The HUB: Humans United in Binghampton

Dakota James Wyatt

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THE HUB: HUMANS UNITED IN BINGHAMPTON
by
Dakota Wyatt

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Architecture
Major: Architecture

The University of Memphis
May 2020
DEDICATION

I dedicate this thesis to my parents, Dave and Deb Wyatt. You already know I would not be who I am without your amazing guidance throughout my whole life. Thank you for leading me to Christ at a young age, thank you for everything you have done for me. This thesis is just one of the results of your love for me. I hope I can always make you proud.

I dedicate this thesis to my younger siblings, Delaney and Devin Wyatt. I am so excited to continue going through life with both of you and to see where you go. I hope you get to experience God in your own way, through life’s trials and tribulations, to get closer to Him like I have. Follow your dreams and never lose sight of what is important.

Finally, I dedicate this thesis to my grandparents, Jim and Diana Lotz and Ralph and Sue Wyatt. Thank you for your continuous support and blessings in my life and while in school. You make life that much easier.

You all mean the world to me. I am forever grateful and hope I can bring as many blessings into your life as you have in mine. I love you!
ACKNOWLEDGEMENTS

I first of all want to express my thanks to God for His provision in my life. I feel extremely blessed to be where I am and have this opportunity and experience in my life, which I know is not afforded to everyone. I owe it all to Him.

I have so much gratitude for the University of Memphis Department of Architecture and for the professors that I have had for six years now. They have generously shared their constant expertise and care for their students, including me. Thank you to my studio professor and thesis chair, Jim Williamson, and my thesis committee members, Professor Jennifer Barker and Professor Andrew Parks, for your architectural wisdom and enthusiasm in my project and for pushing me to do my best.

Additionally, I would like to thank my classmates and other close friends that have been a great source of companionship in school, fellowship in the Word, and enjoyment every day.
This thesis is influenced by three major elements: my previous involvement in Binghampton, the values of MASS Design Group, and the affects of nature on me.

Involvement in Binghampton

In my six years studying architecture at the University of Memphis, I have had the opportunity to work with many different community partners throughout the greater Memphis area, several of which have involvement in Binghampton. These are shown in figure 1.

One of my first studio projects was with the Rec Room, located at Tillman Street and Broad Avenue. This was my first time seeing and spending time in Binghampton. The second time I visited Binghampton for school, I was studying Caritas Village at Harvard Avenue and North Merton Street with a focus on the experience of the space and learning more about the community. Later, my studio was working with a very involved community partner, Inspire Community Cafe. That project was located in Downtown Memphis, but they later opened up a cafe in Binghampton at the new Binghampton Gateway Center at Tillman Street and Sam Cooper Avenue. I visited both Caritas Village and Inspire Community Cafe from time to time. Most recently, I have been involved with the Carpenter Art Garden on Carpenter Street the past couple summers with the Design + Build Studio. We have designed and built different useful structures for the youth in the neighborhood.

Because of these different experiences I have had within Binghampton seeing the community, and working with different businesses/organizations that are working to grow the community and improve the neighborhood, I have found myself drawn to working in the Binghampton area as well.

MASS Design Group Inspiration

In my first year of graduate school, I was reading and researching a wide variety of topics within architecture in search of inspiration for my upcoming manifesto and thesis project. I stumbled onto a TED Talk video of Michael Murphy from MASS Design Group talking about his life story and how he became an architect.1 This presentation gave opened my eyes up to the high level of responsibility that architects have, and how architects can go beyond just the preservation of human health, safety, and welfare. This new level of understanding helped me write my manifesto, which then drove the process of design throughout the thesis project.

Affects of Nature on Me

I have always felt like any time I had a great experience in the outdoors, it was due to the affect nature had on me. With the early research I had been doing on nature and its affects on humans in regards to architecture, I took some time to get outdoors more. I bought some fishing gear and went out fishing around Memphis with my roommate. It was a refreshing and reenergizing experience for me.

Along with fishing, I began to listen. I heard water running, the wind in the trees, insects getting louder as sunset approached. It reminded me of natural white noise tracks I listen to all the time, to help me sleep. In an effort to experience this and still get outside more, I bought a professional field recording mic and began to go out and record what I heard. I recorded some of those natural white noise tracks to put online for other people. I then discovered how hard it is to find a place with no unnatural noise pollution, even for just a clean two minute recording.

Being immersed in the wild outdoors like that is such a unique feeling. I wish architecture could recreate that feeling so that more people have access to that experience. I believe some of my own design instincts that are influenced by my recent experiences in the outdoors, along with other biophilic design strategies, can be used to try and achieve this.

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1. Murphy, Michael. “A Sense of Place.”
ABSTRACT

Architecture should go beyond the requirements to preserve human health, safety, and welfare. Architects have the ability, and therefore responsibility, to manifest architecture that heals people and communities in every sense of the word. This thesis studies and implements two proven ways to achieve this. The first way is through the process of design and construction that builds something by the community, for the community, to bring ownership, identity, and dignity to the project, connecting the community members together. The second way is by giving people more access to nature using the theories of biophilic design. With biophilic design, architecture is able to improve the well-being of its users and expedite healing. These theories are utilized and implemented in the design of a multi-use community hub, which aims to be a shared location for human interaction and community growth located in the Binghampton neighborhood of Memphis, Tennessee.
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MANIFESTO

Architecture Should Heal

Architecture is never neutral; it either heals or hurts. Architects have the responsibility to ensure that what they design heals; architecture should go beyond just the preservation of human health, safety, and welfare. Architects influence the ability for architecture to heal physically, emotionally, mentally, spiritually, and socially for all individuals affected by it. It should aim at healing in some capacity at all stages of its life. It would be a disservice and a missed opportunity to all those involved if what an architect designs fails at making people and places healthier and, therefore, happier.

All Architecture Tells a Story

Before the architect

1  Exposition (Place)
   There exists a location with people, history, and context

2  Problem (Need)
   A problem with existing conditions arises

Influenced by the architect

3  Rising action (Design development)
   Problem intensifies and possible solutions are explored

4  Climax (design solutions)
   Architects plan solutions to the issues

5  Falling action (construction)
   Design solutions are implemented

After the architect

6  Resolution (occupancy)
   Problem is resolved and occupants experience the space

7  End of story (transcendence)
   The project allows for healing through the story that the architecture tells
INTRODUCTION

Architecture tells a story; it either heals or hurts. A building should be designed to heal throughout its whole lifecycle. It is up to the designer to help write the story of the architecture so that it is a story of healing. Architecture can go beyond just the preservation of human health, safety, and welfare and contribute to healing physically, mentally, spiritually, socially, or emotionally through each part of the architecture’s story from conception and construction to occupancy and transcendence.

It has been shown that access to nature can improve a person’s health and wellbeing. Atmospheric and visual access to nature within the context of biophilic design can be used to influence the healing of people and community. The goal of biophilic design is to improve the well-being of its users and expedite healing. That is why biophilic design is an appropriate theory to base the thesis research around.

The Binghampton neighborhood—located in the geographic center of Memphis, Tennessee—has great opportunity to study the healing potential of architecture. In an area that is historically one of the most impoverished and dangerous in the city, the community is receptive to change that improves the neighborhood and has momentum pushing it forward. Binghampton is missing several amenities that can greatly increase opportunity for community growth. A space where people can gather for different uses, at different scales, and even at the same time would be beneficial. Uses could include, but are not limited to, the following: markets, festivals, fairs, performances, exhibits, meetings, or sports venues. The HUB: Humans United in Binghampton, is proposed as a space that can be used to fill in the missing amenity gaps that exist in the community and be a place where community grows.
1. Place

This section includes information about the location, context, history, and people. It will start at the macro scale of the city, then zoom in on the Binghampton neighborhood, and finally look at the micro scale of Tillman Street where the project is located.

Memphis

Memphis is located in the southeast corner of Tennessee adjacent to Mississippi and Arkansas. Since Downtown Memphis is adjacent to the Mississippi River and West Memphis, Arkansas is a floodplain, the city of Memphis spreads out from Downtown towards the east. One of the main roads that extend from Downtown to the east is Poplar Avenue, also known as the Poplar corridor due to its substantial amount of economic activity and developmental growth.

Area of Needs

Figure 3 displays the highest levels of need within the Memphis Region. It overlays areas with the most building code violations, asthma rates, blight rates, the Memphis 3.0 degree of change map, energy burden rates, and a noise pollution map (figure 2). The areas with the most overlaps are indicated in figure 3. What might be surprising is that there are areas along the Poplar corridor that fall within the highlighted areas on the map. Even with being right in the middle of Memphis and having great accessibility to the rest of the city thanks to major roads like Poplar Avenue and Sam Cooper Avenue, the Binghampton neighborhood is an area that has relative highlights as an area with a high level of needs. This makes it stand out as an area with great developmental opportunity.

Before the Architect

<table>
<thead>
<tr>
<th>Code violations</th>
<th>Asthma rates</th>
<th>Blight rates</th>
<th>Memphis 3.0 degree of change</th>
<th>Energy burden rates</th>
<th>Noise pollution</th>
</tr>
</thead>
</table>

Figure 2  Memphis Needs Overlays

Figure 3  Memphis Area of Needs Overlay Map

Next Page: Memphis Area of Needs Overlay Map
Binghampton Neighborhood

As seen in figure 6, the Binghampton neighborhood is bordered by Summer Avenue to the north, Poplar Avenue to the south, East Parkway to the west, and North Holmes Street to the east. Broad Avenue, Sam Cooper Boulevard, Walnut Grove Road, and Tillman Street are some of the main roads that cut through the neighborhood. The new Hampline, shown in figure 4, will connect the Shelby Farms Greenline coming from the east to Overton Park on the west by adding a two-way bike lane on Tillman Street, shown in figure 5, and Broad Avenue. This will be a major asset to the neighborhood and encourage safer bike travel through the neighborhood.

Figure 4  Top: Map of the Hampline
Figure 5  Bottom: Hampline Under Construction on Tillman Street
Figure 6  Next Page: Map of the Binghampton Neighborhood Showing Major Roads and Site Location
Tillman Street Context

Much like with the Hampline, there is a lot of development happening in Binghampton, especially at either end of Tillman Street.

Starting at the north end of Tillman Street, figure 7 shows the new Binghampton Gateway Center at the southeast corner of Tillman Street and Sam Cooper Boulevard was developed by the Binghampton Development Corporation to meet some of the needs of the Binghampton residents, including the neighborhood’s first grocery store. Its tenants include Dollar Tree, Save A Lot, Boost Mobile at Total Wireless, INSPIRE Community Cafe, and Stardust Jujitsu. The Binghampton Development Corporation is also responsible for the renovation of 100 housing units, 18 new houses built, and managing over 70 housing units with more on the way.

There are also other developments happening across from the Binghampton Gateway Center. One is Collage Dance Collective. They are moving to a new studio at the southwest corner of Tillman Street and Sam Cooper Boulevard.

On the west side of this stretch of Tillman Street, there are mostly residences in the form of single-family houses and small apartment buildings, as well as a few small private businesses. On the east side, however, there is the Tillman Station police precinct with the Hamp Football Field to its north and a vacant lot to its south.

\[Figure 7\] Tillman Street Context between Sam Cooper Boulevard and Yale Avenue

Recently or currently being developed or renovated

1. future dance studio
2. apartments
3. closed apartments
4. house
5. apartments
6. house
7. small businesses
8. Binghampton Gateway Center
9. future use in the Binghampton Gateway
10. Hamp Football Field
11. police precinct
12. police precinct
13. empty site
14. house
15. house under renovation
One aspect about Binghampton that stands out is the art. The youth in the neighborhood paint murals on different buildings throughout Binghampton and several of them are located on Tillman Street. It is one way that brings people together and adds identity to the neighborhood. Including a space for a mural on the building or site of The HUB would help to connect it to the greater context of Binghampton.

The section of Tillman Street in figure 8 has many different building types including a duplex, low income apartments, senior apartments, parks, a community center, the Binghampton Development Corporation, the Greenline, churches, and several small businesses.

There are several new developments happening on Tillman Street and the addition of The HUB on this street would be appropriate and would contribute to the momentum in growth that Binghampton is currently experiencing.

Figure 8  Tillman Street Context between Hale Avenue and the Shelby Farms Greenline
2. Need

Historic Challenges

Binghampton has had to deal with some exceptionally tough challenges for the community. The list of statistics in figure 9 outline some of the long-lasting effects from Memphis’ history.

Binghampton began as an independent and racially integrated Memphis town in the late 1800s and early 1900s. The community experienced a shift in character as the city’s growth pushed east and urban manufacturing jobs departed, leading to various stages of racial segregation, poverty and population flight. These changes spurred a significant reduction in home ownership and increases in vacant and blighted property.2

Hopeful Future

Thankfully, there are many businesses, organizations, and residents in Binghampton that have been working to improve the neighborhood. They have already taken many strides to reverse the negative effects that Memphis’ history has had on the Binghampton neighborhood.

As we’ve seen time and time again, a lack of jobs, quality education, and commercial outlets (grocery stores, clothing outlets, thrift stores, drug stores, etc.) perpetuates crime, poverty and hopelessness within neighborhoods. An investment in capacity and opportunity can develop life-altering hope.3

These quotes and statistics indicate that there is a great need, and a lot of opportunity and momentum, for investing in the Binghampton community. The area is slowly turning into an area with less blight (figure 10) and a brighter, more hopeful future. Some healing in the neighborhood is occurring thanks to these turn of events.

Precedent Projects

2. Need

Historic Challenges

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Precedent Projects

Figure 9 Top: Statistics from the Binghampton Development Corporation
Figure 10 Bottom: Example of a Blighted Property in Binghampton on Yale Avenue

Community Input

Along with the information about the neighborhood from the Binghampton Development Corporation, some conversations we had with residents and organization leaders in the community that helped to specify the needs of the neighborhood. They were able to express several issues, including the following:

• Better access and spreading of community information neighborhood-wide.
• A better relationship between the neighborhood and the police that protect them (figure 11).
• An adaptable and scalable space for different community organizations to use for different types of gatherings or events.
• A community space for learning and job training.
• A community space for professional mental health education/help.
• A larger gathering space for the Binghampton Community Church to hold services.
• A public body of water in the neighborhood so the neighborhood has an accessible place for them to fish or learn to fish.

Thanks to the input from the local community, a program was derived from this list of needs. If these could all be addressed in an architecture project, it would help to continue to improve the quality of life in Binghampton and be healing for the neighborhood.

Figure 11 Tillman Police Station
3. Design Development

Program

Figure 12 diagrams how the list of needs is able to be transformed into a list of uses, and then a list of spaces that make up the project program, and then finally how it might be spatially organized.

Needs:
These are directly from the community. There is a noticeable theme of the community wanting to be able to bring people together on varying scales in order to inspire growth and healing in the neighborhood.

Uses:
This list is derived from the list of needs as well as the knowledge of existing and missing amenities and organizations in the neighborhood that would bring people together. However, it is not a comprehensive list, as needs will likely change along with the neighborhood.

Spaces:
This is the concise list of spaces that would, when put together, allow all the listed uses to occur if organized and shared efficiently.

Organization:
These are a few different ways to spatially categorize the list of spaces to better understand how they might be organized, shared, or even separated from each other.

Figure 12  Programmatic Analysis
Unification of Site

Figure 14 indicates the preliminary observations of the site. A particular focus for the observations was the relationship between the project site and the police station to the north. The Tillman Police Station has just one entrance off Tillman Street and a brick fence at its north and south property borders, cutting off Gracewood Street at the property line. This brick fence is extremely limiting: it acts as a physical barrier stopping anyone from crossing from one side to the other except for at the sidewalk.

Based on community needs, a preliminary goal of this thesis is to encourage multiple levels of human interaction between different walks of life, especially between the neighborhood and the police. This meant that not only did the brick fence need to be rethought, but that the siting of the project would need to be considered so that it too did not become a barrier to interaction.

In figure 15, the left image shows how the initial building part ignores an opportunity to connect with the police station and does not create any shared space between the two. The right image in figure 15 shows how, if the fence was taken down and Gracewood Street was reconnected, the two sites could overlap and then be able to share spaces and amenities. This would encourage much more interaction than with the alternative.

There are some other opportunities that sharing the site provides for the community and for the police station. Parking can be shared, which can simplify the site design; the project addresses more of the Tillman streetscape; the community gets a larger public space to use; and the police get easier access to the new amenities on the site. This move allows for a much more cohesive and synergetic design.

Site

The chosen site, highlighted in red in figure 13, is the vacant lot at the northeast corner of Tillman Street and Yale Avenue. This site was chosen for several reasons. It is a decently sized parcel in the middle of Binghampton on Tillman Street and the new Hampline, and it is directly next to the Tillman Police Station. A new development at this site would be appropriate as development is already happening all along Tillman Street, especially at the north end. Locating the project directly adjacent to the police station opens the opportunity to address the community need of strengthening relationships with the local police. The site is chosen because it has the potential to meet most of the needs discussed in the previous sections while also having many other advantageous qualities for the program.

Currently, Yale Avenue and Gracewood Street are both gated off to through-traffic. This is shown in the existing site photos in figure 13. A project at this site could reopen these roads and reestablish the intersection of the neighborhood while also allowing more access to the site.

Figure 13 Site Solar Study and Existing Site Photos

Figure 14 Top: Initial Site Observations
Figure 15 Bottom: Unification of Site
After the world-shocking fire at the Notre Dame Cathedral in Paris, France, many design proposals were created by different architecture firms all around the world. Most proposals were designs of how Notre Dame should be rebuilt, but this proposal by Gensler is one that aims to be a temporary solution for what to do while the cathedral is being rebuilt. Figure 17 shows how the black charred wood and plastic structure is multifunctional with adaptable walls and doors. This flexibility allows for different uses like shopping, gallery viewing, mass, or performances.

This precedent is a perfect example of the type of space that could be created to serve the functions that The HUB needs. Scale, transluscent panels, natural light, and adaptable walls are key aspects of this precedent that were considered in the thesis design. These considerations help The HUB to fulfill the neighborhood’s needs.

This project by Studio Gang acts as precedent for addressing the challenges of a neighborhood’s poor view of the local police. The first step they took was to create a space that the police and community could share on a human level. A basketball court on the police station property in the neighborhood of Chicago, Illinois, was built. The basketball court, seen in figure 16, was a success and the local youth grew an appreciation for the police in their community. This success inspired a neighborhood-wide urban planning project that aims to continue this growth and positive change in the neighborhood. This planning project took community input from all types of people involved in the neighborhood, including residents, organizations, and police. The social healing this project has allowed for is evident. A space that can be shared between people from different walks of life can inspire a change in perception for the better. This type of community involvement that Studio Gang leads in this project shares a resemblance to the way that MASS Design Group serves the communities they design for as well.

Pavilion Notre Dame


Figure 16: Polis Station Public Basketball Court, Community Meetings, and Urban Design

Figure 17: Pavilion Notre Dame
This residence also has a sliding structure that is used to adapt to different preferred setups. In this case, however, the moving structure can go completely over the permanently placed building from one end to the other. As seen in figure 19, this unique organization and function allows some outdoor spaces to transform into interior spaces, which can also be used to respond to the weather, to shade and cover different parts of the house.

The Sliding House is closer to the scale of building that is appropriate for The HUB compared to the previous precedent project. It also is more functional and more adaptable. The programmatic diagram in figure 12 shows that the different spaces could be organized by whether the space is meant to be all indoor, all outdoor, or some of both, and this type of sliding structure could be used to create spaces that can transform from outdoors to indoors or something in between.

This structure is larger than what is appropriate in Binghampton, but its adaptability by having a sliding structure to expand space is still something that can be scaled down to be very effective. At a quarter of the size of this precedent, the idea of the moving shed is considered in the design of The HUB to allow for the adaptability and scalability of spaces for the community. The close-up images of the mechanics of the moving structure helped to understand how this may work structurally and mechanically.
4. Design Solutions

This section details the design of The HUB through research, diagrams, and drawings. It includes research necessary for this thesis as well as solutions to the needs of the community.

Biophilic Design

With the goal of healing, biophilic design can be a great tool to use in architectural design. According to Terrean Bright Green, “biophilic design can reduce stress, enhance creativity and clarity of thought, improve our well-being, and expedite healing.”

14 Patterns

Evidence showcased in the chart in figures 20 and 21 outline the effectiveness of biophilic design. The chart lists and defines each of the fourteen patterns in the far left column. These patterns are split into three categories: nature in the space, natural analogues, and nature of the space. In the middle three columns, it shows how humans respond to the patterns in three main ways: stress reduction, cognitive performance, and emotion, mood, and preferences.

Biophilic Design for The HUB

The far right column of the chart lists the main ways that each pattern is considered in the design of The HUB. Integrating these aspects of biophilic design should help people interacting with The HUB to experience a reduction in stress, higher cognitive performance, and emotion and mood enhancement.

Site Design

Figure 20: Human Responses to the 14 Patterns, Nature in the Space
Figure 21: Following page: Human Responses to the 14 Patterns, Natural Analogues and Nature of the Space

<table>
<thead>
<tr>
<th>14 PATTERNS</th>
<th>STRESS REDUCTION</th>
<th>COGNITIVE PERFORMANCE</th>
<th>EMOTION, MOOD, &amp; PREFERENCE</th>
<th>in The HUB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Connection with Nature</strong></td>
<td>Lowered blood pressure and heart rate</td>
<td>Improved mental engagement/attentiveness</td>
<td>Positively impacted attitude and overall happiness</td>
<td>Views through site to water &amp; nature of all around</td>
</tr>
<tr>
<td><strong>Non-Visual Connection with Nature</strong></td>
<td>Reduced systolic blood pressure and stress hormones</td>
<td>Positively impacted on cognitive performance</td>
<td>Perceived improvements in mental health and tranquility</td>
<td>Sounds &amp; smells of the outdoors are allowed</td>
</tr>
<tr>
<td><strong>Non-Rhythmic Sensory Stimuli</strong></td>
<td>Positively impacted on heart rate, systolic blood pressure and sympathetic nervous system activity</td>
<td>Observed and quantified behavioral measures of attention and exploration</td>
<td></td>
<td>Meandering paths, changing disposition arrangements, &amp; vegetation growth</td>
</tr>
<tr>
<td><strong>Thermal &amp; Airflow Variability</strong></td>
<td>Positively impacted comfort, well-being and productivity</td>
<td>Positively impacted concentration</td>
<td>Improved perception of temporal and spatial pleasure (allolustion)</td>
<td>Openness to outdoors</td>
</tr>
<tr>
<td><strong>Presence of Water</strong></td>
<td>Reduced stress, increased feelings of tranquility, lower heart rate and blood pressure</td>
<td>Improved concentration and memory restoration</td>
<td>Observed preferences and positive emotional responses</td>
<td>Retention pond &amp; splash pad</td>
</tr>
<tr>
<td><strong>Dynamic &amp; Diffuse Light</strong></td>
<td>Positively impacted circadian system functioning</td>
<td>Enhanced perception and psychological responsiveness</td>
<td></td>
<td>Translucent pavilions &amp; glass walls</td>
</tr>
<tr>
<td><strong>Connection with Natural Systems</strong></td>
<td>Enhanced positive health responses</td>
<td></td>
<td>Shifted perception of environment</td>
<td>Deciduous trees on site &amp; deciduous vines on pavilions</td>
</tr>
</tbody>
</table>

Influence of the Architect
Another main aspect to the design of The HUB that helps it accomplish as much as it does is the site design. As stated previously, the original site for The HUB and the site of the existing Tillman Police Station are being combined. This allows anyone in Binghampton, including the police, to share the spaces and amenities. These outdoor spaces created through the integration of the site and placement of the building create different plazas that can be used in different ways (figure 22).1

1. Appendix includes the chronological process work detailing the evolution of the site design.
Primary Plazas

There are three primary plazas where large groups of people can gather. One main plaza that centers the project site on Tillman Street and is a concrete slab; one to the south at the Tillman Street and Yale Avenue intersection made of pavers; and one to the north that crosses the road from The HUB to the front yard of the police station, further strengthening this new connection between the police station and the community.

Secondary Plazas

The circular language of the primary plazas is continued with the secondary plazas. These smaller plazas serve more specific purposes around the site, including entry points to the site and to the building, a bike rack area, a splash pad, a community information kiosk, and other connection points on pathways around the site.

Other Elements

Some other important aspects to the site design include the shared parking lot with a car washing station, the track that meanders throughout the site, the grass field, the rain water run-off bioswale and the fishing retention pond. The curb along Tillman Street curves towards the building following the edges of the plazas and creates a space for street parking as well as a new bus stop and bus pull off.

Figure 22: Site Plan

1. Police Department
2. Shared parking
3. Main plaza
4. South plaza
5. North Plaza
6. Bus stop
7. Community info kiosk
8. Bike racks
9. Splash pad
10. Field
11. Track
12. Bioswale
13. Retention/fishing pond

Primary plazas
Secondary plazas
Site water collection, filtration, and retention
Building Design

The programmatic diagram (figure 12) provided clear objectives to be met with the design of The HUB. Some parts of the program need to be indoors all the time, some need to be outdoors all the time, and some need to be indoors and outdoors at different times. The building also needs to be efficient in the way it can accomplish the needs of the project with simple, yet big, design moves.

Indoor and Outdoor Spaces

The distinction between whether a certain use in the program needed to be indoors all the time, outdoors all the time, or adaptable between the two determined what spaces are in the permanent building, what spaces are outdoors all the time, and what spaces are able to be covered and uncovered, or opened and closed. In figure 23, the blue building represents the spaces that will stay indoors, the yellow represents the spaces that can create indoor or outdoor spaces, and the green represents uncovered spaces. By adding the ability to shift the yellow spaces around, the user can change the way the building as a whole functions for different events. It also allows for the building that consists of the permanent indoor spaces to remain a relatively small structure.

Pavilion Design

These yellow spaces are moving pavilions. They are one of the major architectural moves for the design of The HUB and are a significant feature for the building’s biophilic design (figures 20–21). The structure of them pays homage to the structure of a tree: the structural material is wood and is largest and strongest at the bottom, narrowing and becoming more branch-like as it moves upwards towards the sky (figure 24). The material enclosing the pavilions allows in dappled light, creating shade like the canopy of a tree. These pavilions can be moved around as desired to change the qualities of the spaces under them.

Responding to Weather

A major advantage to the pavilions’ design is the ability to respond to changing weather conditions. For example, in the summer, the pavilions can be positioned to allow for wind to travel through the space while also shading a large area, including the glazed southern facade of the permanent building (figure 25). Having high volume, low-speed fans also helps to cool the space. In the winter, the pavilions could be positioned to use the greenhouse effect to keep the space warmer with the plastic curtains down and the doors closed. Heaters can also be used for additional heating needs at night or on overcast days.
Influence of the Architect

Building Size

The main plaza space is sized for a basketball court as well as the square footage that the Binghampton Community Church needs for larger gatherings. This square footage helps determine the size of some of the interior spaces such as the restrooms and storage rooms. The program as defined in figure 12 determined what spaces needed to be in the main building based on the spaces that need to be indoors all the time. By not dedicating a permanently interior space for all the spaces in the program, the size of the permanent buildings is reduced. This helps to add more flexibility to the adaptable spaces and reduce building cost.

Building Entry

There are several ways into the building. The main entrance is located on the western facade where the community information kiosk is located. The north and south facades of the building are glass door panels that fold open to either side allowing the entire wall to open up to the outside. This is another adaptable aspect to the design of The HUB that allows for different setups and can also bring nature indoors.

Interior Spaces

The four main interior spaces include the front desk and office, the kitchen, the maker lab, and the meeting room. These spaces are based on the needs of the community. The organization of these spaces is based on a public versus private separation and circulation around the building. The blue zone in figure 26 represents the most space that can be opened up to the outdoors. The green zone makes up the spaces that are still public and have visibility to the outdoors while still creating a sense of refuge. The yellow zones are the most private or closed off zones and they are constructed with brick walls. There are also a couple structures highlighted in yellow outside of the main building. Those are storage spaces with enough space for all the equipment and seating for the typical uses of the main plaza. The large doors of the storage spaces can open to create a backdrop for presentation or projection.

Figure 26 Floor Plan
Building Elevations

The pavilions slide on a track in the ground and allow the structures to slide completely over the permanent building with a few inches of clearance on the sides. The pavilions and the main building were designed in tandem so that one complements the other. The doors to the main building are spaced to align with the doors on the pavilons when they are fully adjacent to each other over the building.

As seen in figure 27, there is a ten foot datum line across the project where the glass walls stop. For the pavilions, there are glass doors below the ten foot datum line and double layered corrugated plastic above. For the permanent building, there are glass doors and walls below the datum line and then metal panels for the remaining four feet of structure above the datum line.

Figure 27 Building Elevations

1. North plaza
2. Bus stop
3. Entry (reception, lobby)
4. Community info kiosk
5. Main plaza
6. South plaza
7. Shared parking
8. Bike racks
9. Splash pad
10. Field
Building Sections

In section (figure 28), more of the structure can be understood. The main building uses a combination of metal and masonry structure. The masonry walls help support any lateral loads that the building might experience. The pavilions’ structure is made of mass timber columns and glulam beams that are joined with rigid steel connections and steel tenon cables to support the structure laterally.

Figure 28: Building Sections
Pavilion Details

Design
There were many things to consider in the design of the pavilions: scale, moveability, weather protection, light quality, electricity, circulation, and adaptability were among the most important ones. The final design allows for a deeper connection to nature, which will expedite healing for its users. The design aspects that contribute to this deeper connection to nature are outlined in figures 20–21. Some of the construction details for the pavilions are pointed out in figure 29 and its process from concept to the final design can be found in appendix 3.

Figure 29 Pavilion Section Perspective

Figure 30 Pavilion Energy

Influence of the Architect

Pavilion Details

Structure for green vines
Integrals rain gutter
Curtain wall supports

Energy
One exciting design aspect to the pavilions that helped simplify the design complexity and allowed for more adaptability in the space was the solar power design. Each pavilion is independently powered and individually controlled via WiFi. A solar panel array is optimally designed to capture sustainable energy and power the pavilion’s electronics as well as charge a Tesla battery that will then power the pavilion at night or on overcast days (figure 30). The electronics powered by the solar array include the fans, heaters, WiFi, power curtain dividers, lights, and electronic motors in the wheels.
5. Construction

If taken advantage of, the construction process offers every project the opportunity for healing.

MASS Design Group Process

MASS Design Group has been documenting their design and construction process for many years and they advocate for design that is built to heal. They design their buildings to not only help healing to occur post-occupancy, but also during the construction process. They call this technique “local fabrication,” or “Lo-Fab.”

Local Fabrication

According to MASS Design Group, there are four pillars of Lo-Fab:

1. Hire locally
2. Source regionally
3. Train where you can
4. Invest in dignity

MASS Design Group claims that by following these four steps, a project can be much more impactful for the community.

MASS Design Group Lo-Fab Precedent Projects

Both the Butaro District Hospital (figure 31) and the GHESKIO Cholera Treatment Center (figure 32) are two significant projects by MASS Design Group that use Lo-Fab as a tool to create architecture that heals. Details about how each project accomplished local fabrication are explained below.

Butaro District Hospital

Rwanda, 2011

This project is one of MASS Design Group’s first and most widely known projects. It is a major success in impactful design. They hired locally by hiring new local architects, designers, and builders. They sourced regionally by using abundant regional materials. They trained a mass of volunteers with new skills throughout the construction process. The entire design and construction process was dignifying for that community and region in Rwanda.

Dr. Agnes Binagwaha of the Butaro District Hospital even said: “This hospital was for the people. And the fact that they sweat to make it, they own it far more than if we were just giving them a key.”

GHESKIO Cholera Treatment Center

Haiti, 2015

This project represents another implementation of the Lo-Fab process to expedite healing through the intended use of the building, and in the design and construction process. They hired locally by having a mainly Haitian design team and an all Haitian construction team. They sourced regional materials. They trained a Haitian metal workers with new ways of building a building façade. It was built from labor and locally sourced materials and creates a space for a more dignified healing process for the extremely undignifying illness of cholera.

15. “The Butaro District Hospital.”
17. “GHESKIO Cholera Treatment Center”
Lo-Fab Techniques Used in The HUB

By following the four pillars of Lo-Fab construction as described by MASS Design Group, construction of The HUB could be more meaningful, impactful, and dignifying for everyone in the community of Binghampton.

1. Hire Locally

Use a full construction team from Memphis and have the youth in Binghampton create a mural using the full parking lot as their canvas (figure 33). This will add to the identity of Binghampton and add ownership and dignity of the project to the community. This also reduces the solar heat gain and heat island effect caused by large dark surfaces since it is not simply an asphalt parking lot.

2. Source Regionally

The pavilions are designed with widely available yellow cypress wood because of its strong, lightweight, and durable qualities. There are two lumber yards in the Binghampton neighborhood where these wood members can be sourced and brought directly to the site. This brings more business to the neighborhood and adds to the ownership and dignity of the project. It is also much more sustainable than ordering shipments from other parts of the country.

The vines on the eastern and western facades of the pavilions (figure 34) are structured with reclaimed chain link fencing from blighted properties in Memphis. This could be a small city-wide beautification project since there are many blighted properties throughout the city. This green facade on the pavilions would bring new life in a beautiful way to an otherwise unappealing material. The vegetation also creates a better connection with nature for the site.

All other building materials can be regionally sourced to boost local economies and also further reduce the embodied energy of The HUB.

3. Train Where You Can

Many of the construction and landscaping techniques can be taught easily to new people working or volunteering to work on the construction of The HUB. For example, local organizations such as the Binghampton Development Corporation could have a team of young volunteers who want to learn about landscaping work on the project. They could help build the paths along the site, install the landscaping around the site, and learn how to maintain the plants throughout the seasons (figure 35).

4. Invest in Dignity

The steps outlined in the pillars above are ways that The HUB invests in dignity for the project and the people who interact with it.

One way that this could be furthered is by involving community youth in the construction process. For example, this poly-acoustic panel in figure 36 has been designed so that kids and teens can come and learn about 3D printing, pick a color, watch it print, and then add it to an ever-expanding panel system. The youth who participate in this may come back more frequently because they want to learn more about 3D printers. Every time they come, they can point out which 3D printed panel in the system is the one they added.
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6. Occupancy

After research, conversations with community members, designing, and constructing, The HUB finally comes to life. It has already left a lasting mark on the community thanks to the lo-fab techniques. As is the case with the Butaro District Hospital, the community really owns and takes pride in this project much more since their input, hard work, and labor went into making it.

All of the needs that were discovered early on have been met with this design of The HUB, creating a place that is built to heal the community in many ways. A greater connection between humans from all walks of life is encouraged by the design and is reinforced by a deep connection to nature in every space. Figure 37 shows the final design within its context.

Figure 37 Aerial Perspective of The HUB
7. Transcendence
As time goes on, The HUB will continue to heal the people of Binghampton. The stories that residents and other community members will tell others about Binghampton will be stories of growth, positivity, and healing. The act of telling your story of Binghampton alone will be healing to them as well.  

Experience of The HUB
There are so many ways someone might experience a visit to The HUB. They might only bike or drive by it sometimes, they might regularly use the bus stop to get around Memphis, they might be a police officer stationed at the Tillman Police Station, and they might be a resident of Binghampton. There is something here at The HUB for everyone: everyone has the opportunity to get closer to nature and possibly experience its positive healing effects.

Tillman Street and Yale Avenue Intersection
This corner in figure 38 is one of the main entrances to the site and that is made clear by the large 3D sign for The HUB facing the intersection. The street is easier to cross since it has been reduced to one lane each direction, and the bike lanes added. Additionally, on street parking at The HUB on Tillman Street will help reduce traffic speed, therefore making it easier to cross. Depending on the time of day and what events are happening, this view of The HUB can drastically change. During the day, the pavilions might be positioned to shade a certain part of the plaza that need to be cooled. Later in the night, however, they might be repositioned to light up certain areas.

At this entrance to the site in figure 39, you are immediately met by vegetation and have options on which direction to meander around depending on where you want to go. To the left, you can walk by the pavilions towards the main building or further to the police station. Straight ahead, you will find yourself under the pavilions in either the south plaza or the main plaza where a number of activities may be happening, or further you will find the bike racks and parking lot mural. To the right, you will walk by the splash pad and grass field on your way to the pond or bioswale.

Into the Site
Walking further into the site, you get to feel the scale of the pavilions as they create a large sense of space while walking underneath them (figure 40). They add some indoor qualities to the outdoors.

While walking further west down Yale Avenue, you might see some kids playing in the only water fountain splash pad in the area (figure 41). It provides a play area for kids and anyone wishing to cool off from the heat while also providing the soothing sound of splashing water. You might find people playing a game of soccer, or frisbee, or something else in the field behind the splash pad. Either way, you see that there are different activities going on all around you filled with many different types of people.

Figure 40: View from under Pavilions
Figure 41: Bottom: Splash Pad View of the Pavilions
At the north end of the site shown in figure 44, the north plaza extends across Nathan Avenue from the Tillman Police Station to The HUB pavilions. The same paths that meander the site at The HUB meander parts of the police station site to further unify the sites. Nathan Avenue was previously a road used to get in and out of the police station parking lot, but now it is the main vehicular entrance for both the police station and The HUB.

At the Tillman Street and Nathan Avenue intersection, there is another blue “The HUB” sign, but this one is on the edge of the roof of the main building. At this corner of the site looking down Tillman Street, there is the new bus stop, which has its own pull off (figure 45). Further down there is the community information kiosk, flag pole, and main entrance to the interior lobby.

After the Architect
Meandering the Site
If you follow the meandering pathways around the site, you will find yourself by the retention pond and bioswale (figures 42 and 43). These landscape features are part of a water collection and filtration system that provides multiple learning opportunities for passers by. Rain water runoff from the parking lot is sent to the bioswale where the water is naturally filtered by the plants and soil on its way towards the retention pond. The pond holds the water at a certain level and can slowly drain the storm water from the site into the main water creek just off site. There is a fountain in the water providing the sound of splashing water for people near by and there are fish and other wildlife living in and around the pond for people to see. People can come and fish and teach other people how to fish as well.

Figure 42: Top: Retention Pond View of The HUB
Figure 43: Bottom: Bioswale View of the Retention Pond

Figure 44: Top: North Plaza View of The HUB
Figure 45: Bottom: Bus Stop View towards the Community Information Kiosk

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Figure 42: Top: Retention Pond View of The HUB
Figure 43: Bottom: Bioswale View of the Retention Pond

Figure 44: Top: North Plaza View of The HUB
Figure 45: Bottom: Bus Stop View towards the Community Information Kiosk
As seen in the many different views, the pavilions are designed to be as adaptable as possible. They can create a large, spread out shaded area. They can create one large enclosed space adjacent to the building. They can create several smaller and more spread out enclosed spaces as well. They can individually aid in cooling the spaces or heating the spaces.

There is no specific use for any of the plazas and there would be no way to list all the possible uses, but a couple important uses to design for are for church services and indoor/outdoor sports. Figure 46 suggests what the setup might be like on a Saturday afternoon with no events planned for the space. Figure 47 suggests what the same perspective might look like the next morning for a church service from the Binghampton Community Church or any other church that reserves the space that Sunday. In the summer, the doors could be open and the fans could be turned on. In the winter, the doors could stay closed and the heaters could be on. After the church service ends and the chairs and other equipment are stored back in the storage spaces, the pavilions could remain in this setup and the basketball goals could be rolled in for some indoor basketball.

Figure 46: Top: Main Plaza Setup for Free Play
Figure 47: Bottom: Main Plaza Setup for Church Service
Interior Spaces

The interior spaces all have a connection to nature via views and natural light except for the spaces within the brick walls. These spaces are the private spaces such as the restrooms and storage rooms.

Even though it is not programmed as such, the lobby area could be one of the most important spaces to the main building (figures 48 and 49). The south wall, as well as the north, are large foldable glass doors that allow the whole wall to open up to the outdoors. Depending on the setup of the pavilions, this might open up the lobby to the outdoors, or it might open it up to the enclosed main plaza, which would blur the line between indoors and outdoors even more.

The front desk and office in figure 50 are for permanent staff that help manage and run The HUB. Spaces can be reserved for individuals or organizations and they can be open to everyone when available.

The kitchen, also shown in figure 50, is a small commercial kitchen that can be used for many different events at The HUB such as a food festival, crawfish boil, neighborhood barbecue, Sunday lunch, or holding cooking lessons in a class.

The makers lab is for all ages and anyone can come and use the 3D printers, computers, building materials, or presentation tools to make, share, play, and learn. In the hallway just outside the makers lab is a small reading area with books (figure 51).

The meeting space in figure 52 serves as an informal conversation space. This might be for an interview, a presentation, a meeting, a class, or anything similar.

At the end of the main building is the northern glass door facade that can completely open up to the north plaza to either the outdoors or an enclosed pavilion space depending on the setup at the time.
CONCLUSION

By starting with the desire to design a project that goes beyond the basic preservation of human health, safety, and welfare and expedites healing, I discovered the architecture firm MASS Design Group and learned about their way of designing architecture that heals. I then discovered biophilic design and how it can be used as a tool to expedite healing. For the architecture thesis, I was able to design for a neighborhood I was familiar with. I was able to take the knowledge I had gained about the neighborhood and research I had done on healing architecture to create a project that would allow me to explore these design techniques. This also allowed me to design a building and site that could greatly impact the Binghampton community.

One area of my process that could have been some improvement is the community engagement. I was able to have a meeting with the Carpenter Art Garden organization and I was able to have a discussion with a police officer that is stationed at the Tillman Police Station, however, my efforts in getting a meeting with the Binghampton Development Corporation never worked out and I never got in contact with the Binghampton Community Church. Further conversations with people in the community could have possibly led to a more cohesive program development. This would have made for a better connection to MASS Design Group and learned about their way of designing architecture that heals. I then discovered biophilic design and how it can be used as precedent for this thesis project as an example of size, materiality, and adaptability.

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For this architecture thesis, I was able to design for a neighborhood I was familiar with. I was able to take the knowledge I had gained about designing for healing in each phase of an architecture project that would allow me to explore these design techniques. This also allowed me to design a building and site that could greatly impact the Binghampton community.

ArchDaily is a website that publishes many different types of architecture related articles and is covering architecture projects among others. That target audience is architects and designers. In this article, Eric Baldwin gives some background information about the proposed Notre Dame Pavilion designed by Gensler that would serve as a temporary worship space that could also be used in other ways. This article talks about the materials, light quality, and adaptability being very important aspects to this design. The information in this article, along with the provided images, was used as precedent for this thesis project as an example of size, materiality, and adaptability.


This article is on MASS Design Group’s website outlines information about the Butaro District Hospital that they designed in Rwanda. The article discusses the need for a healthcare facility that is able to give 340,000 people access to a doctor in a safe, sanitary environment. MASS Design Group used the design and construction process of the building to instill dignity and ownership that allows for the project to be more impactful for the local community. For the thesis project, this serves as precedent and proof that the lo-fab construction techniques are powerful in expediting healing beyond just physical healing. It also serves as an example of how a previously undesired abundant material can be used to train people in the construction process and create something beautiful from it.


This article is a summary of a larger publication from the American Public Health Association. It outlines all the evidence that the publication puts together that supports that having access to nature improves health and wellbeing for people of all ages, incomes, and abilities and that it also helps to solve many of the other important problems in public health, including obesity, stress, social isolation, injury, and violence. The American Public Health Association is a professional organization based in Washington D.C. for public health professionals in the US with over 25,000 members.

The AHPA does a great job of organizing the text that emphasizes the problems, shows the solutions and proves them, and provides different action steps that can be taken in different situations to provide better access to nature and more opportunity for improving one’s health and wellbeing. Some of the main steps include providing nature accessible to social groups, have neighborhood parks, and trails and green ways.

The main goal for the thesis project was to design a building that improves one’s health and wellbeing, so nature has become a large tool in the design of the thesis project. This research also aligns with the theories in Terrapin Bright Green’s “14 Patterns of Biophilic Design.”


In the TEDx Talk, Donald Davis explains how one can change their perception of an event in their life that they first thought was something bad that happened to them but actually led them to where they can have a positive look on it. It is titled “How the Story Transforms the Teller” because the way that the teller tells the story changes their own perception of it. Davis was a United Methodist Minister for 25 years and is the author of eighteen books and more than 40 original recordings. He is also the recipient of both the Circle of Excellence and the Lifetime Achievement Awards from the National Storytelling Network.

Binghampton has a rich history associated with it, but according to a survey done by the Binghampton Development Corporation, the majority of residents see that the neighborhood is improving. The design of this thesis is meant to assist in healing the community and will be a part of the story of Binghampton as it strives to become more positive.


This article is a weblog similar to ArchDaily that posts content relating to architecture. In this article, Rose Ehrenfeld gives some background information on the Sliding House, designed by DRMM. It is a residence in Suffolk, England and features a 3D printed home that can change its length to access different parts of the house.


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The research in this article has become a key factor in many of the design choices in this thesis project. It utilizes each of the 14 design strategies of biophilic design performed that explains 14 design strategies of biophilic design.

Their research suggests that biophilic design can be used to create spaces that promote health and wellbeing for human mind, body, and spirit. The article outlines many effects that biophilic design has on humans such as stress reduction, higher cognitive performance, better mood and emotions, as well as an overall preference for natural spaces.


This is a research document that Terreämp Bright Green, a sustainable and healthy design research firm, compiled and performed that explains 14 design strategies of biophilic design that can be implemented into the design process.

Their research suggests that biophilic design can be used to create spaces that promote health and wellbeing for human mind, body, and spirit. The article outlines many effects that biophilic design has on humans such as stress reduction, higher cognitive performance, better mood and emotions, as well as an overall preference for natural spaces.

The research in this article has become a key factor in many of the design choices in this thesis project. It utilizes each of the 14 patterns determined by Terreämp Bright Green with the intention of creating a project that expediates healing for the Birmingham community.

This page on MASS Design Group’s website features several documentaries and video lectures that showcase different architecture projects. These include the Butaro District Hospital and the Gheskio Cholera Treatment Center; different research projects such as World that Dignifies and Landscapes that Heal; and skilled craftsmen and artisans including Núria Canyes and Mackenzie Vi. These videos help viewers understand how the firm accomplishes such impactful projects all around the world. Several quotes from these videos have been selected and used in this research. The in-fab construction method is also modeled after a precedent research of the Butaro District Hospital and Gheskio Cholera Treatment Center.


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APPENDICES

Appendix 1: Presentation Boards
Figures 53 - 61 are the final presentation materials for the project.

Figure 53: Thesis Poster

Unless otherwise noted, figures are by author.
**Programmatic Diagram**

- **Better communication of community information**
- **Outdoor only**
- **Pond**
- **Entry (receptionist, lobby)**
- **Walking, running, biking**
- **Classroom**
- **Public body of water for fishing**
- **Church needs a space for larger gatherings**
- **Bike Rack**
- **Bus stop**
- **Public**
- **Servant**
- **Picnicking**

**NATURE IN THE SPACE**

**SPACES**

**QUALITIES**

**Improved comfort**

**Material and elements from nature**

**Material Connection**

**Complexity & Order**

**Ecology or geology to create a symbolic connection with nature**

**Non-Rhythmic**

**Symbolic references to processes**

**A condition that enhances gustatory stimuli that engender connection with the changing natural light to be diffused**

**Positively impacted circadian rate, systolic blood pressure and stress hormones**

**Improved mental engagement/concentration**

**Non-deterioration**

**A condition that enhances gustatory stimuli that engender connection with the changing natural light to be diffused**

**Incorporate the changing natural light to be diffused**

**Positively impacted temporal and spacial pleasure and exploration**

**Overall happiness**

**PREFERENCE**

**Performances**

**Markets**

**Fairs (career, tech., arts and crafts)**

**Exhibit/gallery**

**Space for professional mental health education/help**

**Public**

**Space for job training**

**Day camps (vbs)**

**Meeting**

**Computer work**

**Computer games**

**Eating**

**Fishing**

**Trainings (mechanical, electrical)**

**Workshops (woodwork, metal work)**

**Computer design**

**Carving**

**General rotate**

**General public**

**Engineers**

**Construction labor**

**Lawyers**

**Retail**

**Designers**

**Horticulture**

**Civil engineers**

**Site inspectors**

**Planning**

**Surveyors**

**Equipment repairers**

**General labor**

**Craft workers**

**Electricians**

**Plumbers**

**Carpenters**

**Construction labor**

**Masons**

**Impacts**

**Level of impact**

**Risk/Peril**

**An identifiable threat coupled with other sensory devices that obscured by growing vegetation**

**Rattle**

**Curved paths**

**Occluded view**

**Open view**

**Second story view**

**Negative feedback**

**Improved concentration, concentration**

**Positive feedback**

**Differences in concentration**

**Feedback from the neighborhood**

**Asthma rates**

**Improved education**

**Improved health**
The HUB: Humans United in Binghampton

NEEDS
- Better communication of community information
- Better police-neighborhood relationship
- Scalable space for different community organizations
- Space for job training
- Space for professional mental health education/help
- Church needs a space for larger gatherings
- Public body of water for fishing
- Diverse transportational access (walk, bike, bus, drive)

USES
- Church Services
- Performances
- Markets
- Fairs (career, tech., arts and crafts)
- Day camps (vbs)
- Exhibit/gallery
- Watching movies
- Sports (basketball, soccer, volleyball, frisbee, etc.)
- Walking, running, biking
- Fishing
- Sharing information
- Meeting
- Teaching
- Computer work
- Computer games
- Wait for the bus
- Picnicking
- Eating
- Cooking

QUALITIES
- Outdoor pavilion court
- Field
- Track
- Pond
- Entry (receptionist, lobby)
- Office
- Classroom
- Computer lab
- Maker Space
- Bike Rack
- Bus stop
- Kitchen
- Restroom
- Storage

Programmatic Diagram
- Site Plan
- Site water collection, filtration, and retention
- Main plazas
- Secondary plazas
- MEP
- Closed structure
- Interior refuge
- Open interior space
Figure 58: Thesis Defense Boards—Interior Renderings

Figure 59: Thesis Presentation Setup
Binghampton Needs Programmatic Diagram Derived From An Architectural Study on Design that is Built to Heal

Homeownership increased from 2000 to 2010 from 33% to 50%. A decline in population from 1960 to 2010. Summer Ave. Fairs (career, tech., arts and crafts) computer games. Day camps (VBS) computer work. This residence also has a sliding structure that is used to adapt to different preferred setups. In this case, it needs. Place for their regular activities that would happen if the cathedral was open. This relatively simple design is a temporary solution for what to do in the meantime while the cathedral is being rebuilt. The people need a place to gather, enjoy, and have interactions. They need a community space for learning, job training, and education, and commercial outlets (grocery stores, clothing stores). A community space for learning and job training. An adaptable and scalable space for different community needs. Better access and spreading of community information in capacity and opportunity can develop life-altering hope.

It has been shown that access to nature can improve a person’s health and wellbeing. Atmospheric and visual connections with nature. Healing physically, mentally, spiritually, socially, or emotionally through each part of the architecture's story and has momentum pushing it forward. Binghampton is missing several amenities that can greatly increase the quality of life for their residents. This design is the beginning of an architectural proposal to address some of these needs.

Architectural Model

An identifiable threat coupled with information achieved through a refuge. An unimpeded view over an area. Rich sensory information that facilitates perceptions of safety and comfort. Material and elements from sensory stimuli that engender a connection with the experience of a place. Of light and shadow that are controlled via wifi in wheels in the anchored track. Battery powers electric motors. Lights, fans, heaters, motors, that are controlled via wifi in wheels in the anchored track. Each pavilion is independently powered and cooling the spaces they create. For example, in the Summer, the pavilions could be positioned to allow for lots of sun to enter the pavilions, like under the canopy of a tree. The biggest difference between the pavilions and a tree is the fact that these pavilions do not have roots. The structure of them mimic the structure of a tree; the structural material is wood and it is largest and strongest at the bottom like a tree trunk and it gets lighter and feathers out like the limbs, branches, and twigs. They are designed to adapt to the needs of the people. The design moves made in the design of The HUB. When reading through the ways that The HUB considers each use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. The distinction between whether a certain use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. Indoor and outdoor spaces to remain a relatively small structure. Indoor and outdoor spaces to remain a relatively small structure. The time, or adaptable between the indoors and outdoors determined what spaces will be in the permanent program.

Architectural Design

The HUB needs. A community space for learning and job training. An adaptable and scalable space for different community needs. Better access and spreading of community information in capacity and opportunity can develop life-altering hope. Architecture moves made in the design of The HUB. When reading through the ways that The HUB considers each use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. The distinction between whether a certain use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. Indoor and outdoor spaces to remain a relatively small structure. Indoor and outdoor spaces to remain a relatively small structure. The time, or adaptable between the indoors and outdoors determined what spaces will be in the permanent program.

Responding to Weather

In the design of the pavilions, there is an understanding that the pavilions need to move with the time, or adaptable between the indoors and outdoors determined what spaces will be in the permanent program. Photovoltaic panels are used to provide clean energy for the pavilions. The panels are designed to move with the time, or adaptable between indoors and outdoors. The pavilions are designed to move with the time, or adaptable between indoors and outdoors. The pavilions are designed to move with the time, or adaptable between indoors and outdoors. The pavilions are designed to move with the time, or adaptable between indoors and outdoors. The pavilions are designed to move with the time, or adaptable between indoors and outdoors. The pavilions are designed to move with the time, or adaptable between indoors and outdoors.

Sensory Stimuli

Sensory stimuli that engender a connection with the experience of a place. Of light and shadow that are controlled via wifi in wheels in the anchored track. Battery powers electric motors. Lights, fans, heaters, motors, that are controlled via wifi in wheels in the anchored track. Each pavilion is independently powered and cooling the spaces they create. For example, in the Summer, the pavilions could be positioned to allow for lots of sun to enter the pavilions, like under the canopy of a tree. The biggest difference between the pavilions and a tree is the fact that these pavilions do not have roots. The structure of them mimic the structure of a tree; the structural material is wood and it is largest and strongest at the bottom like a tree trunk and it gets lighter and feathers out like the limbs, branches, and twigs. They are designed to adapt to the needs of the people. The design moves made in the design of The HUB. When reading through the ways that The HUB considers each use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. The distinction between whether a certain use in the program needed to be indoors all the time, outdoors all the time, indoors or outdoors. Indoor and outdoor spaces to remain a relatively small structure.

Biophilic Design Research and Other Elements

• Splash pad
• Bike rack area
• Maker Space
• Office
• Restroom
• Storage
• Pond

• A community space for learning and job training.
• An adaptable and scalable space for different community needs.
• Better access and spreading of community information in capacity and opportunity can develop life-altering hope.
Appendix 2: Process Piece

Natural White Noise Recordings

As stated in the preface to this thesis, I have been spending a lot of time in the outdoors recently fishing and recording white noise tracks.

I have recorded many things including rain, a bonfire by a lake, fountains, and insects at night. This has led me to pay more attention to the changing weather. Not only do I look for opportunities to get new recordings of things like rain, but I have actually noticed a change in the sounds of the seasons. The type of rainfall changed, and settlement was quieter at night when the weather was cooler. This collection of natural outdoor recordings has turned into an ever-growing library of tracks available for other people to listen to on music streaming platforms such as Spotify and Apple Music.

The process of getting outdoors, recording something natural, and being able to use it to sleep at night has been therapeutic and has also proven for me that nature has many ways of healing people. The influence of the process piece shows up in the design of this thesis project in the form of the fountain and splash pad that are on the site. It was my first-hand experience of how the sound of water affects me that made it important to recreate these sounds in the site. This positive, healing affect of the sound of water was also supported by the research in Terrapiin Bright's "14 Patterns of Biophilic Design*.

The QR code images below can be scanned by a phone camera to listen to the nature recordings for this process piece.

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* Terrapiin Bright: "14 Patterns of Biophilic Design"
Appendix 3: Process Work

Figures 62 - 82 are the process work, study models, and presentations that were most influential in the design of The HUB.
Figure 72: Top Left: Early Site Design Drawing
Figure 73: Bottom Left: 30% Critique Presentation
Figure 74: Above: Pavilion Facade Study Model
Figure 75: Unified Site Design Sketches
Figure 76: Unified Site Design Drawing
Issues in City Building

The new Hampline will allow many people to easily reach the project by bicycle and the building will have bike racks for these people transversing the neighborhood this way.

Water features and vegetation is added to act as natural thresholds between different areas of the site.

Community members contribute to the finish of the building and adds this building to the collection of buildings in Binghampton that add identity to the neighborhood.

Project introduces a whole new dynamic chance for human interaction between the police, neighborhood, and various communities within Binghampton.

Existing brick wall acting as a territory boundary is removed.

1) Build to the sidewalk
2) Make the building front "permeable"
3) Prohibit parking lots in the front of the building

Issues in City Building

What Makes a Great City - Alexander Garvin
For the Love of Cities - Peter Kageyama

Other sources

Mind Maps

Figure 77: 60% Critique Presentation

Figure 78: Building Floor Plan Sketches

Figure 79: Issues in City Building Class Connection Map