

## ABSTRACT

Title of Document: UNCOVERING DESIGN:  
TRANSLATING THE PAST CAN ENHANCE  
THE DESIGN PROCESS

Terry M. Zink, Master of Architecture, 2013

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

Throughout the late 20<sup>th</sup> century, urban buildings around the world have repeatedly lost their unique reason for being. The phenomenon of diminished value, while tragic at the time, provides extraordinary opportunities for future use, by offering an authentic narrative to build upon, and overcoming the “blank slate” approach of traditional design thinking. A current generation of designers is recognizing the potential value in these deteriorated and neglected structures and districts. However, we should look critically and creatively at the past to understand the causes of displacement, before attempting to design for the future. War, deindustrialization, tourism, gentrification, white-flight, and economic instability are some of the principal forces responsible for the emptying our downtown communities. By establishing proper analytical and imaginative lenses through which to examine unique developments around the world, we can better see how to reconstitute value in these derelict buildings, thus achieving a more sustainable future. This thesis applies

a framework for interjecting creativity and considerations into the regeneration process. I will use a district of abandoned building in the Portland neighborhood of downtown Louisville, Kentucky, to depict these ideas at a variety of scales. This process will develop and utilize appropriate design principles and proposals, to illustrate how architecture can revitalize and reoccupy abandoned buildings, while bringing neighborhoods and communities back to life. In utilizing neglected but rediscovered space, urban infrastructure and buildings within the urban fabric, opportunities are created through the understanding and appreciation of existing contexts, combined with the integration of innovative approaches. The process of uncovering and providing alternative interventions strategies is not linear and blurs the edge between re-search and design. This thesis reveals how architects, by uncovering the past, can fuel a creative process and lead the transformation of a lost community.

UNCOVERING DESIGN:  
TRANSLATING THE PAST CAN ENHANCE THE DESIGN PROCESS

By

Terry Michael Zink.

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park, in partial fulfillment  
of the requirements for the degree of  
Master of Architecture  
2013

Advisory Committee:

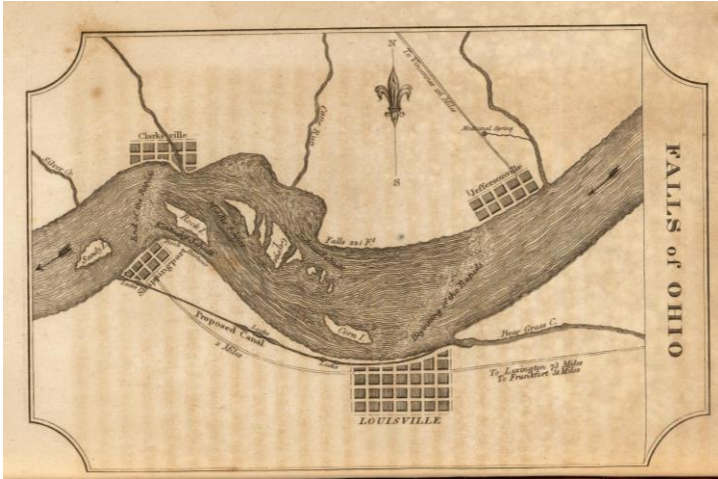
Professor Garth Rockcastle, Chair  
Brian Kelly, Member  
Hooman Koliji, Member

© Copyright by  
Terry Michael Zink  
2013

# Table of Contents

Table of Contents .....	ii
Chapter 1: Constructing a Contextual Framework .....	2
Historical Narrative - Louisville, Kentucky.....	2
Past Industrial Significance.....	4
Chapter 2: Developments around the World   Precedent Analysis .....	4
Introduction.....	4
Copenhagen, Denmark.....	6
Admiral Hotel .....	7
Grain Silos: Gemini Residence .....	7
Kodyben Neighborhood.....	7
Torpedo Hallen .....	7
N. Zahles Gymnasieskole .....	8
Concrete Boat.....	8
Amsterdam and Rotterdam, Netherlands .....	9
Café - Open .....	10
NDSM.....	10
Rotterdamsche Droogdok Maatschappij, RDM.....	10
Lloyd Quarter.....	11
WORM.....	11
Whiskey Row   Louisville, KY .....	12
Chapter 3: Bridging Analysis and Design - Intervention at Three Scales .....	13
Urban Design .....	13
District Planning .....	17
Building and Details .....	27
Chapter 4: Design [Process] Discoveries.....	35
Understand Initial Design and Intent .....	35
Re-Consider Abandonment.....	35
Assess Assets and Liabilities .....	35
Buildings Transform and Learn .....	36
The Uncovering Process is not Linear .....	36
Structural Concerns and Opportunities.....	37
All Elements of a Building's History Add Value .....	37
Mysterious Beginnings .....	37
Story Telling .....	38
Irreplaceable Authenticity.....	38
Potential in Natural Evolution .....	38
Expecting Transformation .....	38
Sensory Input Should be Translated and Revealed.....	39
Imitation / Preservation Concerns.....	39
Shifting Scales .....	39
Balance Delicacy and Aggressiveness.....	41
Levels of Intervention.....	41

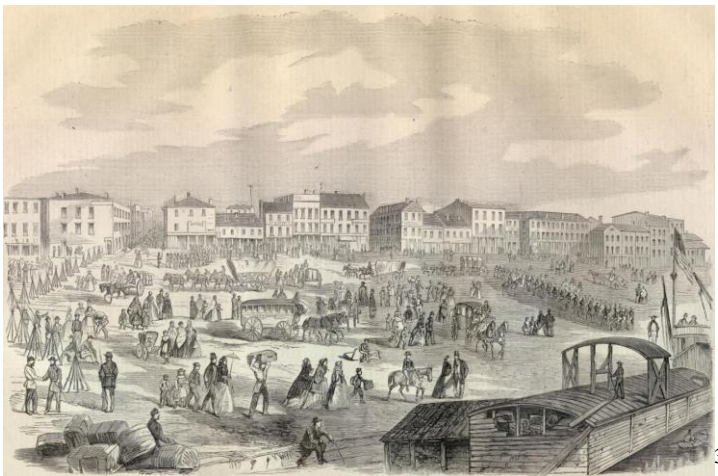
Chapter 5: Impact.....	43
Immediate .....	43
Sustained .....	43
Bibliography .....	44



1



2



3

<sup>1</sup> "Falls of Ohio. - David Rumsey Historical Map Collection," accessed March 18, 2013, [http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~946~60254:Falls-of-Ohio-?sort=Pub\\_List\\_No\\_InitialSort&qvq=q:louisville%2Bky;sort=Pub\\_List\\_No\\_InitialSort;lc:RUMSEY~8~1&mi=5&trs=25](http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~946~60254:Falls-of-Ohio-?sort=Pub_List_No_InitialSort&qvq=q:louisville%2Bky;sort=Pub_List_No_InitialSort;lc:RUMSEY~8~1&mi=5&trs=25).

<sup>2</sup> Falls1912.jpg (JPEG Image, 460 × 293 Pixels) - Scaled (0%), accessed April 4, 2013, <http://www.oldlouisville.com/postcards/Louisville/pic/Falls1912.jpg>.

## Chapter 1: Constructing a Contextual Framework

Like most cities across the United States, Louisville, Kentucky is located at the crossroads of three major transportation systems: the river, railroad, and vehicular based grid or interstate system. The proposed site for the application of the thesis is located at the edge of the historic downtown and reveals each of these classification systems. In order to fully understand the significance of the site, a brief explanation of the city's evolution follows.

### Historical Narrative - Louisville, Kentucky

Louisville was founded in 1778, by George Rogers Clark on the banks of the Ohio River.<sup>4</sup> The location of this historic city was based heavily on the proximity to the Falls of the Ohio, marking a two mile long impassable line due to shallow water, through which river traffic could not easily navigate. This is the only major fall line in the 812 mile long Ohio River, and therefore a point of major significance in the movement of goods and people along the river. As early as 1812, city planners began to project a grid perpendicular to the waterfront,<sup>5</sup> establishing an organized community. From here, the city would grow in exponential fashion, mostly because of the introduction of an undisturbed water passage, the Portland Canal.

The Portland neighborhood, which was established in 1811, played a crucial role in the development of the city. Built primarily to accommodate ships and passengers travelling along the rugged Ohio River, the town and eventually the canal, offered a safe, alternative route. While its proximity to the river was a prime location for travelers and locals alike, the Portland neighborhood would face an abundance of challenges throughout its history, some of which can still be felt today. The floods of 1937 and 1945 left devastating impact that, “drove many of the middle class families from the area,”<sup>6</sup> most of which have never returned. Portland, which begins just west of the intersection at 9<sup>th</sup> and Main streets, sits in one of the most segregated regions in the city and today, is suffering.

---

<sup>3</sup> H. Mosler, “Louisville Wharf,” accessed March 18, 2013, <http://www.sonofthesouth.net/leefoundation/civil-war/1862/october/louisville.htm>.

<sup>4</sup> John E. Kleber, *The Encyclopedia of Louisville* (University Press of Kentucky, 2001), xv.

<sup>5</sup> “Falls of Ohio. - David Rumsey Historical Map Collection.”

<sup>6</sup> “Preserve America Neighborhood: Historic Portland, Louisville, Kentucky,” accessed April 4, 2013, <http://www.preserveamerica.gov/portlandKY.html>.



The second force line that built both the city was the railroad. According to local railroad historian Rick Tipton, “the 14th Street corridor became an almost continuous strip of rail facilities, warehouses, and manufacturers from the Ohio River south to Broadway, and on south to Kentucky Street (about a mile and a half on the PRR). At Kentucky Street the 14th Street industrial spine continued south through the city.” He continued, explaining that, “although the 14th Street corridor was over a mile from downtown Louisville (down Main Street), it automatically became the best location for everybody's freight house. Consequently, the blocks between 13th and 14th got PRR and Southern freight houses, and the blocks between 14th and 15th got Monon and B&O freight houses.” This intersection is located directly at the center of the proposed site for the thesis project.

The third and final system at work in the development of the city and the site is the street grid, which grew exponentially as a result of the canal and railroad. While the original Jeffersonian grid runs primarily north, south, east and west, there is an angle introduced, located in the center of the proposed site, which corresponds to the turn in the river. Access equals value, thus the grid reacted accordingly.



---

<sup>7</sup> Louisville, KY Figure-Ground. Source: Author

## Past Industrial Significance

Thousands of farmers across Kentucky were involved in the agricultural business, establishing an early identity for the city of Louisville. Reasons for the high volume of production can be seen on several levels, the first of which is the state's location. Kentucky is, "in the center of the most densely populated portion of the United States,"<sup>8</sup> increasing the marketability and distribution processes. Also contributing, were the natural characteristics of land and water. The availability of fertile soil produced a vast offering of corn and tobacco production throughout the state and a unique hint of limestone found in the water added a desired ingredient to whiskey production. The close proximity to the Ohio River and popular flat boat traffic further complemented Kentucky's largest city as a thriving industrial center, ideal for shipping and receiving cargo. It was the combination of the rural countryside and the energetic downtown that, when it came to agricultural production and distribution in the 19<sup>th</sup> and 20<sup>th</sup> century, Louisville was the place to be.

## Chapter 2: Developments around the World | Precedent Analysis

### Introduction

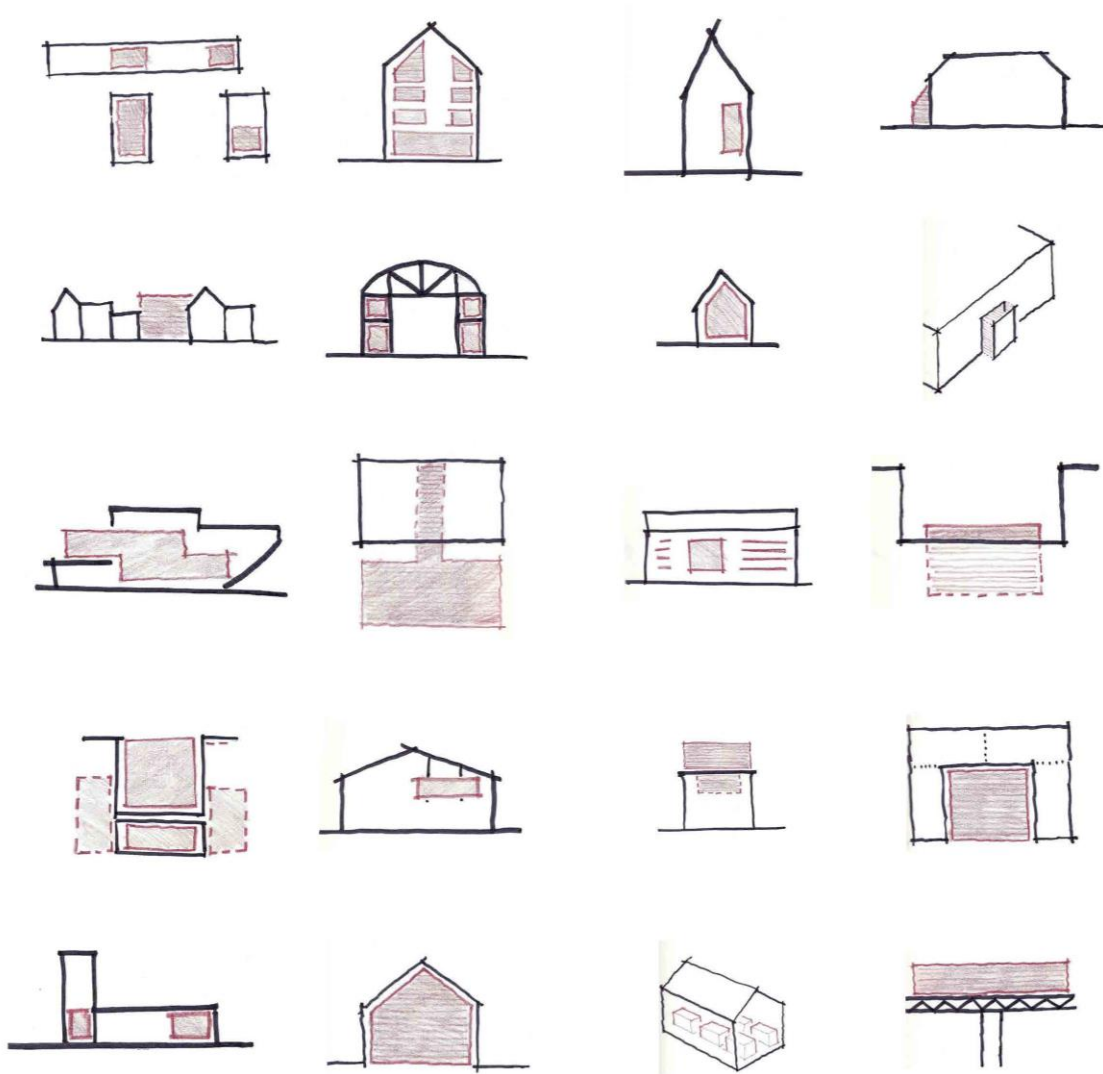
The following is a series of forensic case studies, based on select industrial buildings and their immediate context, now serving different purposes than originally intended. I was awarded the 2013 David M. Schwarz travelling fellowship, which provided me the unique opportunity for international travel to these historic city centers.

Serving as a framework through which to analyze the process of architectural reuse, these precedents: inform the aesthetic of proposed designs, support the idea that mystery heightens the value of design (displaying where preservationists and evolving architects may differ) show what aspects of historic buildings remain intact (designing space, triggered by history) and uncover authenticity, throughout time.

---

<sup>8</sup> Louisville Commercial club, *Brief Facts about Louisville*; (Louisville, Ky., H. L. Morrow & co., printers, 1890), 7, <http://archive.org/details/brieffactsaboutl01comm>.

Each case includes a personal anecdote of reactions on site, as well as photographs reflecting existing conditions. These analyses highlight unique qualities, approaches, and specific examples of how different cultures around the world have revitalized historic buildings, giving them, and the neighborhoods in which they sit, new life.



---

<sup>9</sup> Precedent analysis diagrams, highlighting a variety of techniques to blend the old with the new.  
Source: Author

Copenhagen, Denmark



10

Certain areas within the city, once distressed by, “WWII and...the economic depression that had preceded it,”<sup>11</sup> are embracing major renovation. One neighborhood that is particularly transformative is Kødbyen, or the ‘Meatpacking District’, a section of the Vesterbro area. This neighborhood, once known primarily for its working class, driven by industry, is becoming one of the most popular scenes for local dining and nightlife. Since 1990, residents and tourists have been drawn towards this unique neighborhood, mostly due to its proximity to downtown and the central train station.

<sup>10</sup> Photographs of precedents. Source: Author

<sup>11</sup> Cristian Bonetto, *Copenhagen Encounter*, 2nd ed. (Lonely Planet, 2011), 165.

### Admiral Hotel

The rooms are completely immersed within the original structure of the building and there is a delicate juxtaposition between old and new, surfaces and finishes. The rooms expose dramatic, deep window cavities and the columns in the lobby are close to four feet thick, exposing their structural and spatial significance. The exterior lighting makes the building glow on the water and highlights the materiality: wood, stone, and stark white surfaces. From the outside, it looks like a lot of the buildings that are along the water, yet the inside reveals a contemporary appeal.

### Grain Silos: Gemini Residence

These silos were once the city's primary employer. Today, the inside of the building is like a secret to the public. Only some people get to enjoy the interior, which frustrates but also intrigues and heightens the appeal. There is virtually no contemporary intervention for the first twenty feet up the silos (at street level) and exceedingly simple cut outs form the entry. The geometric configuration shows how two circles are morphed into elegant curves.

### Kodyben Neighborhood

The meat hooks and doors remain within these industrial structures. There is one raw strip in the wall that is highlighted by a crisp new edge. The courtyard seating faces shipping containers, dumpsters, and manufacturing facilities. How do you get clients into a shipyard with virtually no visible intervention, with only bar seating available at 6pm on a Thursday evening? The answer: is to provide innovation from within. Wall tiles were transformed into appetizer plates and a neighborhood that transformed from seemingly dangerous and frightening to densely packed and activated with people and positive energy within a half hour. You would never see it from the main road. Dinner inside the cooler and processing room included sloped floors to drain in the center.

### Torpedo Hallen

The water where the ships used to come in now allows for small canoes, kayaks, and recreational use. You can still see the railings coming out of the water. Most of the original structure still remains, with a perimeter of dense residential. The big open space in the middle allows for plenty of natural light and community space. Being able to dock your boat inside the building, with car parking underneath provides

unique spatial capabilities. The balconies on the end punch through the original structure.

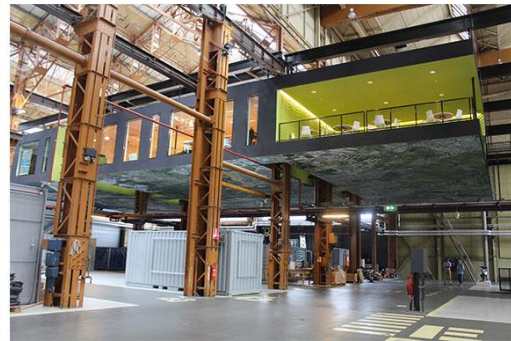
#### N. Zahles Gymnasieskole

The addition was inspired by the nearby park and casts unique shadows on the surrounding context, presenting a stark contrast between new and old.

#### Concrete Boat

The owner, Daniel Christiansen has tried pulling it up for two years. He explained, “if you can get something up from the bottom of the water, it’s yours.” This is a great example of taking counter intuitive ideas, like concrete and water, and working to make them find harmony, creates stunning results.

Amsterdam and Rotterdam, Netherlands



12

Amsterdam is known for its distinct ability to fuse history with contemporary urban flair. Throughout the city, abandoned shipping facilities have been repurposed as desirable apartments and commercial spaces and old warehouse hubs have morphed into the, “cutting edge of Dutch - and even European - architecture.”<sup>13</sup> The projects offer a glimpse into the future of Amsterdam, “where modern architecture and design meet forward thinking, yet ancient maritime tradition.”<sup>14</sup>

<sup>12</sup> Photographs of precedents. Source: Author

<sup>13</sup> Karla Zimmerman and Sarah Chandler, *Amsterdam*, 8th ed. (Lonely Planet, 2012), 176.

<sup>14</sup> *Ibid.*, 175.

## Café - Open

For this project, the local government was faced with an abandoned railroad bridge and wanted a contemporary intervention that remembered an industrial object on the river, that was as cost neutral as possible. A design contest was then held, including financial specifications, and the project winner was selected. Flo, the owner and developer for the project, explained that to execute his scheme, the team basically hoisted the bridge from its supports, carried it across the river by barge, renovated it and then brought it back, at a total project cost of 1.3 million Euro. The result was, “a glass box with bathrooms in the middle with all plumbing and electrical utilities coming in through walkway, located at the entrance,” explained Flo. The team possessed an intense drive and positive energy. “It’s an old structure, but a new building. The interior doesn’t need to over-exaggerate it.” He admits however, that, “the glass box gets cold in the winter, on the water, so we are thinking about some renovations.”

## NDSM

Historically, this big-building infrastructure helped build the city. The question being asked to day is, who wants this space now? The response: the makers. The people who are willing to rent out these little spaces are going to lead the rehabilitation process and use their synergistic energy to come up with new ideas.

The site is new enough to feel safe, but still entirely authentic. It maintains the essence of its being and has not been picked over and commercialized. It is representative of good, honest people who appreciate what these spaces once meant to the city and the community. As expected, there is some struggle with codes and building legitimacy. According to one local tenant, speaking in regards some of those inhabiting the building, “they are artists, they just do.” The space feels like you are not supposed to be here, but the atmosphere insists exploration.

## Rotterdamsche Droogdok Maatschappij, RDM

“A lot of industry throughout the city is moving closer to the ocean, because the ships are getting bigger,” explained a local business owner within the community. This is a big deal for one of the biggest port cities on the planet. If the industry leaves, the vast amount of available space will grow exponentially. These warehouse buildings were built to make mammoth ships and are made up of extremely strong steel bones,



wrapped in brick boxes. Companies can now rent spaces within these vast halls, forming communities inside colossal structures. It is an environment of collaboration, education and experimentation.

### Lloyd Quarter

The major intervention on the exterior is used to express vertical circulation and common spaces and is a delicate balance between old and new. The railroad tracks are still etched in the concrete that surrounds the building.

A restaurant nearby is built entirely out of old shipping containers and new glass walls. This intervention seems more successful than the new construction building found nearby, which references similar industrial elements.

### WORM

Worm, an institute for avant-garde recreation, wanted a new entry vestibule, not on the nearby main street like everyone else in the neighborhood, that hinted towards the innovate ideas within its walls. The solution was to keep the same bricks in the façade, extend them out to capture the sidewalk, and expose the result which was a transparent hole in the original elevation. They wanted something that was contemporary and stood out, but had to oblige with local building codes and preservation restrictions. A simple solution provided dramatic results.

The building was originally a newspaper factory with big printing machines, built on tracks with wheels. The furniture is still on rollers and the floor is composed of old desk tops from an abandoned bank building. The design firm, *Superuse* designed the inside, sharing many of the ideas regarding the ambiance of re-use. The film screening tribune is made out of airplane chairs and fabric from train seats, while the walls are made from airplane windows. The owner explained, “to squat is a way of life. There have been budget cuts on culture and times are hard.”

Whiskey Row / Louisville, KY



15

The one hundred block of West Main Street, now known as ‘Whiskey Row’ was developed more than 150 years ago. These buildings were constructed for one primary purpose, to store barrels of whiskey and market their distribution. For the most part, the distilling process was handled where more land was easier to come by, outside the city, but the commerce industry demanded a density that only downtown Louisville could provide.

With the exception of the glass panes, most of which have been removed, the south facing façade has maintained exemplary integrity over the last 150 years. This face of the bourbon industry defined not only the prominence along Main Street, one of the first streets in the city, but also the city as a whole.

The block is now undergoing an extensive renovation effort, involving numerous residential and commercial spaces. Joined with the adjacent and recently completed KFC Yum! Center (home of the University of Louisville basketball team) the project is promoting a prosperous downtown neighborhood for living, dining and nightlife.

---

<sup>15</sup> Photograph of Whiskey Row. Source: Author

This project displays a minimal amount of intervention on the exterior faces. Its contemporary design elements and innovations are found within the historic walls. This may be thought of as a missed opportunity to reveal creative design, but it does show a city's commitment to remembering the past and is heavily preferred to merely destroying what was there and starting over with cutting edge architecture.

## Chapter 3: Bridging Analysis and Design - Intervention at Three Scales

### Urban Design

The dense infrastructure that once built the city, in this case, the railroad, defined an edge between live and work. The once fertile edge is now broken and in desperate need of repair. The primary reason for this extreme loss of vitality is due to the evolving technology and migration of industry. The key force lines that once defined the site, have left the area and are only found in remnant form. When the train lost its element of necessity to the city, it took the neighborhood with it and Louisville became known as a tale of two cities.



16

---

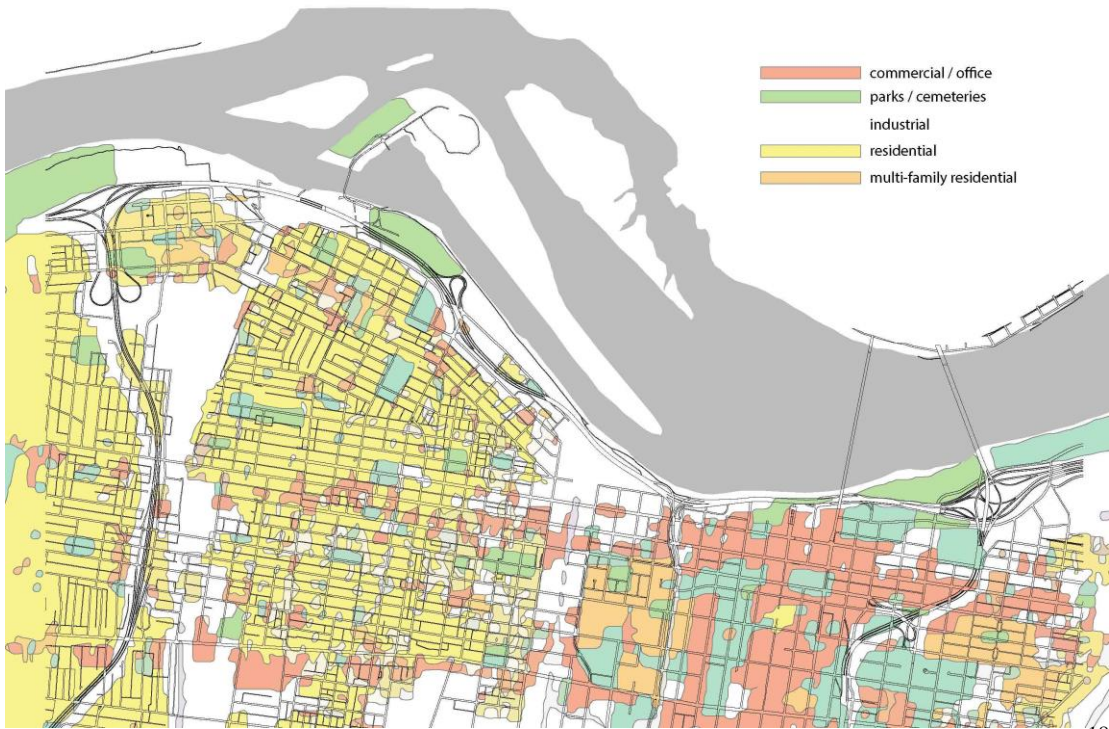
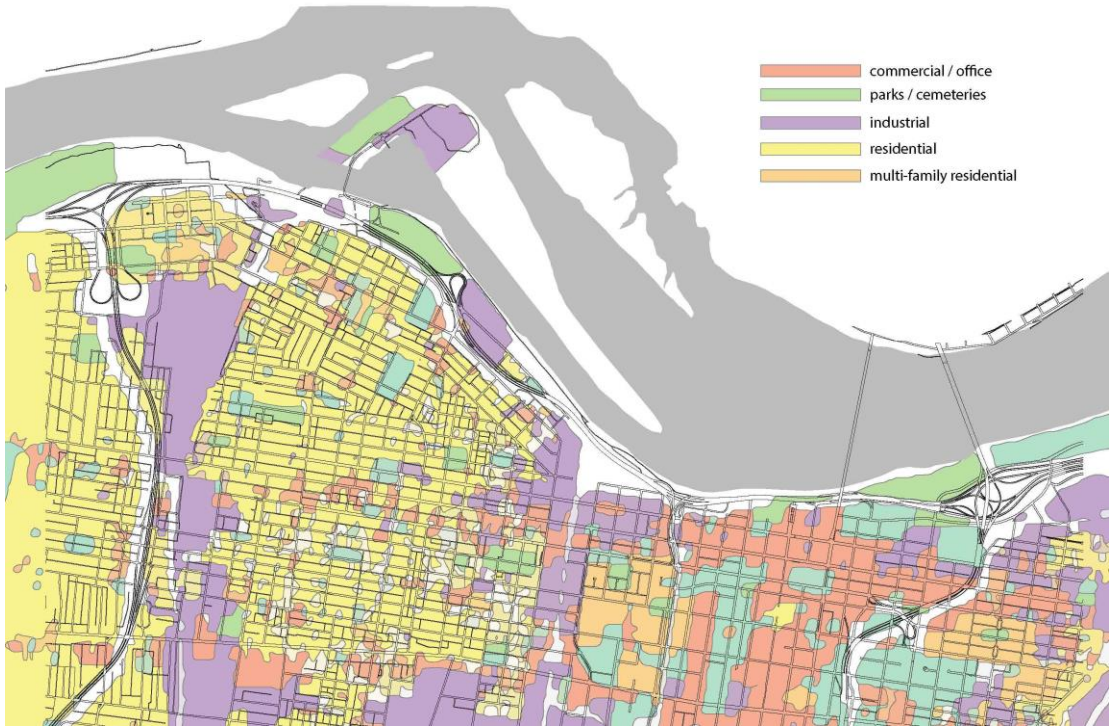
<sup>16</sup> Satellite image of downtown Louisville, KY. Source: Google Earth



17

---

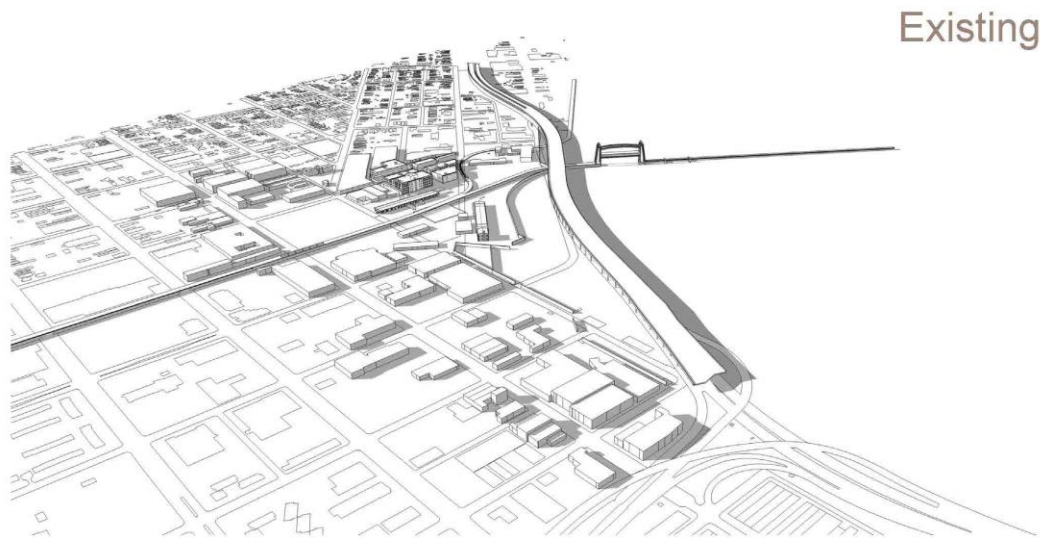
<sup>17</sup> Figure-ground of buildings and line drawing of streets, highlighting Main St. corridor Source: Author



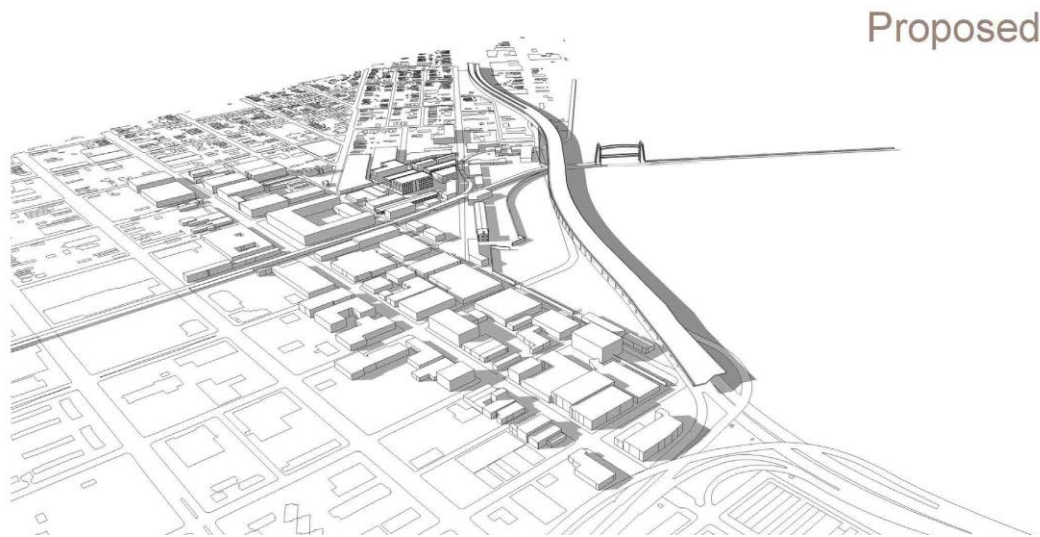
18

<sup>18</sup> Current zoning in downtown Louisville. Source: Author

However, there is hope for the downtown and a renaissance is unfolding, proving that the people here continue to care about their city. There is a unique combination of small scale entrepreneurs and large, institutional catalysts driving the re-birth, showing opportunity not only from east to west, but also south from the river. The soft infrastructure that once lined the 14<sup>th</sup> street railroad corridor in particular, provides an abundance of potential for decades to come. Initial propositions involve the application of what was learned from the urban analysis, and continue the density along Main street, into the starving neighborhood, west of the 9<sup>th</sup> street interstate exchange.



Existing



Proposed

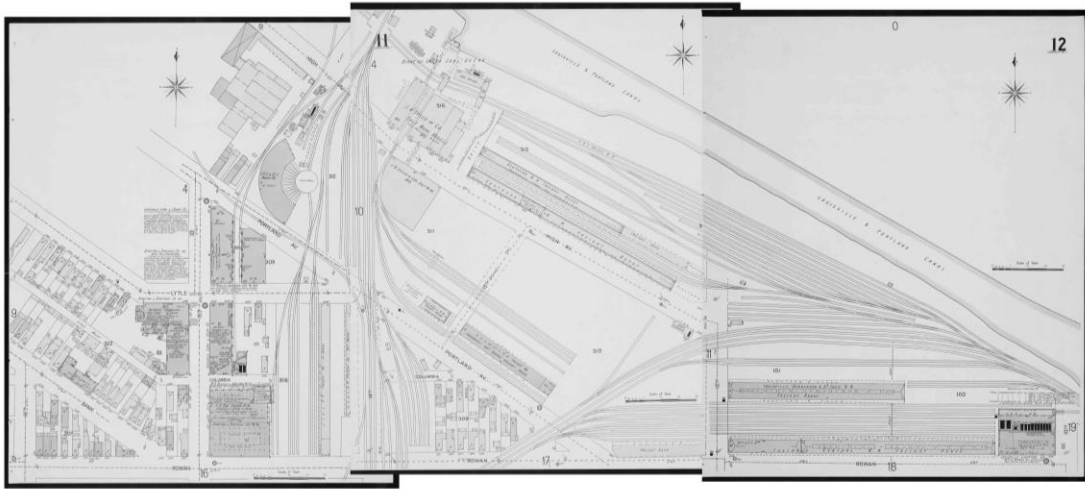
19

---

<sup>19</sup> Main St. corridor - existing and proposed. Source: Author

*District Planning*

The localized site, an abandoned rail yard, was once defined by movement, which has since vanished. However, there are traces of this history, buried (literally) just below the surface. Steel railroad tracks can still be found beneath crushed stone and rough vegetation throughout the site.



20



21

<sup>20</sup>Map of Site, 1905. Source: Sanborn Map Company

<sup>21</sup>Satellite image of site, 2013. Source: Google Earth

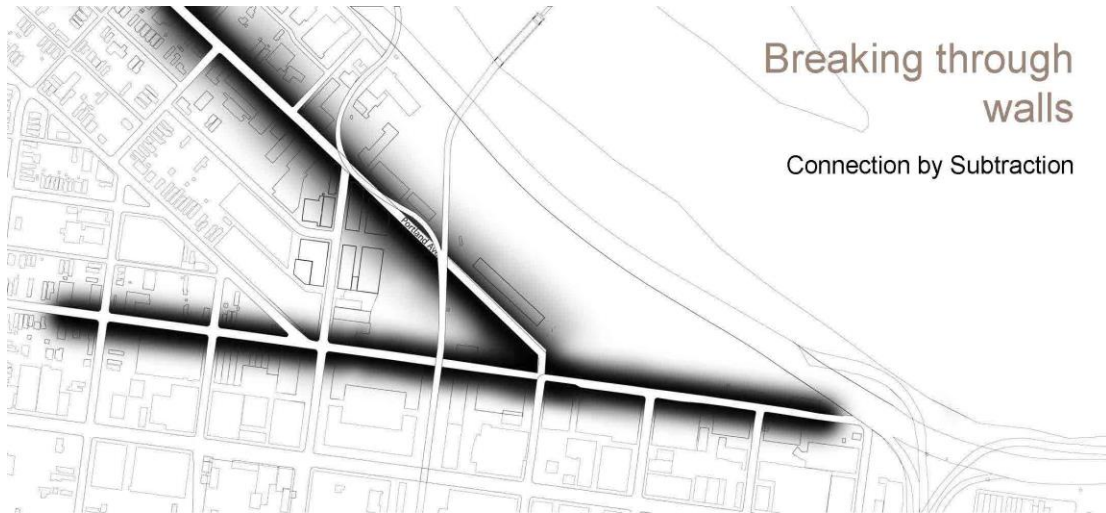
At this scale, steps towards a reconnection to the city involve two major ideas, break through site barriers, such as the raised railroad tracks, to re-establish the original street grid system and maintain open and civic cultural space within the community.



## Dense Urban Streets

Connection by Addition

1. Maintain an edge, established by the Main street corridor that provides a density to support the site



## Breaking through walls

Connection by Subtraction

1. Maintain an edge, established by the Main street corridor that provides a density that will support the site
2. Re-open Portland and Rowan ave. as primary connections between the Portland neighborhood and downtown Louisville

22

<sup>22</sup> Drawings showing proposals at the urban scale. Source: Author



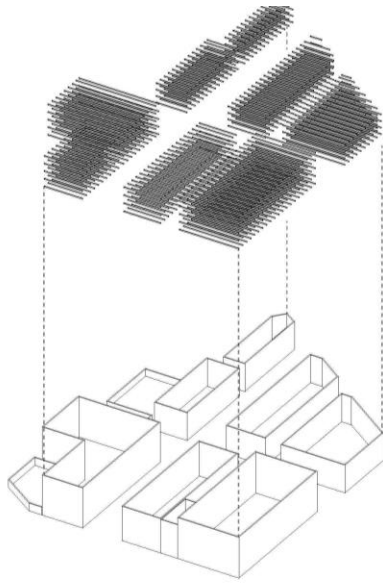


23

Shifting scales is vital to uncovering the design process, and can be seen clearly at this stage. While typical district planning maintains an ‘appropriate’ altitude in plan, those making these types of design decisions need to look more closely at what is there now. For example, this site can be understood as two very different yet equally complex systems: a conglomerate of dense warehouses to the west, and vast amount of open space, or brownfields to the east. By taking the time to look more closely into what these spaces actually look like, we can make more informed decisions about what they could, or should become.

<sup>23</sup> Drawings showing proposals at the urban scale. Source: Author

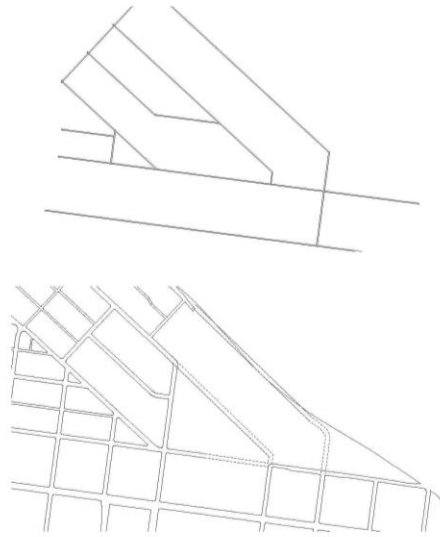
Dense Warehouses



Brown Fields

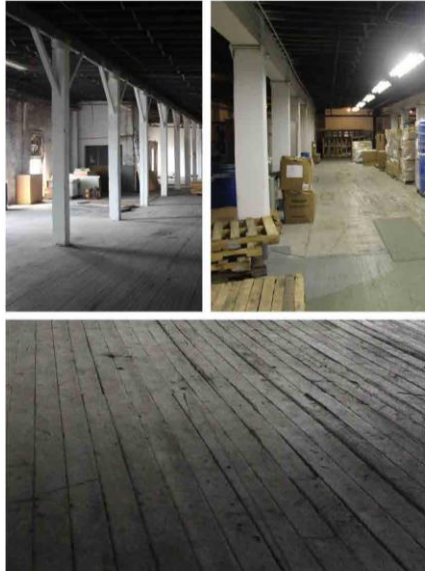


Infrastructure



<sup>24</sup> Site analysis diagrams: Source: Author

## Dense Warehouses



## Brown Fields

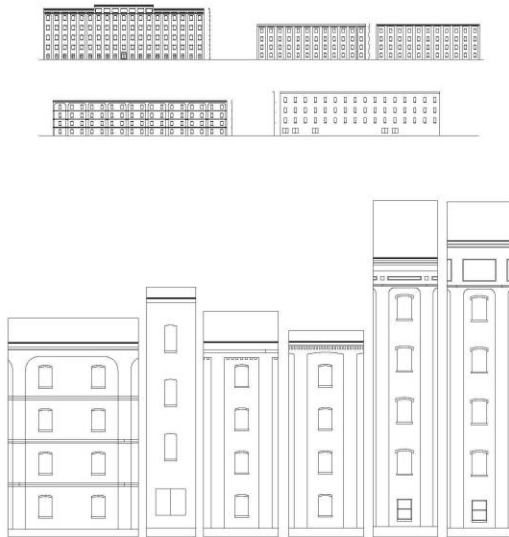


Systems

These dense urban warehouses, for example are full of solid structural “bones” and stable, well designed façades. Street facing façades for the buildings on the east side will receive abundant natural daylight in the evening, while those on the west will see direct morning light. Other, less positive existing attributes include little porosity at street level, minimal sectional design, and significant insulation issues.

With extremely vast floor plates, measuring up to 120’ wide by 200’ long, the challenge to transfer natural light towards the middle of these buildings is an interesting one. Proposals may include the carving out of interior or exterior courtyards or skylights, as well as thoughtful program placement.

## Dense Warehouses



## Brown Fields



Surfaces

25

These buildings, once full of single use industry, are likely to be divided up for diverse uses. This will not only enhance the architectural and spatial qualities within, but also allow for more potential businesses and diversified markets, which will help get, and keep, people downtown. As Whiskey Row Lofts developer Bill Weyland mentions, “You have to assemble multiple buildings, or you don’t have a project.”

By carefully diagnosing these buildings, we can uncover and take advantage of what is there, and propose intelligent functioning spaces. In this case, residential units with retail and mixed use at the base seem the most fitting. Further design development can then build on what is there now, focusing at a scale from internal structural systems to detail window connections.

---

<sup>25</sup> Site Analysis Diagrams. Source: Google Earth and Author

Dense Warehouses



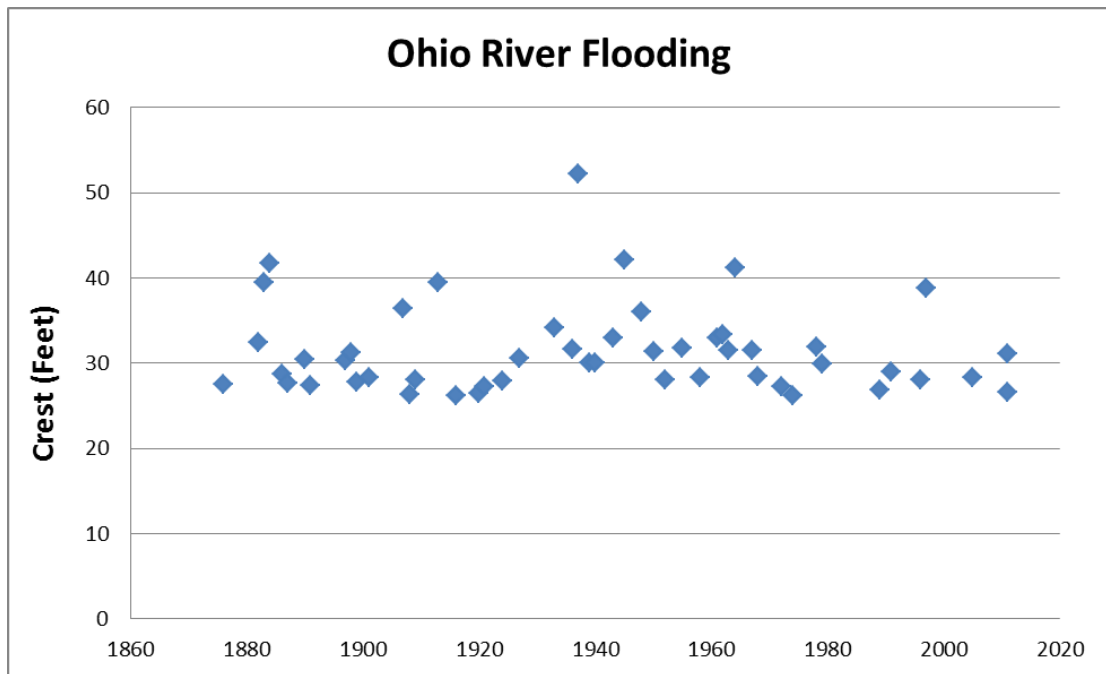
Brown Fields



Details + Materials

26

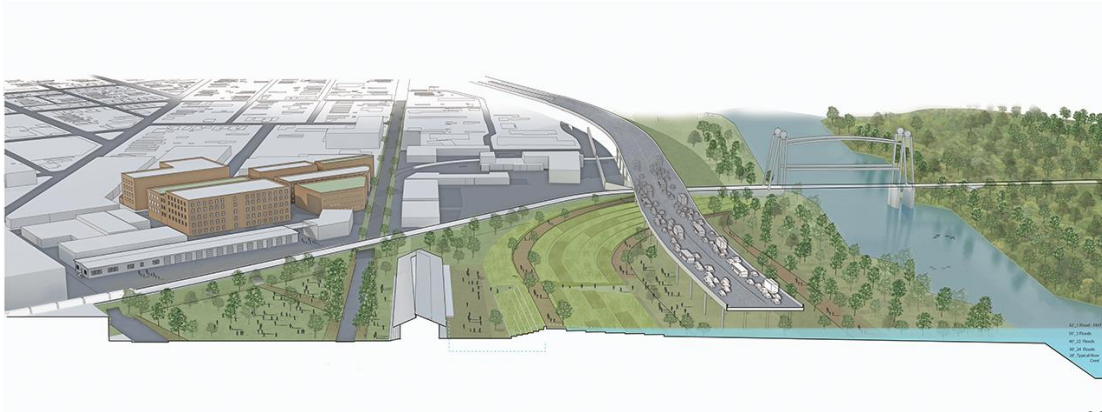
In regards to the brown fields to the east, an area that has been devastated numerous times by the rising of the river, flooding is a major concern for this neighborhood and must be considered when designing the spaces.



27

<sup>26</sup> Site Analysis Diagrams. Source: Author

<sup>27</sup> Ohio River flood history in downtown Louisville, KY. Source: [www.weather.gov](http://www.weather.gov)



28

A closer look reveals that existing underground infrastructure beneath the once prominent streets could be re-captured and offer support for what is to come, above the surface, while also helping to mitigate flooding concerns.

Another very unique element to this area is the 12' high concrete floodwall that bounds the fields on three sides. While this may seem like an impossible challenge, we should think creatively about what it is and utilize it. How do we harvest opportunity from such an intrusive element? One thought is to take advantage of the perfectly level datum line and create a modern day aqueduct system along it.

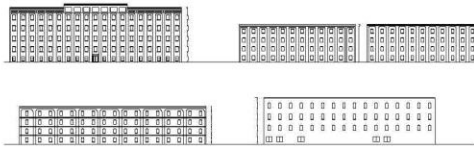
These two simple ideas, underground infrastructure combined with an established above ground irrigation system point towards a vision of use, urban agriculture. This establishment's primary intent would not be to feed the city entirely, although this would be an advantage, but to provide education and inspiration, showing that Louisville is serious about future generations, family farming, and supporting the state and local farmers throughout it.

---

<sup>28</sup> Proposed Site Section. Source: Author

Dense Warehouses

## Urban Life



29

Brown Fields

## Urban Agriculture



Gets people to **come together**

People take **interest and ownership**

Kids can **learn** where food comes from and the **lifecycle** of a plant

If they are in the **garden**, they are less likely to be on the streets



The result of this analysis is two systems, urban life and urban agriculture, that work together to heal communities and re-establish an identity for the site. The city has done 60% of the work for us; it is simply being covered up and is hidden to the untrained eye. Architects should look back to better understand how to move forward.

---

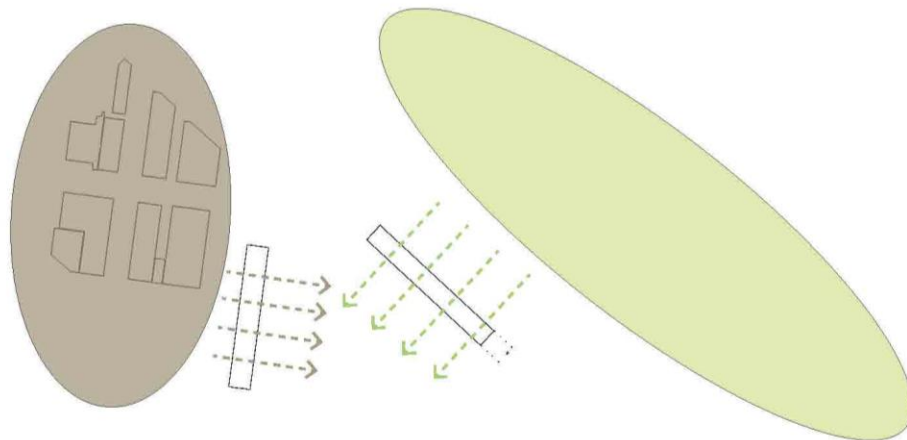
<sup>29</sup> Proposed Perspectives. Source: Author

## Urban Life

## Urban Agriculture



These two concepts, urban living and agriculture, then come together to meet in an open civic park, each bringing unique characteristics. Located on two of the park edges are historic freight houses, the eastern most of which will be further examined in the following section.



<sup>30</sup> Proposed Site Plan. Source: Author



Building and Details

According to the KHC survey, this structure was constructed in 1888 for the Jeffersonville, Madison and Indianapolis Railroad Company. It was later utilized as the Pennsylvania Lines Freight Depot until 1919. The building was then purchased by the Louisville Bridge and Terminal Railroad Company.



31



32

<sup>31</sup> Site conditions, 1960. Source: Bob Dawson

<sup>32</sup> Site conditions, 2013. Source: Author

The freight house is now stranded and isolated from all existing methods of movement, specifically rail and road. Not only has the building been abandoned, but it is also in bad company, facing some modern day warehouses with little to no design implementation. After comparing these styles of design, one must consider, what happened to design in the intervening years? Furthermore, how is it that these historic structures are being destroyed and contemporary sheet metal sheds are being built as replacements? The current model is failing us by producing sub-standard and expedient buildings and we need creative designers and developers to prove the past and better construction practices has more to offer than we are giving it credit for.



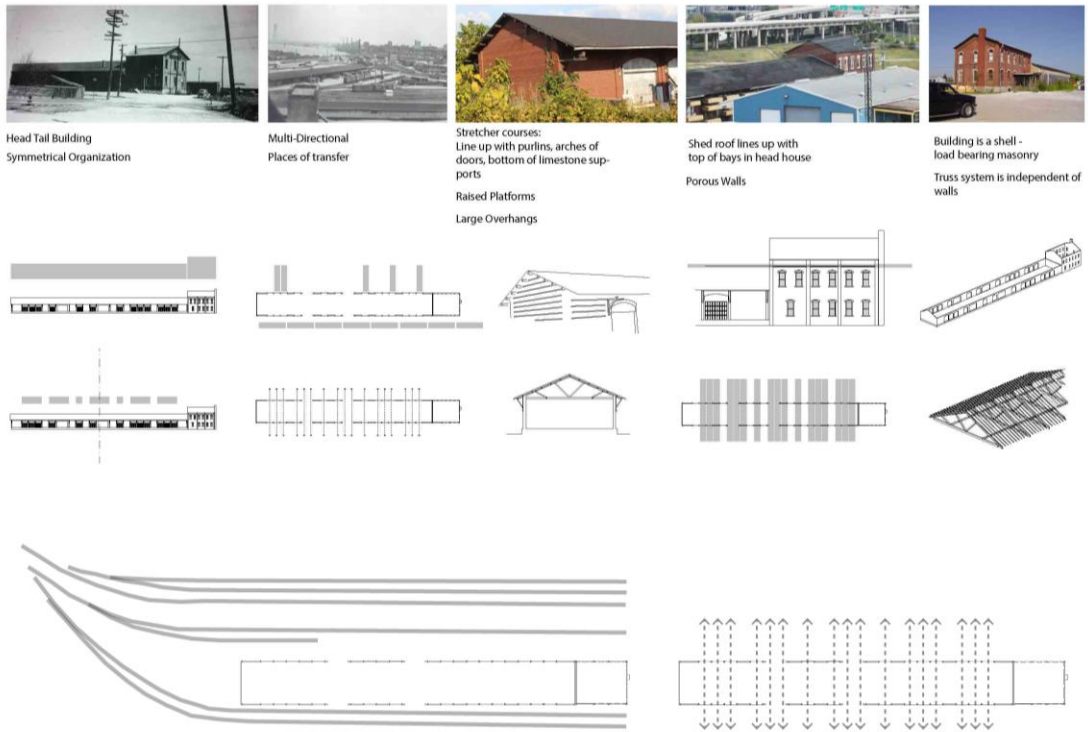
33

Inspiration can be found in research and analysis, serving as a path towards design discoveries and decisions, both functionally and formally. The remaining freight house was once a place of transfer, expressing movement from one side to another, an act of changing physical location. Its edges were full of activity and stood as a symbol of mediation between goods and ownership. Today, the building re-establishes a similar identity and connects the two aspects of the district plan, people and food.

Formally, the north and south façades of the building can be described, mostly of doors, symmetrical loading and unloading bays (yet disturbed through modern interventions) consisting of raised platforms, large roof overhangs, load bearing masonry walls, and a roof constructed of heavy wood trusses and steel tie rods. While the explanation of the building can go on, the value can be found in translating these discoveries into design propositions, not simply noticing them.

---

<sup>33</sup> Satellite Image: Source: Bing Maps



34

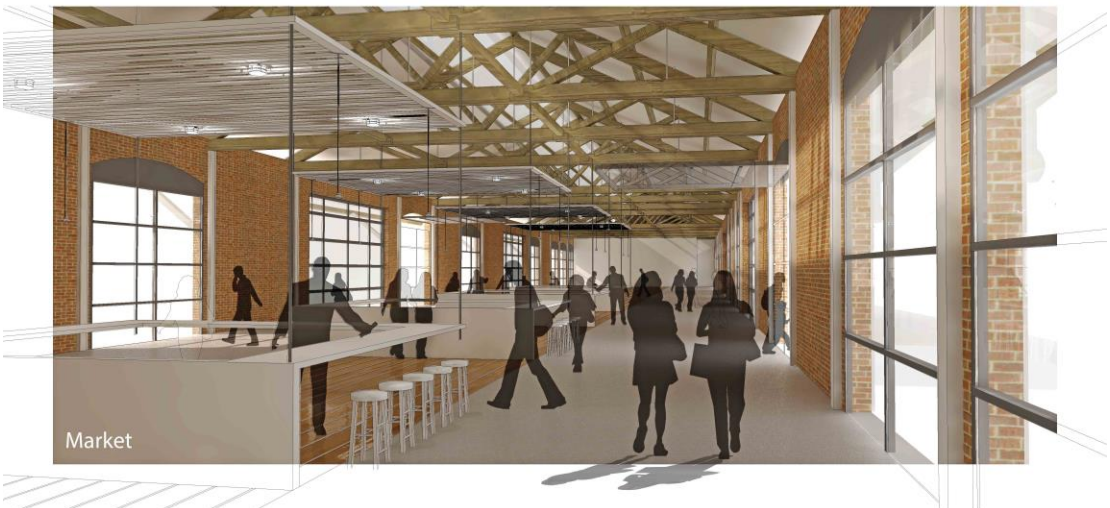
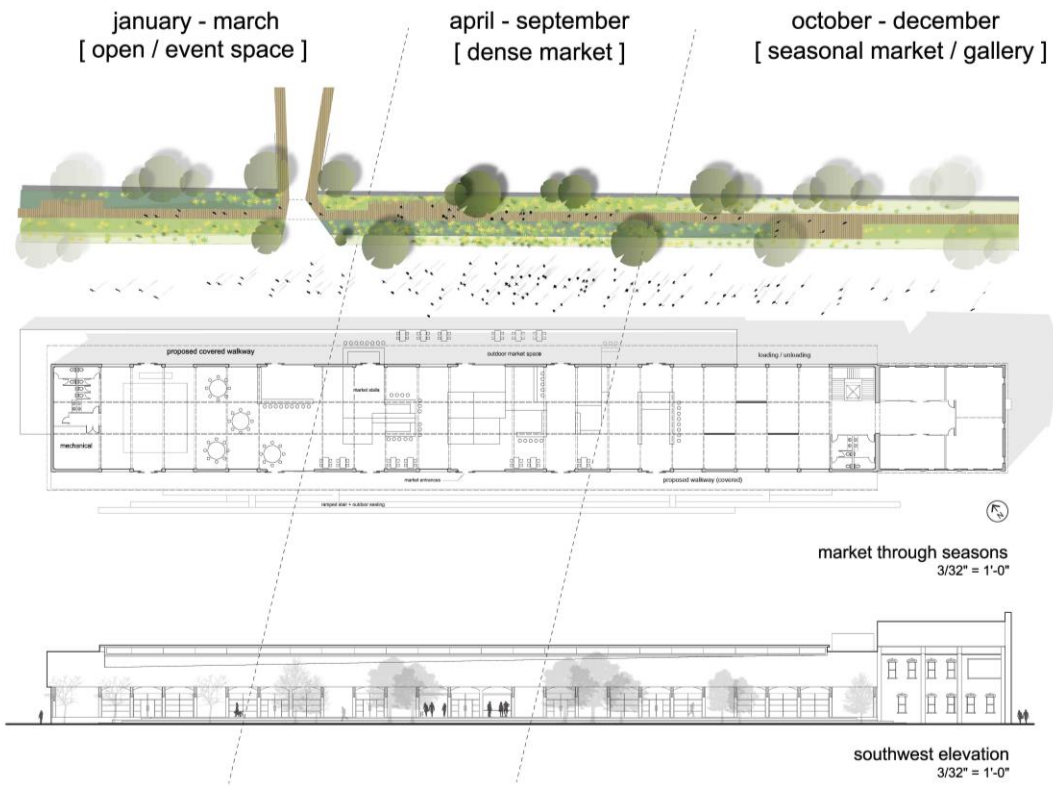
This process should be thought of literally, abstractly, iteratively, without boundaries and across scales. The process of uncovering is by no means linear. The following is a list of several ways to re-interpret what was found existing in the site:

---

<sup>34</sup> Analytical Diagrams. Source: Author

<b>Original / Existing Condition</b>	<b>Contemporary Proposition</b>
Symmetrical bay system	Subtle reference with light wells
Door to wall ratio	Transformative façade / spaces within
Aligned stretcher courses	Line up with mullions in proposed glazing system
Raised platforms	Support space beneath floor / seating / loading and unloading spaces
Large roof overhangs	Porch areas / covered public walkways
Load bearing masonry	Open Plan / Freedom to remove / adapt roof as desired
Truss system	Ability to suspend light weight / adjustable surfaces throughout interior
Flexible spaces	Flexible spaces – market
Building as a mediator	Building as mediator – food to the people

In terms of proposed designs, the interior of the building is a flexible space, functioning primarily as a market, but capable of hosting special events, both inside and out. The majority of utilities lines are aligned in the center of the building, beneath the raised floor. The stalls can be arranged in a variety of configurations.



35

<sup>35</sup> Proposed plan and perspectives. Source: Author



36

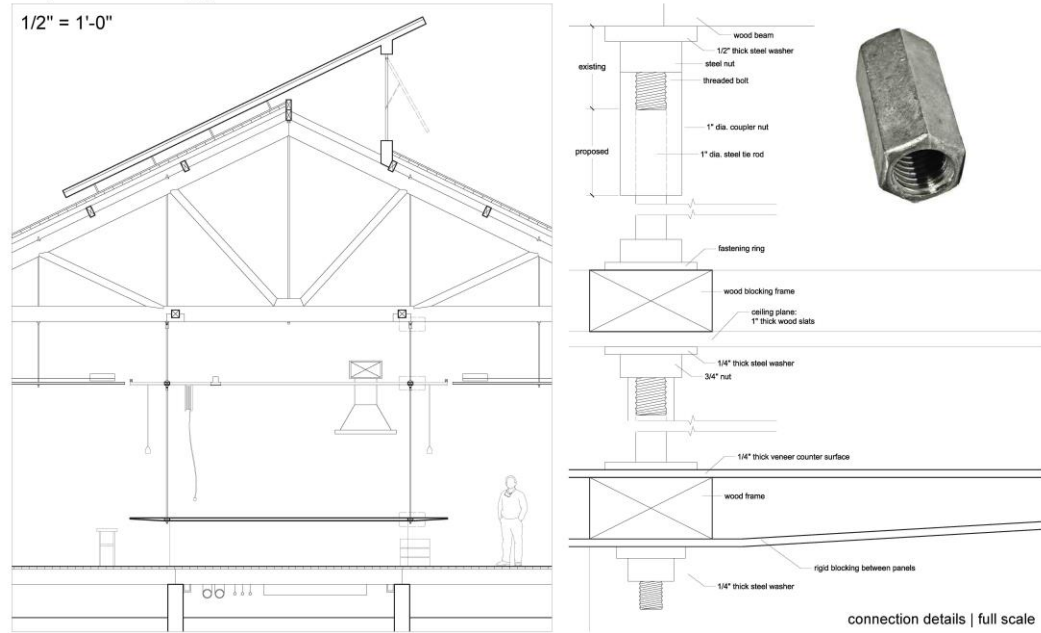
Certain details within the building were considered, in order to develop a comprehensive range of scale shifting throughout the thesis. Included in these are the horizontal surfaces, hung from the existing tie rods located in the truss system. The detail draws attention to the connection, expressing the pure vertical load transfer from one steel rod (existing) to the next (proposed). This allows the weight of the ceiling and counter planes to be distributed evenly throughout the trusses above and minimalizing impact. The surfaces allow market visitors to experience the structure above, while also keeping free the ground plane.

---

<sup>36</sup> Exterior Perspective. Source: Author

# Hanging Surfaces

suspended ceiling planes + counters



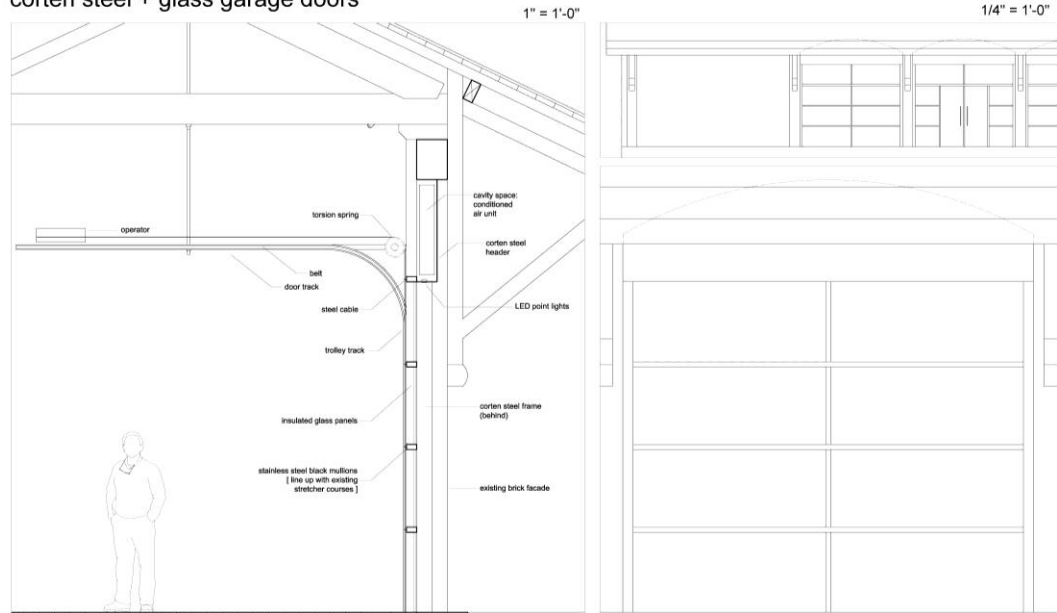
37

Another major consideration, when it came to detailing the building was the door treatment. The building façade is made up of approximately 50% openings, thus the decision on how to address them is imperative. A glass garage door was placed on the interior portion of the existing brick wall, providing thermal insulation and protection, but not limiting views out or light coming in. A priority is made so that at certain times, when the building doors are shut, visitors to the adjacent park can see through the glass doors to the educational garden space beyond. This effect is reminiscent of the building's unique history, antiquated infrastructure in a field of vegetation.

<sup>37</sup> Design Detail. Source: Author

# Vertical Surfaces | Doors

corten steel + glass garage doors

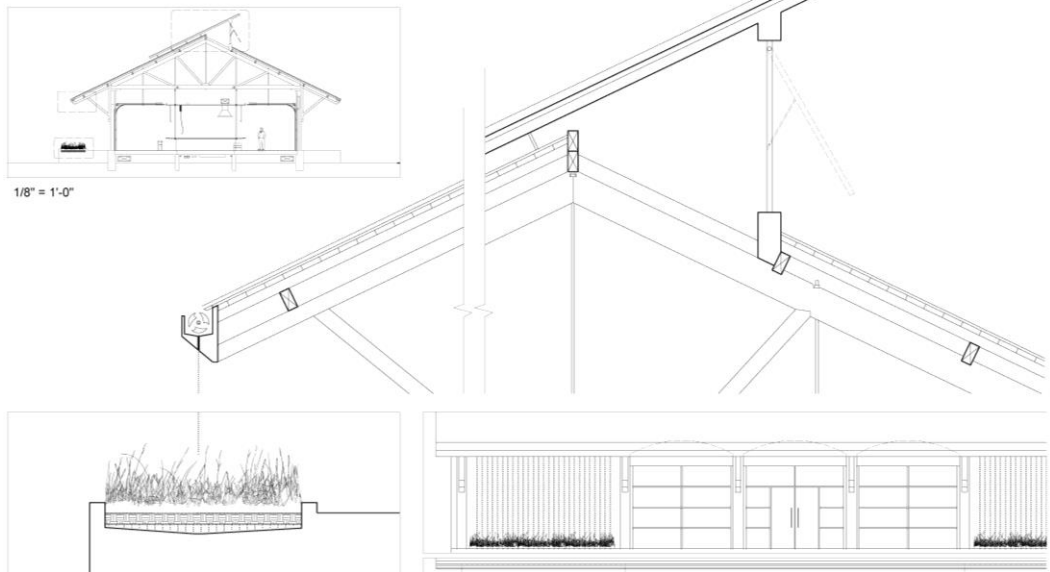


38

Water collection is the final detail development, which plays a crucial role in the overall scheme of the project. This idea shows how small scale design can impact large scale systems, and vice versa. By exposing the rainwater runoff, and thus the collection system, visitors can learn about how the system works.

# Environmental Design

rainwater collection + natural ventilation



39

<sup>38</sup> Design Detail. Source: Author

<sup>39</sup> Design Detail. Source: Author



## Chapter 4: Design [Process] Discoveries

A language is evolving for these embodied stories that describe the evocative cultivation of translating history into contemporary, architectural design. These discoveries provide insight into how uncovering the past can inform design principles for specific site proposals.

### Understand Initial Design and Intent

Industrial buildings were typically designed for very specific purposes, a vernacular driven by a specific industry. Whether it was the abundance or depletion of natural daylight, topographical considerations, construction material selection, or any other of the virtually endless list of unique industrial building characteristics, each provide insight towards future design. Retired smoke stacks, dark cellars, expansive warehouse spaces, open floor plans, and vast windows; all common vernacular decisions in the design of industrial buildings. While these characteristics could be seen as restrictive, in actuality, they provide for optimal flexibility in future use.

### Re-Consider Abandonment

What are typical causes for decline? War, deindustrialization, tourism, gentrification, white-flight, and economic instability are some of the principal forces responsible for the emptying our downtown communities. Stewart Brand mentions some slower moving causes for the disregard of industrial buildings, including, “technology, money, and fashion.”<sup>40</sup> He continues by explaining that even changing building and fire codes contribute towards this diminishing effect of existing real estate.

At first glance, abandoned industrial buildings may seem utterly useless, but in reality, urban “ruins may become spaces for leisure, adventure, cultivation, acquisition, shelter and creativity.”<sup>41</sup> Their uses, while non-traditional, are well worth understanding and have the potential to inform contemporary design.

### Assess Assets and Liabilities

Urban Ruins are places of extreme poverty and potential. They, “open up possibilities for regulated urban bodies to escape their shackles in expressive pursuits

---

<sup>40</sup> Stewart Brand, *How Buildings Learn: What Happens After They're Built*, First Edition (Penguin Books, 1995), 5.

<sup>41</sup> Tim Edensor, *Industrial Ruins: Space, Aesthetics and Materiality* (Berg Publishers, 2005), 21.

and sensual experiences, foreground alternative aesthetics about where and how things should be situated and transgress boundaries between outside and inside.”<sup>42</sup>

The embodied energy within existing structures begs for reuse, despite the negligible value offered from current sustainability standards, including the Leadership in Energy and Environmental Design. Of the required minimum eighty points for a project to achieve LEED Platinum certification, four are offered for the re-use of the existing building. However, there is a section of LEED devoted to Existing Buildings, as well as a growing variety of comparable ranking systems. There is a constant necessity to heighten environmental consciousness throughout the design profession, it is a growing responsibility of the architect.

### *Buildings Transform and Learn*

The static nature of architecture is misleading. What a community asks of its buildings is, by definition, continually evolving. This must be considered not only when designing for today, but also for generations to come. The buildings being designed, and re-designed today, as well as the programs within them, will continue to change. Our designs must enable as such.

Brand mentions six S's, in regards to a building's evolution throughout time: Site, Structure, Skin, Services, Space plan, and Stuff.<sup>43</sup> These layers, each necessary components for a building to function, are shed at different intervals throughout a buildings life. The site in which the building sits is most permanent and stuff inside, the least. These layers tell astonishing stories that span generations and can enrich our interactions within buildings. Buildings are made of pieces, which die at different times for different reasons. We should not simply throw the whole thing away.

### *The Uncovering Process is not Linear*

Analysis starts with discovery. Typical research and development, when considering architectural exploration, can be read in linear fashion. This process begins with historical 'digging' and precedent analysis, followed by an eventual digestion of the material, which fuels the design process.

A preferred method recognizes an eye for design almost immediately after the digging begins, concurrent with the research process. The designer is constantly

---

<sup>42</sup> Ibid., 18.

<sup>43</sup> Brand, *How Buildings Learn*, 13.

being informed of potential design influence and should not hesitate to absorb the surrounding storm of knowledge.

As the research process begins to produce substantive material (historical photographs, city directories, maps, ownership papers and deeds) the design influence will react accordingly. At times, historical triggers may align with contemporary design decisions, while others will interrupt. Both cases are particularly useful and share equally embodied influence.

Curiosity plays a major role in this design process, which can sometimes result in fruitful discovery. The opposite, however, is sometimes true as well, and paths of inquiry lead to dead ends. This time is not wasted as curiosity is essential to exploration and design. Inspiration can be found, more often than not, in things that have nothing to do with buildings.

#### *Structural Concerns and Opportunities*

As technology evolves, structural modifications allow for a unique display of old and new. For example, picture a series of contemporary floor joists tying into a fifty year old steel beam, resting on a one hundred year old (now vastly oversized) wood channel and column. This dichotomy represents an evolution and tells a story of material efficiency and structural sophistication. Equally impressive would be the notion of wrapping a crumbling 19<sup>th</sup> century piece of infrastructure in transparent structural glazing, showing how innovation can nurture the past, while also allow for additive design and construction.

That is not to say that historic buildings designed during this time were by any means, under engineered. In fact, the opposite. There is opportunity in harvesting these structural systems and adjusting design accordingly. Structural systems should be remembered, expressed and brought into contact with users.

#### *All Elements of a Building's History Add Value*

##### Mysterious Beginnings

Revealing original uses and architectural qualities of abandoned buildings can influence the proposed designs and enrich the meaning behind them. At times, however, certain aspects of buildings pasts remain unknown, either by lack of evidence, or conflicting historical accounts. These mysterious beginnings need not be

seen as weaknesses, rather embraced, as this unknown can add a layer of mysticism and intrigue, leaving personal translation ambiguous and rich. In the book *Industrial Ruins: Space, Aesthetics and Materiality*, Tim Edensor intentionally mentions only the general location of his photographs, and only in the first chapter. In noticing value in the unfamiliar, he explains that, “the arguments of this book would be less pertinent if they were accompanied by this superfluous geographical information.”<sup>44</sup>

#### Story Telling

Apart from the factual and tectonic messages we uncover from buildings pasts, are the stories told, found only in the balance of research and speculation. These stories are rooted in the paintings across warehouse walls, the stains scattered on crumbling floors, and the shattered glass sprayed within ruinous factories.

#### Irreplaceable Authenticity

Discovered information within a building is impossible to manufacture with new construction. Resurfacing a previously hidden past inherently possesses great value, found especially in the juxtaposition between old and new.

#### Potential in Natural Evolution

A caved in roof or walls that leak, if given ample daylight and ventilation will produce vegetation. In abandonment, this process took control and should maintain a certain amount of integrity. Instances such as these may offer insight in terms of the buildings orientation, and eagerness to produce naturalistic elements, such as outdoor courtyards with plantings, etc.

#### Expecting Transformation

Design should expect and embrace change, but do so with authentic integrity. Flexibility is key when considering re-use design proposals. The decisions made today will be looked upon as precedent, just as today’s responsible designers look to the past. Stewart Brand notices this constantly fluctuating system, noting that, “An adaptive building has to allow slippage between differently-paced systems of site, structure, skin, services, space plan, and stuff.”<sup>45</sup>

Constantly fluctuating societies continue to dictate and transform the program within some of our most historic structures. “From the first drawings to the final demolition,

---

<sup>44</sup> Edensor, *Industrial Ruins*, 7.

<sup>45</sup> Brand, *How Buildings Learn*, 20.

buildings are shaped and reshaped by changing cultural currents,<sup>46</sup> linked to the production and consumption of contemporary communities.

### *Sensory Input Should be Translated and Revealed*

“The textures and tactilities, smells, atmospheres and sounds of ruined spaces, together with the signs and objects they accommodate,<sup>47</sup> represent the richness offered only by previously inhabited buildings. Viewing these abandoned structures through photographs reveals only a skin deep layer of the complexity within. In order to fully embrace what they have to offer, we must inhabit them and share our experience through the design.

### *Imitation / Preservation Concerns*

The design process and all that it reveals, is not meant to bring the past to present, verbatim. A great deal of value is lost in a mistranslation, or lack of ingenuity between the past and present. If we redesign a building today that was built in 1900, and make it look like it was built in 1900, we are depriving the next generation of architects of valuable messages from our time.

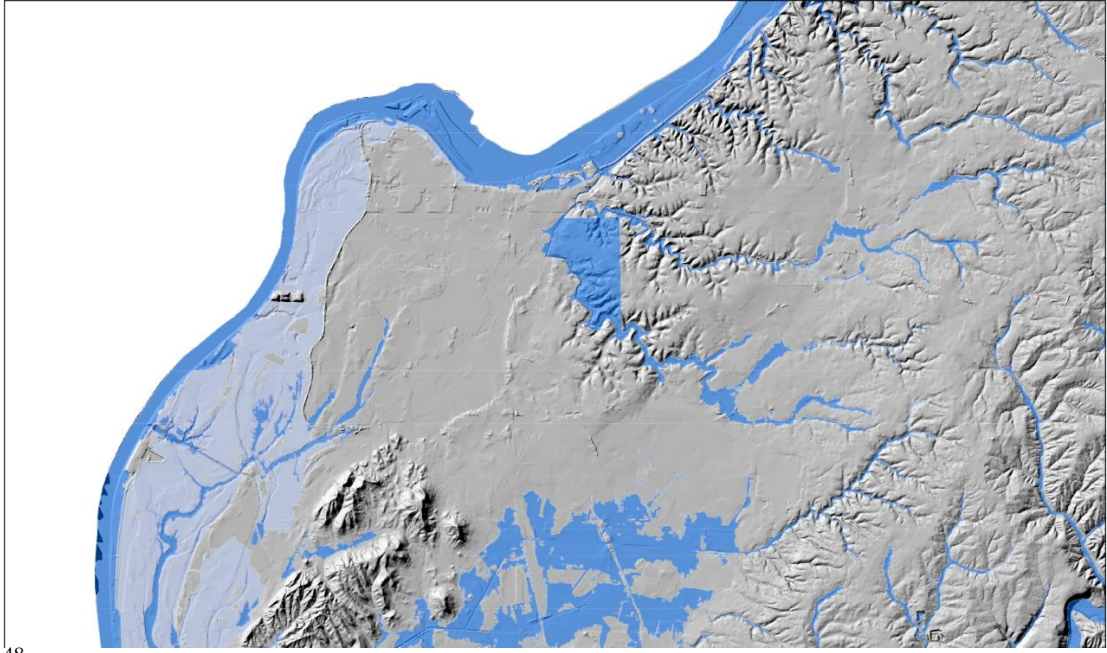
### *Shifting Scales*

Certain elements of site analysis can be found in unfamiliar sources, such as the conversion of metadata and across all scales, like the molecular makeup of a brick. These images, created from the global to the local scale, now begin to take on useful and powerful meaning. From there, the opportunity of shifting scales means different results, more detail, and a divulgence of information.

---

<sup>46</sup> Ibid., 2.

<sup>47</sup> Edensor, *Industrial Ruins*, 16.



48



49

---

<sup>48</sup> GIS Generated Map: Topography and Waterways  
<sup>49</sup> Photograph of brick from site. Source: Author

Analysis from 5000 ft. up is only one approach towards this type of process. One can find equal value at the opposite end of the spectrum, the micro-scale. A material investigation and tracking system begins to reveal further potential for design. The buildings in this site, for example, are built almost entirely of bricks. In asking questions such as, what are bricks made of, what is the embodied energy, how do bricks go together to form a wall, and how do they come apart, reveals specific and useful meaning.

Geomorphology is important to analysis and design. In fact, at some point, analysis and design begin to merge and it can be hard to distinguish the two as separate entities or processes, independent of each other. As a result, this continual shift in scale begins to bookend the design process, cultivating and enriching the architecture that comes to fruition. This process finds insight from unfamiliar sources.

Balance Delicacy and Aggressiveness



In building on the established analytical framework, it is useful to immerse oneself in the site and ask questions about what should be done there. What do these buildings need? Unique strategies have been developed to answer these questions, based on a sliding scale of interjection, from an uninterrupted exterior to intense reformation. To exemplify the character of the district in question, one specific façade shown and brought into focus these ideals:

Levels of Intervention

1. [80.20] Uninterrupted Exterior
  - a. Innovation within
    - i. Interior partitions

<sup>50</sup> Process Diagram. Source: Author

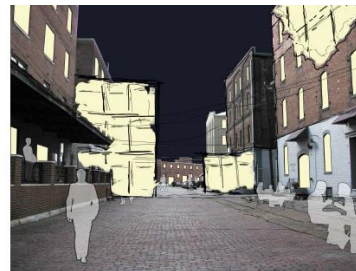
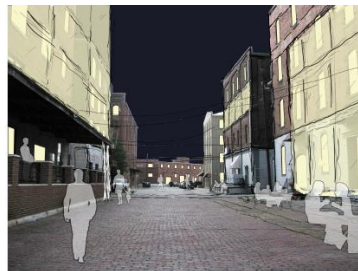
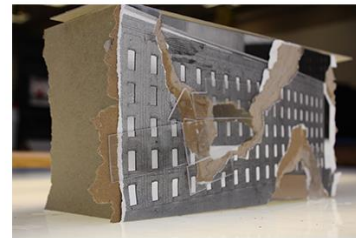
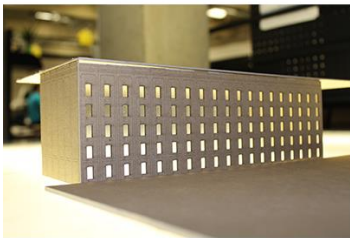
- ii. Floor plates
- iii. Vertical circulation
- b. Replacement apertures
- c. Preservation on the outside

2. [50.50] Meticulous Carving

- a. Carefully measure rhythm, proportions, scale, apertures, etc.
- b. Create indoor / outdoor spaces = thickens threshold
- c. Increase porosity + activate the street level
- d. Let in more natural daylight

3. [20.80] Intense Reformation

- a. Reveals layers of construction and depth
- b. Allows the building to open up freely (break where it breaks)
  - i. Seemingly arbitrary, but based on historic site data (rail roads)
- c. This is how buildings come apart
  - i. From brick breaking study
- d. Based on what the buildings need, is it more destructive?



51

<sup>51</sup> Process Drawings and Models. Source: Author



## Chapter 5: Impact

### Immediate

The influence of this thesis could be read on several levels. I have explored and developed a comprehensive catalog of how cultures around the world have and continue to adapt their downtown buildings and promote thriving, contemporary, environments. Building on this research, I have developed an understanding for how reuse and the design of downtown buildings can benefit the neighborhood in the Portland neighborhood of Louisville, Kentucky and transform a lost community.

While the specific design propositions described here may not be employed directly, the value of the thesis can be found in both the comprehensive analysis and procedural interrogation.

### Sustained

A sustained impact will also be made in providing a contribution to this generation of designers and those wishing to rebuild urban areas across the country. Providing examples of the unmatched quality that historic buildings make available, can offer knowledge and inspiration to those who share my interests and convictions. In an age defined by environmental concern, this type of design development will contribute directly to illuminating a more sustainable future. Urban sites such as this are scattered all over downtown Louisville, and the world. No city is immune to abandonment. By interrogating more than a specific site, rather a way of thinking, a design process, I can apply this thesis as a foundation on which to build a professional career.

## Bibliography

- Binelli, Mark. *Detroit City Is the Place to Be: The Afterlife of an American Metropolis*. Metropolitan Books, 2012.
- Bonetto, Cristian. *Copenhagen Encounter*. 2nd ed. Lonely Planet, 2011.
- Brand, Stewart. *How Buildings Learn: What Happens After They're Built*. First Edition. Penguin Books, 1995.
- Buchanan, George C. *Fine Whisky Facts*. Accessed March 14, 2013. <http://archive.org/details/FineWhiskyFacts>.
- Carson, Gerald. *The Social History of Bourbon*. Reprint. The University Press of Kentucky, 2010.
- Commercial club, Louisville. *Brief Facts About Louisville*; Louisville, Ky., H. L. Morrow & co., printers, 1890. <http://archive.org/details/brieffactsaboutl01comm>.
- “Conversion of Warehouse to Offices, Grand Canal Dock.” *Irish Architectural Review* 3 (2001): 86–87.
- “Copenhagen: Two Harbour-front Grain Silos Have Been Radically Repurposed by MVRDV.” *Architecture Today* no. 164 (2006): 10–11.
- “Corso Karlín.” *Adaptive Reuse*. Accessed February 25, 2013. <http://adaptivereuse.info/portfolio/corso-karlin/>.
- Crowgey, Henry G. *Kentucky Bourbon: The Early Years of Whiskeymaking*. 1st ed. The University Press of Kentucky, 2008.
- Davenport, Fionn. *Dublin*. 8th ed. Lonely Planet, 2010.
- Dewar, Margaret, and June Manning Thomas. *The City After Abandonment*. University of Pennsylvania Press, 2012.
- “Docklands Revival: a Converted Gas Holder Forms the Centrepiece of a Mixed-use Scheme in Dublin’s Docks.” *Architecture Today* no. 167 (2006): 71.
- “Dorte Mandrup: Neighborhood Center, Copenhagen, Denmark 1999-2001.” *A + U: Architecture and Urbanism* no. 6(381) (2002): 44–[49].
- Edensor, Tim. *Industrial Ruins: Space, Aesthetics and Materiality*. Berg Publishers, 2005.

*Falls1912.jpg (JPEG Image, 460 × 293 Pixels) - Scaled (0%).* Accessed April 4, 2013. <http://www.oldlouisville.com/postcards/Louisville/pic/Falls1912.jpg>.

Gallagher, John. *Reimagining Detroit: Opportunities for Redefining an American City*. Wayne State Univ Pr, 2010.

Hannema, Kirsten. "Conversion of a Warehouse, Rotterdam: Mei." *A10: New European Architecture* no. 20 (2008): 49–50.

Hardy, Hugh. "The Romance of Abandonment: Industrial Parks." *Places* 17, no. 3 (2005): 32–37.

Hartung, Martin. "The Victualling Warehouse in Copenhagen." *Living Architecture* no. 13 (1994): 99–[106].

"High and Dry: An Office Building by OTH Is Sited on a Disused Crane Deck in Amsterdam." *Architecture Today* no. 199 (2009): 87–88.

Hinshaw, Mark. "Amsterdam Opens a New Culture Park: Kathryn Gustafson Transforms a Dutch Brownfield into an Amazingly Complex Landscape." *Landscape Architecture* 94, no. 11 (2004): 60,62–66,68,70–71.

Hollis, Edward. *The Secret Lives of Buildings: From the Ruins of the Parthenon to the Vegas Strip in Thirteen Stories*. First Edition. Picador, 2010.

Hudnut, William H. "Reclaiming Waterfronts." *Urban Land* 58, no. 7 (1999): 50–55.

Hutchings, E. T. "Louisville." *Pencil Points* 21 (1940): 295–324.

Kleber, John E. *The Encyclopedia of Louisville*. University Press of Kentucky, 2001.

"Kødbyen [meat Market, Copenhagen]." *Arkitektur DK* 30, no. 0.6–7 (1986): 292–293.

Krohe, James Jr. "The Incredible Shrinking City: Places Are Trying to Make Smaller Better, but It Isn't Easy." *Planning* 77, no. 9 (2011): 10–15.

Kuggas, Ulrik. "På kanten af Kødbyen = [On the edge of Kødbyen] [Copenhagen]." *Landskab* 90, no. 6 (2009): 142–145.

Lebrasseur, Rick. "Going Dutch." *Urban Land* 66, no. 6 (2007): 65–69.

*Louisville Illustrated*. Accessed March 14, 2013.  
<http://archive.org/details/LouisvilleIllustrated>.

“Louisville Magazine - DEC 2012.” Accessed March 14, 2013.  
<http://loumag.epubxp.com/i/95686>.

Lunday, Elizabeth. “Shrinking Cities, U.S.A.: Confronting the Challenge of Population Loss, Rustbelt Cities Are Seeking an Improved Quality of Life.” *Urban Land* 68, no. 11–12 (2009): 68–71.

Mansfield, Howard. *The Same Ax, Twice: Restoration and Renewal in a Throwaway Age*. 1st ed. UPNE, 2001.

Pike, James. “The Old Distillery, Dublin.” *Irish Architect* no. 173 (2002): 15–19.

Powell, Kenneth. *Architecture Reborn: Converting Old Buildings for New Uses*. Rizzoli, 1999.

“Preserve America Neighborhood: Historic Portland, Louisville, Kentucky.” Accessed April 4, 2013. <http://www.preserveamerica.gov/portlandKY.html>.

“Recycling Cities :downtown.” *Design and Environment* 4, no. 2 (1973): 22–37.

“Revitalisering Af Remiser: Remiserne Enghavevej = Revitalizing Tram Depots: Tram Depots on Enghavevej [Copenhagen] - Architect: BBP Arkitekter.” *Arkitektur DK* 54, no. 5 (2010): 52–55.

Rowe, Colin, and Prof Fred Koetter. *Collage City*. The MIT Press, 1984.

Sanborn Map Company. “Sheet 10 of Insurance Maps of Louisville, Kentucky. – Kentucky Digital Library.” Accessed April 4, 2013.  
[http://kdl.kyvl.org/catalog/xt7rxw47qc79\\_28/details](http://kdl.kyvl.org/catalog/xt7rxw47qc79_28/details).

Scott, Berkeley, and Jeanine Scott. *The Kentucky Bourbon Trail (Images of America) (Images of America)*. Arcadia Publishing, 2009.

“Steven Holl: Sarphatistraat Offices, Amsterdam, the Netherlands.” *GA Document* no. 63 (2000): [38]–47.

“The Bourbon Review.” Accessed March 14, 2013. <http://www.gobourbon.com/>.

“The City Of Louisville Kentucky. (with) The City Of New Orleans Louisiana. Published By J.H. Colton & Co. No. 172 William St. New York. Entered ... 1855 by J.H. Colton & Co. ... New York. No. 34. - David Rumsey Historical Map Collection.” Accessed March 14, 2013.  
[http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~1683~130042:The-City-Of-Louisville-Kentucky---w?sort=Pub\\_List\\_No\\_InitialSort&qvq=q:louisville%2Bky;sort:Pub\\_List\\_No\\_InitialSort;lc:RUMSEY~8~1&mi=0&trs=25](http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~1683~130042:The-City-Of-Louisville-Kentucky---w?sort=Pub_List_No_InitialSort&qvq=q:louisville%2Bky;sort:Pub_List_No_InitialSort;lc:RUMSEY~8~1&mi=0&trs=25).

*The Conservation of European Cities*. Cambridge, Mass: MIT Press, 1979.

“The Old Jameson Distillery [Smithfield, Dublin].” *Irish Architect* no. 136 (1998): 33–35.

“[Two Commercial Buildings in Louisville, Ky., by C.A. Curtain, Archt.].” *Inland Architect and News Record* 24, no. 3 (1894). <http://search.proquest.com.proxy-um.researchport.umd.edu/avery/docview/55944028/13CCBD9BC5E35349037/1?accountid=14696>.

Veach, Michael R. *Kentucky Bourbon Whiskey: An American Heritage*. The University Press of Kentucky, 2013.

“West Main Street Preservation.” Accessed March 14, 2013.  
<http://www.louisvilleky.gov/NR/rdonlyres/9B578902-F9F0-4793-858B-B2DE417B9C74/0/WestmainNG.pdf>.

Woods, Lebbeus. *Radical Reconstruction*. Princeton Architectural Press, 2001.

Ziehl, Michael, Sarah Oßwald, Oliver Hasemann, and Daniel Schnier. *Second Hand Spaces - Über Das Recyclen Von Orten Im Städtischen Wandel*. Bilingual. Jovis, 2012.

Zimmerman, Karla, and Sarah Chandler. *Amsterdam*. 8th ed. Lonely Planet, 2012.

Zoeller, Chester. *Bourbon in Kentucky: A History of Distilleries in Kentucky*. First. Butler Books, 2009.