via Verde showing the central community garden as a design form generator.

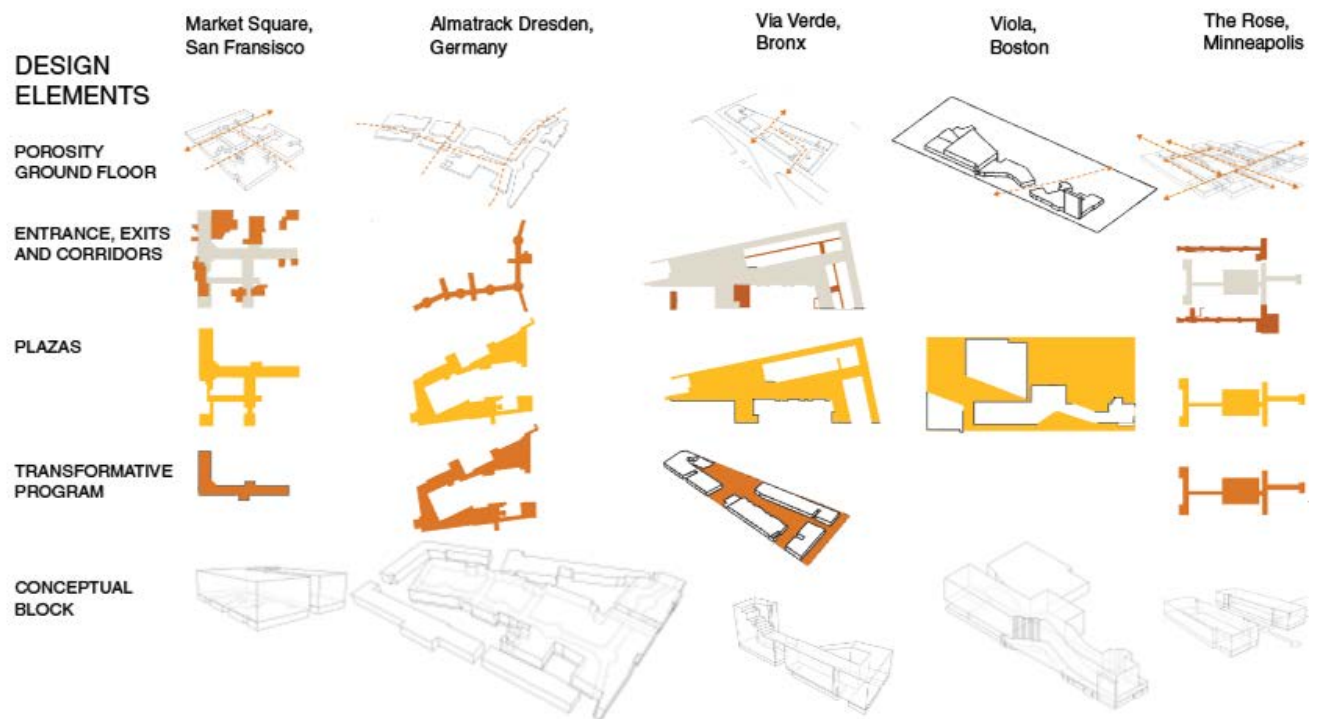


Figure 35: Showing Matrix of Precedents analyzing the residual space

Source: Author

PRECEDENT STUDY: Objective take on designing MUDs in Urban Centers

In this study, the author investigates what type of building uses are most effective together, from a functional, and partially self- contained standpoint, taking context out of the picture. Some important questions that arise at this time are:

What types of mixtures are the best?

Based on a detailed investigation of the site and its urban context, the thesis will arrive at what the best mix of uses are. The author keenly believes that clear analysis of the past, present and future context is key to determining the mixes.

And also to draw inspiration from the historical, cultural and social constructs of the site surroundings.

Role of the context in the designing of “mix”?

The author believes that the role of the context is highly significant, as it is what distinguishes the mix layer and makes it unique. It is what gives it soul and identifies it with the local people. It is what may stem pride and ownership over the space. It is what can brand the space and give it a distinct and cohesive narrative.

How the layer of the mix interacts with the built and unbuilt environment, on site and off site:

- Socially, Culturally

- Physically
- Functionally
- Aesthetically
- Architecturally
- With time

Why is mixing an asset?

To provide an elevated experience through a careful choreography of the different elements.

ANALYSIS:

The following analysis aims at deriving a comparative qualitative effectiveness of mix of uses within each of the five projects:

Table 1 shows the area tabulation for different uses. The horizontal axis of the table represents the different building use areas and the vertical axis is the different projects.

Category\Building	R1-Rental	R2-Condo	R3-Co-Op	Office	Retail	Hotel
Market Square	0	0	0	1,050,000	85,000	0
Altmarkt-Gallerie-Dresden	0	0	0	78,500	700,000	57,000
The Viola-Boston	80,750	91,600	0	0	20,350	76,000
South Lake Union	460,000	0	0	420,000	30,000	0
Via-Verde-NYC	109,186	0	66,403	5,500	2,000	0

Table 1: Area Tabulation for different building uses and estimation of total users. Source: Author

Hotel	Other	Uniq	O - Open	Total Area	Res Num	Non-Res Num	Total Num
0	55,500	0	0	1,190,500	0	941	941
57,000	75,000	0	56,000	966,500	380	3,650	4,030
76,000	107,000	7,900	6,800	390,400	780	8,680	9,460
0	120,000	0	5,800	1,035,800	920	2,528	3,448
0	863	40,000	40,000	263,952	450	0	450

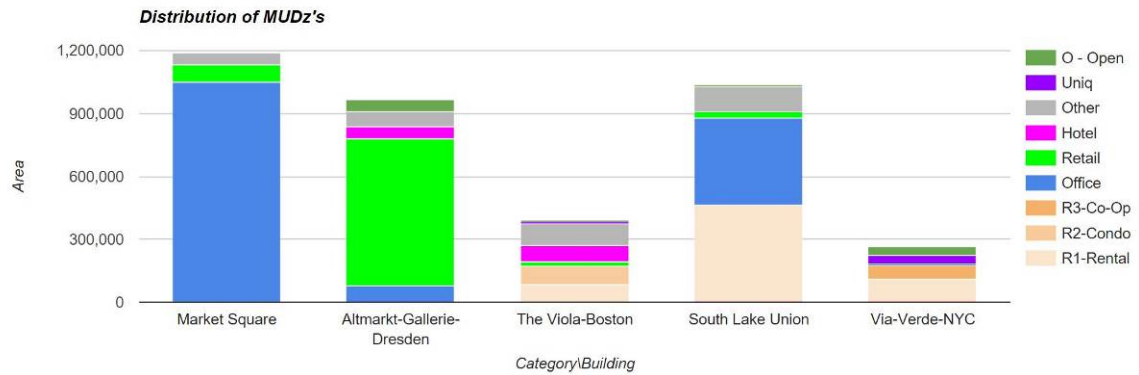


Table 2: Maximum and minimum distribution of uses over square footage in the different projects
(source; author)

Utilizing data from Table1 and 2, Table 3 shows the areas in percentages, where we can note what the dominant and passive uses are. Important to note is the last row, the weightage row. The weightage represents the importance of the use with respect to the self-sufficient functioning and utilization of the building spaces.

Category\Building	R1-Rental	R2-Condo	R3-Co-Op	Office	Retail	Hotel
Market Square	0.00%	0.00%	0.00%	88.20%	7.14%	0.00%
Altmarkt-Gallerie-Dresde	0.00%	0.00%	0.00%	8.12%	72.43%	5.90%
The Viola-Boston	20.68%	23.46%	0.00%	0.00%	5.21%	19.47%
South Lake Union	44.41%	0.00%	0.00%	40.55%	2.90%	0.00%
Via-Verde-NYC	41.37%	0.00%	25.16%	2.08%	0.76%	0.00%
Weightage	22	26	18	3	4	9

Hotel	Other	Uniq	O - Open	Res /1000sqf	NR /1000	Score
0.00%	4.66%	0.00%	0.00%	0.00	0.79	2
5.90%	7.76%	0.00%	5.79%	0.39	3.78	13
19.47%	27.41%	2.02%	1.74%	2.00	22.23	43
0.00%	11.59%	0.00%	0.56%	0.89	2.44	12
0.00%	0.33%	15.15%	15.15%	1.70	0.00	23
9	1	13	4			

Table 3: Table showing effectiveness of the mix of building uses (source: author)

Weightage = Factor of effectiveness of the mix per square foot

So it is assumed that the highest weightage goes to the permanent residents (R1, R2 and R3) and the least would be to the “Other” column

A high weightage is also given to the column “Unique” which represents the special, unique use. The purpose of this use may be to become an economic generator, to brand the space, to amplify the positives of the existing context.

As can be seen from the table, the only two projects that had a unique factor were:

1. Via Verde Mixed Use Residential Complex that houses a community garden and amphitheater
2. The viola in Boston, will be situated at a MBTA, T- light rail station that immediately gains a higher score as a mixed use establishment just because of its transit oriented development.

Certain assumptions are as follows:

- More density of people = good
- Effectiveness definition = effectiveness of square foot percentage of the building use, as able to amplify the self-sufficient functioning of the mixed-use development (based on what the author deems important for a creative millennial lifestyle)

The two columns introduced in table two represent the number of people per 1000 square foot visiting (Non-Res Number) and occupying (Res –Number) per day.

These number have been calculated in approximation, based off of available information about the project and its functioning from different online sources.

Following are a few assumptions in the calculations:

1. Office Space – average of 175 sq. per person (although this varies from 100 – 250 sq. per person)

2. Hotels – 150 sq. per hotel room

3. Residences – Rental- 600-1500 sq. feet (average of 2 occupants)

 Condo- 1000-2000 sq. Feet (average 2 occupants)

 Co-op- 600-1500 sq. ft. (average 2 occupants)

4. The use “Other” constitutes parking, services, and any other miscellaneous uses.

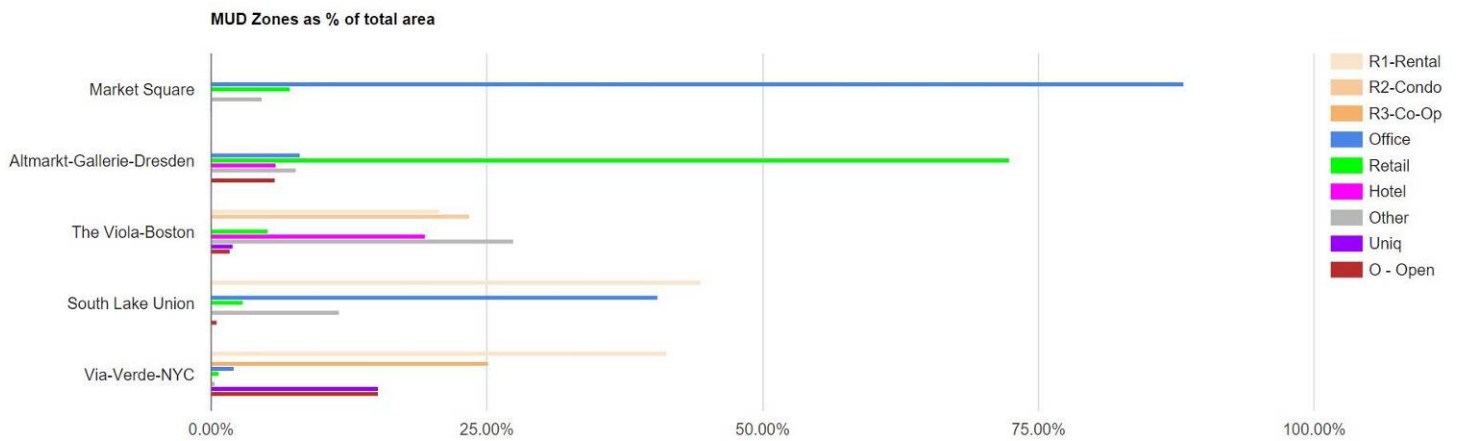


Figure 36: Figure showing MUD Zones as a percentage of the total square footage of the building
(source: author)

Conclusion:

The author attempted this exercise to determine what mix of program uses may best enable greater human activity. It was a research conducted to provide results from a purely statistical standpoint. Upon reflection, this method may have been more successful if there was greater collaboration with a person from a real-estate background.

Case Study: Restructuring of Montparnasse Superblock

The significance of this case study is to understand how the design of this MUD aims to “reintroduce the human scale” and improve “accessibility and programmatic identity” to the aging mixed-use development.

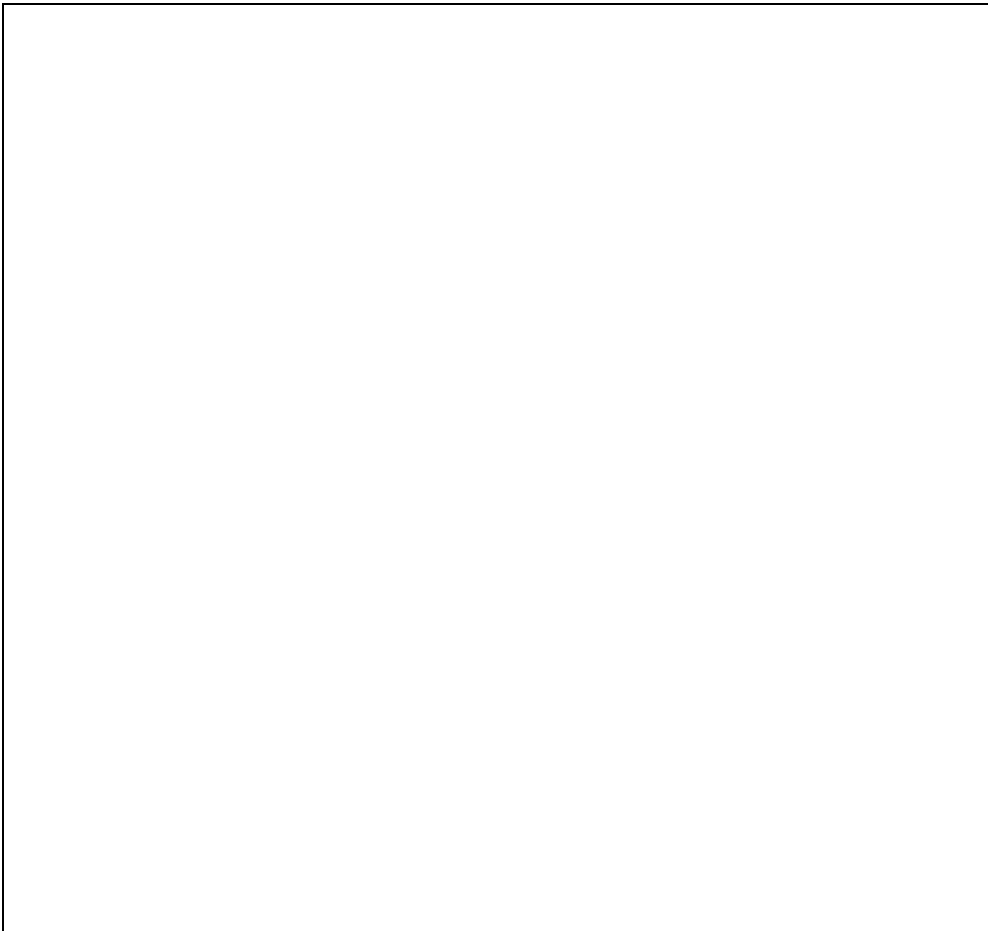


Figure 37: Fragmented facades: Street View Source: l'autre image Karissa Rosenfield. "City of Paris Approves MVRDV's Restructuring of Montparnasse Superblock" 23 Feb 2015. ArchDaily. Accessed 29 Oct 2015¹¹



Figure 38: New Program Block Diagram (Source: Karissa Rosenfield. "City of Paris Approves MVRDV's Restructuring of Montparnasse Superblock" 23 Feb 2015. ArchDaily. Accessed 29 Oct 2015)

Issues of the old development:

- design driven by the ideal of the automobile, the building was on an urban island surrounded by the traffic and rail tracks
- introverted and self-contained block
- lack of urban connectivity,
- discourages pedestrian activity
- neglects any sense of identity

Design Strategies:

- Breaking the solid, horizontal volume up into fragments
- Extroverted programmatic quality of uses in the ground floor/ building plinth
- Visual distinction of programmatic character from the outside promoting
- Transparency of activities and inviting the observer
- Fragments of boxes inserted in a structural frame allow for flexibility in program
- Accessibility was increased

Conclusion

It is important to distinguish the mix layer from any public plaza on the streets, in the fact that it is more protected and sheltered by the Development it is tied into. Most of the mix layers are limited to the ground floor of the development for security purposes. There is an opportunity here to examine how this layer may be extended vertically and if there are any advantages to doing so. For the Mix to be the effective, desirable and thoughtful space that ties in all the other parts of the Mixed Use development, some general characteristics it can have at the least are:

- It is designed to become functionally transformative with time, makes the space refreshing and exciting
- It should be capable of tying in as many amenities as possible to support an outdoor branch of all the indoor activities in different uses of the building

- It should have views or hints of views to and from the streets it surround

It is important to note that this layer in most developments exists as a space of residual that is towards the end of the design landscaped into a park or is fitted with some seating. Although we do see a lot of intentional design of public space in cities when it is stand alone or a part of a water edge, we do not see the same sensitivity to designing and integrating this layer of the mix with the buildings in the development, functionally and spatially.

CHAPTER 4: Designing for a Live-Work LIFESTYLE

Context and Definitions:

Use of the terminology live-work for this thesis has been adapted in a generalized sense to stress on the main idea that a live-work lifestyle enables stronger connection to place. The inherent advantage of this sense of belonging is thought of as extremely important by the author, who strongly believes in the capacity of thoughtful architecture's responsibility to respond outwards to its immediate context and well as inward to make degrees of public to personalized space.

Also, research pertaining to live-work in this thesis, including related codes, precedents, history is limited to what is going on in the United States due to limitation of scope. Carrying such research further it is important to look into precedent from Eastern and south east Asian countries for their living traditions of live-work and to see if there are lessons to be learned and adapted into the American context.

Live-Work Typologies:

Texts from the Congress of New Urbanism and Form Based Codes have dealt in detail with what they believe live-work comprises of. For the convenience of study, it has been divided into three types:

Live- With

This is the most common type of Live-Work Scenario where there is no physical boundary between the live and the work space. The space is zoned residential and allows for an informal relationship between live and work. A popular example of this is the Loft Style Artist apartments

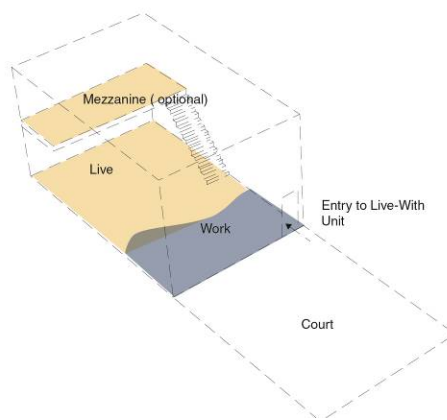


Figure 39: Diagram of a generic Live-With Unit, Source: Drawn by author¹²

Live Near

This allows for a higher intensity of work to happen, the work space being commercially zoned and separated from the live space by a fire wall.

It is important to note that the codes here only allow for a business of up to four employees operate in this type of work space.

¹² Adapted from the book titled Live-Work Planning and Design: Zero-Commute Housing

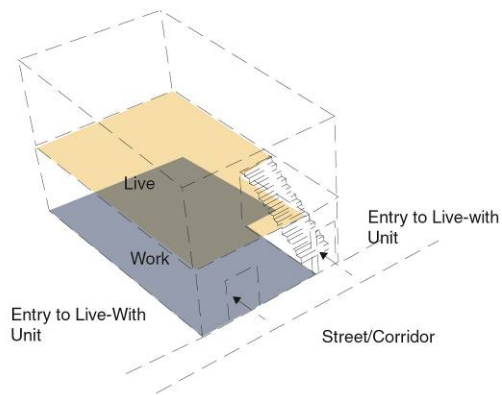


Figure 40: Diagram of a generic Live-Near Unit, Source: Drawn by author

Live-Nearby

This live-work type applies to all scenarios where the live and the work space are separated by less than a 5-minute walk.

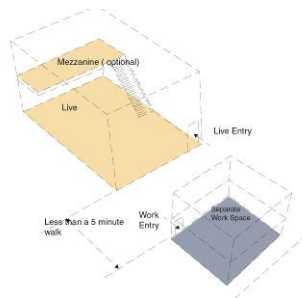


Figure 41: Diagram of a generic Live-Nearby Unit, Source: Drawn by author

The author believes the three delineations to be highly useful to spatially differentiate live and work spaces, based on a person's lifestyle and the relationship of the intensity of their live vs. work style.

Precedents

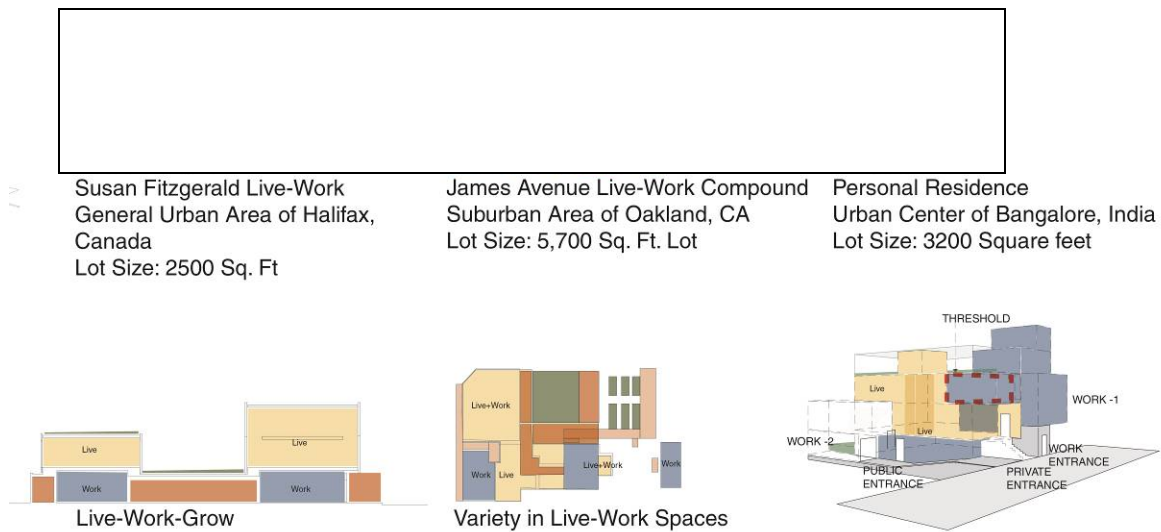


Figure 42: Diagrams by Author illustrating spatial organization of live-work spaces, Aerial Images from google earth

The three precedents show how we can design Live-Work spaces innovatively and with flexibility.

The first example (Figure 42) is a single family residence by Susan Fitzgerald

¹³Architects. It consists of three separate units, with entrances at grade, the program for the project includes: an office space for an architecture and contractor firm with equipment storage; a dwelling for a family of four with a dog and two cats; and a two-story live-work rental studio apartment. The programmatic and spatial flexibility that

¹³ "Live_Work_Grow House / Susan Fitzgerald Architecture" 16 Jun 2015. ArchDaily. Accessed 17 May 2016. <http://www.archdaily.com/642055/live_work_grow-house-susan-fitzgerald-architecture/>

enables the commercial and residential spaces to contract or expand into one another based upon the viability of the business is an uncommon idea. The design also accommodates idea of changing family size as the kids mature and parent age. A central landscaped space is integral to the design providing respite from the busy city life.

The take away from the James avenue live-work compound is that it successfully accommodates variety in live-work spaces. The diagram shows work spaces with three different relations to the live. While one workspace seamlessly opens up into a live space deeming it informal, the second work space is slightly more formal and the third work space is completely detached from the living spaces. Thus based on the intensity of work an appropriate unit can be rented. This precedent also accommodates central space for a community garden and collaboration.

The third image (Figure 42) is a diagram of the authors childhood residence and show how the design for the single family residence was conceived to also allow for two organizations to operate without disturbing the dwelling spaces. While one work space had the advantage of the street front, the other opens up into an enclosed backyard.

Advantages of a live-work lifestyle:

The unique lifestyle of live-work has many inherent advantages, the most important of which are illustrated in Figure 44.



Figure 43: Infographic showing advantages of a live-work lifestyle. Infographic source: Author

CHAPTER 5: THE DESIGN PROPOSITION

Site Context

The site analysis chapter analyzed the site at the scale of the neighborhood of the LES. The following paragraphs articulate the site context as is at present, zooming into a smaller scale.

1. Low-Line

The low line is immediately adjacent to the chosen sites.

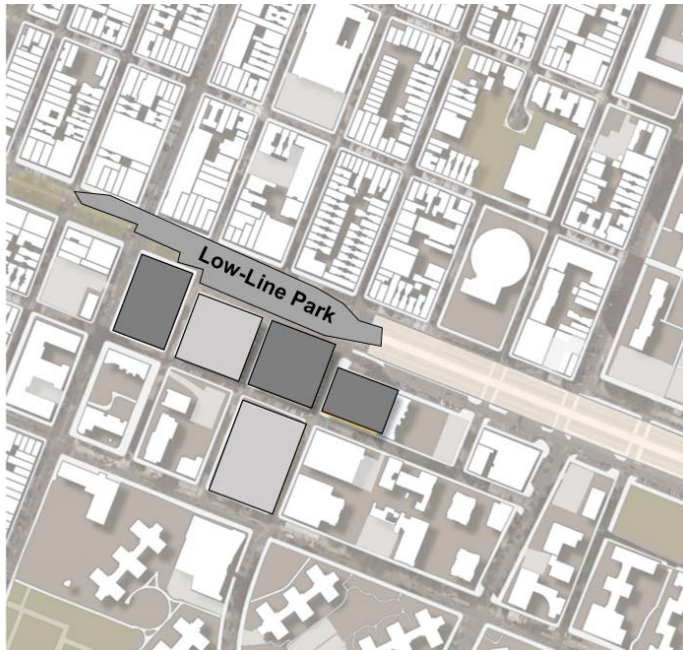


Figure 44: Image highlighting the location of the low-line park

The Lowline is a plan to use innovative solar technology to illuminate an historic trolley terminal on the Lower East Side of New York City. Its vision is to provide a

beautiful respite and a cultural attraction. While the LES is in need for more open and community space, the author criticizes this as an innovative idea yet unnecessary.

There is not only plenty of above ground space that has the potential to be revitalized.

2. Essex Crossing Development



Figure 45:Diagram highlighting the sites for the current Essex Crossing urban renewal proposal

The Essex Crossing Proposal is a major urban renewal development comprising of 1.9 million square feet of residential, commercial, and community space.

Evolution of the thesis question:

Upon gaining knowledge about the Essex crossing proposal, the author had the choice to

- a. Ignore the context of this proposal and continue to develop a Live-Work mixed use building on one of the sites
- b. Accept the master plan of the Essex Crossing and adapt the program into the thesis proposal
- c. Critique the proposal and for its strengths and weaknesses and choose a site that would belong to this future masterplan and yet respond to the goals of the thesis as well as the unique and divers context of the LES.

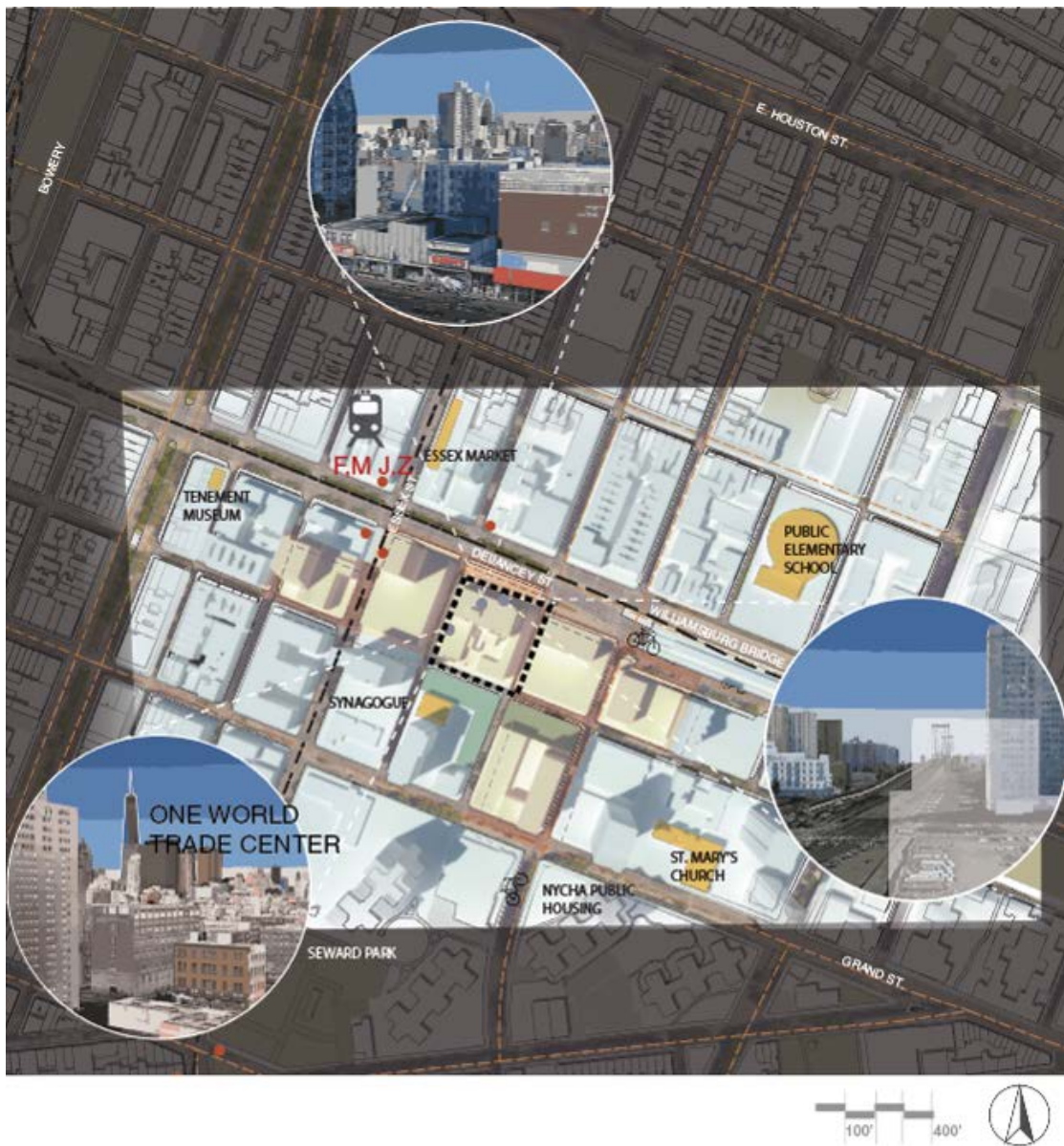


Figure 46: Image by Author Highlighting Views, Access and Site within Essex Crossing Proposal chosen for the purpose of designing the Live-Work MUD

The author chose option c. as to be the most pragmatic way to move forward and chose site 3(Fig. 47) of the Essex Crossing to become the site for the thesis proposal.

Site 3 is unique as it is a square site, occupying a whole city block. It belongs to the second phase of the Essex Crossing Masterplan, allowing the design for its building to have sufficient context to respond to from phase 1 of the design which is now upcoming.

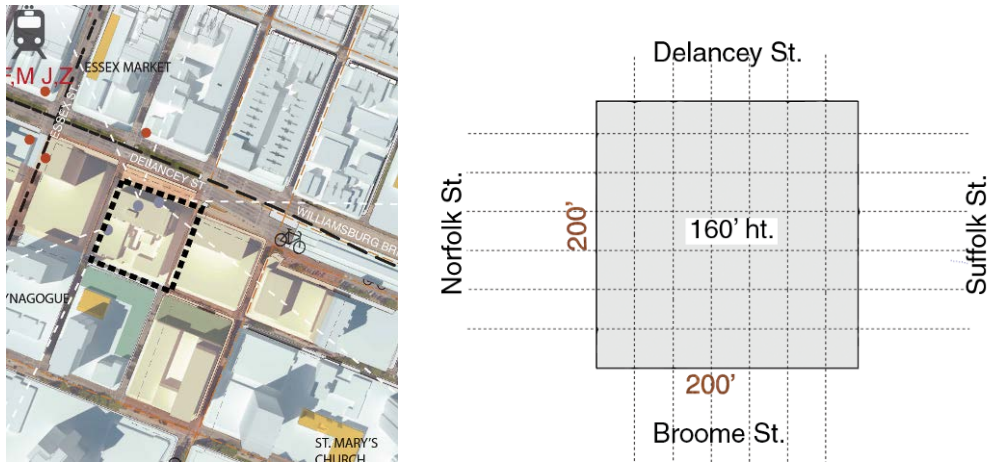


Figure 47: Left to right: Location of Site 3, Site Dimensions
Source: Image by Author

Zoning Envelope

Mid rise and tower options

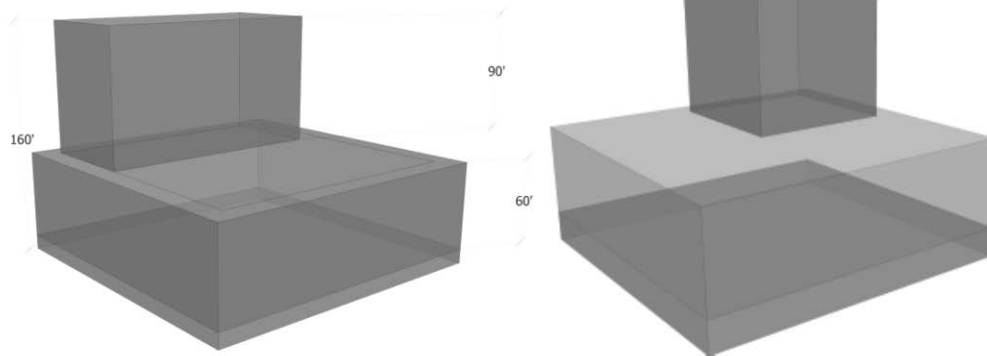


Figure 48: Zoning Envelope
Source: Image by Author

Designing the Program:

The Essex Crossing Development vision was appreciated for the following points:

1. Inclusion of Broome St. Garden as a thoughtful winter public space
2. Inclusion of the Essex Street Market within the program, which was small sale retail market space, that was a reflection of the thriving fresh produce market in the area

It was critiqued for the following factors:

1. Practicality of the roof top gardens as a community space versus a smaller scale community garden patches, similar to the beautiful community gardens existing within the crevices of the residential blocks in the vicinity.
2. Lack of inclusion of an outdoor public plaza in to the schematic design
3. Bulk of massing- its size and lack of response to the variety of massing in the immediate surrounding urban context.
4. HOUSING- Lack of a higher degree of creativity in the spatial arrangement of housing giving the strong history of small businesses, public housing and the eclectic nature of architecture in the LES.

While critiques 1-3 are addressed in the thesis, emphasis is given to the housing aspect of the critique and how the context calls for a complex thinking of the program use and spatial organization of the residential, commercial and retail spaces. And not only that, given the rate at which the

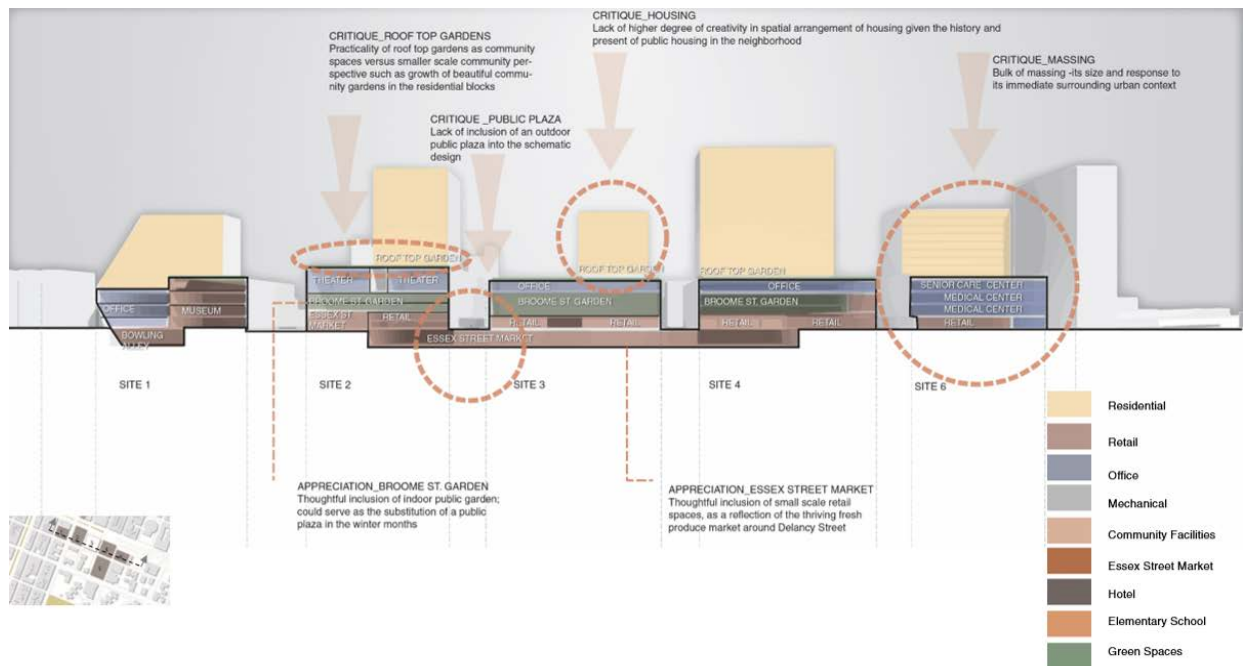


Figure 49: Image representing critique on the Essex Crossing Proposal.
Source: Image by Author

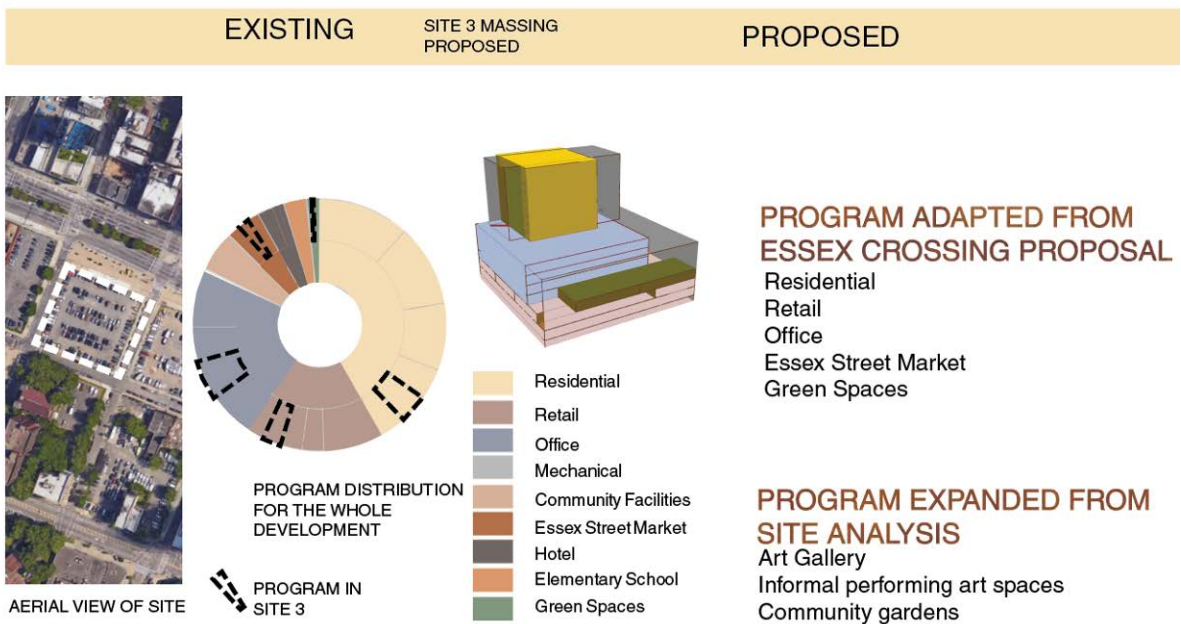


Figure 50: Program of Essex Crossing versus thesis proposal
Source: Image by Author

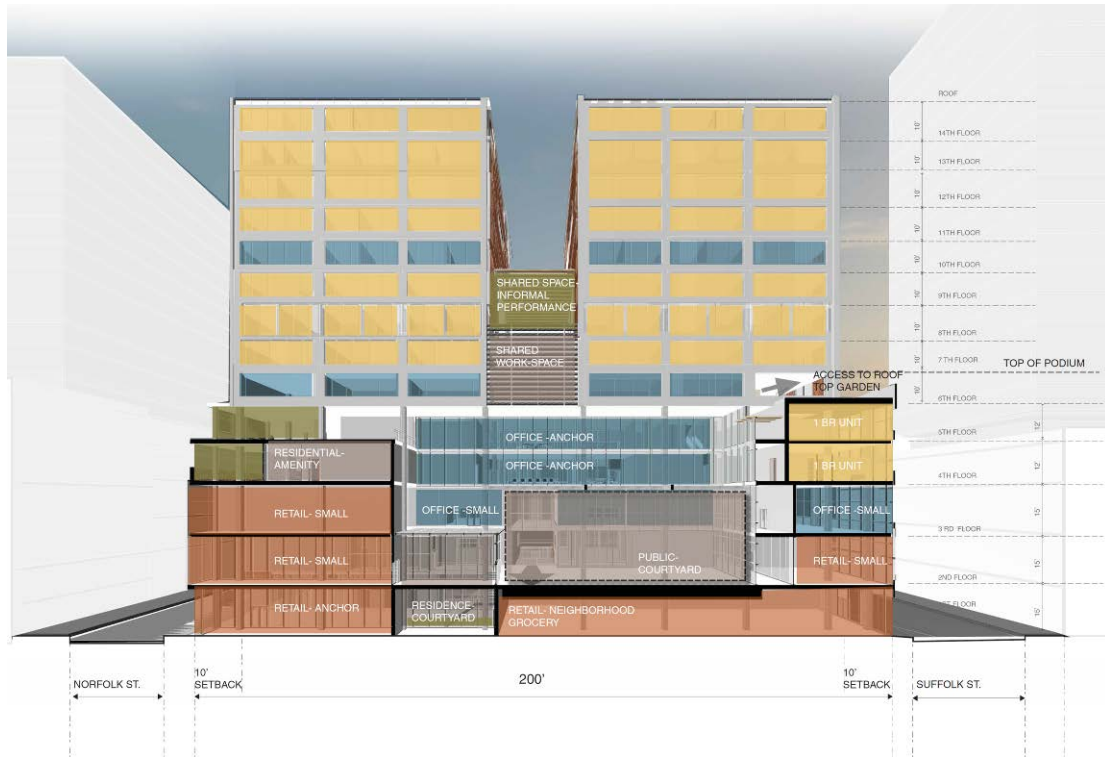


Figure 51: Alternate section configuration of program spaces to promote flexibility and variety in live-work spaces

Source: Image by Author

Schematic design

At this stage, the design was broken up into two elements:

- a. Design of the podium and its relation back to the immediate urban context and public realm
- b. Designing the live-work zone for flexibility, dynamism and variety

Studies in flexibility of program

1. Live-Work Zone vs. Mixed Use Podium

The diagram (Fig. 53) shows strengths and weaknesses of the live-work zone in its different relationships to the building podium zone.

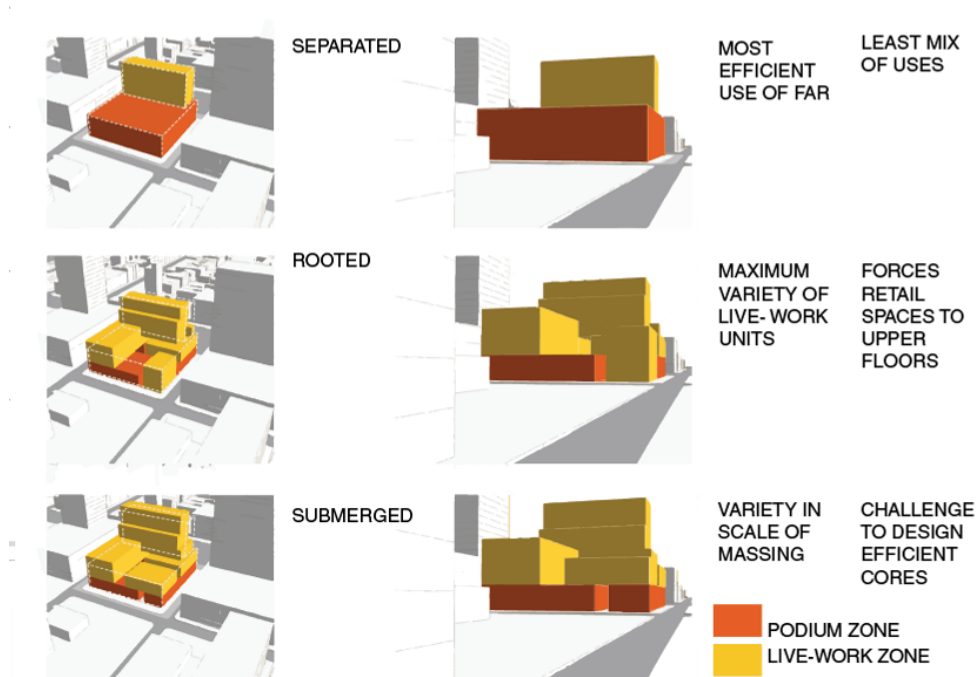


Figure 52: Schematic design options for a flexible program at the scale of the building

Source: Image by author

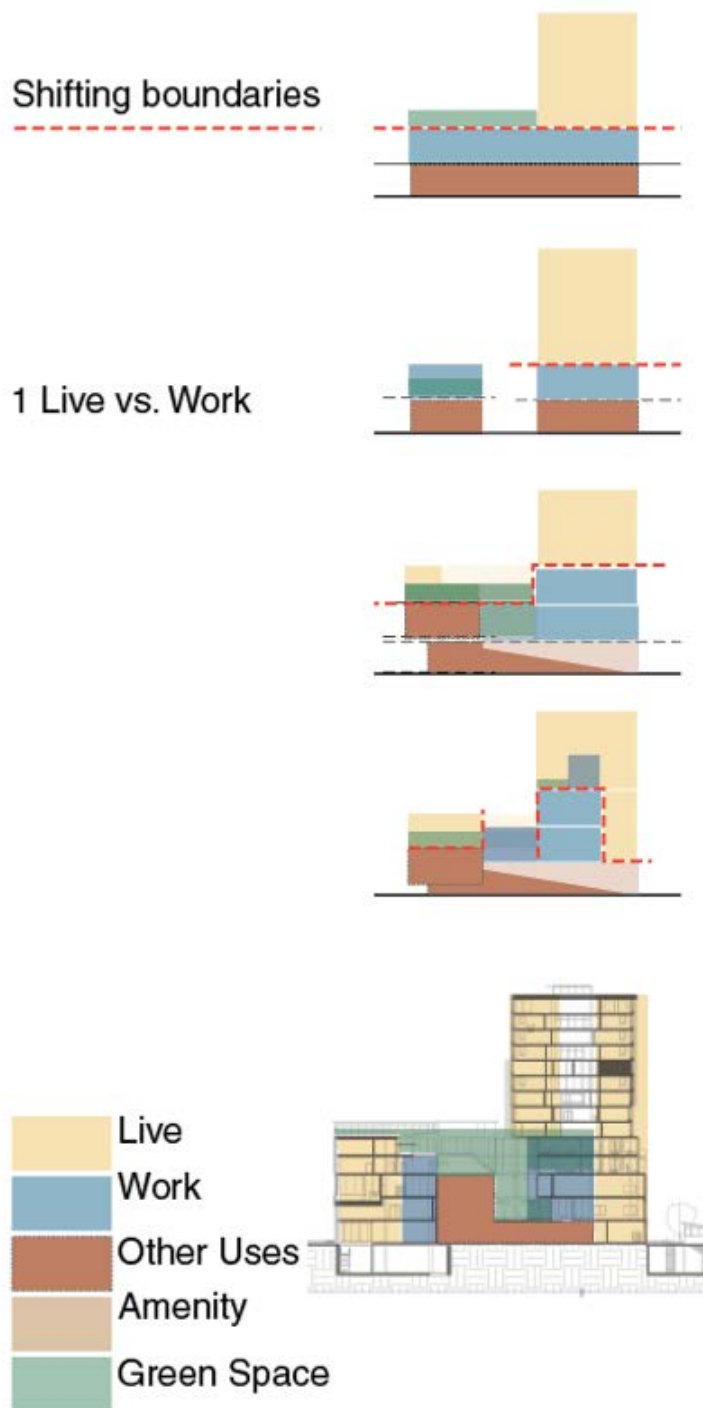


Figure 53: Flexibility of the live vs. work spaces highlighting how there is an attempt to blur the boundaries.

Source: Image by author

Issues in designing for flexible live-work spaces:

One of the major issues achieving a modular strategy to accommodate a variety of units. The solution was to design on a 25' x 25' grid and ensure units worked in multiples of 5'. Figure 55 shows the modular massing strategy of the building where the whole building, including spaces in the podium level are conceived as live-work spaces.

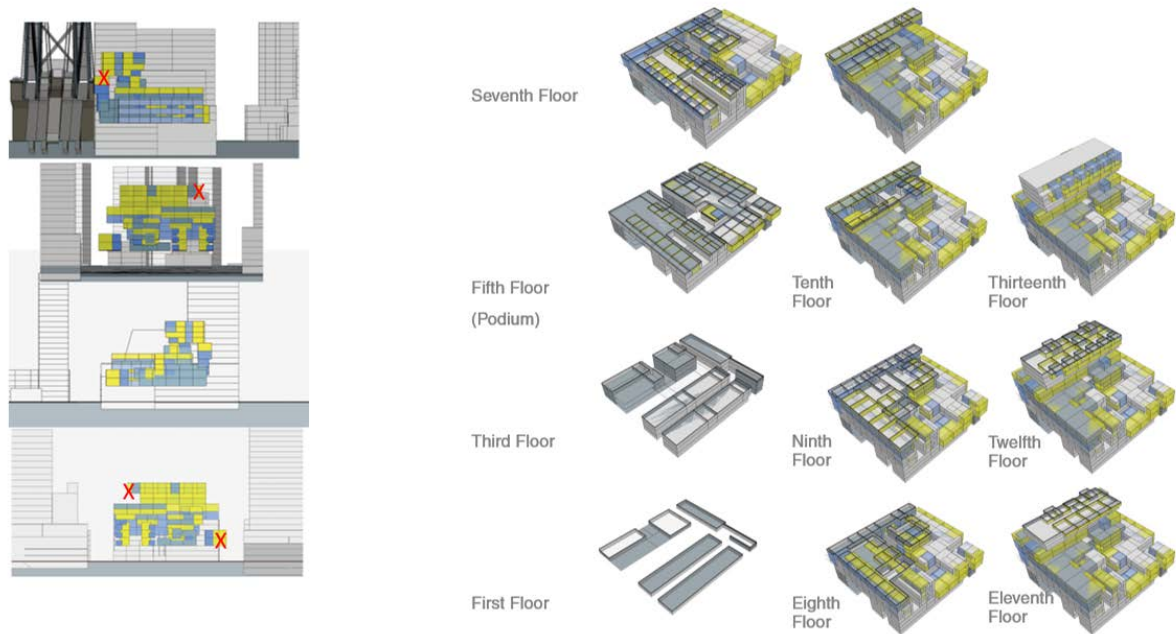


Figure 54: Conceptual modular massing

Source; Image by Author

Another design strategy was to provide plumbing chases running through all floors of the building to be able to accommodate the shifting uses from spaces for dwelling to work and vice versa. (Figure 56)

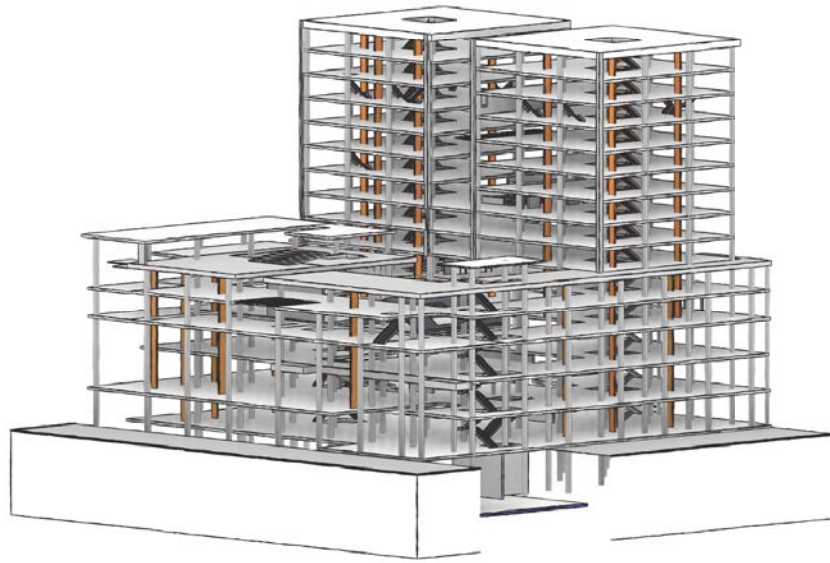


Figure 55: Diagram highlighting plumbing chases running through all floors
Source: Image by Author

The last issue addressed was that of daylighting for flexible locations of dwelling spaces. The massing strategy of puncturing a courtyard into the podium, allows for a second tier of spaces along the inner lining of the courtyard to receive direct daylight enabling them to become future locations for residences.

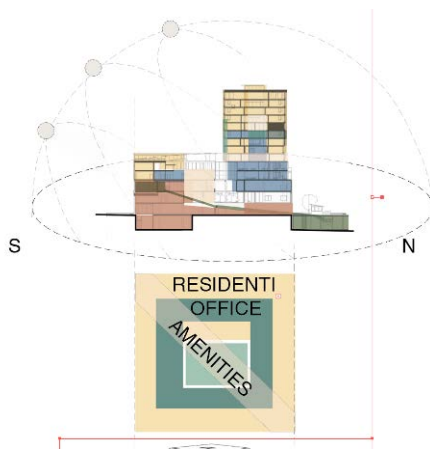


Figure 56: Daylighting strategy
Source: Image by author

Lower East Side Block Studies

Learning from local massing:

The diagram shows the diversity of block configuration, then breaking them up into their seminal massing elements, in an attempt to understand the strengths and weaknesses of each.

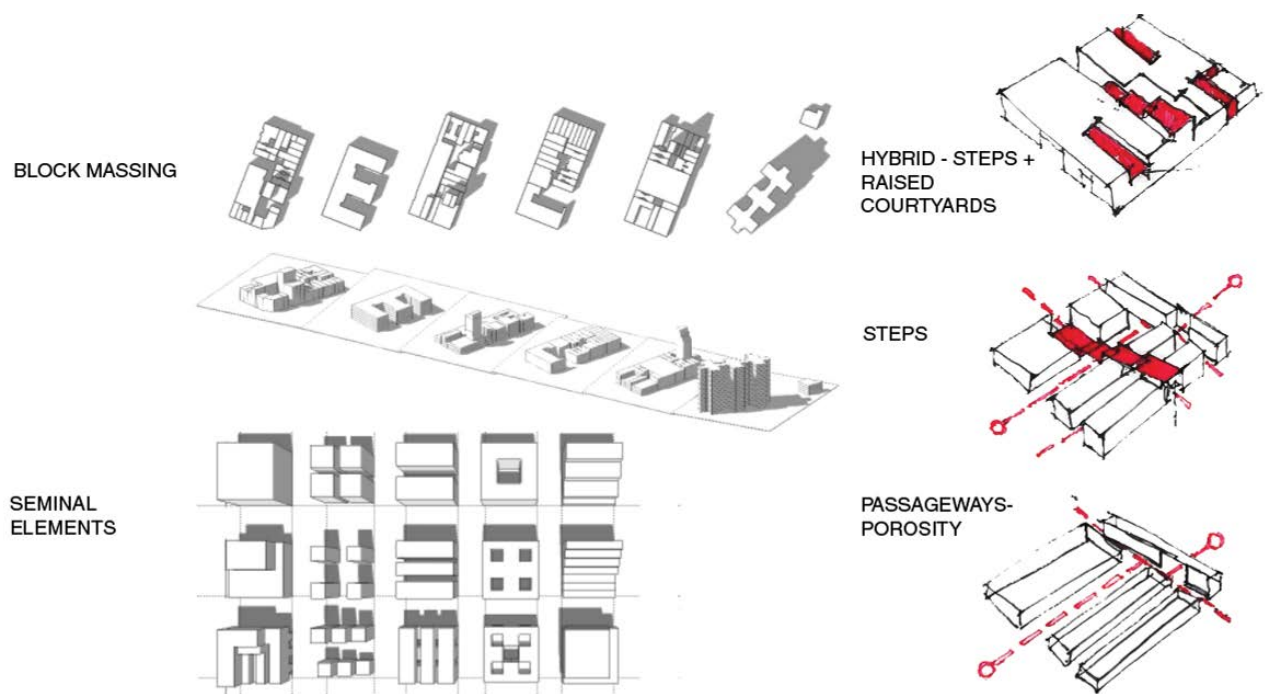


Figure 57: Massing Studies
Source: Image by author

Podium Design

The podium design responds to the following design goals:

1. Response to the critique on the Essex Crossing Building
2. Lessons learnt from precedent studies on successful podium design in its relation back to the immediate urban context
3. Provision of ample daylight into the lower stories
4. Public route running from north to south intersected by the courtyard opening up to retail fronts



Figure 58: Section cutting across N-S showing the public realm

Source: Image by Author



Figure 59: Public Route through the building highlighting circulation from Delancey to Broome Street
Source: Image by author



Figure 60: First Floor Plan
Source: Image by Author

Figure 61 shows the generic planning of the retail spaces that may gain character based on who rents them. One can see the plumbing chases in the plan provided

without compromising the retail capacity of the space. Highlighted are the spaces for public commons as well as lobby spaces that get one up to different live-work zones.



Figure 61: Second Floor Plan
Source: Image by Author

Figure 62 highlights the courtyard space flourishing at the second floor, along with the circulation space that hosts informal gallery spaces that may open up into the

courtyard and transform into a larger semi-enclosed performance space when necessary.



Figure 62: Fourth Floor Plan (The Live-Work Podium)

Source: Image by Author

Figure 63 shows one possible configuration of organizing the live work apartments, every apartment obtaining a view to NYC or the thriving courtyard. The apartments begin to populate the south, east and western portions of the building to maximize northern, eastern and southern light while the larger office spaces develop towards the north.



Figure 63: Eighth Floor Plan

Source: Image by Author

Figure 64 highlights an important semi-public informal performance space that may become an extended work space on non-performance days. The plan includes micro units, shared kitchen spaces, and laundry services. The cores for the towers have been designed for efficiency and compactness to include switchback stairs.

Variety and Organization of Units

Figure 65 shows the sample location of different apartment units that accommodate requirements of people with varying live and work lifestyles.

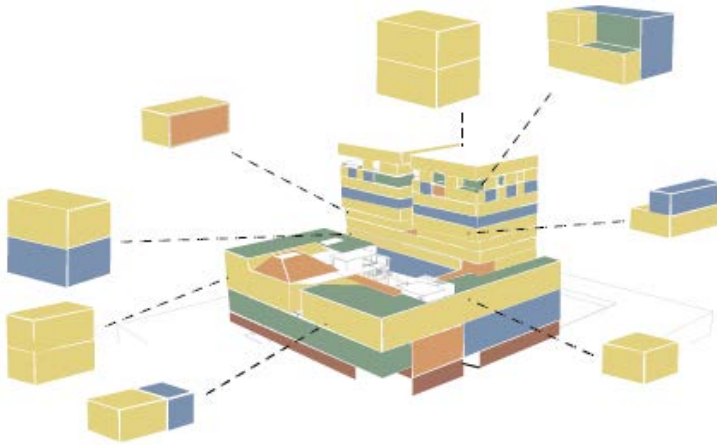


Figure 64: Variety and organization of units
Source: Image by Author

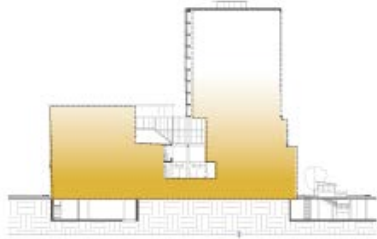


Figure 65: Tapering of program mix towards upper floors
Source: Image by Author

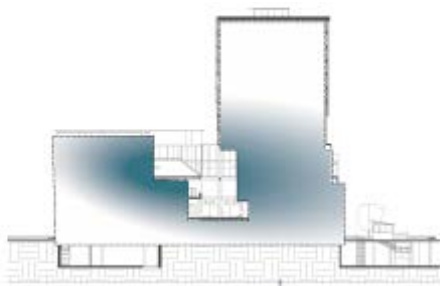


Figure 66: Organization of work units based on intensity of work
Source: Image by Author

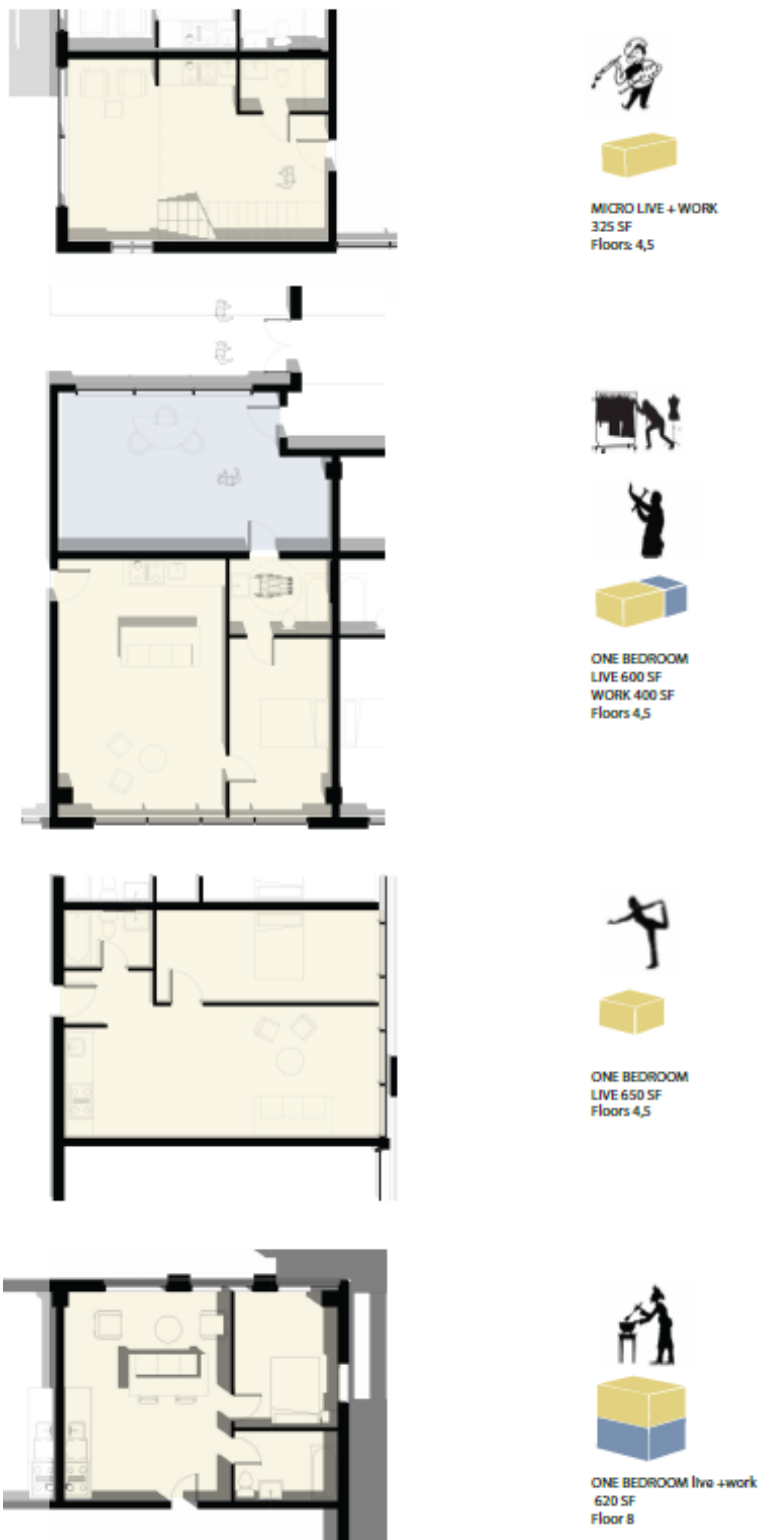


Figure 67: Variety of Apartment units, Floor Plans Part-1-2
Source: Image by author

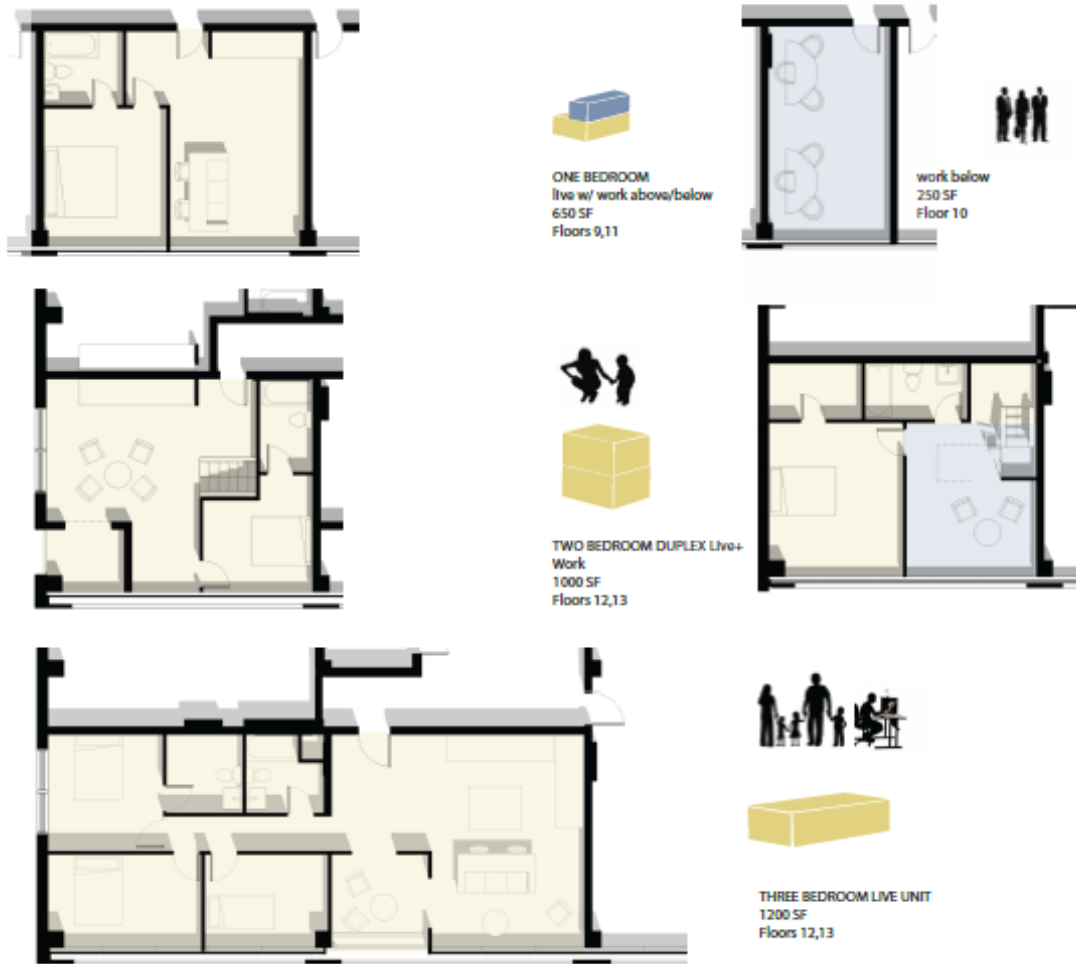


Figure 68: Variety of Apartment units, Floor Plans Part-2-2
Source: Image by author



Figure 69: View from the south showing relationship of building at ground floor to the human scale
 Source: Image by author

Figure 71 shows how not only a variety of units have been designed but also how the ambiances outside every unit have been carefully crafted into different environments. Based on the type of lifestyle of the user, he/she may choose an apartment that opens up into a courtyard, looks into one, has a stunning view of looking towards midtown, has a generic lobby with closest access to the elevators, and much more. The point here is to provide variety and choices at every scale of the design.



Figure 70: Perspectives showing variety of immediate views outside different apartments
 Source: Image by author



Figure 71: Variety of available shared amenities, shared work-spaces
Source: Image by author

CHAPTER 6: Review, Remarks and Conclusion

A valid concern of the thesis was the affordability of housing for the proposed set of users such as the creative population, entrepreneurs and alike. The premise for economic viability of the live-work units was that such creative population would have otherwise been paying rent separately for their dwelling as well as work/ studio space in two different locations, under two different managements. Belonging to the live-work community designed in this proposal would allow them to save on one of the rents. If this was still not viable, there were micro units provided on certain floors such as the fourth, fifth and eighth floors. Users would also benefit from the shared amenities and be a part of the vibrant collaborative culture.

In conclusion this thesis on live-work spaces call on and emphasizes the need not dictatorial, but more ad-hoc, eclectic, dynamic architecture that provides people with more choices, variety and flexibility, the type of architecture that is rooted with the permanence of place (in this case, the Lower East Side) and yet has the capacity to ever change and renew itself for the uncertain future.

There are two distinct DNA's of architecture in the LES that lead to strikingly different experiences. One is of the large towers and objects in space that stand out and refuse to belong and the other is of the eclectic and older blocks with the richly colored crevices and elements of surprise that one experiences only when they have walked

and talked along those streets. The design for the Live-Work Mixed Use Building is inspired from the latter. It appreciates and is inspired by the layered manner in which thriving cities are and how urban architecture, just like life needs to integrate itself better with changing lifestyles and the flows of the city.

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