ABSTRACT

Title of Thesis:	THE INDISTINCT EDGE: RECONNECTING EXPERIRENCE IN NATURE AND ARCHITECTURE
	Matthew David Bender, Master of Architecture, 2016
Thesis Directed By:	Lecturer Michael Abrams, School of Architecture, Planning and Preservation

This thesis explores how architectures sense of place is rooted in the natural environment. The built environment has been constructed to protect and sustain human culture from the weathering of nature. Separating experience from the natural environment removes a sense of place and belonging in the natural and reinforces architectural dominance. This separation distinguishes the natural world as an article of spectacle and gives the human experience an unnatural voyeurship to natural changes. By examining the fusion of architectural and natural edges this thesis analyzes how the human experience can reconnect with a naturalistic sense of place through architecture, blending the finite edge where architecture maintains nature, and adapting buildings to the cycles of the environment. Removing dominance of man-made spaces and replacing them with the cohabitation of the edge between built and natural forms.

THE INDISTINCT EDGE:
RECONNECTING EXPERIRENCE IN NATURE AND ARCHITECTURE

by

Matthew David Bender

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
2016

Advisory Committee:
Lecturer Michael Abrams, Chair
Professor Brian Kelly, Member
Lecturer James Tilghman, Member
Professor Matthew Bell, Member

Acknowledgements

I would first like to thank my committee: Michael Abrams, Brian Kelly, James Tilghman, and Matthew Bell for all of their support in the pursuit of knowledge I have undertaken in this thesis.

I would also like to thank my colleagues for the great atmosphere and comradery that we generated here at the University of Maryland. Although we all pursued our own interests in thesis, I truly believe that it is just as essential to appreciate who you learn with as much as those whom we learn from, for they are one in the same.

Table of Contents

List of Figures

1: Introduction

This thesis explores an atavistic perspective of the natural environment and how architecture can enhance the pre-existing sense of place. The very nature of architecture conquers the natural environment in order to construct spaces for social and cultural means. Much of modern design places us at the vantage point of the spectator, safe behind our own fortifications. This is a theme that has persisted through history since a time when human beings constructed their own shelter to protect themselves from the omnipotent wilderness. The domination of space whether through the conquering and command over landscape or the stewardship and maintenance of its boundaries are ways in which the built environment has dictated where the natural occurs. Through this the idea of true wilderness has dissipated. This appears to be counterintuitive to how architecture can meld into a setting, whether urban or natural. Place making should be paired with the notion of defining a sense of place in which site and environmental conditions exhibit a will on the edge between interior and exterior space. Re-connecting the human experience to a sense of place derived from the wilderness in which it was primordially presented to us is a necessity for the human experience. This thesis intends to critically analyze the boundaries between constructed space and pre-existing conditions to bring about a sacred sense of what the human interaction with the outside environment must be. Reevaluating what fortifications conditioned space require, and how architecture can accept the natural cycles of climates, and seasons that natural environments undergo.

2: Historic Outlook of Natural Environment

Wilderness

It has been said that "*Since the dawn of time man has sought to destroy the sun*." This is a comical notion that brings up an interesting concept of man's place amongst his surroundings. While this is not entirely truthful in its expression of mankind, it is expressive of mankind's passion for growth and conquest. Wilderness was once the environment that gave birth to mankind, and has been described as untamed and uncontrollable. The idea of wilderness contains within it the most diverse form of environment to the point where control is unattainable. Wilderness always maintains a state of flux, where competition among its constituent elements is always changing its appearance.

The wilderness has always maintained a duality in its character through its diversity. As the brothers Grimm have characterized *Wildnis* in their *Deutsches Wörterbuch*, "There is a twofold emotional tone. On the one hand it is inhospitable, alien, mysterious, and threatening; on the other, beautiful, friendly, and capable of elevating and delighting the beholder."[1] This representation of wilderness is created from the vast overlap between all of the components that make up an environment. As there is no predictability to the growth of wilderness it can be expressive of any given typology of the natural environment at any given time. Through this comes the notion of untamable beauty and power.

As human culture has progressed, architecture has been required to engage more space. As architecture subsumes more space it creates diversity to the natural

[1] Roderick Nash. *Wilderness and the American Mind.* (New Haven: Yale University Press, 1967), 4

environment, however it consumes the natural environment to add this diversity. Through this process architecture deters wilderness as the most diverse environment and controls what natural elements are capable of achieving. With the potential elimination of wilderness via architectural progression, cultural necessities for space have reaped the ability to define sense of place from the natural environment.

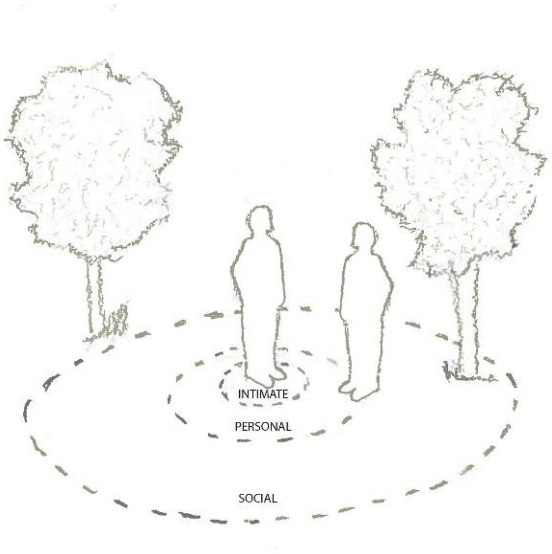

Figure 1: Interactions in Built Environment
Image by Author

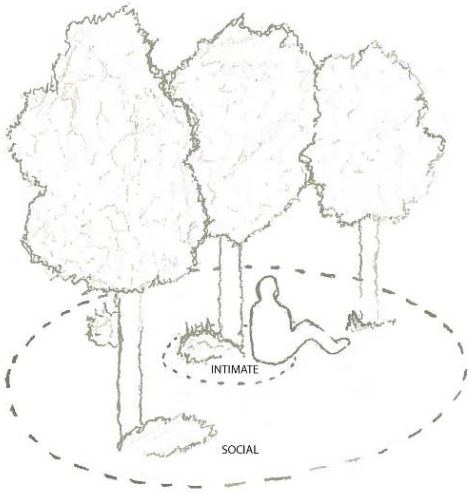

Figure 2: Interactions in Nature
Image by Author

As nature maintains its ability to overpower architecture as well as create moments of beauty within itself, it has been stripped of its freedom. Rarely is the natural environment allowed to define its own boundaries. If we stumble upon a natural environment it is defined through cultural designations and typologies.[2] Land designations range in use and size, for example National Recreation Areas are large open spaces maintained for public use, while National Preserves consist of land maintained for hunting, trapping, and extracting materials. Nature is dominated to the extent that even wilderness is designated and contained, in turn deeming the term wilderness null and the physical sense non-existent.

The American Conqueror

The most evident natural landscape that has gone through the transformation of wilderness to tamed environment is that of the North American continent. The New World was perceived as a chaotic place where wilderness needed to be ordered and liberated from its wild constraints to allow for cultivation by society. As civilization grew it became evident that the natural environment was in constant competition with the built environment. Wilderness was perceived as an obstruction to the progress of advancing society.

The designation of state boundaries in the United States, with regards to westward expansion, divided land based on equal plots that allow for fairness of cultivation by its citizens. The diversity and qualities of the natural environment that

[2] "Designations of National Park System Units." National Parks Service. Last Updated December 4, 2015. Accessed December 5, 2015. http://www.nps.gov/goga/planyourvisit/designations.htm

designate different areas, like the layers that Ian McHarg describes as transects[3], are not valued as indicators of space. Space was transformed by the cultural dictated rational, or in simpler terms, the imaginary lines of society.

The American landscape was unparalleled in the Old World. The new discovery underwent a dramatic change from a natural setting to one of an urban context. In Andrew Jacksons inaugural address he asked "what good man would prefer a country covered with forests and ranged by a few thousand savages to our extensive Republic, studded with cities, towns, and prosperous farms, embellished with all the improvements which art can devise or industry execute."[4] The speed of growth allowed by the industrial revolution valued cultural assets higher than pre-existing natural conditions of place.

With spatial boundaries directed by societal means, changes in the natural topography were implemented to allow for such designations. The competition between human culture and the natural landscape does not allow for a compromise. The natural landscape was carved through to create space, dividing the natural and built realms. This is evident in the way in which highways cut across America. Through this it is said that "what brings us together in the new landscape is not the sharing of space in the traditional sense but a kind of sodality based on shared uses of the street or road, and on shared routines."[5]

---

[3] Ian L McHarg, *Design with Nature* (Garden City, N.Y.: Published for the American Museum of Natural History by the Natural History Press, 1969), 8-10

[4] "Andrew Jackson's Annual Message" Ourdocuments.gov, last modified February 12, 2016, accessed February 12, 2016, http://www.ourdocuments.gov/print_friendly.php?flash=true&page=transcript&doc=25&title=Transcript+of++()

[5] John Brinckerhoff Jackson, *A Sense of Place, a Sense of Time* (New Haven: Yale University Press. 1994), 10.

Sacred Escape

Through the separation of architecture from the natural environment a sanctuary is created in nature as an oasis from the overshadowing effects of the built environment. The beauty of nature is evident in the way it resembles a remnant of the once dominant wilderness, untouched and untamed. Through time the power of wilderness has always been balanced with the beauty that resides within it. While nature is a relic of what it once was, the mysticism is relevant in its untouched clarity. Its ability to pacify the supremacy of the ego reveals that society along with all living things are inseparable elements of a cosmic order.[6]

The oasis of nature is more accepting of diversity than the built environment, which fundamentally shelters human experiences from overwhelming conditions. When referring to 'Sense of Place' there is an implied meaning of guardian divinity presiding over place.[7] This divinity does not reside in urbanity where places are normalized through homogenized architecture language. The ritual of place has been rejected in a globalized world where technology spurs the growth of civilization. The alienation found in the built environment creates a pilgrimage from urban context to find the supernatural spirit of place.[8] This procession into the natural environment to escape monotony invites ritual.

While the sacred escape is found in the nature, the built environment has always attempted to emulate the natural world with the caveat of being a safer place for society to dwell. Urbanity and architecture can mimic the systems found in the

[6] Jackson, *A Sense of Place, a Sense of Time*. 84-91
[7] Jackson, *A Sense of Place, a Sense of Time*. 84
[8] Travis Price, *The Mythic Modern: Architectural Expeditions into the Spirit of Place*. (Novato, CA: ORO editions. 2012)

natural environment, yet they are unable to recreate them. As much as the built environment rejects the ritual of place it possess these means to connect to the guardian divinity of place.

3: Cohabitating the Edge

City Edge

Spaces that are constructed through architectural means maintain a focus on holding the edge of the built environment to protect its realm from that of the natural wilderness. This leaves us with few ways to connect with a sense of place in the wilderness that allow more than just a visual connection to the natural world. The very nature of architecture takes from the environment to usurp a space for our societies, and in the conquering of the world cities have developed into densities of separate individually regulated spaces that are interacted either within or outside of nature. As cities develop they create a constructed environment totally separate from the nature that have preceded and sustained them.

In fact, the ways in which cities grow tend to dictate the spatial edge of the natural environment in which the city intends to inhabit next. This is evident in the clear ways in which cities at the water's edge infill land into the water to subdue the edge into a more malleable area for a constructed environment to preside upon. The way in which cities like Boston and New York have developed express the ownership of the water's edge as a subordinate object to be determined by perceived societal needs for space. As well as historic cities like Florence, Italy where walled fortifications subdue engagement of the built and natural environments.

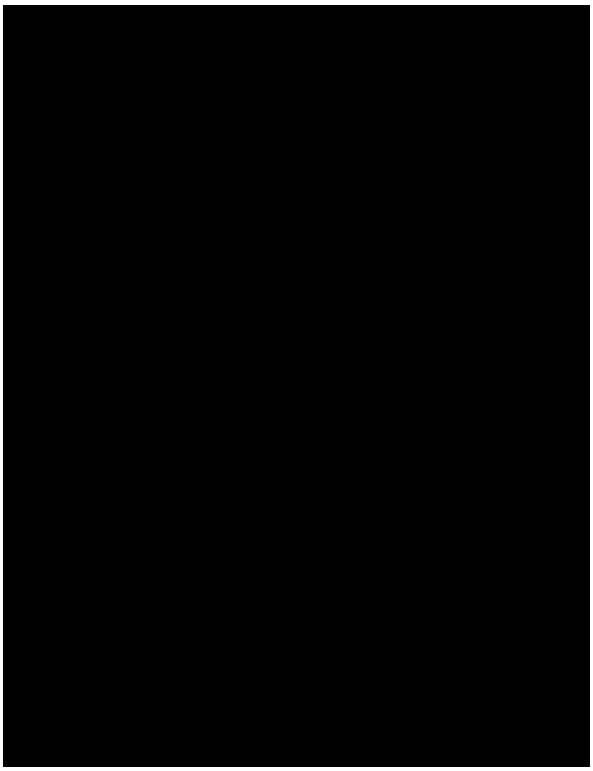

Figure 3: Manhattan on right; virtual recreation of 1609 Mannahatta on left. Created by Markley Boyer[9]

This command over the ways in which societies have dictated the development and domain of the natural landscape is not limited to water however, it is far reaching into every aspect of the environment from the dedication of zones of Forest Preserves and Wildlife Reserves, it is evident in the way agricultural land is cultivated and implemented to march the wilderness farther and farther away from our cities and only leave areas that can be presided over. This dominion against the wilderness has allowed for cities to create their own connections with a sense of built space that mimic the function of the natural environment in a protected sense that serves human functionality.

[9] Eric W. Sanderson, *Mannahatta: A Natural History of New York City*, (Abrams, New York 2009)

In recent years it has been evident that flooding events and rising sea levels could possibly reconstitute the makeup of almost every major city along the eastern seaboard. The way in which the landscape has been huddled into its human defined corners will not be as evident after one of these events as the wilderness reclaims the land that it has lost. With this reallocation of space towards a wilderness dictated domain, tackling the way in which nature can be a designer of architectural spaces is a prevailing focus in the development of our cities. To accept nature is a valuable way of thinking, but to design so that the built and natural environment can grow together with the spectrum not being in favor of one or the other is an invaluable design approach. The necessity to have architecture that can adapt to changing climates, seasons, and naturally defined spaces is a topic that is rooted in a primal necessity of conceptions of shelter from the omnipotent will of the wilderness and the incredibly powerful faith in the way wilderness provides for our basic survival and experiential needs. To apply the integration of the natural environment into our architectural spaces before climatic changes dictate how our built environment will change demands a dissimilation of built and natural fabric as opposing forces, and a move towards an architectural language that engages built and natural forms coexistence.

With a world that has been near entirely discovered and extensively mapped, it is evident that resources are now limited and cohabitation with the primordial wilderness, extending this definition to its assortment of deserts, forests, tundra, and oceans must be upheld. This does not mean landscape and place dictated by architectural wants and desires or even the reverting architecture to the basic needs of

shelter, but an overlap of the boundaries that are currently described as hard edges of these neighboring conditions and blurring the design of natural and built worlds.

As cities have developed an architectural and urban design language to mimic that of the natural environment while maintaining a protective barrier from the passions of the natural environment, they have grown to such an extensive scale where it is near impossible to maintain a relationship with the natural environment without sacrificing the protective barrier and the dominion over the natural environment. Most spaces in a city are designed to perform a specific way while maintaining a certain aesthetic. However, designing cities to allow growth from the wilderness into the city, and adaption of built spaces to the changing of nature, devises spaces with a sense of place conscious of the natural environment that programmatic functions can adapt within. Understanding that the natural environment is a functioning amenity of the human experience creates a sense of place based development and architecture. With cities being so developed it is intrinsic that they have lost their relationships to the natural amenities that have first spurred their growth. It is evident that finding a supplementary way to inject the natural environment into a dense city populous as a revitalization of the place in whence we have distilled is a necessity to the human experience. Inserting an experience of the natural environment into the built form of a city allows for an oasis in which the human experience can break from the day to day grind and reflect on the experiential place in which we preside.

Architectural Edge

The architectural make up of buildings hold specific edges to the conditioned spaces that are composed. To redefine the idea of conditioned space to incorporate changes in the patterns of nature requires implementing responsibility of the user on how comfort can be achieved within the space. Architecture is then allowed to create a language that breathes in the outside environment, connecting back to a primordial sense of place within the human experience. Architecture that allows for the human experience to create a sacred connection to the outside environment in a way which surpasses the purely visual by wielding an emotive response furthers the human interaction past a functional relationship to spatial places and allows spirituality of space to become present.

In Juhani Pallasmaa's *Eyes of the Skin*: *Architecture of the Senses* he describes the human experience as "Instead of experiencing our being in the world, we beholding it from outside as spectators of images projected on the surface of the retina."[10]

Figure 4: Architecture as Spectatorship Sketch
Image by Author

[10] Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses (*Chichester: Wiley-Academy, 2005), 33.

Psallasmaa is expressing the inability of man to have profound experiences from the strict stance of viewership behind designed architectural boundaries that are separated from the natural environment, and in furthering an architectural language of blurred boundaries, integrated an embodied experience of the natural world with a sense of place where the human experience seamlessly resides within architecture and environment. "What is missing from our dwellings today are potential transactions between body, imagination, and environment."[11]

Figure 5: Architecture as Experiential Sketch
Image by Author

The implementation of one cohesive space of the natural and built environment creates a sacred bond between what the earth provides for architecture to reside among and that which architecture repurposes to craft anew. Creating edges that respond in an accepting manner instead of those which define space authoritatively speaks to spatial integration, allowing for the interaction of interior and exterior space to transcend the traditional perception of human dictated and conditioned space.

In harsh climactic regions and areas of the world where there are multiple and distinct seasons prevalent, an approach to the architectural edge that accepts environmental conditions may be tougher to achieve when combating natural conditions for the bare necessity of survival or adapting space to interact with the

[11] Pallasmaa, *The Eyes of the Skin: Architecture and the Senses,* 44

multitude of ways in which the wilderness presents itself in different seasons. However for the betterment of the human experience there is not a requirement for a total integration into the wilderness. Light, sound, sight, thermal and tactile connections all place the human spirit in the realm of the wilderness if they are capturing as much of the exterior environment as possible while maintaining a space that is sheltered from the awesome power of the wilderness. A separation of thinking 'sheltered away from' the natural environment and 'sheltered within' is a connection that architecture must make in order to re-connect the human experience back into its rightful place in nature and not in a constructed environment that neglects the mysticism of the wilderness.

Jun'ichiro Tanizaki describes the way in which light gives feeling to spatial properties in his book *In Praise of Shadows*. "Ultimately it is the magic of shadows. Were the shadows to be banished from its corner, the alcove would in that instance revert to mere void."[12] He goes on to depict a sense of beauty dependent on the imperfections of the world and if beauty must hide parts of what make it whole then it is not beautiful at all. If cities and architecture create environments separate from the perceived imperfection of a powerful wilderness then in turn the constructed environment is incapable of reaching any form of beauty and reverts to a strictly functional setting.

Threshold

Threshold is traditionally a construct that defines the boundary between two separate entities creating a here vs. there scenario. It is the emulation of abutting

[12] Tanizaki, Jun'ichirō. *In Praise of Shadows* (New Haven, Conn.: Leete's Island Books. 1977), 20

circumstances in which the most diversity occurs, in architecture it is often the moment when public space meets private space. This has traditionally been perceived as the way in which the control of the built environment that is presented through architecture is segregated from the natural environment. However this strict sense of threshold only maintains that there is a difference between diversities, instead of cohabitating existence among the diversities. With the expanse of abutting conditions creating significant diversities, overlapping the domains that come together to create the threshold does not take away from the diversity between them, it magnifies the potential outcomes.

Anita Berrizbeitia and Linda Pollak discuss threshold in their book *InsideOutside: Between Architecture and Landscape* as an operation that pivots around the action of passage, embedding the participant into the architecture in spatial and social terms.[13] The question here is how the passage through space is defined when there is a complex series of thresholds in the procession of one spatial condition to the next. When discussing what conditions of threshold separate the here from there it is prevalent to consider what is being defined by the idea that these spaces are indeed separate. "We shouldn't say that we cross mountains and plains, and that we stop at lodgings, it is almost the opposite: for several days I live in a landscape, I slowly take possession of it, I make it my site."[14] The sense of place that is inhabited between architectural and environmental elements is not of a transitory nature, but inhabitable spaces that can be personified with integrated atmospheres of the here and there to make one here-there spatial field.

---

[13] Anita Berrizbeitia and Linda Pollak, *InsideOutside: Between Architecture and Landscape* (Gloucester, MA: Rockport Publishers, Inc., 1999). 82.
[14] Frédéric Gros, *A Philosophy of Walking* (London: Verso. 2014), 33

The conditions of thresholds tend to be composed of linear separators of neighboring diversity. Instead of being considered as the instrument that separates these entities, thresholds have the potential to be the engagement of an area in which the mixture of different qualities rejoice in the multitude of spatial or natural diversities and when combined add more potential outcomes. As wilderness was seen as the threshold that separated the built environment, it is simultaneously the element that built environment is dividing. To redefine the language of threshold so that threshold defines the inclusive ability of inhabitable space and not the exclusive division of space, where wilderness and architecture are both elements of equal spatial priority and overlap in harmony.

User Responsibility

Threshold expands past the spatial component and engages with the thermal barrier as well, which dictates a controlled climate of one continuous 'comfortable' season. "With our current technology the temperature of a place need not be associated with the form of the building or the materials used or region where it is located. But how unsatisfying is this dissociation of warmth or coolness from all of our other senses."[15] Technology provides a disconnect of thermal barriers and the connection to natural thermal qualities that are lost. With technology dictating the thermal experience of conditioned space there is a divergence of any human connection to the natural environment by repurposing that experience to a domain dependent on technology, instead of being predisposed to the regulations of changing seasons, for example an igloo or African hut which are in tune with seasonal changes.

[15] Lisa Heschong, *Thermal Delight in Architecture*, (Cambridge, Mass.: MIT Press. 1979), 25.

To accept the demands of a responsible experience users must engage with an active assimilation of the human experience into the conditions created via the natural environment. As Pallasmaa says "Architectural space is lived space rather than physical space, and lived space always transcends geometry and measurability."[16] The action required to experience architectural space is more than a technological advancement of the measure of the attributes that maintain the human condition. Thus, experience cannot be anything more than functional realization of program if reduce to the measurability of thermal attributes.

The acceptance of thermal mass is a way in which the human experience can appreciate the defining characteristics of the outside environment. If temperature were to remain constantly comfortable as time progressed, there would be a disconnect from to the natural pattern of the world, a separation between a progressive experience dependent on time and the stagnate experience implicated by a never ceasing consistency.

Materiality

Architecture materials are derived from the earth and in turn are repurposed to accommodate spatial concepts that engage the human experience. In this way architecture has the potential to create a connection with the sense of place in which building resides if it applies a material that are found locally and not from exotic and distant lands. As much as architecture has the potential to repurpose the earth to dwell within it, similar to the way mud brick homes relate back to their place in the desert, applying the language of wilderness foraged and wilderness sanctified blurs the

[16] Pallasmaa, *The Eyes of the Skin: Architecture and the Senses,* 68

boundaries of what spaces are left as residual and which are created anew from the earth.

The question of which spaces are residual and created is dependent on what is perceived as the designer of spatial conditions, the architect or Mother Nature. If the designer of space is an equal part both, materiality can be the tool that redefines place from being designed to having instinctive qualities.

Materiality in this integrated sense is not always appropriate in defining a modern urban condition. With limits in applicability to programmatic functions of modern societies, mostly in cities which don't produce their own natural materials, a material must be displaced from its original environment. The definition of material with regards to the predetermined location is difficult to assess in regards to cities and urban densities. If cities allow integration of a natural material and allowed that natural element to decide upon its own boundaries, the use of these materials could influence more integrated aesthetics of construction and environment. To re-implement cities with wilderness draws from an interaction of primordial place in relation to the history of the site in which a city resides by engaging the built environment to the tactile experience with the natural realm that once ruled.

Although materiality is a connection to natural realm that architecture can implement, architecture is limited by the means of access and abundance of materials. However displaced materials and natural boundaries are not singular elements that can deter the connection between the built and natural environments being made if there are shortages of materials as cities sprawl and as usable materials are turned into the built environment. Mimicry of the patterns that are evident in the natural

environment holds connections to place through materiality. For example the use of plastics and composite materials taking on tactile attributes of wood decking, or architectural forms that mimic the golden section, which is also found in many natural forms, like a nautilus shell.

Environmental Resilience

Wilderness is not a static entity, it is constantly growing and adapting even when the human experience is separated from the natural world; the knowledge of these changes are evident in the fundamental purpose of this separation being the intention to protect from these changes. The natural environment grows and contracts as much as leaves change color and fall to the ground and return in again in spring. To define the edge of the natural realm only leaves the potential for it to recede. This in turn protects the human experience from the hardships of survival, however at the cost of minimizing the interaction with the natural world, giving nature a cage within which it must reside.

When given the chance the natural realm always expresses its resilience and ambition to define its own space. As Alan Weisman describes in his book *The World Without Us* "On the day after humans disappear, nature takes over and immediately begins cleaning house- or houses, that is. Cleans them right off the face of the earth. They all go."[17] There is a constant back and forth between that of the built and natural worlds. However, to dictate where one realm presides based on the other only allows for the recession of spatial qualities of the built or natural environments.

[17] Alan Weisman, *The World Without Us.* (New York: Thomas Dunne Books/St. Martin's Press. 2007), 15

To allow environmental resilience to allow growth and retreat past definitive edges creates an architectural language that emphasizes a pilgrimage of sorts between the previously abutting spatial conditions where the journey between the wilderness expanse and the built environment is a place to dwell with the holistically 'in-between' realm. The destination of wilderness and built environment become opposites that attract where they breathe together. Inhaling and exhaling as cities, ecosystems, and architecture expand and shrink constantly, instead of detracting from an exclusive perspective of threshold as a concept of spatial division detracting from the natural environments opportunity to be resilient.

4: Precedent Analysis

Querini Stampalia Foundation, Carlos Scarpa

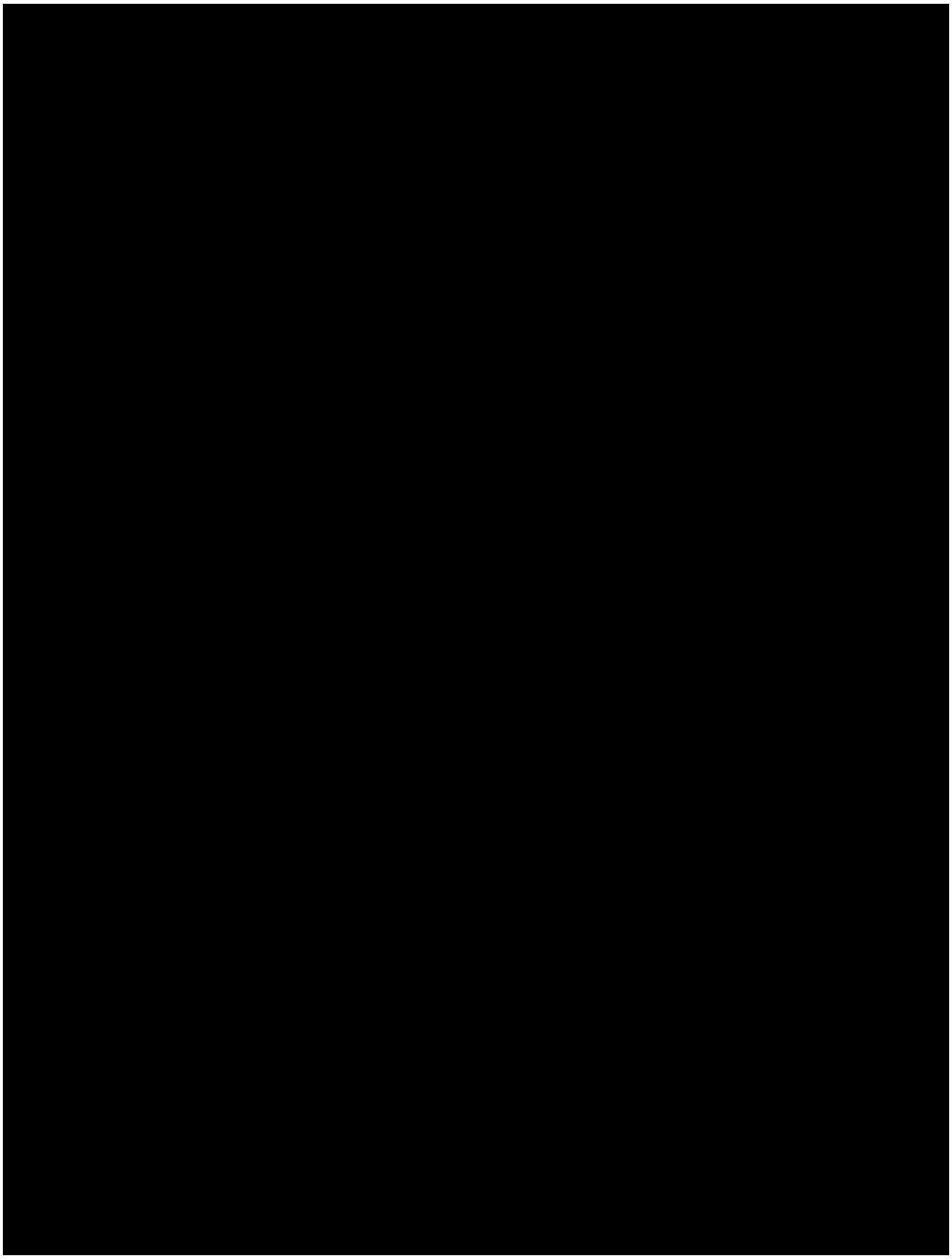

Figure 6: Querini Stampalia Canal Entrance
Image by Timothy Brown[18]

[18] "Fondazione Querini-Stampalia, Carlo Scarpa, 1963," Timothy Brown & Flickr, last modified June 22, 2008, accessed January 15, 2016, https://www.flickr.com/search/?l=commderiv&q=Querini%20Stampalia.

The refurbished design of the Querini Stampalia Foundation by Carlos Scarpa adapts the first floor to engage the temporal conditions of the environment. In Venice, water is such a major element to be celebrated and feared. Depending on the temporal conditions of the tides in the canals, water can devastate the historic architecture or create passages for transportation. Built on a marsh the architecture of the Venice sinks into the landscape. With minimal landscape typologies in the city, the Querini Stampalia design interjects a garden courtyard protected from the tides. The reciprocity between architecture and nature allows an atmosphere of fear and awe while appreciating all conditions of the marsh.

Figure 7: Venice Map
Image by Google Maps

Figure 8: Querini Stampalia Site
Image by Google Maps

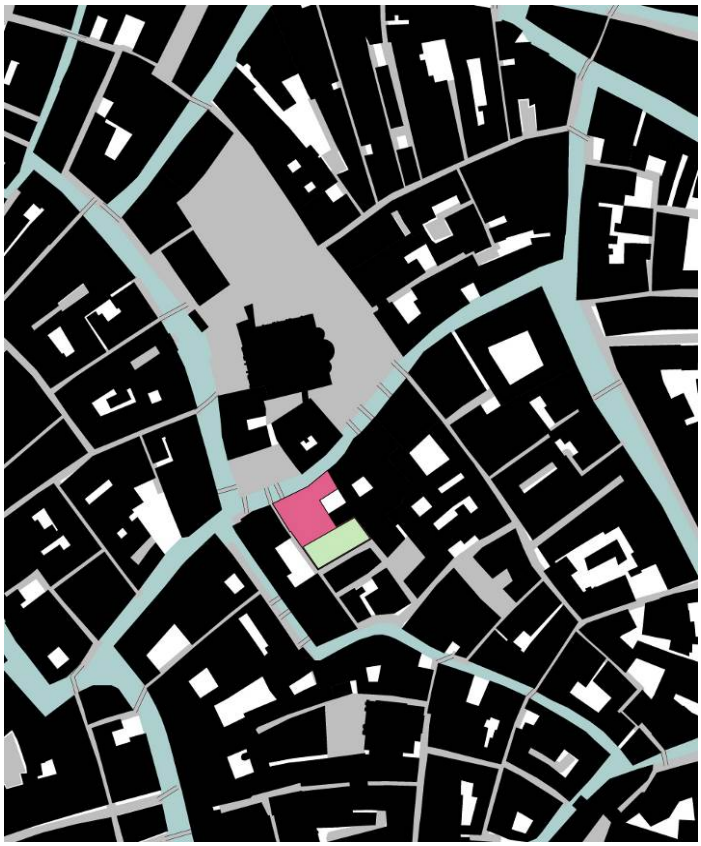

Figure 9: Querini Stampalia Figure Ground
Image by Author

Scarpa incorporates dual access for gondola and pedestrian to a raised walkway that circulates perpendicular to the spatial sequences that connect through the building to the garden opposite the canal. The garden and canal as opposing events speak to the connection the Stampalia has with accepting the water of the canal. At its most destructive the water is accepted and within the architecture while the garden is always protected as a picturesque landscape.

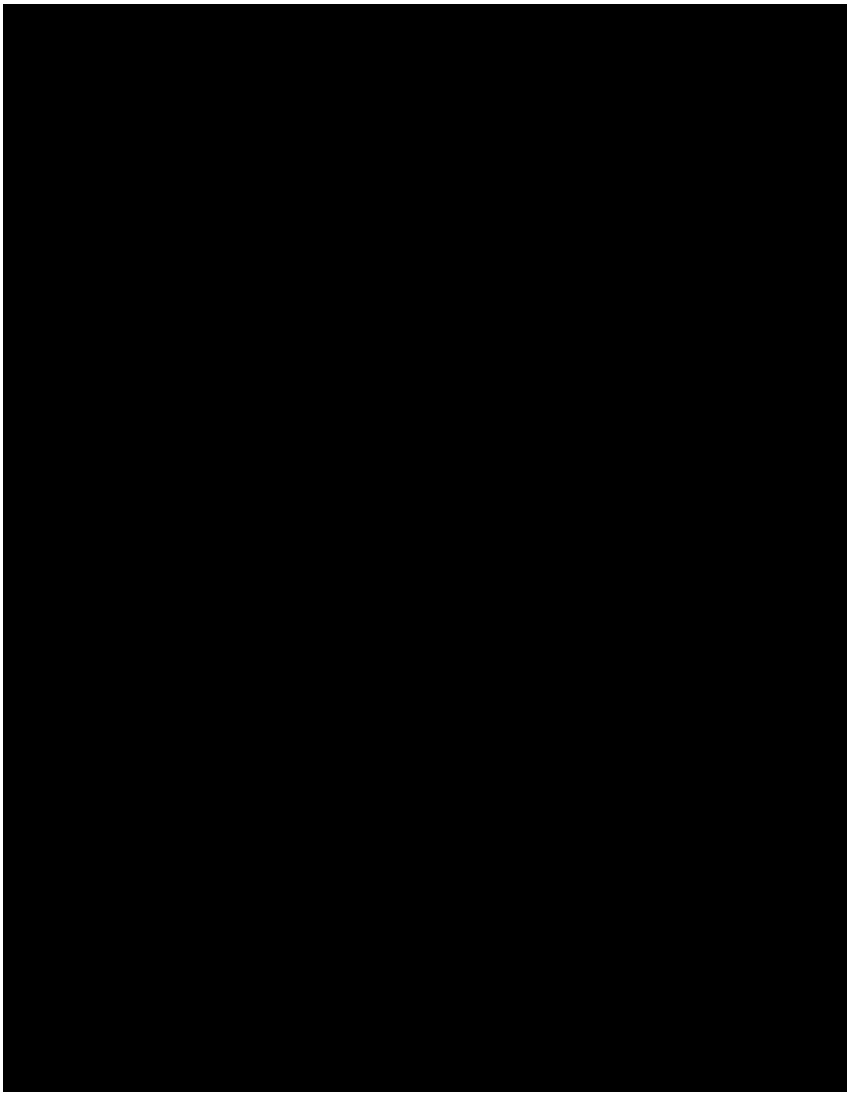

Figure 10: Querini Stampalia Plan
Image by Don Freeman[19]

[19] Berrizbeitia and Pollak. *InsideOutside: Between Architecture and Landscape, 17*.

Figure 11: Querini Stampalia Section
Image by Don Freeman[20]

The garden elevation and the causeway that connects to the canal both occur on the same elevation. The spatial depression created underneath the building define event space for exhibitions. The descending recession of space from these elevated platforms allow for the androne to allow connections to both exteriors. A portico extending towards the garden draw occupants out towards the elevated garden, while the recession of the glass wall occupying the other end of the portico bring the garden into the building, extending visual space into the androne. As the portico on the canal side accommodate different tidal levels, the water is brought into the building as it pleases. The stairs leading to the causeway are able to be reached at high and low tides. In the event of a flood, the androne holds excess water until it drains back into the canal, while the causeway allows pedestrian access around the flooded areas. Scarpa includes a high bridge that allows pedestrian access from Campo Santa Maria Formosa into the building above rising flood levels. The descent for pedestrian occupants onto the causeway is also incorporated in the canal entry as the steps ascend one riser above the causeway. The approach to the fear and awe inspired by the natural environment is evident in the tension and relief the building character possesses.

[20] Berrizbeitia and Pollak. *InsideOutside: Between Architecture and Landscape, 17*.

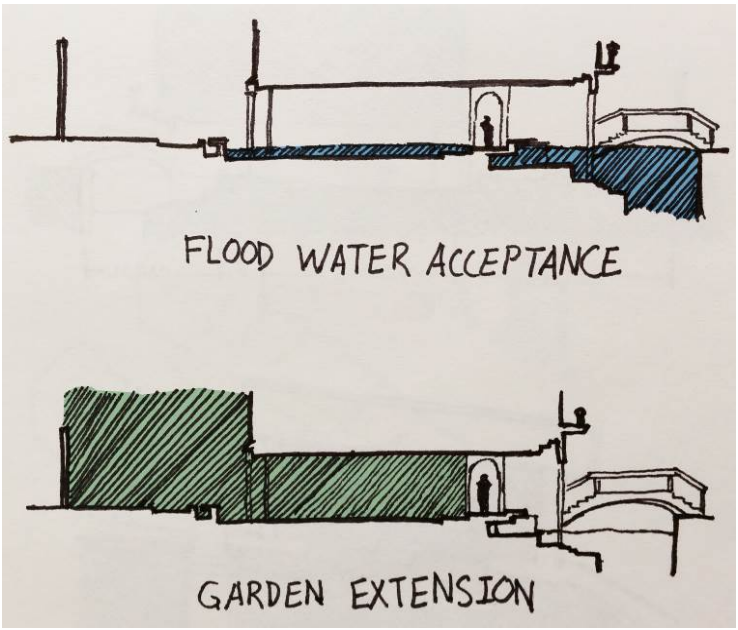

Figure 12: Nature Interaction Diagram
Image by Author

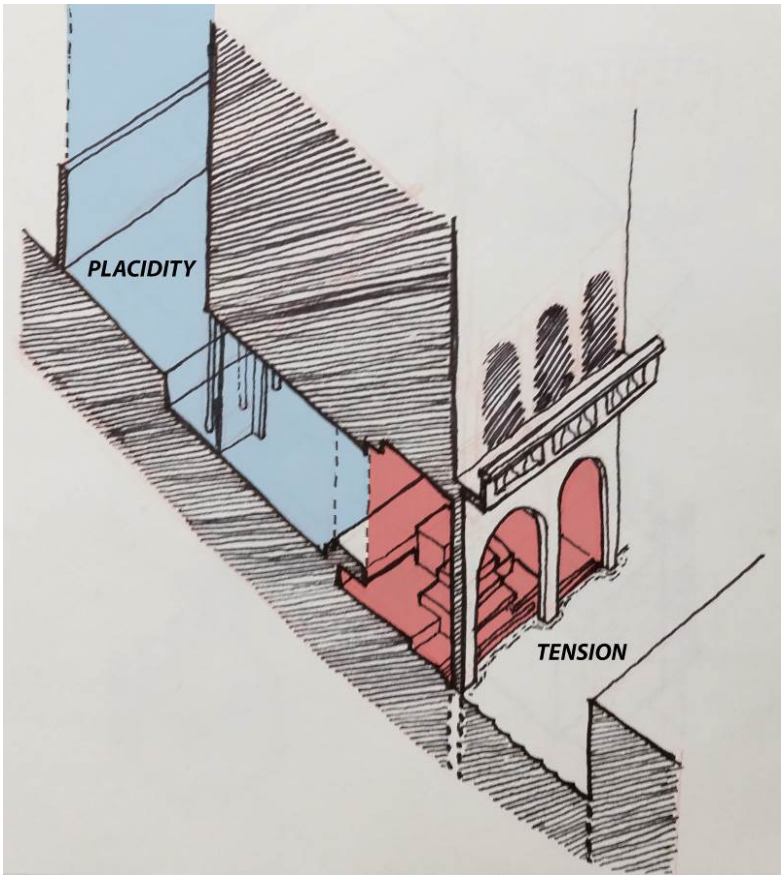

Figure 13: Tension Placidity Diagram
Image by Author

The compression created by the sunken character of the androne release occupants to the elevated status of the natural environment. The vertical planes of the stairs and floor plates compared with the horizontal planes that define the spatial features of the garden and walls, typical of Scarpa design, blend the character of the architectural space with the natural space.

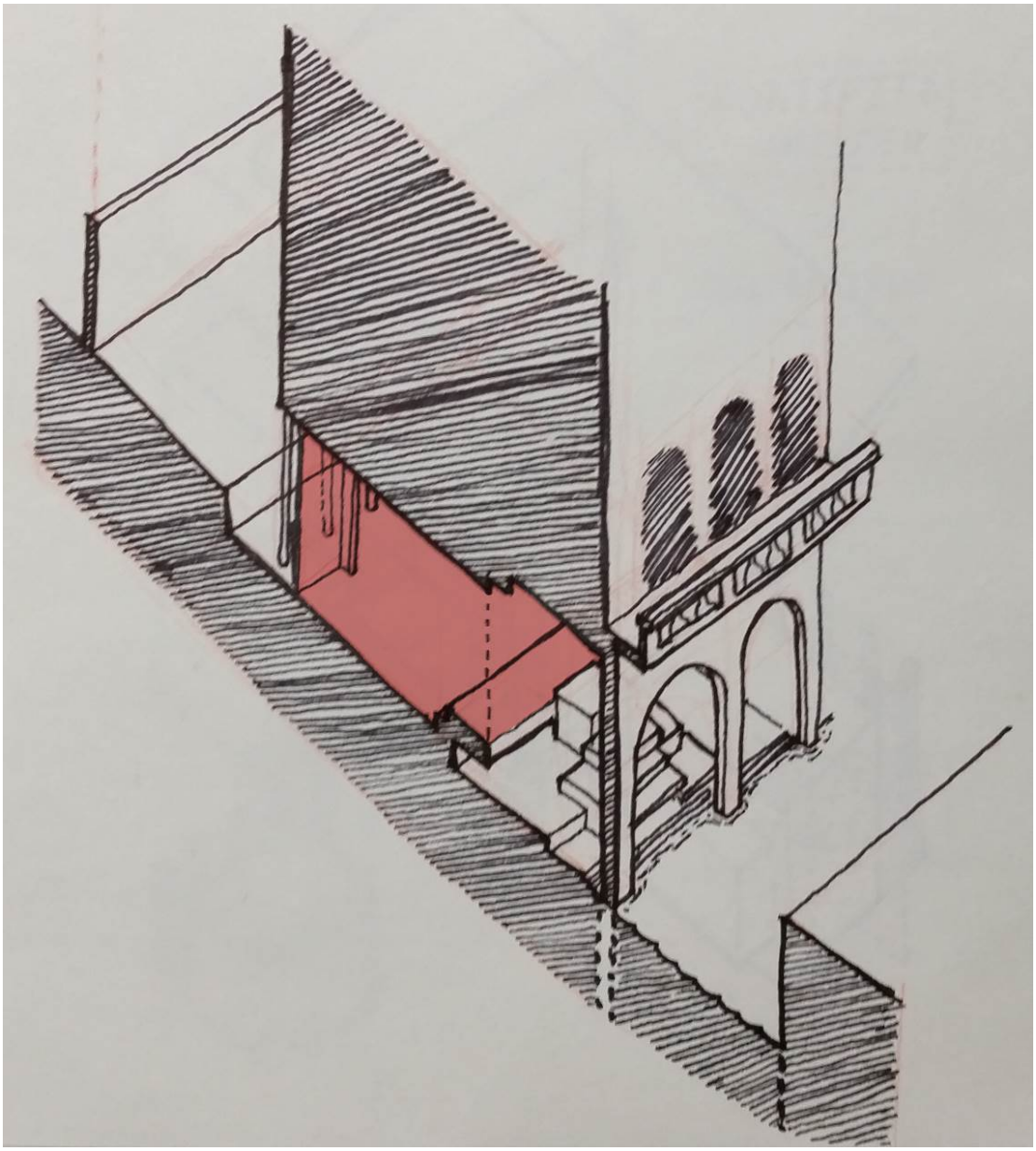

Figure 14: Querini Stampalia Compression Diagram
Image by Author

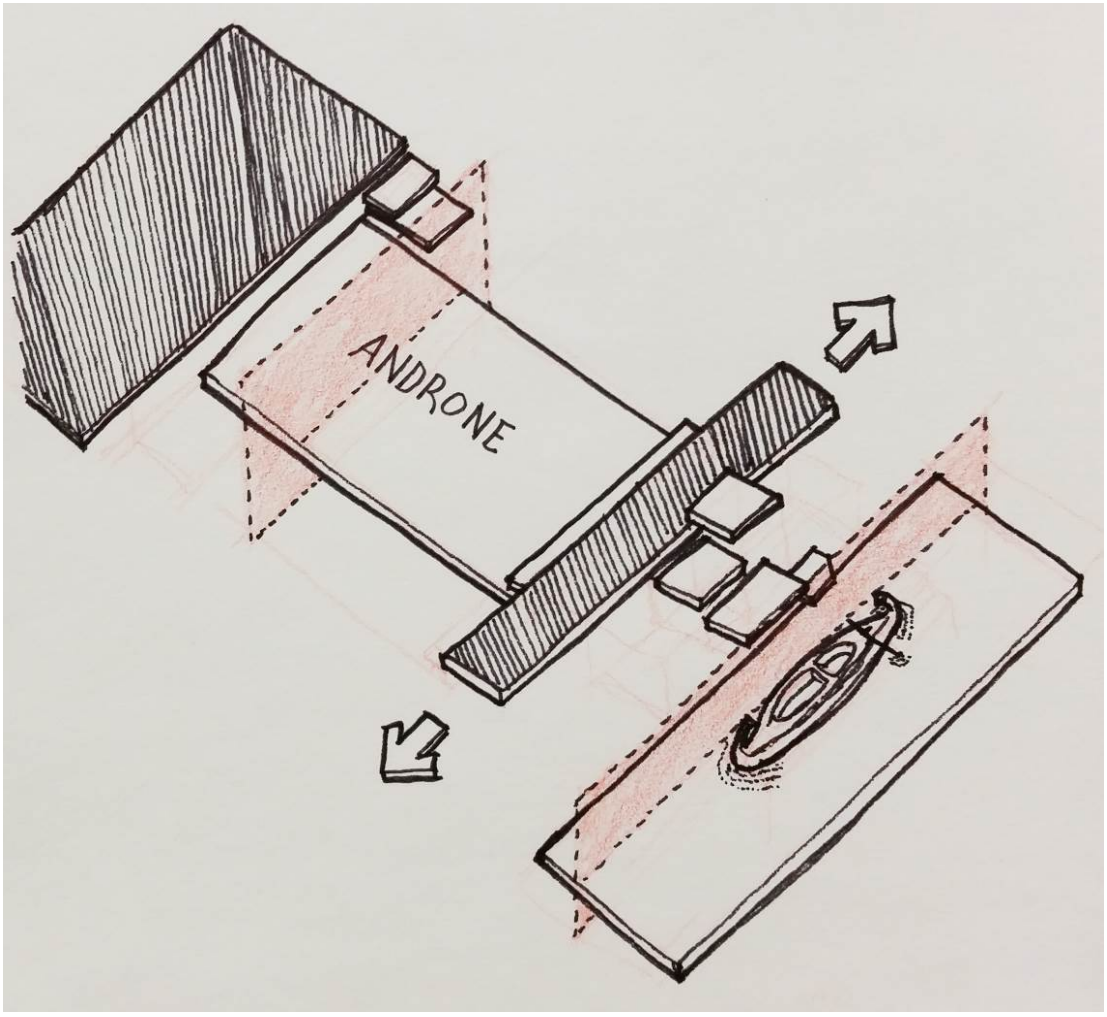

Figure 15: Building Edge Diagram
Image by Author

Therme Vals, Peter Zumthor

Figure 16: Exterior of Therme in Vals, Switzerland
Image by Timothy Brown[21]

Peter Zumthors' Therme at Vals is a thermal bath complex that rehabilitated a group of hotels in the Alps. The design intent creates a sense of timelessness in the environment and culture. Carved into the topography and applying local stone from nearby quarries, the construction is grounded in the mountain side.[22] Aa ritual of emerging or retreating from the landscape occurs as occupants proceed between the indoor to outdoor pools. As most constructions in the Alps is scattered throughout the

[21] "Vals Therme, Peter Zumthor," Timothy Brown & Flickr, last modified June 15, 2008, accessed January 15, 2016, https://www.flickr.com/photos/atelier_flir/2659152772/in/album-72157606105576450/.
[22] Anthony Radford, Selen Morkoc, and Amit Srivastava. *The Elements of Modern Architecture: Understanding Contemporary Buildings*. (New York, New York: Thames & Hudson, 2014).

landscape following topographical conditions, the bath complex sinks into the landscape to become one experience within it.

Figure 17: Therme Aerial
Image from Bing Images

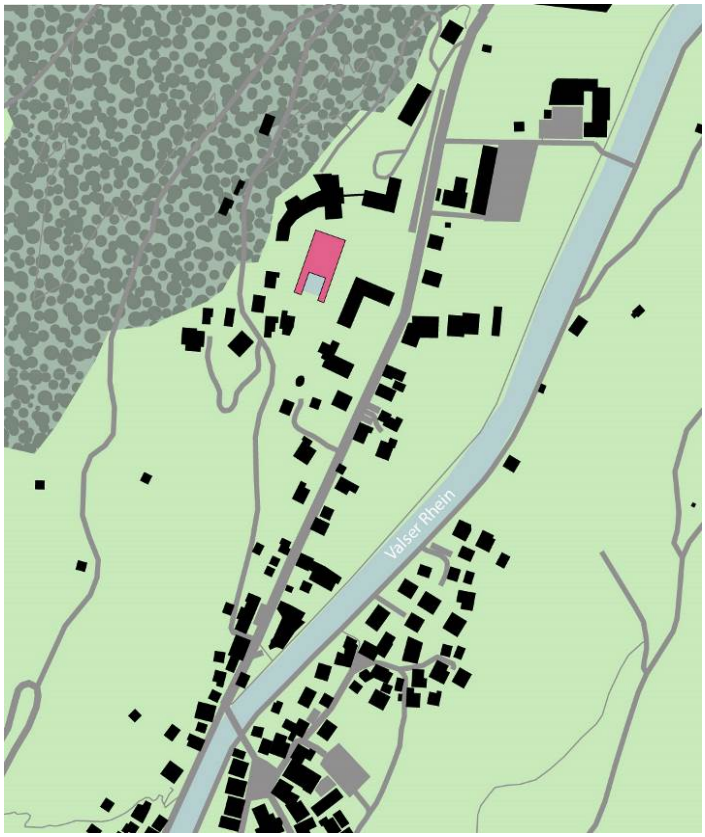

Figure 18: Figure Ground Therme at Vals
Image by Author

The baths incorporate a procession through areas of individual and group therapy. With a consistent materiality throughout the complex there is a continuity and primordial sense of being rooted in the caverns of the landscape. Distinguishing between private and community spaces expresses the versatility of the program of the building, however more importantly is the characterization of transitory space. When occupants walk from hot room to cold room at their own leisure, the definition of space is created by the size of space and not materiality. The heavy nature of stone roots the building underground, allowing the size of the form to determine programmatic function. The addition of a typology of spatial distinction dedicated to circulation idealizes the rite of procession. By giving prominence to the circulation

above the destination, preference is given to the place you are moving through and not to where you are going (Figure 20).

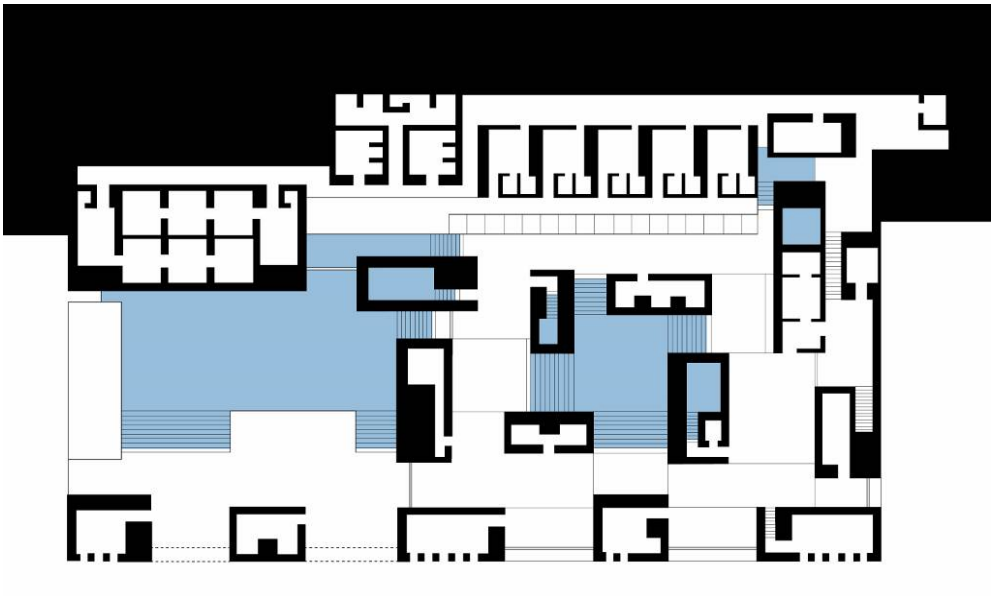

Figure 19: Therme First Floor Plan
Image by Author

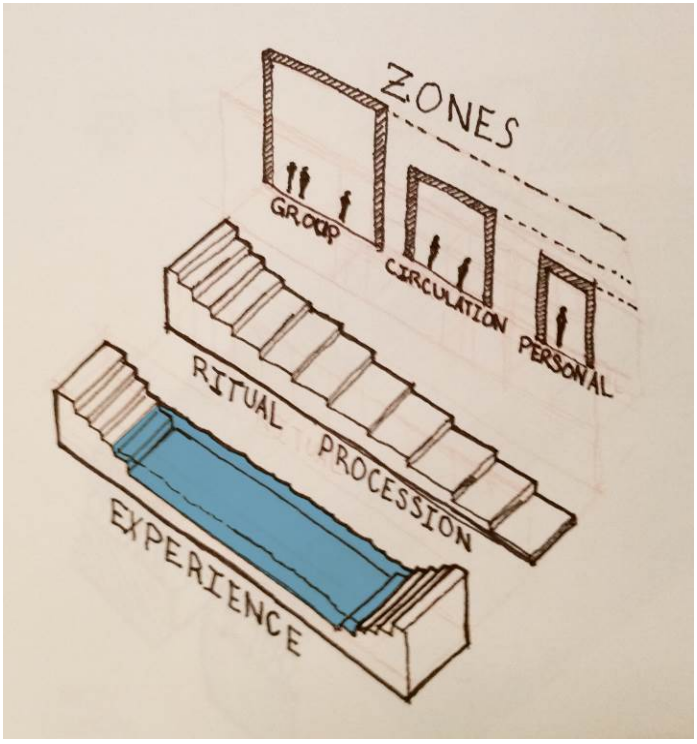

Figure 20: Therme Zone Typology Diagram
Image by Author

As each space is confined within itself besides the pools, a divide is created between event spaces. This permits the procession through the building to take on a central appeal as the dominant function. Disengaging the functions of the bath allows the materiality to dominate occupants' sense of place, compounding the connection to landscape as the architecture acts as the caverns within the mountain.

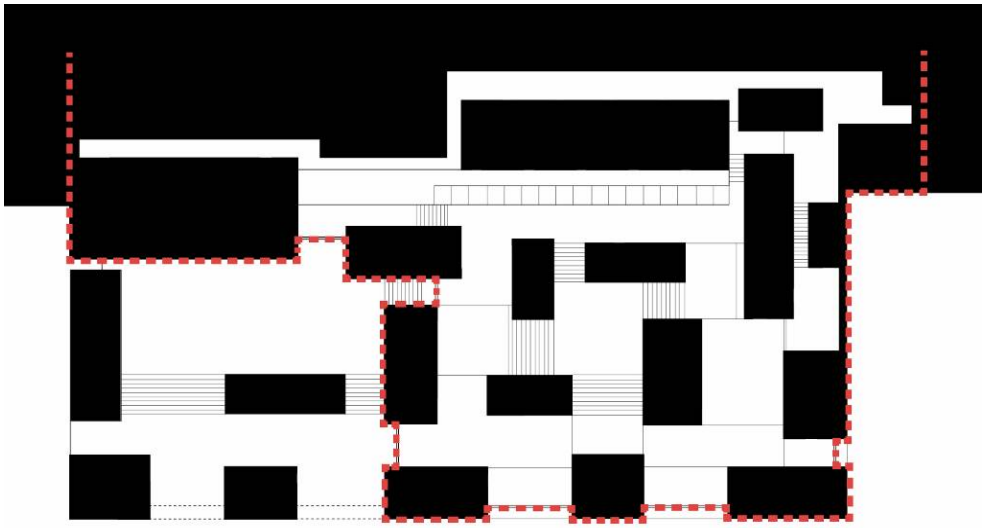

Figure 21: Therme Porosity Diagram
Image by Author

As the cavernous nature of the baths sinks into the landscape, lighting becomes an important issue. Natural sky lighting is added to illuminate the path through the building while regarding a connection to the elements of the natural environment. Slits of glass penetrate the roof structure along the axes of the walls to illuminate the stone, exemplifying the continuous materiality of the building. Engagement with the landscape is maintained over the skylights by extending the grass lawn that blankets the slope of the mountain over the building, tucking the architecture into the landscape as one uninterrupted entity.

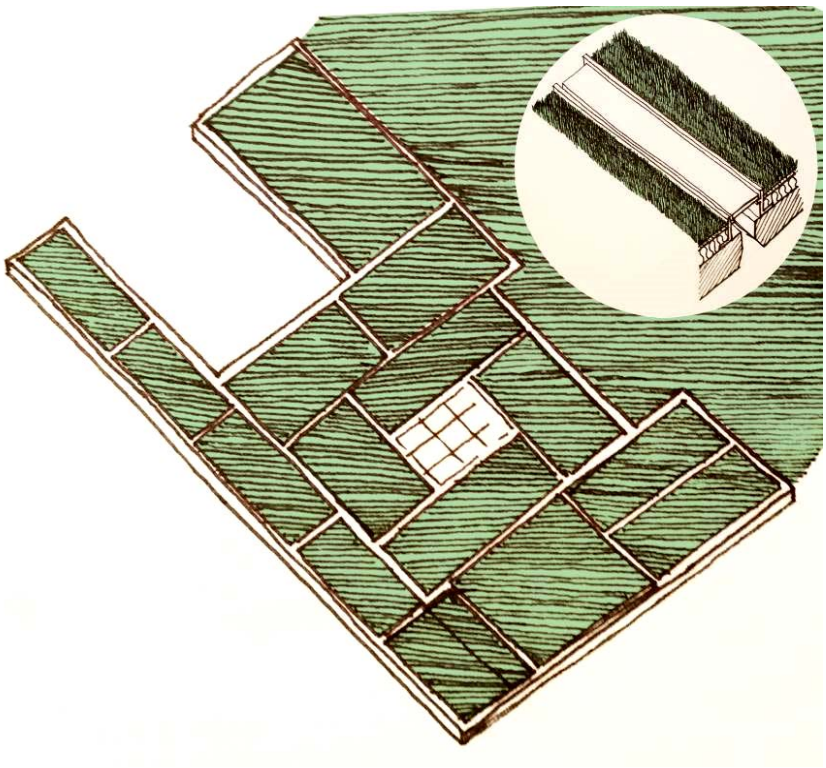

Figure 22: Sky Lighting Sketch
Image by Author

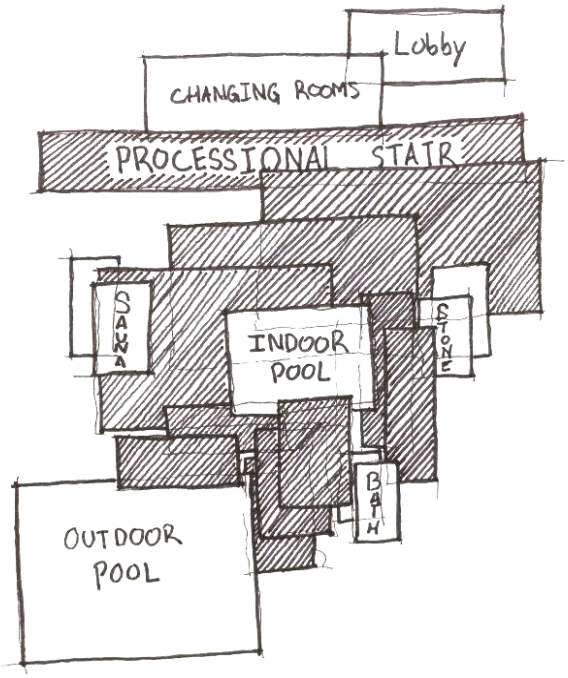

Figure 23: Therme Programmatic Disengagement
Image by Author

Indicating a transition between event spaces the stairs allow for a conversion in tread length to cause occupants to become aware of the adjustments. As well as the change in tread length, the floor plates of the event spaces and transition spaces are not on the same level. Changing elevations for each and every event compounds the difference between those spaces. This allows a sense of arrival for each and every space, not preferencing one over another but celebrating each space as unique. Thus the experience is about procession between events as opposed to grand destination spaces.

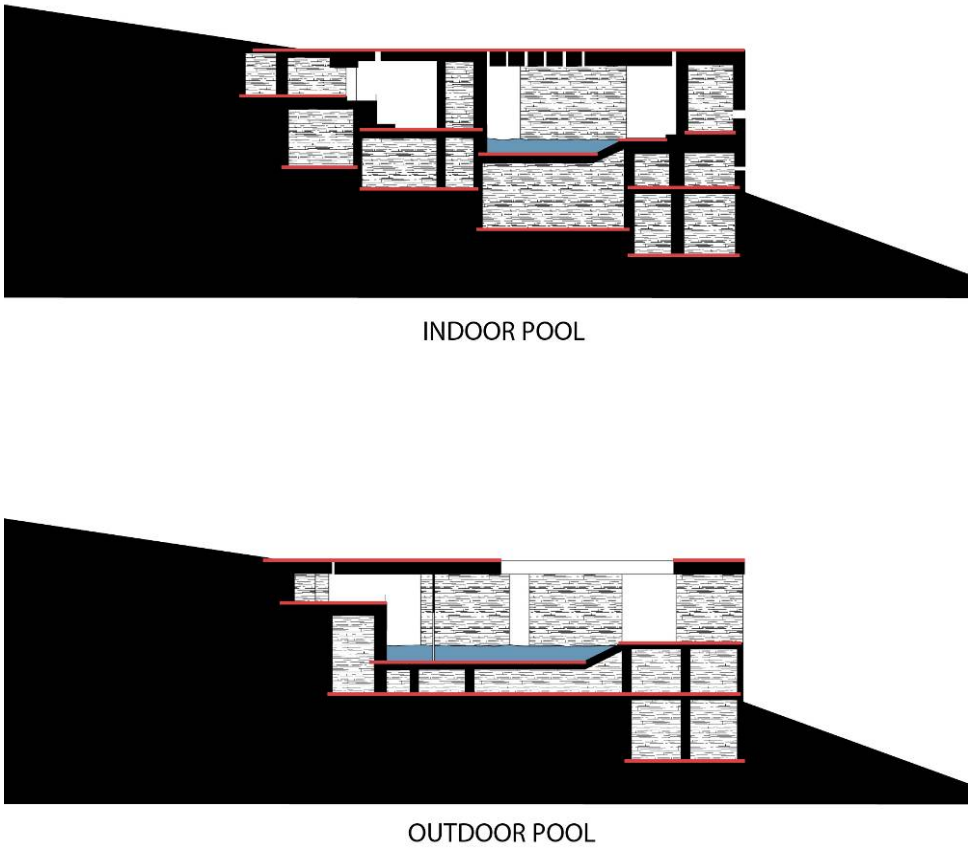

Figure 24: Therme Elevation Layering Diagram
Image by Author

The ritual of passing through the cavernous architecture maintains two programmatic zones that are not obligatory to the event spaces. An area for preparation transitions occupants between daily life and the retreat into the landscape. This occurs at a significantly different elevation to exemplify the descent into the landscape inside of the building. Areas of retreat allow occupants zones of observation to reflect back out towards the landscape from which they came. Emerging from the bath complex towards the exterior pool, a slight ascension is required to return the connection to exterior factors.

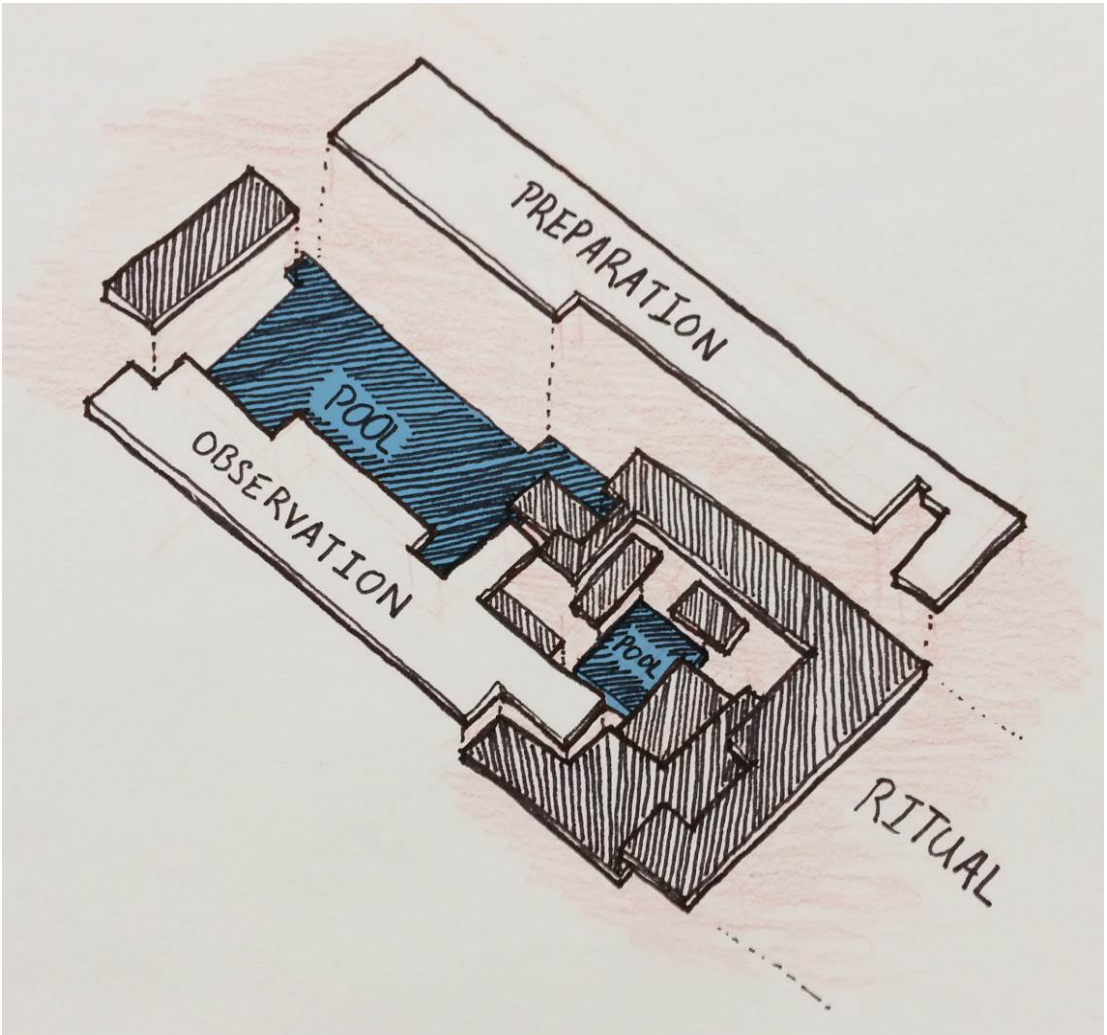

Figure 25: Ritual Procession Sketch
Image by Author

Arthur & Yvonne Boyd Art Centre, Glenn Murcutt

Figure 26: Arthur & Yvonne Boyd Art Centre
Image by Lucas Torresi[23] (Edited by Author)

Figure 27: Arthur & Yvonne Boyd Art Centre Character Photo
Image by Lucas Torresi[24]

[23] "DSC00370," Lucas Torresi & Flickr, last modified July 16, 2009, accessed January 15, 2016, https://www.flickr.com/photos/unrosarinoenvietnam/3784091448/in/photostream/
[24] "DSC00240," Lucas Torresi & Flickr, last modified July 16, 2009, accessed January 15, 2016, https://www.flickr.com/photos/unrosarinoenvietnam/3784052486/in/photostream/

The Arthur & Yvonne Boyd Art Centre designed by Glenn Murcutt along with Wendy Lewin and Ref Lark was created as an expansion to an educational facility that focuses on the arts. Residing on the east coast of Australia just south of Sydney, an oasis between the Shoalhaven River and the Australian Bush. The layout of the building creates a succinct program that tailors to the primitive idea of shelter in the natural environment. Living quarters are wedged between the diversity created by engagement of forestry and the river. This difference between natural extremes wedges the building on this edge, leaving the experience of refuge to adapt to the different environmental setting that engages the architecture.

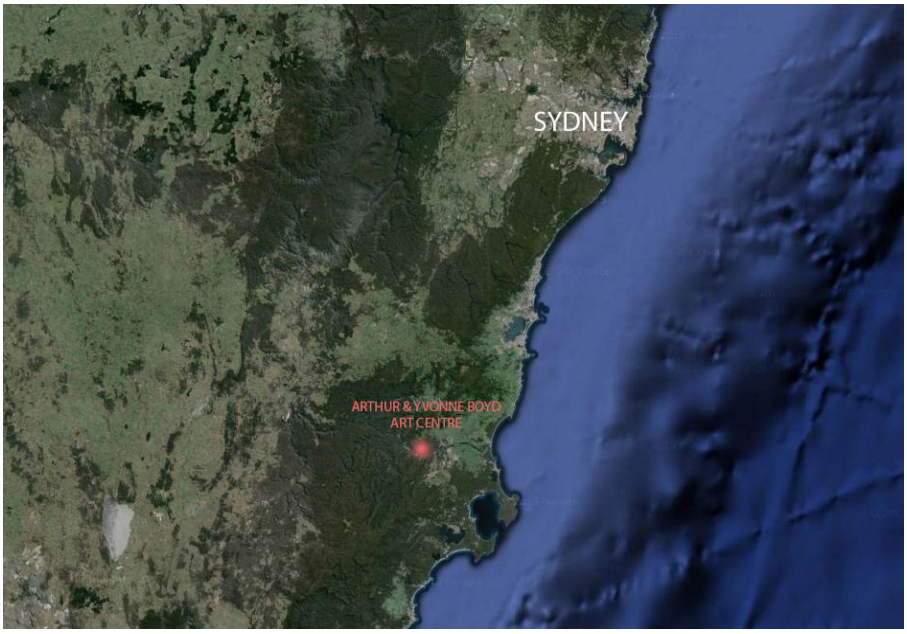

Figure 28: Arthur & Yvonne Boyd Art Centre Proximity to Sydney
Image by Google (Edited by Author)

Figure 29: Arthur & Yvonne Boyd Aerial
Image by Bing Maps

The Art Centre is an addition to the existing layout of cottages for students. The impact of its program responds to the idea of simple survival, creating minimalist spaces that respond to shelter, cleanliness, and a small gathering space to eat. Most activities occur outside of the architecture. The Arthur & Yvonne Boyd Centre creates circulation that resides outside of the living quarters, sheltered by a tilted roof that lifts to allow views of the forest and match the sloping terrain.

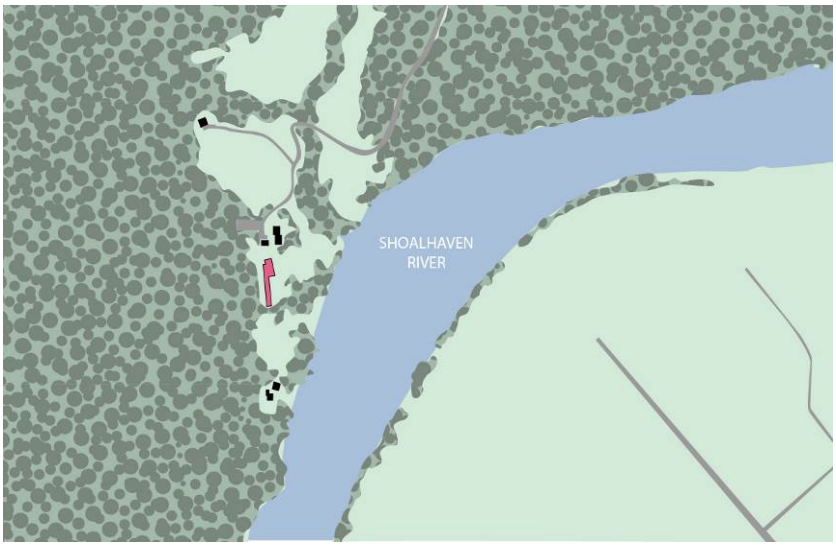

Figure 30: Arthur & Yvonne Boyd Figure Ground
Image by Author

To accommodate the duality of river and forestry, the structure uses simple additive and subtractive means to carve away the fortification of shelter. The notion of unwrapping architecture to shrink the expanse between interior and exterior becomes an expression of building to the natural environment and carving space out for the nature to inhabit. With space protruding out and receding inwards to make this accommodation, a continuous roof encloses the dispersed event spaces.

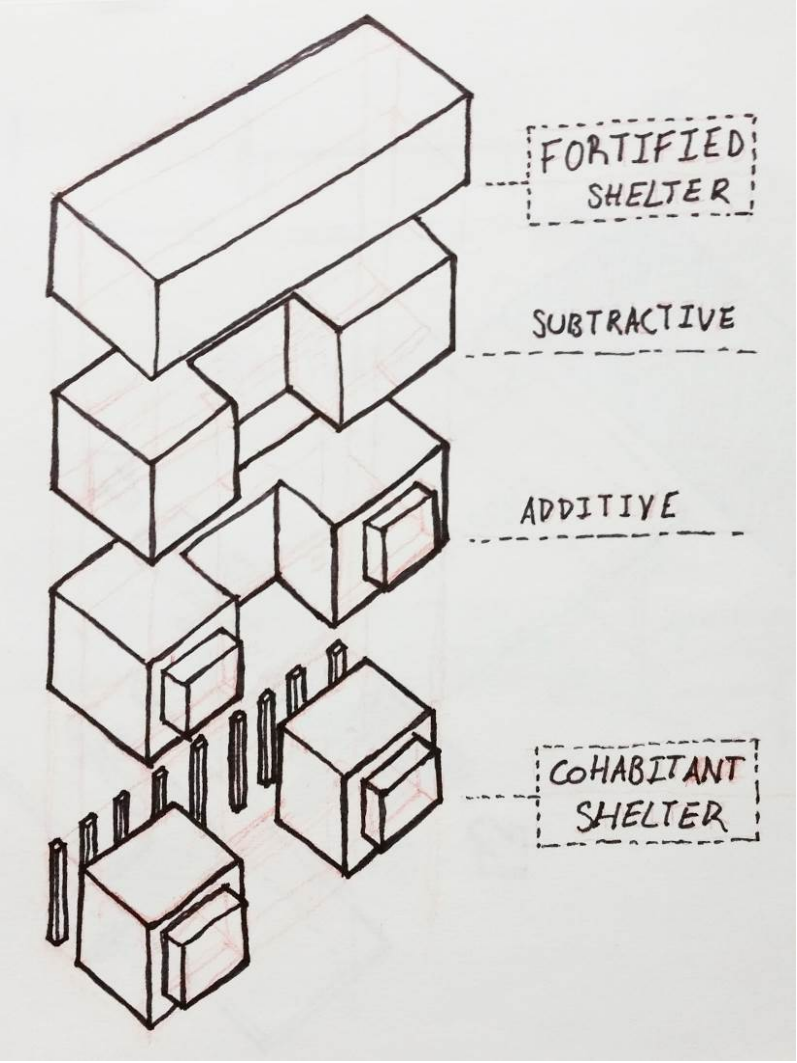

Figure 31: Design Sequence Diagram
Image by Author

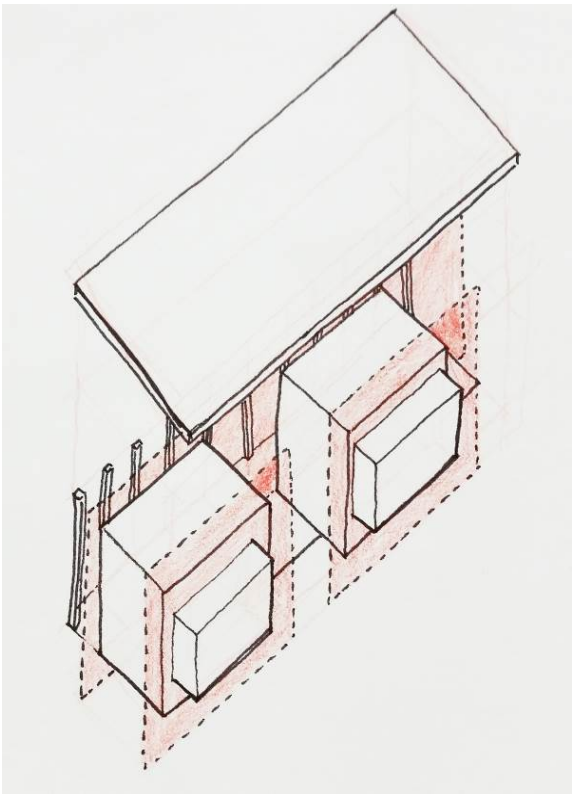

Figure 32: Shelter Edge Sketch
Image by Author

Paralleled around a service core the group living quarters create individual views of the river for each individual bed. A vantage point to the river is created by the variety operability each window possesses. The distance separating the occupant and the river is mitigated by the way in which the design projects some of the sleeping areas away from the building to hang on the edge. This projection complimented by the floating corrugated metal roof create natural ventilation to enhance the experience of being a part of the natural landscape when dwelling apart from it. The circulation zone possesses an immediate correspondence with the beauty of an undisturbed landscape that is just out of tangible reach (Figure 34), while the

living quarters harbor occupants from the proximity of an untamed landscape connecting to a distanced connection to the Shoalhaven River (Figure 35).

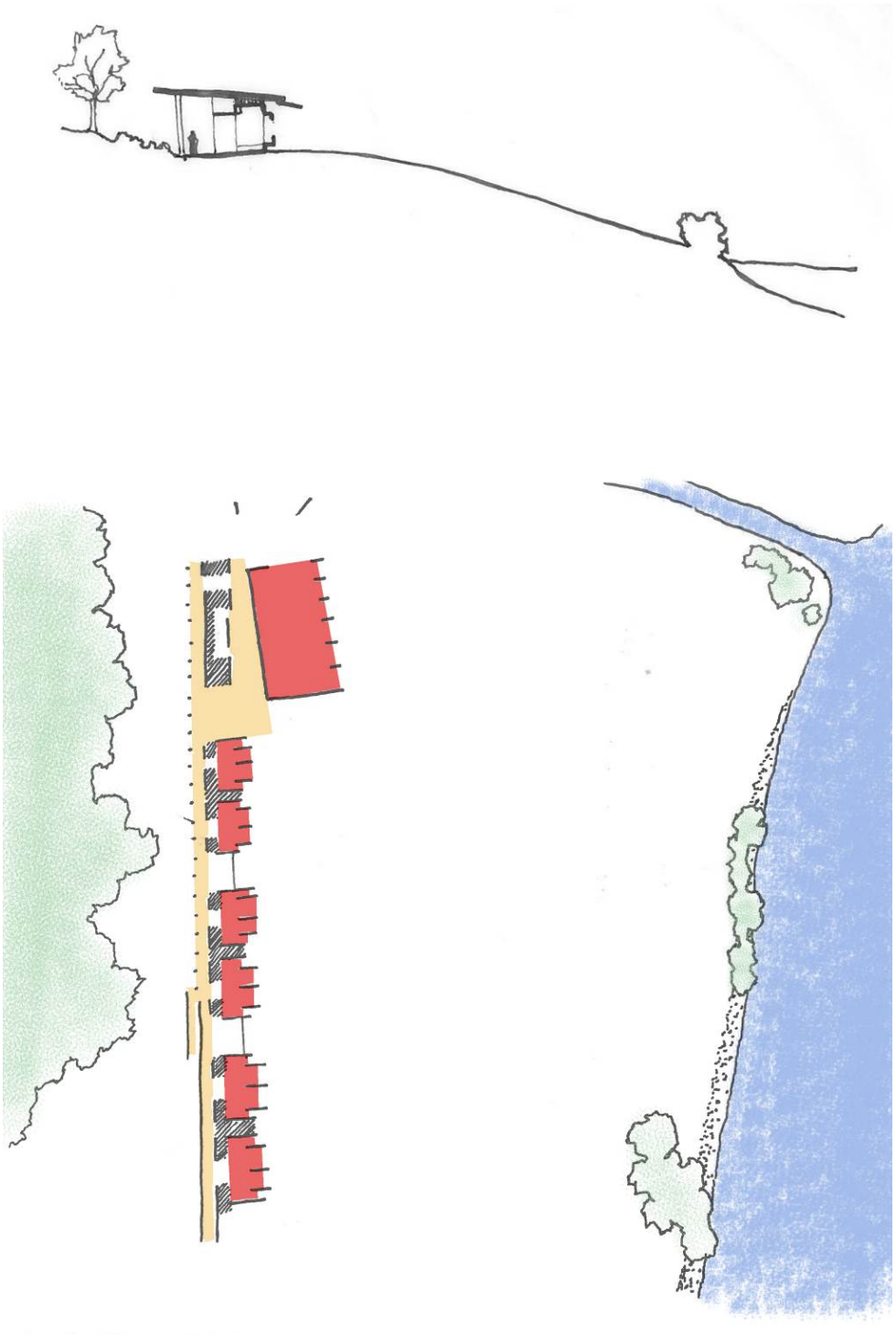

Figure 33: Arthur & Yvonne Boyd Plan/Section Circulation Nodes
Image by Author

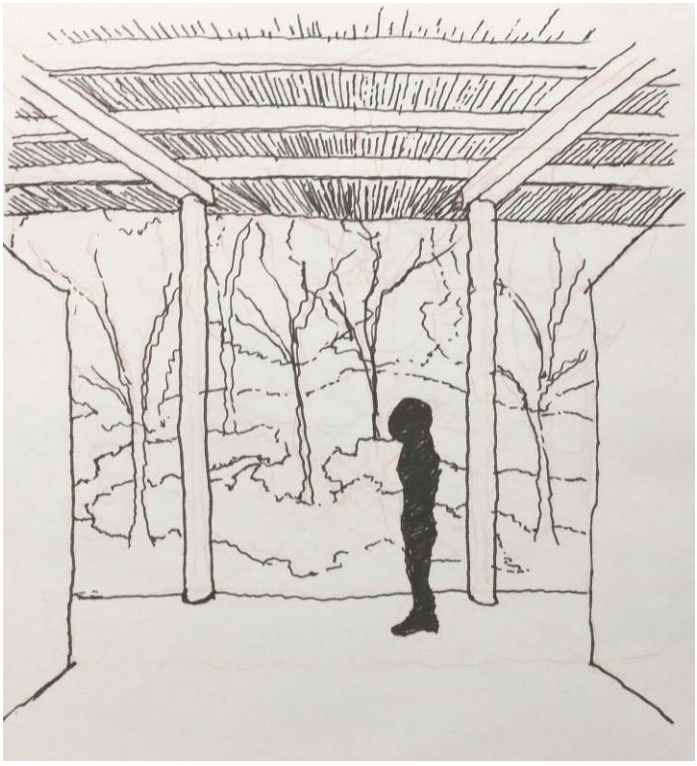

Figure 34: Sketch of Circulation and Forestry
Image by Author

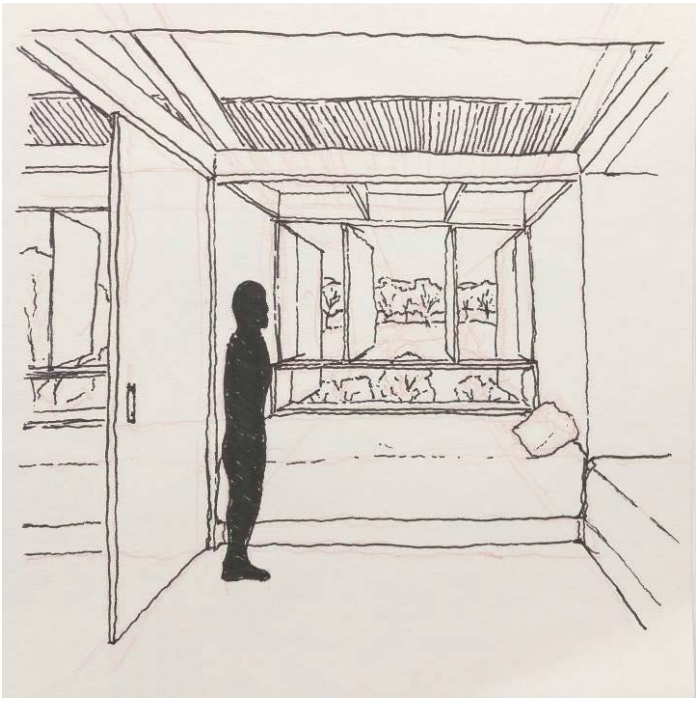

Figure 35: Sketch of Living Quarters and Shoalhaven River
Image by Author

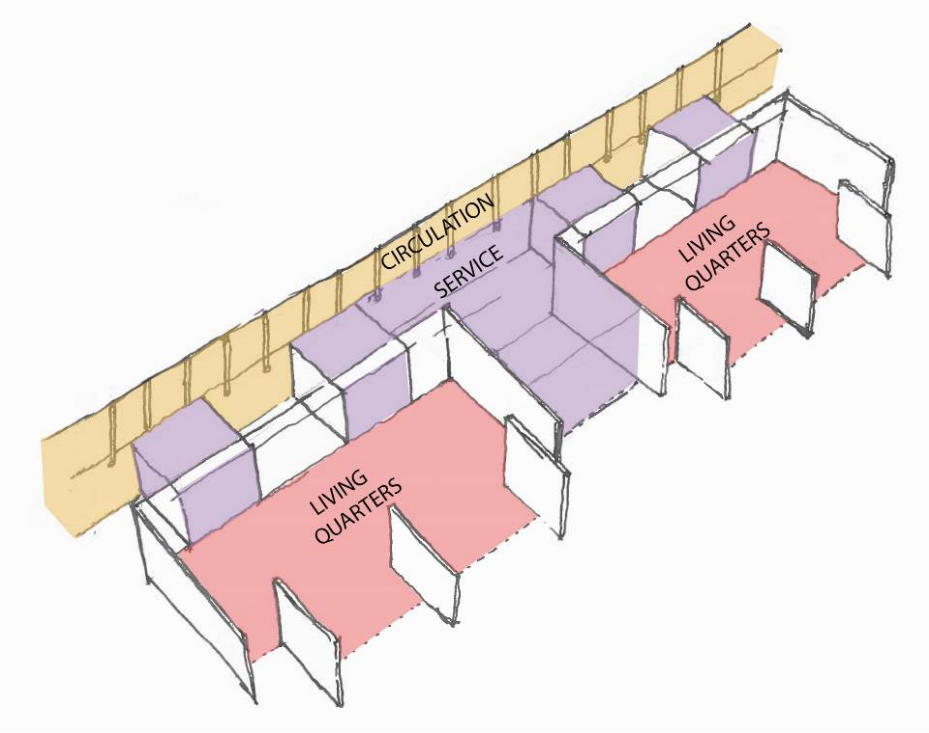

Figure 36: Program Analysis of Arthur & Yvonne Boyd
Image by Author

The program here is based on sheltering little from the natural environment. The sleeping quarters and showers are shielded for privacy reasons as well as protection from the wildlife. The service bar is parceled out sporadically to allow for users to engage in a distanced connection to nature as well as an immediate tangible connection without skipping a beat in the procession. The simplistic function of living quarters, service and circulation create the necessity to observe from shelter and experience from action. To further the connection to the Shoalhaven River beyond a sense of voyership, some of the beds hang outside of the structure, creeping into the natural realm. This creates a sense of responsibility for the user over the way that they experience the space by allowing the natural climate to intermingle with interior space.

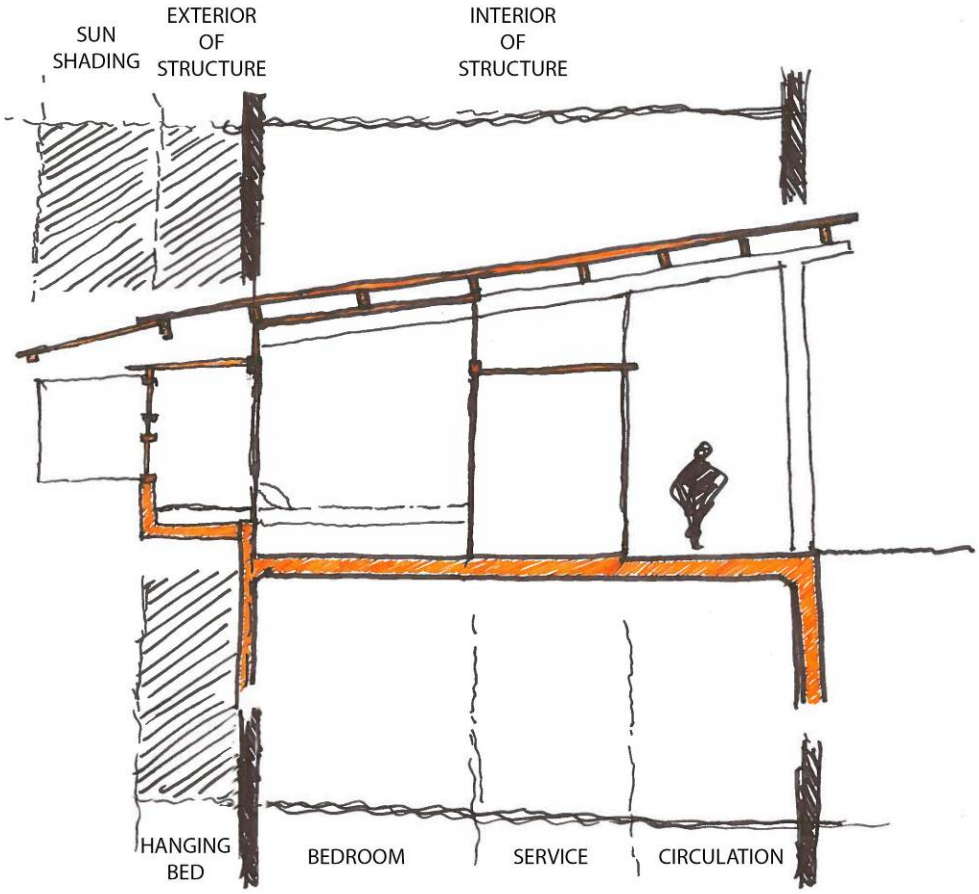

Figure 37: Section of Living Quarters
Image by Author

The roof is a key element in expressing the way the special sequence flows through the building and how natural elements engaged with it. The floating nature of the roof allows for the building to open up and allow for natural ventilation to influence an occupant's experience. It also creates the appearance of the roof being the main shelter from natural elements. As the metal roof also enhances the sounds of the natural environment, such as wind and rain, it collects rainwater for use in the building. The folds that allow for a water catchment portion of the roof also emphasizes zones of compression and release. These areas express direct engagement

with the environment, where the structure of the building opens up to allow occupants to move into the environment (Figure 38).

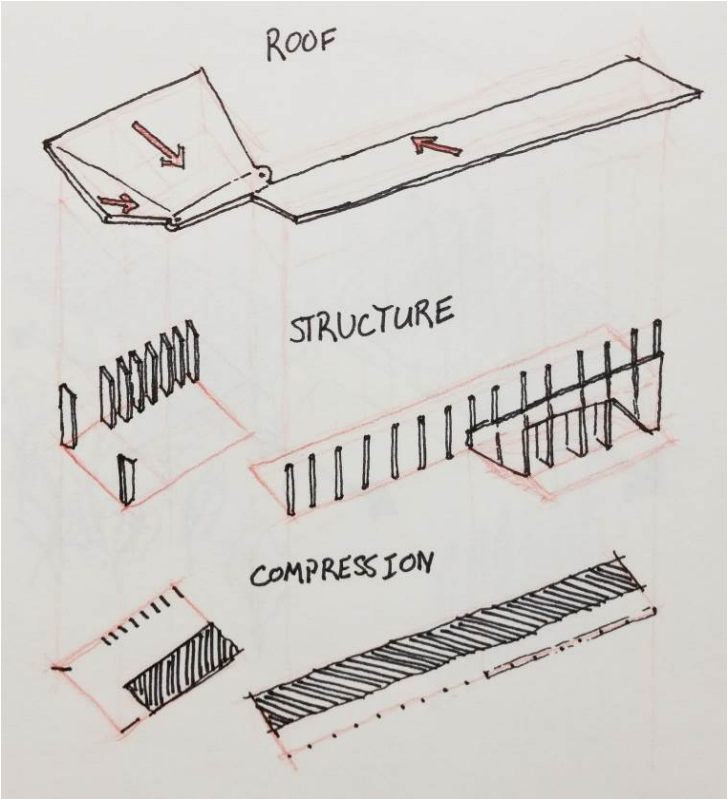

Figure 38: Arthur & Yvonne Boyd Compression Analysis
Image by Author

Highline, Diller Scofidio + Renfro

Figure 39: Highline in New York City
Image by Cristina Bejarano[25]

The Highline in New York City is an adaptive reuse project of a derelict rail line that was reinvigorated by the conversion to an elevated path. Incorporating aspects of the natural environment with the dense urban setting of the city places the architecture between these two realms. The repurposing of the revitalized rail line celebrates nature's ability to be re-injected into the city, blending natural and urban experiences. Residing above the street and under the urban canopy, the path permits a removed human experience from the aspects of city life that are dependent on a

[25] "Highline," Cristina Bejarano & Flickr, last modified September 8, 2009, accessed January 15, 2016, https://www.flickr.com/photos/cristinabe/3902089357/in/album-72157623465567495/

ground plain. The removal of the pedestrian path from the regulated city movements that occur at street level allow the path a flow rate that is dictated by the occupant.

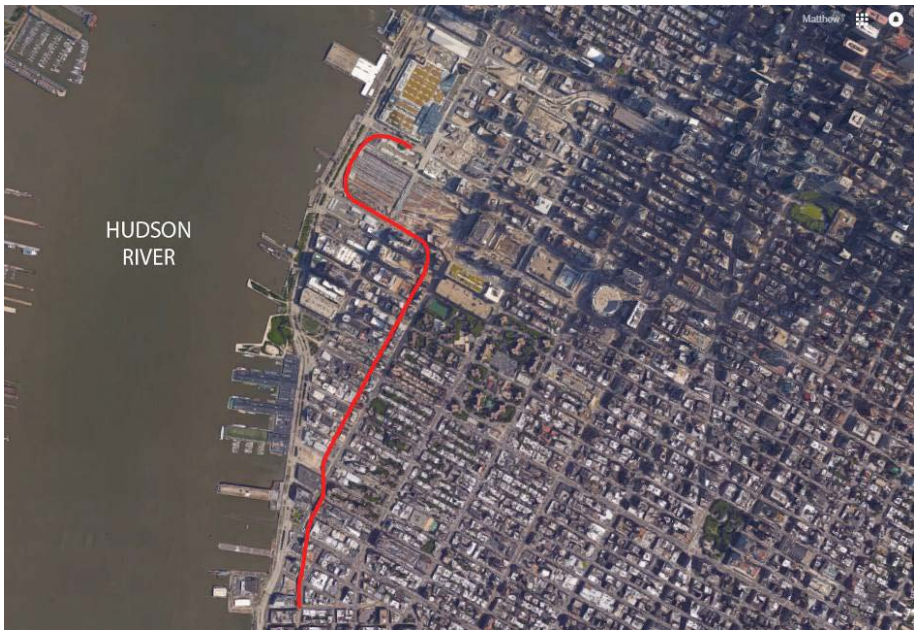

Figure 40: Highline Aerial
Image from Google (Edited by Author)

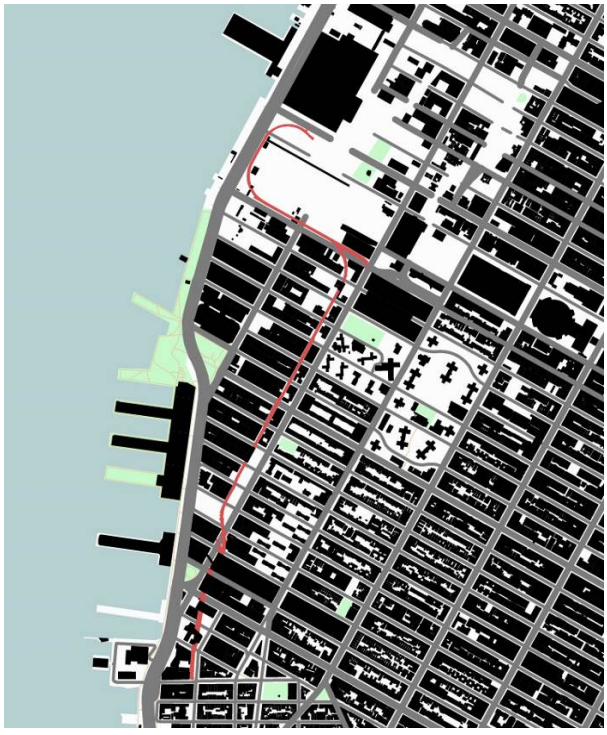

Figure 41: Figure Ground of Highline
Image by Author

The planting beds of the Highline allow for a diverse setting where experiences occur underneath, above, and among natural elements. These connections use nature to define space, fields of vision, and express how the occupants understand a connection with nature. Moving through, over, or under objects have profoundly different impressions on human experiences. Feelings of overwhelming, and compression can be opposed to emotional states that derive from affinity and duality. Giving nature the power of how space is experientially defined links nature and human experience.

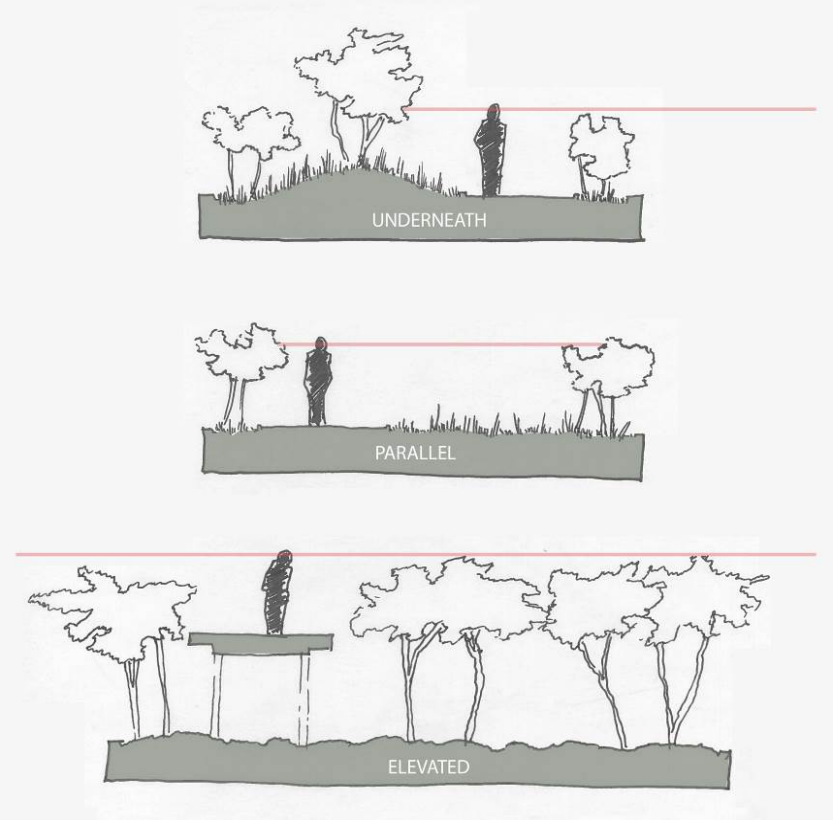

Figure 42: Visual Space Directed By Natural Edge
Image by Author

This play between nature and experience is paralleled with how the Highline interacts with the monolithic urban fabric, moving through, under, and around buildings. What the Highline does so well is relate back to urban infrastructure and however far removed the natural experience is, there is always a link to the urban experiences happening at street level. The natural landscape is not an oasis away from the city. The gathering spaces along the path re-appropriate the walker to the city from above. The experience changes based on the how the path pierces the urban fabric, from being squeezed through two towers, to compressed underneath a building, to projecting out over the streets to align with view corridors. Interjecting natural conditions with different densities create a duality of urban and natural cohabitation. The highline detaches itself from some fundamental elements that connect back to city life, while selectively implementing elements of dense and barren natural settings. Pockets of space begin to be characterized by both nature and urbanity.

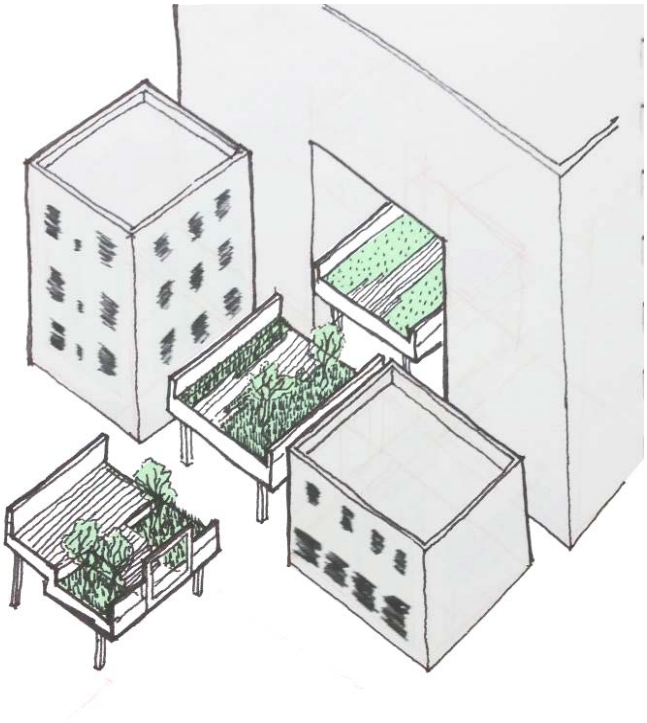

Figure 43: Highline Urban Connection Sketch
Image by Author

The integration of nature in the Highline must overcome the changes of time, as the majority of the landscape features are not meant to rigorously be manicured. Installing a diverse range of landscape typologies allows for the natural space to design itself, while maintaining enough control over the usable space of the Highline to protect the path. As a linear path the Highline connects many aspects of New York City with one continuous element, thus requiring continuity of its circulation. Many buildings in society outlive their use, and from an architectural standpoint surviving through time depends on performing functionally. Nature survives time by growing into as much space as it can support. When Natural elements grow, they can deter spatial use from an original intent. The Highline design allows the natural

environment to re-appropriate space, without eliminating use but expounding the quality of a space (Figure 46).

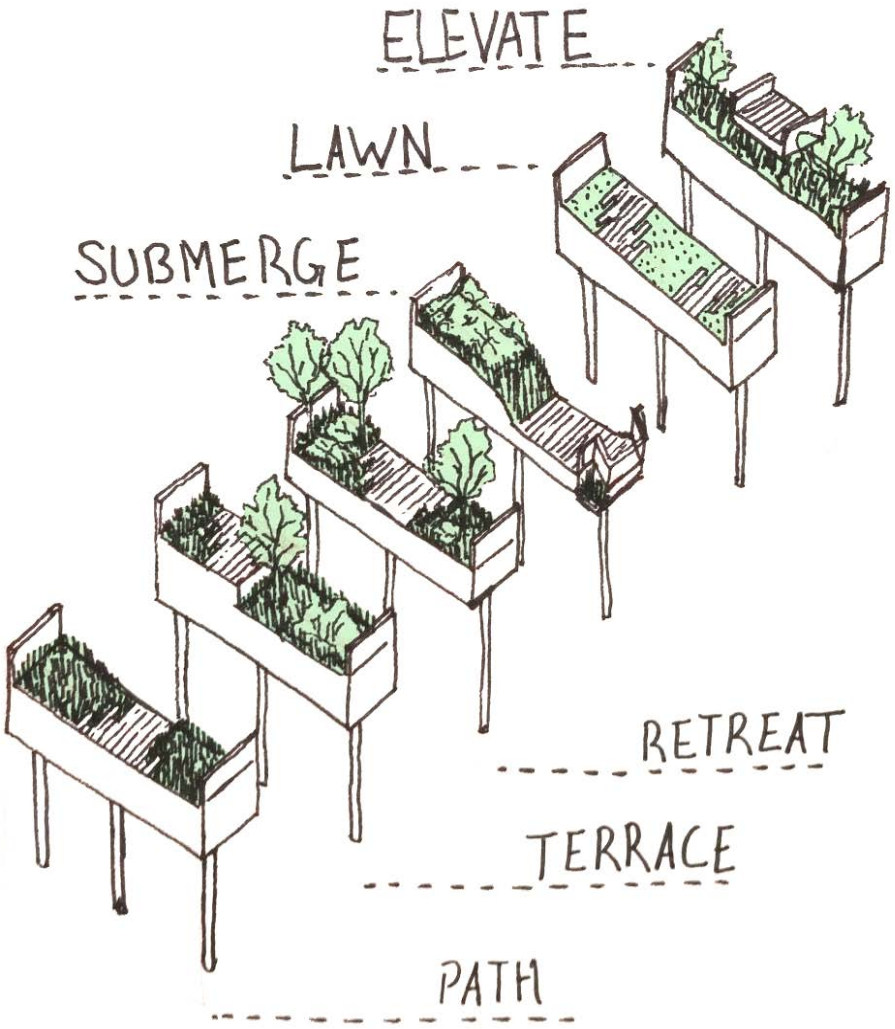

Figure 44: Highline Path Typology
Image by Author

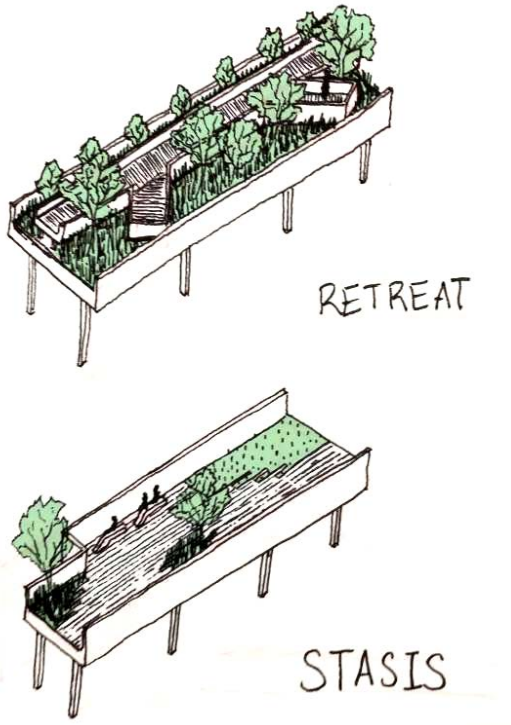

Figure 45: Areas of Retreat and Stasis
Image by Author

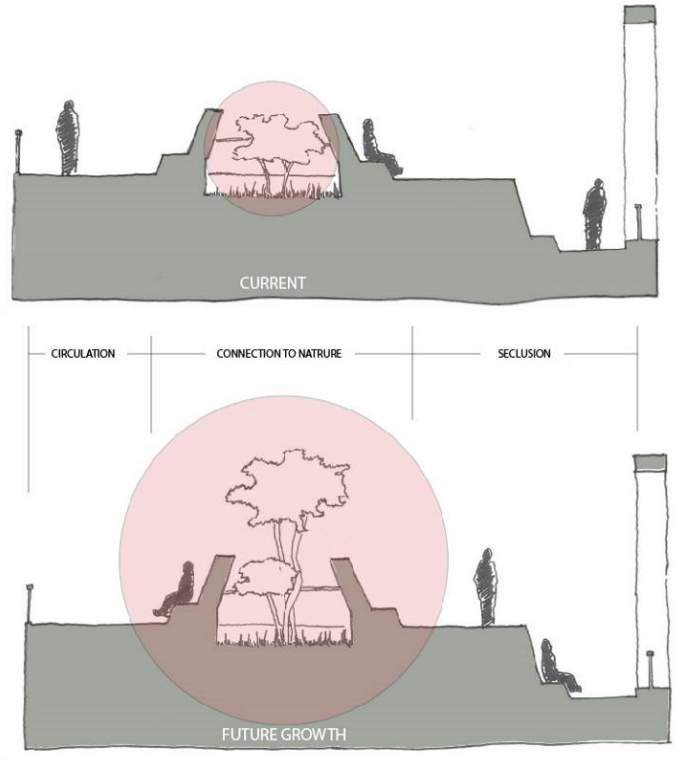

Figure 46: Natural Impact on Spatial Qualities Through Time
Image by Author

The engagement of architecture and environment does not limit itself to the imposing structures that the Highline weaves through and the natural scenery that grows from within. As the Highline separates itself from the street it also encloses the street. Defining the space as it draws back from any commitment to the urban context. This is similar to the interaction the Vasari Corridor in Florence creates by its elevated passage. Space beneath the Highline is generated by the simple definition of a ceiling plain. Comparable to the way that the urban context defines the verticality of a space (Figure 43), the Highline defines the space beneath (Figure 47).

Figure 47: Highline Producing Space Below
Image by Author

5: Analysis of Site

Washington, D.C.

Site selection was dependent on the factors of a heavy composition of the natural environment contrasted with a heavy urban fabric. The edge conditions prevalent for this selection require the ability to allow for a precession between the natural and built realms. The site must allow for interventions in an urban and natural setting as well as allowing for these multiple design interventions to begin formulating a language of how these domains can be integrated when out of place. The idea of maintaining relationships of architectural vernacular and culture on one site was important as opposed to different sites that may have opposing cultural implications. A site in a region that undergoes a changing environment through a range of seasons allows for a broad range of conditions imposed by the diversity of natural and built environments through time.

Washington D.C. is a city that has a variety of constructed natural landscapes, like the National Mall, as well as a diverse range of National Parks that preserve the integrity of what the natural environment once possessed, like Rock Creek Park. This variety of natural landscapes interacting with the urban fabric was a driving force in the selection of Washington D.C. as the region to study for the site. Washington D.C. is in a climactic region that exemplifies spring, summer, fall, and winter uniquely from each other. As well, this region has a connection to water with the Potomac and Anacostia Rivers abutted the city. These elements allow the site to be in a location

where architectural design can integrate the broadest range of features from the natural environment.

The urban context of Washington D.C. maintains a variety of urban settings that have progressed through time. The rich history presented in the historic districts, as well as the ability of the city to adapt to maintain its seat of power on a global scale creates diversity in the urban fabric that compares to that of the natural environment.

Figure 48: Natural Spaces in Washington D.C.
Google Images (Edited by Author)

Georgetown and Northwest D.C. offer a diverse connection of natural elements, from its canal system along the Potomac River to Glover Archbold Park as well as Dumbarton Oaks Park, with a historical urbanism that maintains the federalist architectural vernacular. This overlap expresses an urban and natural overlap in an area of Washington D.C. that maintains cultural consistency.

Figure 49: Natural and Historic Urban Spaces in Washington D.C.
Google Images (Edited by Author)

Site Description

Through an analysis of Georgetown the site selected contrasts the natural landscape surrounding the waterfront with the urban fabric underneath the Francis Scott Key Bridge. These counterparts revel in their fortification in a sense of place, from a secluded celebration of the natural to a sheltered urbanity confident of its own grit. The Capital Crescent Trail and the Georgetown Waterfront are disconnected by the looming presence of the Whitehurst Freeway and the Key Bridge. The link between these elements resides through a gateway under the old Aqueduct Bridge Abutment. The complex nature of this site allows for a vast range of urban and natural conditions to overlap, however allows no such overlap to occur. At the west end the Capital Crescent Trail resides as a continuation of the natural elements of the Glover-Archbold Park, a finger park of Rock Creek Park. The trail permits a retreat into a naturalistic landscape. The east end of the site commemorates the Potomac

River with the Georgetown Waterfront Park as a manicured landscape with views to Theodore Roosevelt Island.

Figure 50: Possible Design Locations, Site Diagram
Image by Author

Residing at the urban edge of Georgetown, the historic Washington Canoe Club, Potomac Boat Club and remnants of the Aqueduct Bridge are contrasted with the looming vehicular infrastructure of Route 29 and the Francis Scott Key Bridge. The Capital Crescent Trail is paralleled by the C&O Canal and Canal Road/M Street to connect the urban setting to a nearly undisturbed landscape. These work at

different elevations (Figure 51), separating the types of movement linking or disjoining urbanity and the natural environment.

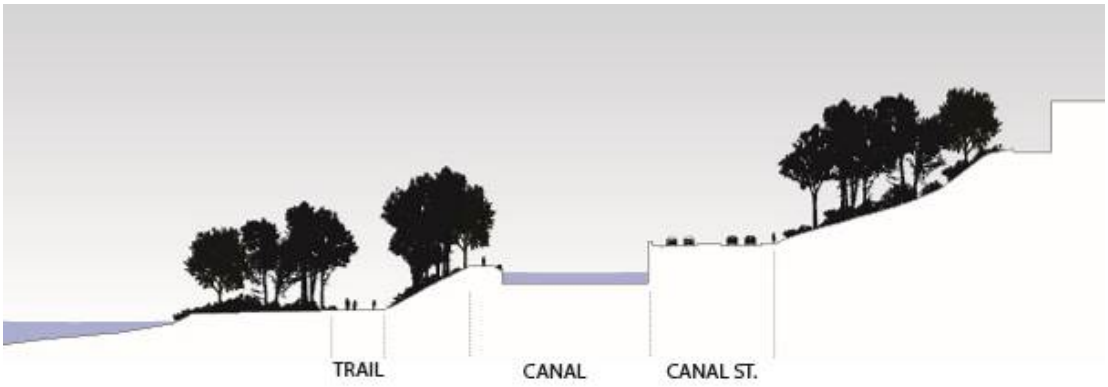

Figure 51: Site Section (Potomac River to Georgetown University)
Image by Author

Glover-Archbold Park

Glover-Archbold Park resides as a natural oasis nestled in a valley between Georgetown University and the Foxhall Village neighborhood. Inside the Glover-Archbold Park reside the remnants of a Washington & Great Falls Electric Railway trestle bridge. Other than the trestle bridge, the only other connection to urban form is a few views to the backside of Georgetown Universities McDonough Arena, and the rare scream of a jet engine descending towards Ronald Reagan Washington National Airport. Glover-Archbold Park is accessible to the Capital Crescent Trail via a tunnel under the C&O Canal. Even though the language of the natural landscape continues towards the waterfront, the trail is disconnected by Canal Road. The park creates a naturalistic environment with minimal human disruption. With mature forestry, a stream that runs through the park, and dense undergrowth the park allows for an environment where landscape maintains the ability to develop through its own

desires. This is shown in Figure 53 where the trees have grown through the trestle bridge to reclaim space from the built environment.

Figure 52: Trestle Bridge Entry to Glover-Archbold Park
Image by Author

Figure 53: Nature Reclaiming Trestle Bridge
Image by Author

The sewer lines that run underground through the Glover-Archbold Park create issues of soil contamination to the flora in the area. These pipes have outlived their maximum life expectancy. Most of the sewer lines in Georgetown are in danger of dumping into the Potomac River with a simple storm surge. The drainage basin of the Glover-Archbold Park collects from Foxhall Village to Georgetown University and runs this water, along with sewage deposits in the park stream, underneath the canal into the Potomac River.

Figure 54: Glover-Archbold Park Section (West-East)
Image by Author

The deposits of contaminants into the Potomac River are reflected along the Capital Crescent Trail as well as the Georgetown Waterfront Park. The design of some of these pipes are so old that sewage and water are deposited in the same pipe, and with an outflow backup during a storm surge, the sewage is carried into the lines which dump the water into the Potomac. The secluded character of the Glover-Archbold Park is a dominant example of naturalistic and undisturbed landscape, which will be used as a reference point for the site due to the absenteeism of unrestricted naturalistic characteristics on the rest of the site.

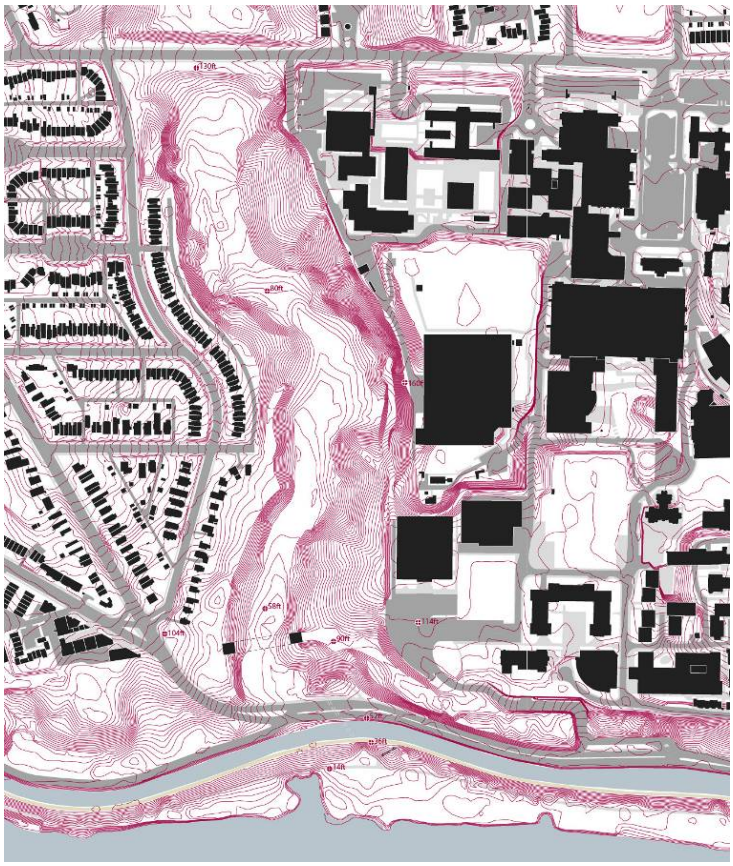

Figure 55: Glover-Archbold Park Topography
Image by Author

Figure 56: Glover-Archbold Park
Image by Author

Capital Crescent Trail

Figure 57: Capital Crescent Trail
Image by Author

The Capital Crescent Trail (CCT) is a passive recreational zone through the naturalistic landscape wedged between the Potomac River and the C&O Canal Towpath. The trail connects the natural environment extended from the Glover-Archbold Park to Georgetown's urban edge, even extending to the waterfront park. The trail is used often by walkers and bikers as a means to maintain an active lifestyle as well as a means for commuters who work in Georgetown. 11 miles of paving extend up through Bethesda, terminating the trail in Silver Spring. Reflecting landscape character of Glover-Archbold Park, forestry steps down the topography of Georgetown to mingle with the Potomac River. The CCT's passive recreation zone through the landscape follows the river's edge as it leaves the urban context peeling

away from the river's edge before reaching Glen Echo. The Trail ends its trek to Georgetown by the Washington Canoe Club (Figure 62) and the Potomac Boat Club (Figure 63), becoming expunged from the landscape as its projected from the Aqueduct Abutment into the middle of Water Street. This active path runs parallel to the C&O Canal and directly over the remnant right of way of the B&O Railway. A transition in framing elements occurs as the trail progresses on either side of the abutment, being framed by natural elements to being subdued by the urban fabric (Figure 65). A transition back to the natural landscape occurs farther down Water Street as the trail slips out from underneath the Whitehurst Freeway and connects to the Georgetown Waterfront Park (Figure 74).

The 10ft wide asphalt path allows for a bandwidth of approximately 18,455 weekly trail users of the Georgetown Trailhead in 2006.[26] The following data comes from a 2006 Capital Crescent Trail study done by the Montgomery Parks Service.

Figure 58: CC Trail Use by Location
Image by Montgomery County Park Service

[26] "Capital Crescent Trail / Georgetown Branch Trail Survey Report." Montgomery Parks. May 1, 2007. Accessed January 7, 2016. http://www.montgomeryparks.org/PPSD/ParkTrails/documents/CCTrail_Survey_2007web.pdf.

Figure 59: CC Trail vs. C&O Towpath Use Comparison
Image by Montgomery County Park Service

Figure 60: Georgetown Trailhead Weekly Use by Mode of Transportation
Image by Montgomery County Park Service

Figure 61: Georgetown Trailhead Hourly Use
Image by Montgomery County Park Service

The Capital Crescent Trail is frequented most during the week at commuter hours, and on weekends throughout the day as a recreational excursion or connection of residential sites to the commercial and business entities of Washington D.C. The dominant mode of transportation is bicyclists, with a large amount of traffic occupying the trail as opposed to the Canal Towpath.

Figure 62: Washington Canoe Club
Image by Author

The Washington Canoe Club is the first building experienced as the trail approaches the Aqueduct Abutment. Residing along the Potomac River, the trail passes this derelict looking historic building that has been condemned by the District of Columbia. In 1904, a few canoe enthusiasts branching out form the Potomac Boat Club enlisted architect Georges P. Hales to design a shingle style architecture that would house locker rooms, boat storage, and a ballroom. With the help of the 100 members, the construction of the building was built entirely with repurposed wood.[27] Over the years, floods and the freeze thaw cycle of the seasons has detrimentally destabilized the building. Being condemned and currently owned by the Parks Service, the dock and makeshift outdoor storage areas are the only operational parts of the design used by its members. The Canoe Club is proud of its open water sports and its continuing contribution to the US Olympic team.[28] With a rich history and continued use the intent is to refurbish the historic building and not relocate the Washington Canoe Club.

[27] "The History of the Club." Washington Canoe Club, last modified 2016. Accessed January 7, 2016. http://www.washingtoncanoeclub.org/CMSMS/index.php?page=club-history.
[28] Washington Canoe Club "The History of the Club."

Figure 63: Potomac Boat Club
Image by Author

Founded in 1869 the historic Potomac Boat Club is the oldest rowing club established in Washington D.C. The last building of the urban fabric underneath the Francis Scott Key Bridge before embarking through the Aqueduct Abutment into nature. The club represents 300 members from all sorts of backgrounds from recreational to Olympic users. Maintaining a few competitions throughout the year including the Head of the Potomac race, the boat club maintains relationships with a few Virginia High Schools whose student athletes train out of. Farther down the river by Rock Creek tributary is the Thompson Boat Center which is home too much of D.C.'s rowing community including high school and college crew teams. Residing right next to the Aqueduct Abutment, the facility maintains a small dock and implements excess storage underneath the abutment.[29]

[29] "Potomac Boat Club History." Potomac Boat Club. Accessed January 7, 2016. http://www.potomacboatclub.org/about/.

Aqueduct Abutment Bridge

The abutment of the old Aqueduct Bridge stands as an ode to the history and character that developed Georgetown. The overlap of the C&O Canal bridging to Virginia and the B&O Railroad connecting to Washington D.C. As a remnant of these systems, today the abutment stands as a symbol of the edge between the urban character and the natural character of the CCT. The path through the abutment generate a portal that transports occupants between urban fabric and a natural setting.

Figure 64: Aqueduct Abutment
Image by Author

Figure 65: Views to Water St. and Capital Crescent Trail from Abutment
Image by Author

The structures on each side of the abutment are both boat houses that engage with the Potomac River. As the character of the trail is terminated at the abutment and the character of Water St. begins, the waterfront character is seamless. With a large boating culture and minimal space for storage, the abutment has become a place for the Potomac Boat Club to store its excess rowing shells.

Figure 66: Aqueduct Abutment as Storage
Image by Author

Dominating the scenery the vastness of the Potomac River is easily viewed from on top of the abutment. The portrayal of water as a continued axes from the abutment is abruptly ended due to the topography. As the portal beneath runs parallel to the river's edge, the only access to the vantage point is from the canal towpath. The perspective back to Georgetown is limited by the sunken character. Descending into the abutment detaches one from the city but places the observer above the Potomac River at a point of observation with limited interaction even as the abutment projects into the river's edge.

Figure 67: Abutment View of Potomac River
Image by Author

Figure 68: Abutment View to Georgetown
Image by Author

Water Street

Water Street consists of the residual drive underneath the Whitehurst Freeway that connects the Georgetown waterfront district from the Abutment across Rock Creek to plug into downtown Washington D.C. Water Street competes with topography as everything underneath the Whitehurst Freeway struggles to open up to the site, while everything that rises above the fault line projects views toward the Potomac. Accessibility to an elevated perspective of the river emanates from M Street, while Water Street tends to recede from the water's edge.

Figure 69: Water Street View Towards Key Bridge
Image by Author

The urban features of Water Street hold a dense fabric that is tied into the topography as the Whitehurst Freeway acts as a belt. Much of this area maintains the historic brick industrial vernacular that comes from the historic character of M Street. (Figure 70) The character of these buildings express a relation to the different environmental conditions that occur above and below the freeway. The sloping

topography of Georgetown creates the arteries of access to the waterfront along Wisconsin Avenue, activating the east portion of the Waterfront Park. These connections fall away as the freeway approaches the Francis Scott Key Bridge.

Figure 70: Industrial Character Along Water Street
Image by Author

With ambiguity of how the CCT connects along Water Street there is a bike share to hint at a connection of the active path. However it is so far removed from the trail that it would seem to imply use in away from the trail and towards the city.

Underneath the FSK Bridge the architectural language and character are diminished allowing infrastructure to detach the Georgetown Waterfront Park and the Capital Crescent Trail, as well as the city edge along Water Street from the Potomac River.

Figure 71: Parking lot along Water Street (From FSK Bridge)
Image by Author

Figure 72: Water Street under FSK Bridge
Image by Author

Georgetown Waterfront Park

Figure 73: Photo of Georgetown Waterfront Park
Image by Author

Designed landscapes project over the Potomac River, terraces recede from pedestrian access, and lawns rise and fall over an undulating topography. The Georgetown Waterfront Park engages the natural setting in an expression of diverse landscape typologies. As the park allows for retreat, stasis, and action it engages many users simultaneously, while remaining disconnected from the places these users are coming from. The axes of access between M Street and the park allow a visual extension to the river to draw individuals into the park, however these are afforded the hierarchy to disconnect the continuity of the park running parallel to the river's edge (Figure 74).

Figure 74: West Edge of Georgetown Waterfront Park
Image by Author

Similar to the Glover-Archbold Park, runoff from Georgetown and M Street create an issues for the Potomac River. While the hardscaped pedestrian connections draw pedestrians to the river, they also create avenues for water runoff spurred towards the Potomac. The wetlands that are implemented throughout the park mitigate water runoff in the depressions of the undulating lawn. This typology creates areas of dense undergrowth that slow and hold water.

Figure 75: Georgetown Waterfront Park Wetland Typology
Image by Author

With projections of space out over the waterfront as well as terraces to bring users to the water's edge, visual and physical interaction occur. Observation over the river occurs, but physical interaction is maintained as the forested edge of the park bounds these projections compounding the atmosphere of projection.

Figure 76: Georgetown Waterfront Park River Observation
Image by Author

As the park proceeds towards development on the Potomac side of the Whitehurst Freeway, engagement with the water becomes more than an acceptance of the edge, but an engagement to move into the river. A dock along the commercial waterfront engages a wider variety of users, allowing boaters to moor themselves and engage with the architecture. As the park maintains mostly lawns and simple groves of trees, view corridors are left open and dense growth paralleled to the river's edge frame perspectives of Roosevelt Island and the Potomac.

Figure 77: Dock along Commercial District of Georgetown Waterfront
Image by Author

The incorporation of small plazas occur intermittently in the park to engage users with elements of water yet remain apart from the grand engagement of the Potomac River. Reflecting on similar elements while disengaging from the edge draws the connection to the river deeper into the park with a common materiality and common implementation of natural elements.

Site History

Georgetown was originally formed in 1751 when the Maryland Assembly authorized a town on the Potomac River.[30] Similar to most towns established around this time Georgetown originally flourished as a shipping center which focused around the Potomac River. 40 years later the change of the Nation's Capital to Washington D.C. changed the fabric of Georgetown by drawing people away from the waterfront and creating a social center along M Street. This new commerce hub was the gateway to the Capitol from the west and created a social and political center for politicians. In 1871 Georgetown was consolidated into the District of Columbia. After the depression Georgetown was devastated by its loss of the water trade, being made obsolete by the introduction of the railroad. This created a development plan that focused on industrial means trying to revitalize the economy, the Foxhall Foundry was in service from 1803 till 1854. In the late 1930's Georgetown started to prosper once again turning things around, where today it is one of the most affluent regions in Washington D.C.

[30] "Washington, DC List of Sites." United States National Parks Service. Accessed November 23, 2015. http://www.nps.gov/nr/travel/wash/sitelist.htm.

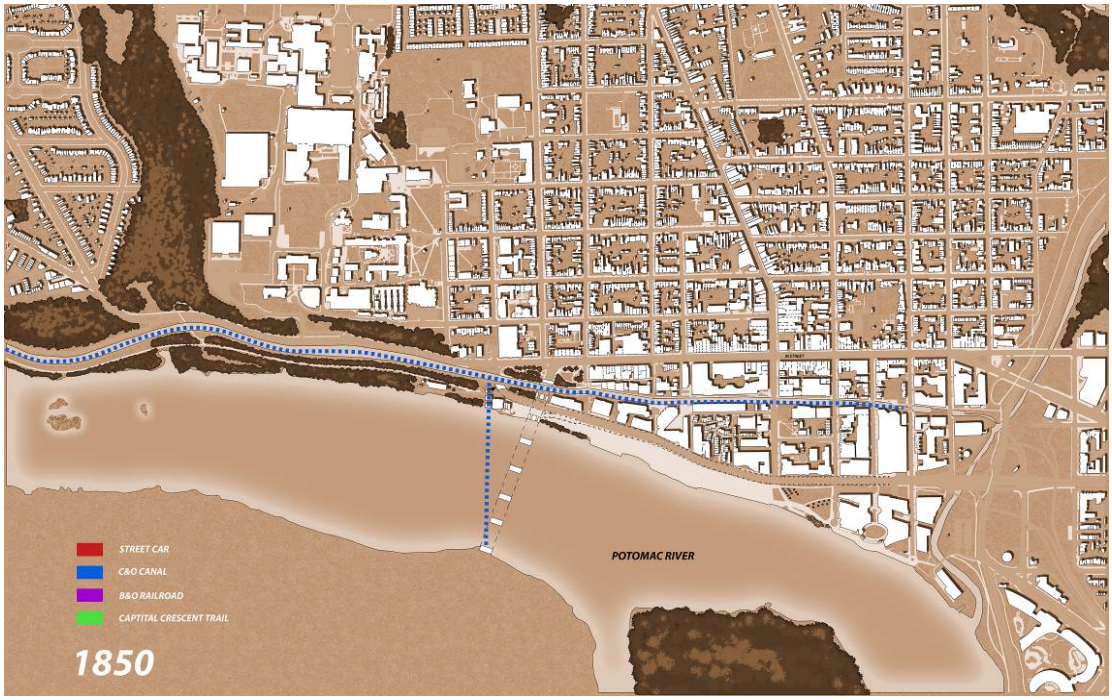

Figure 78: Georgetown 1850
Image by Author

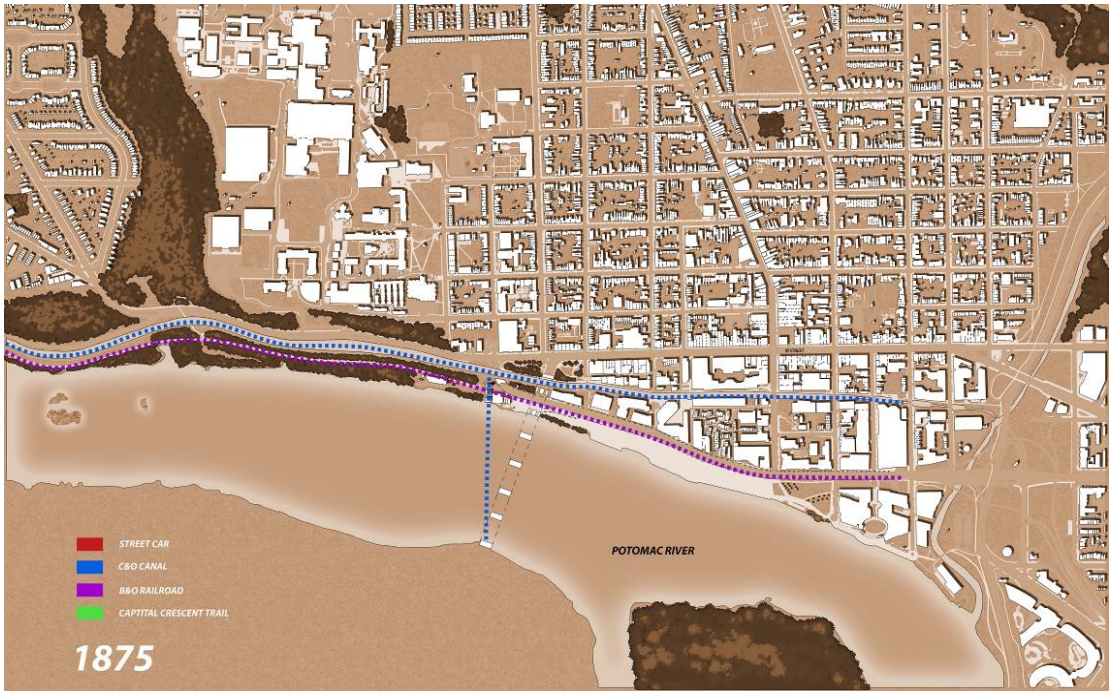

Figure 79: Georgetown 1875
Image by Author

The 185 mile C&O Canal created in 1825 allowed trade to extend farther west to the Ohio River, allowing Georgetown to act as a terminus port.[31] The presence of the B&O Railroad in 1870 created competition with the Canal and began to create industrial development away from the waterways.[32] Floods damaged the Canal over the years and eventually permanently ending its use in 1924 where it was sold to the railway. The Aqueduct Bridge that connected trade from Georgetown across the Potomac River to Rosslyn Virginia was demolished in the 1920's, leaving the abutment as the only evidence it existed.[33] A struggling B &O Railway sold the canal to the US Government in 1938. In 1985 the railway stopped running, shortly after, initiatives were made to transform the old railway into what is today the Capital Crescent Trail.[34] The trail consists of an 11mile pedestrian path connecting Georgetown to Silver Spring MD. In 1996 the rail lines were removed and paved.

Street car access through Washington D.C. opened in 1895. The corner of Prospect Street and 36th Street in Georgetown was the terminus of the line connecting Cabin John to Washington, D.C. In 1902 the Washington Rail & Electric Company took ownership and continued to run up until the 1960's. The remaining evidence of this rail line consists of an abandoned trestle bridge that marks the entry into Glover-Archbold Park as well as a few tracks close to Foxhall Road and the park.[35]

---

[31] United States National Parks Service, "Washington, DC List of Sites."
[32] "Profile of the Capital Crescent Trail." Profile of the Capital Crescent Trail. Accessed November 23, 2015. http://www.cctrail.org/CCT_General_Info.htm.
[33] "Aqueduct Bridge Abutment." DCinruins. December 2, 2013. Accessed November 23, 2015. https://dcinruins.wordpress.com/aqueduct-bridge-abutment/.
[34] Profile of the Capital Crescent Trail, "Profile of the Capital Crescent Trail."
[35] Tom "Abandoned Washington and Great Falls Railroad." Urban Ghosts. May 3, 2010. Accessed November 23, 2015. http://www.urbanghostsmedia.com/2010/05/surbexing-dc-abandoned-washington-and-great-falls-electric-railroad/.

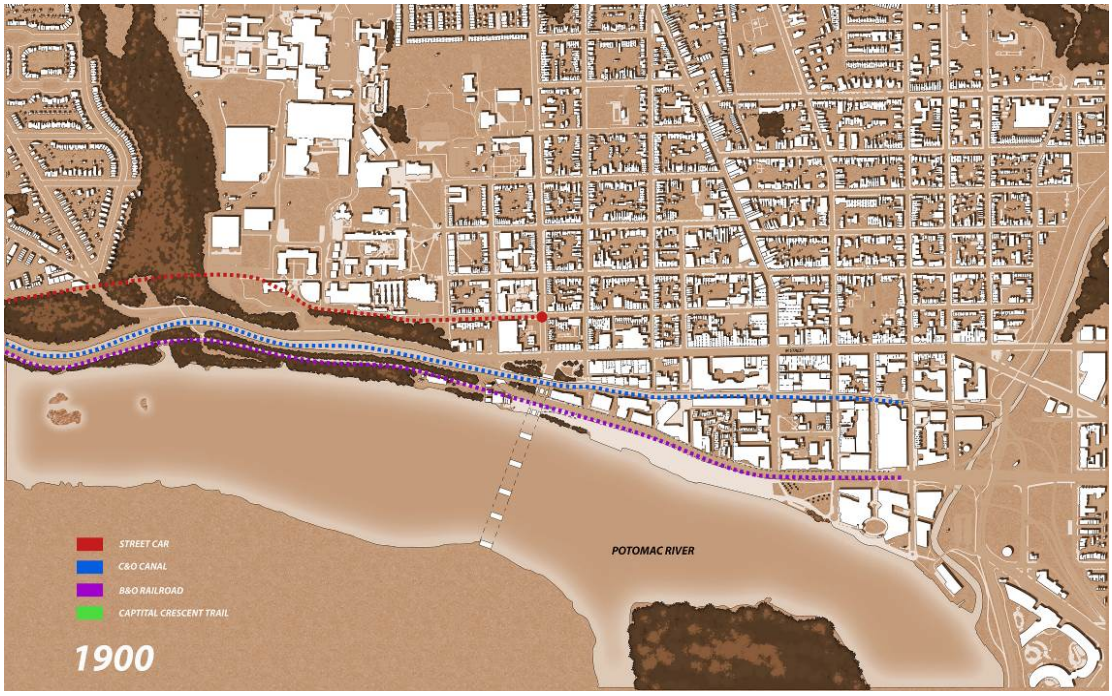

Figure 80: Georgetown 1900
Image by Author

Glover-Archbold Park was donated to Washington D.C. in 1942.[36] The park was initially meant to function as a bird sanctuary, yet over the years invasive species have taken over the park, which is a finger park of Rock Creek Park. The park use to maintain streams and springs, however in the 1950's many of the springs were filled and today the majority of the water is contaminated with sewage or runoff.

[36] "Glover Archbold Park, Washington, D.C." Biodiversity Database of the Washington D.C., Area. Accessed November 23, 2015. http://biodiversity.georgetown.edu/searchfiles/infosearch.cfm?view=all&IDNumber=1520

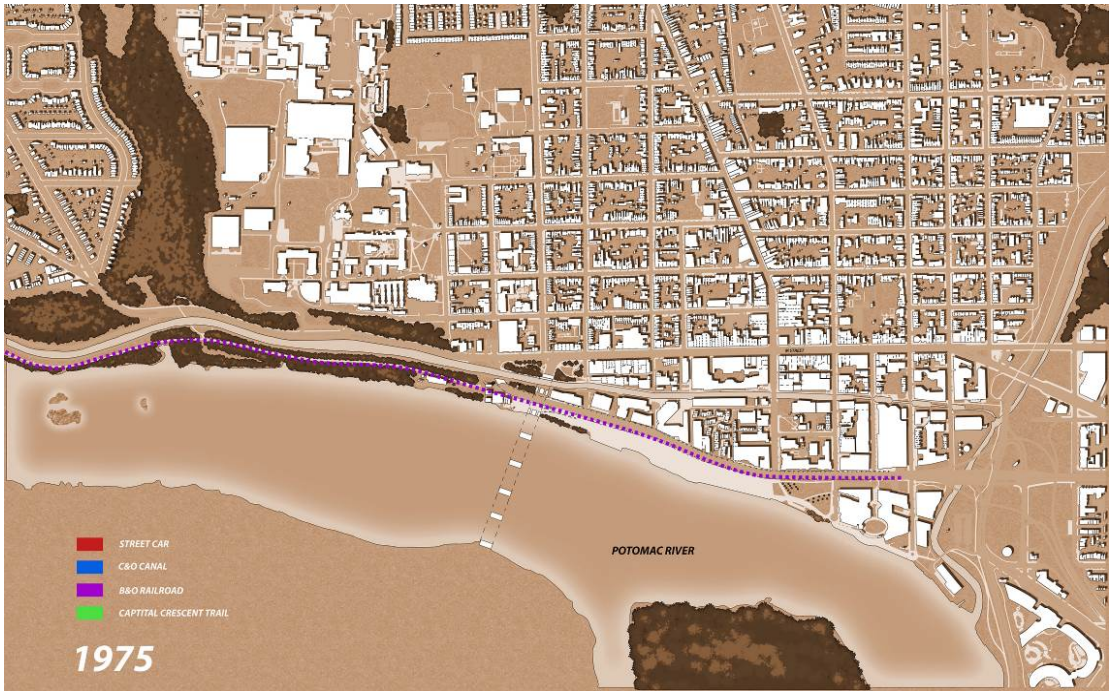

Figure 81: Georgetown 1975
Image by Author

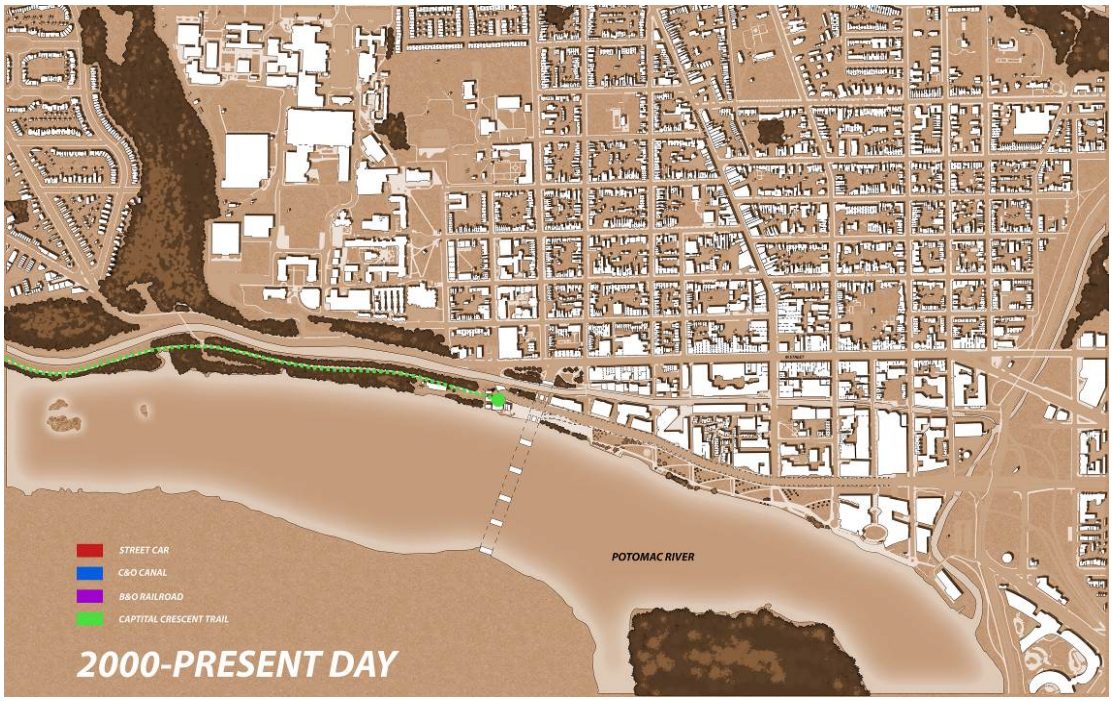

Figure 82: Georgetown 2000-Present
Image by Author

Georgetown University abuts the Park on the East side. Founded in 1789 it stands as the oldest Catholic University in America.[37] The university boundaries have their edge at the corner of Prospect and 35th Street, relating to the terminus of the right of way established by the street car.

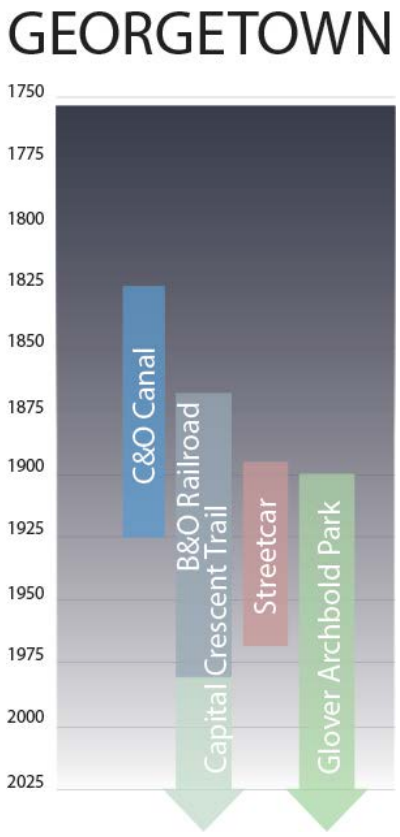

Figure 83: Historic Timeline of Georgetown
Image by Author

[37] United States National Parks Service, "Washington, DC List of Sites."

Site Survey

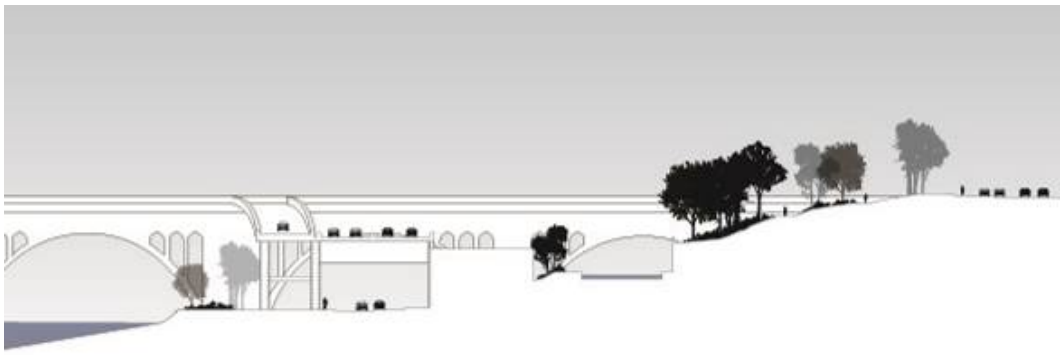

Figure 84: Water Street Section
Image by Author

Figure 85: Site Topography
Image by Author

Site Analysis

Figure 86: Georgetown Use Diagram
Image by Author

Figure 87: Circulation Diagram
Image by Author

Figure 88: Half Mile Walking Distance from Site
Image by Author

Figure 89: Access Nodes to Site
Image by Author

Figure 90: Georgetown Topography
Image by Author

Figure 91: Georgetown Flooding Diagram
Image by Author

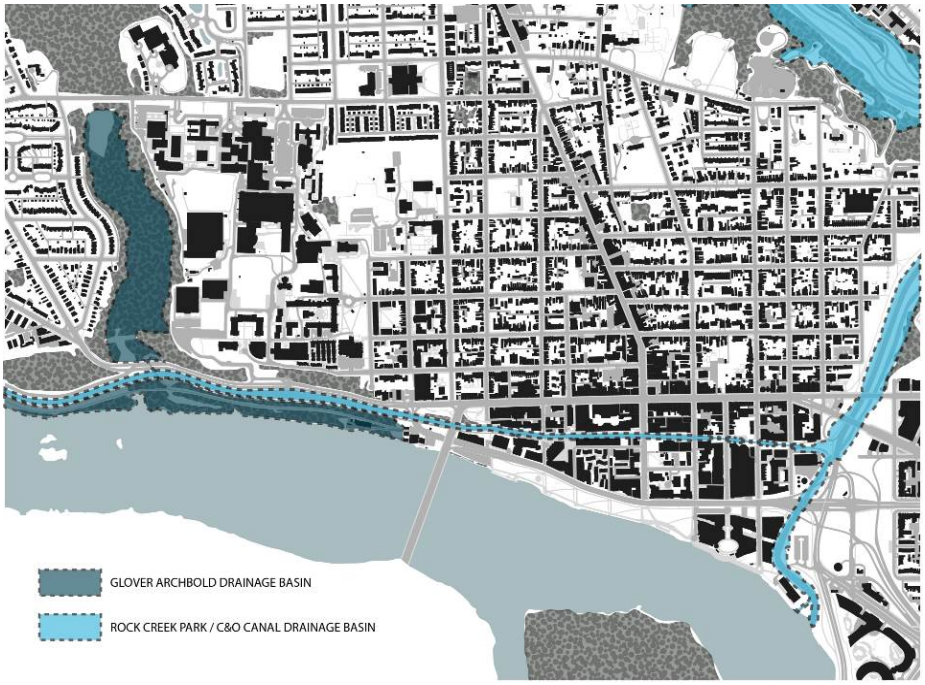

Figure 92: Drainage Basins into Potomac River
Image by Author

6: Analysis of Program

Program Objectives

In this thesis the project that will incorporate the ideas of connecting architecture to a pre-existing sense of place will be the design of a music venue along the Georgetown waterfront. There are two types of venues which express the two different approaches to a sense of place. There is the music festival which consists of a temporary folly or stage in the landscape. These are mobile spaces where the use is temporal and the place is the landscape. However, because of the temporal condition of these event spaces, the connection to the landscape is not highly valued or sanctified. The other type of venue is a dedicated space, where the permanent establishment of the venue constructs an enclosure to perform within. Dedicated space separates itself from the natural sense of place, becoming an object in the landscape. The function of this venue can be tailored to a better experience by removing the connection to the natural environment. These two venues differ in architecture from the temporary projection of experience to the permanent internalization of the experience. Creating a venue in Georgetown that resides partially on the water engages a permanence in the natural environment. This thesis incorporates dedicated space opening up to the environment and firmly existing in the sanctity of the natural place.

A connection to the natural environment is more than just opening a building to its surroundings. The natural environment must be invited to interact with the architecture. The site contains the edge of the Georgetown Waterfront Park along Water Street as well as the Capital Crescent Trail ending at the C&O Aqueduct

Abutment. To connect the two, an extension of landscape between them must be implemented. A new park uniting the passive recreation of the trail to the series of piers and greens that make up the Waterfront Park will engage the natural landscape and the music venue. With the boating and crew culture along the Potomac, the park engages the water to experience more than just spectatorship.

The close proximity of the Potomac Boat Club, Washington Canoe Club and the Key Bridge Boathouse all allow access to the water. Spatially these places take up more space than required due to a lack of storage for the boating equipment. As a launching point for bikers into the Capital Crescent Trail and boaters along the Potomac River, a storage and access hub will begin the precession from city to natural environment. As a passive recreation hub there will be little more than a ritual space to change from city life to exercise and vice versa.

Objectives:

- Engage landscape and architecture across the entire site from the Georgetown Waterfront Park to the Capital Crescent Trail to create a sense of place along the C&O canal, and Potomac River.
- Engage architecture with the natural landscape to go beyond spectatorship.
- Create dedicated space for a music venue that adjusts its function into the park to allow performance adaptions based on seasonal changes of site.

- Adapt existing boating culture to allow for better engagement into the Potomac River for public.
- Create a place to support offseason training and engagement with trail patrons year round as a ritual of changing between urban engagement and landscape.

The program of this thesis connects the disengaged natural landscape running parallel to the Georgetown waterfront, creating a sense of place that resides in the natural and built environments simultaneously. Engaging the waterfront creates an experience beyond spectatorship while allowing for recreation of the trail and the water to remain undiminished. Generating a performance space opposite of that of The Kennedy Center which sits along the waterfront as an object.

Program Summary

		Quantity	SF/Unit	Capacity	Total SF
	Music Venue				
1.01	Entry Plaza	1	600		600
1.02	Lobby	1	500		500
1.03	Will Call	1	150		150
1.04	Coat Check	1	150		150
1.05	Main Floor	1	5,500	1,100	5,500
1.06	Mix Position	1	150		150
1.07	Indoor Stage	1	1,000		1,000
1.08	Artists Room	4	150		600
1.09	Area of Refuge	4	200		800
1.10	Bar	3	300		900
1.11	Mezzanine	1	3,300	670	3,300
1.12	Kitchen	1	300		300
1.13	Outdoor Stage	1	2,500		2,500
1.14	Administrative Office	1	400		400
1.15	Talent/Booking Office	1	150		150
1.16	Outdoor Terrace Seating	1	2,000	285	2,000
1.17	Waterfront Slip Seating	1	1,000	120	1,000
					19,400
	Transitory Hub				
2.01	Boat Storage	2	1,200		2,400
2.02	Bike Storage	2	250		500
2.03	Locker Room	2	400		800
2.04	Shower Room	2	300		600
2.05	Sauna	2	150		300
2.06	Dock Access	2	200		400
					5,000
	Ancillary Services				
3.01	Production Room/Sound Engineering	1	150		150
3.02	Bar Storage	2	150		300
3.03	Venue Storage	1	200		200
3.04	Bathrooms	4	200		800
3.05	Music Storage	2	200		400
3.06	Mechanical Room	2	150		300
3.07	Circulation Hub	N/A	1,000		1,000
3.08	Circulation Venue	N/A	3,850		3,850
					7,000
	Park				
4.01	Forest Grove	1	1,500		1,500
4.02	Pier Overlook	3	500		1,500
4.03	Garden Retreat	3	500		1,500
4.04	Passive Recreation Path	1	15,000		15,000
4.05	Growing Gardens	2	2,000		4,000
4.06	Waterfront Dock	2	500		1,000
4.07	Green/Lawn	1	1,500		1,500
					26,000
	Total				**57,400**

Figure 93: Program Summary
Image by Author

Program Graphic Description

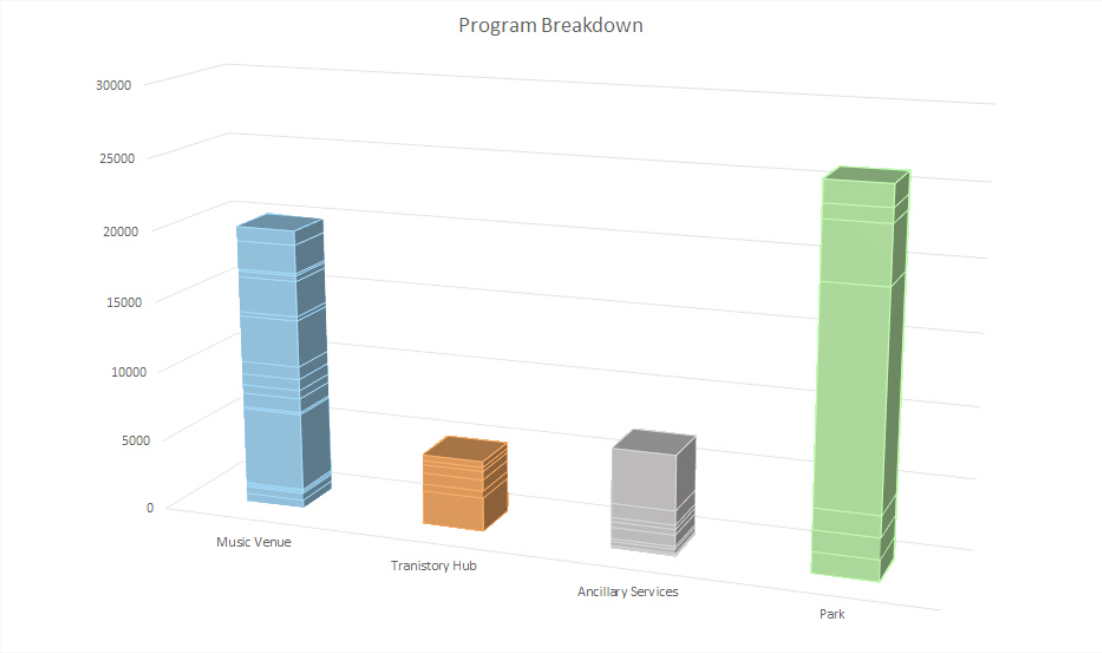

Figure 94: Program Breakdown Stacked
Image by Author

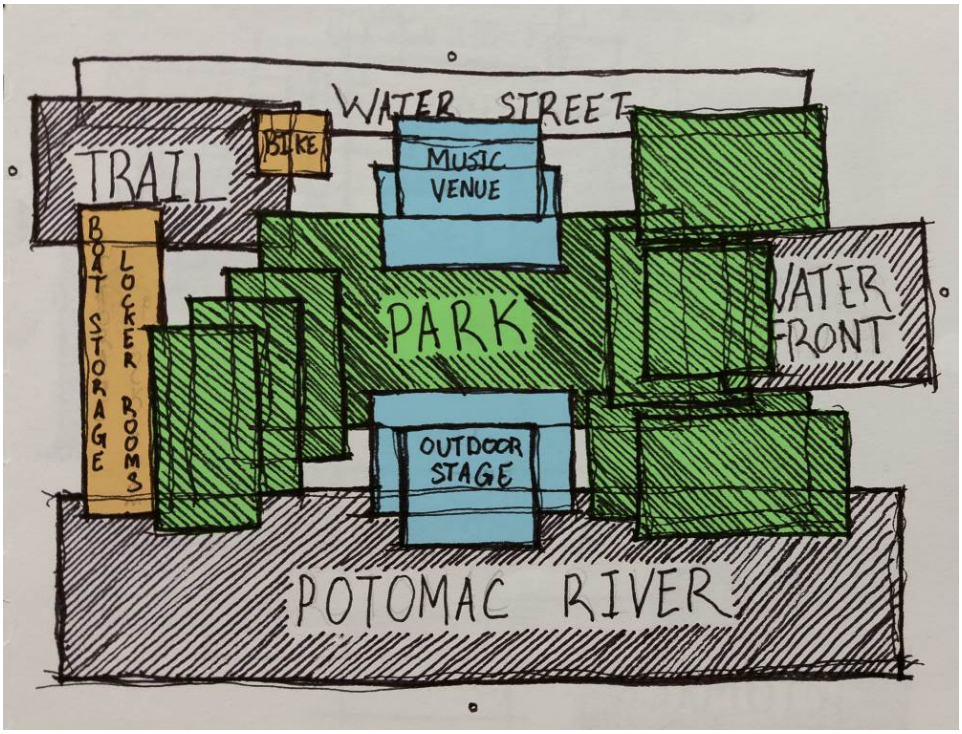

Figure 95: Park Program Relationships
Image by Author

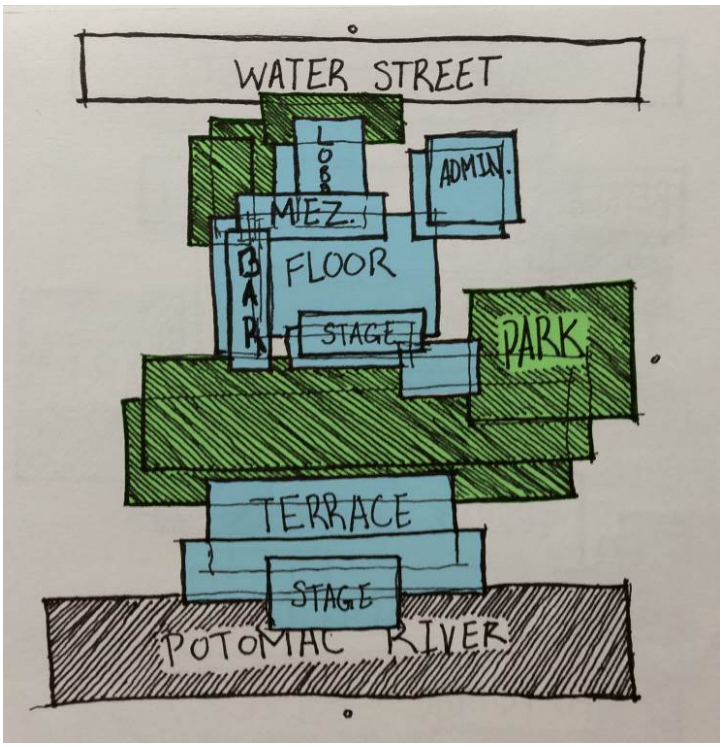

Figure 96: Music Venue Program Relationships
Image by Author

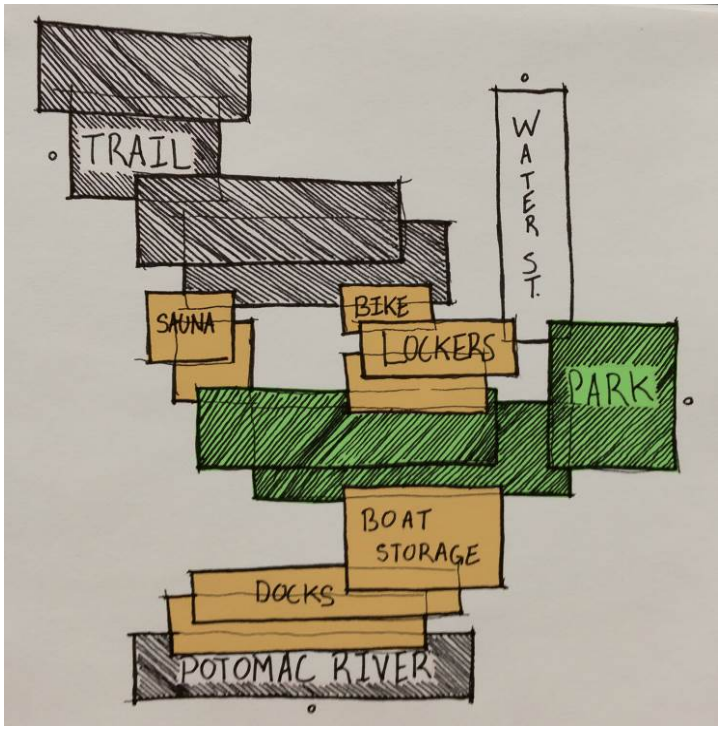

Figure 97: Transit Hub Program Relationships
Image by Author

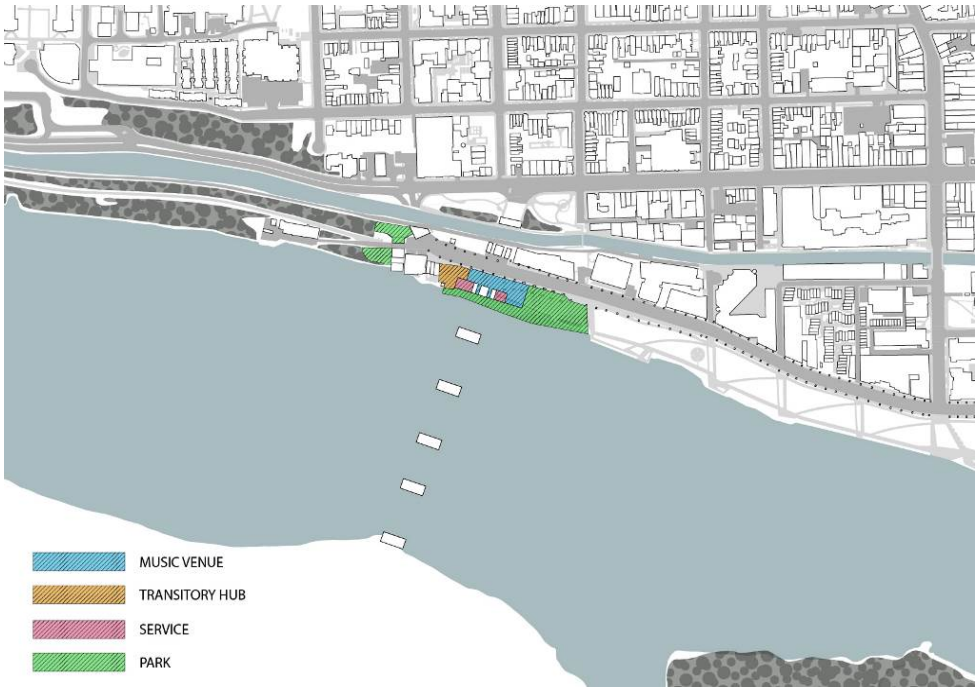

Figure 98: Potential Program Layout on Site- #1
Image by Author

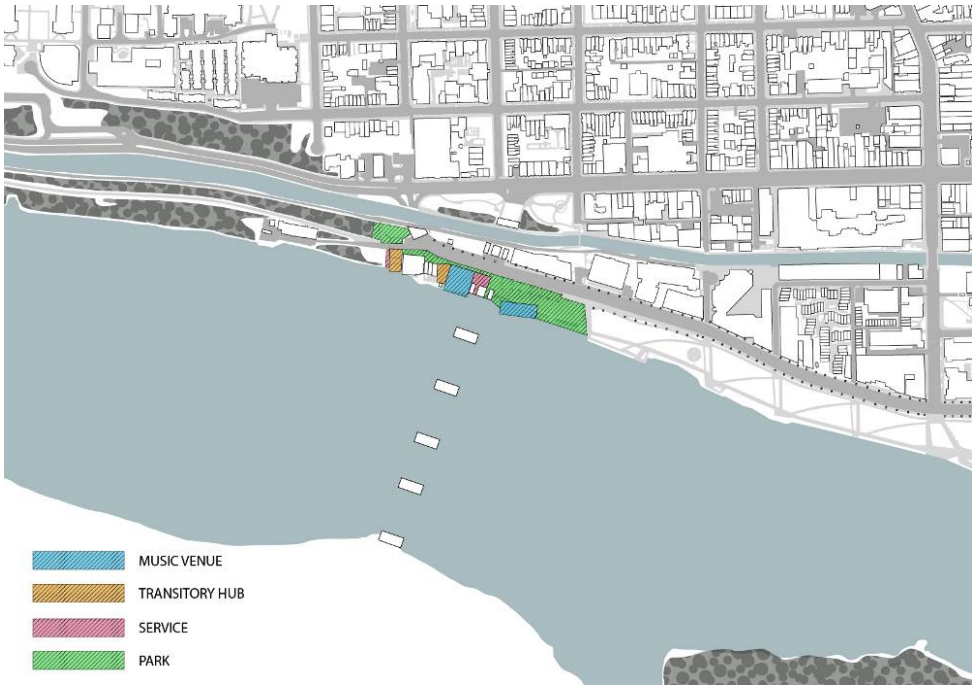

Figure 99: Potential Program Layout on Site- #2
Image by Author

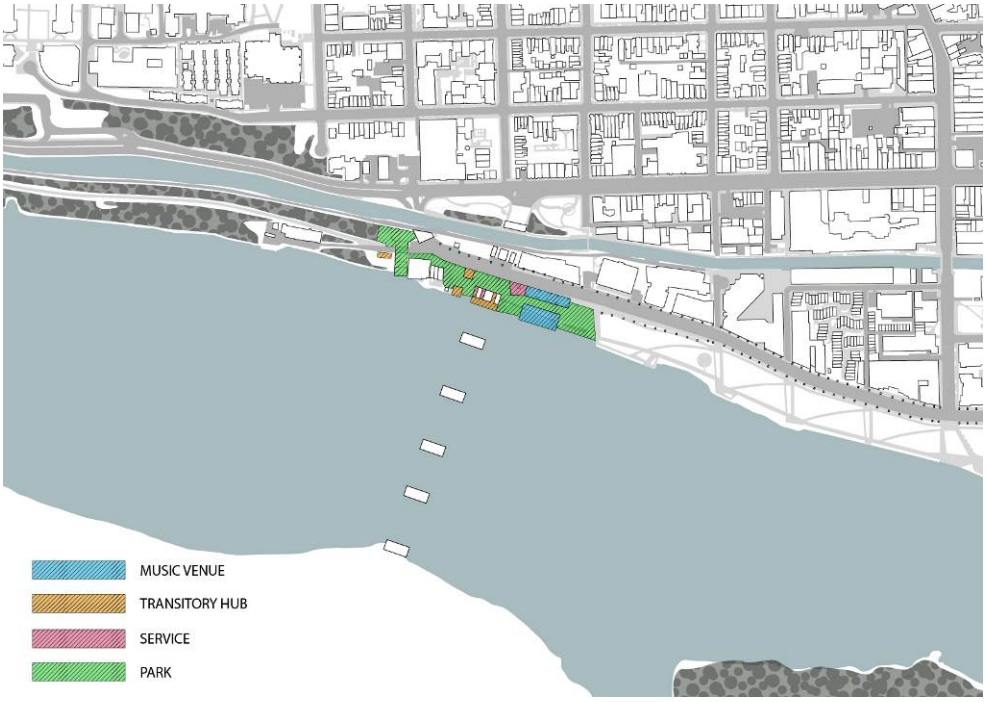

Figure 100: Potential Program Layout on Site- #3
Image by Author

Program Description

1.00 MUSIC VENUE: 20,000 ft^2

A. General Description:

This segment of the program is dedicated to accommodating musical expression in a protective environment while engaging the waterfront where the general public can experience event and environment simultaneously. Multiple stages engage the environment at different times of the year, adapting to the conditions of the waterfront. Space is sanctioned to provide food and beverage accommodations to those attending performances, as well as services. The private administrative areas are separated from the open spaces dedicated to experiencing the performance as well as those spaces ascribed to performers.

B. General Relationships:

The booking and administrative offices, as well as artists waiting areas may reside at a distance from the direct connection to the public for safety reasons. The venue will intermingle directly with the park and waterfront. The venue may fuse with the underbelly of the bridge and freeway to give a holistic sense of place.

1.01 Entry Plaza 600 ft^2

As a staged waiting space outside of the building for visitors to accumulate prior to the start of an event or the opening of the doors, the entry plaza will great patrons as well as engage the street edge. The plaza should incorporate natural elements to blur the hard edge of the street.

1.02 Lobby **500 ft^2**

Visitors will engage display space that inform patrons of upcoming performances. A connection to the entry plaza and event space will be maintained through a promenade. Services such as will call and coat check will be directly accessible from the lobby.

1.03 Will Call **150 ft^2**

As a private venue, tickets for upcoming performances will be sold to prospective patrons. The lobby will provide easy access for visitors to engage in transactions. A workspace for employees should be provided for the printing of tickets, as well as a barrier from patrons for safety.

1.04 Coat Check **150 ft^2**

The lobby will provide easy access to the coat check. Space will be designated for coats and cold weather gear to be stored. This space should provide a way of securing patrons belongings while they attend an event.

1.05 Main Floor **5,500 ft^2**

Standing room space will be provided for patrons to view the indoor stage. This space may be ascribed movable furniture depending on the performance type. The main floor will be in direct proximity to the stage and the mix positions to allow for a variety of performances and events. The services of restrooms and bar will be in close vicinity to accommodate patron's needs. The main floor may have a relation to the outside bandstand stage as well to accommodate larger performances. The main floor may directly engage with the natural environment. The capacity for the main floor is approximately 1,100 people standing room and 365 people seated with tables.

1.06 Mix Position **150 ft^2**

A DJ may perform from the mix position or house music coordinated between the sets of a performance. A table or desk should be provided with access to the stage and sound equipment. Elevated platform should be considered yet not obstructive of views to event or environment.

1.07 Indoor Stage **1,000 ft^2**

The indoor performance stage should accommodate musical equipment and lighting (both natural and artificial). A direct connection to the main floor and mezzanine level view corridors is maintained. Access from the performers' quarters should be different than the approach of patrons. There may be a continuity from the stage to the outside park as well as the outside seating area to accommodate a variety of performance types.

1.08 Artists Room **150 ft^2**

A staging area for artists to change and prepare for a performance should be furnished with a changing area and closet to store streetwear as well as a

seating area to relax before going on stage. The path between the artists' room and the indoor and outdoor stage should be diverge from that of the patrons' path or assembly spaces.

1.09 Area of Refuge **200 ft^2**

Interior and exterior spaces may be kept separate and protected from the event area for patrons to disperse or disengage from the event when required. Space for patrons to engage with each other between sets requires furnished seating. This space entails a disconnect from densely populated areas.

1.10 Bar **300 ft^2**

This area should have a sink, refrigerator, storage and countertop for employees to prepare drinks for patrons. Shelving for storing drinks on display should be visible to patrons. It should have fixed seating for patrons to engage in transactions as well as a separate counter for patrons place their drinks and eat. A cash register should be behind the bar for employees to use. There should be a direct connection to the kitchen as well as a close proximity to the main floor. There may be screen that engages the outside environment to allow patrons of the outside venue to be served.

1.11 Mezzanine **3,300 ft^2**

The mezzanine space accommodates an overlook for patrons to experience the indoor stage. A close proximity to a bar allows mezzanine visitors to grab refreshments with ease. Open circulation allows movement of patrons around the stage to change viewing perspective. A clerestory can open up to connections to the surrounding environment as well as engage with a terrace to observe the outside stage.

1.12 Kitchen **300 ft^2**

This should be accessible to staff only, containing an oven, stove dishwasher, and storage for food and utensils. Food preparation and processing happens out of view from patrons. There is a direct connection to a bar and close proximity to the main floor. The service path is separated from patrons' circulation. Shelving units are required for prepared food to be set aside before being delivered to patrons. Provide a trash room for waste and recycling to be held. There should be access to a service entrance with ventilation for the trash room.

1.13 Outdoor Stage **2,500 ft^2**

The outdoor stage and bandstand resides directly in the natural environment. The large scale stage allows for a larger show and incorporates different types of performances than the indoor stage. This stage will double as a space for the surrounding boat and canoe clubs to use for presentations as well as park gatherings. The stage will have a direct connection to the water and the park. The music venue will open up to the stage and create a continuation of space for outdoor events. The seating for the stage will be incorporated into the

park. Artists approach to the stage will be secluded from patrons' path and gathering spaces. The outdoor stage will connect allow mobile stage equipment to be attached to it. The stage will project sound to the audience through the environment as well as shield patrons from being overwhelmed by extracurricular sounds.

1.14 Administrative Offices 400 ft^2

The offices accommodate logistical functions and operational functions of the venue. Consideration to ample daylighting and efficiency of workspace should be thought out. Storage space should be implemented for staff to store belongings while they are interacting with patrons. The main entry should be accessed from the lobby and away from event space. A conference room should be used for staff meetings and consist of a table, telephone, and terminal for presentations. The administrative workstations should consist of a computer, telephone, work surface, and storage space. There should be a direct connection to the booking office. The administrative office the promotion of events, the logistics of staff functions, and day to day operations.

1.15 Talent/Booking Office 150 ft^2

This office should be in direct connection to the administrative office and will call. The booking personnel schedule which acts will be performing and figure out the logistics of the multiple stages. The workstation should consist of a computer, telephone, work surface, and storage space.

1.16 Outdoor Terrace Seating 2,000 ft^2

This space will function primarily as theatre seating for the outdoor stage as well as an area of refuge for the indoor stage. Patrons will use this space to overlook the park and waterfront. With an adaptability of the indoor and outdoor stage connection, the architect should consider the outdoor terrace seating to be an extension of the park space, with potential seating facing both stages. A direct connection with the park should be seamless and yet visually separate by landscape typology. The outdoor terrace should be considered as a green or lawn typology of landscape design. This seating should accommodate approximately 285 patrons for seating.

1.17 Waterfront Slip Seating 1,000 ft^2

With a direct connection to the waterfront of Georgetown, the indoor and outdoor stage should be considered to be viewable to water traffic. With slip space for kayaks and boats to moor themselves to experience the venue. This temporary slip space should afford the engagement of the waterfront for performances. The architect should consider some form of protection from sound due to the open nature of the water with landscape or construction.

2.00 TRANSITYORY HUB: 5,000 ft^2

A. General Description:

This segment of the program is dedicated to accommodating of passive activity that occurs along the Capital Crescent Trail and on the Potomac River. With the proximity to the Potomac Boat Club, Washington Canoe Club and the Key Bridge Boathouse there are enough launching points for activity. This space is a transition from passive activity to event. This transitory hub creates a place to store bikes, and consolidate boat storage to open up a connection to the waterfront and park. This space begins the ritual of changing from passing through the natural environment to existing in the natural environment, and prepares individuals for this change. Storage space is accompanied by changing spaces, showers and saunas to refresh individuals in the procession to and from passive and active event spaces.

B. General Relationships:

The transitory hub has direct connections to the Capital Crescent Trail, the new waterfront park and the launching docks for access to the Potomac River. There is not a requirement for the transitory hub to be in direct relationship to the music venue, however the park should pass through both spaces.

2.01 Boat Storage 1,200 ft^2

This space is used by patrons of the surrounding boat clubs and individuals who intend to launch into the Potomac River. These spaces should be able to accommodate canoes, kayaks, and boats for sculling and sweep rowing. The boat storage should have easy access to Water Street as well as to the docks. Hanging structures should be considered for efficient storage as well covered structures to protect the wear of the boats.

2.02 Bike Storage 250 ft^2

Individuals biking the waterfront and the Capital Crescent Trail should have a place to store their bikes while experiencing the Georgetown waterfront. These storage spaces should have a close relationship to the trail and Water Street access. The relationship to the locker rooms and showers should be considered as predominant.

2.03 Locker Room 400 ft^2

Individuals using the trail and river as excursions into the natural environment should have a place to safely leave their belongings. Lockers and benches should be provided for individuals to store belongings and change into street clothes.

2.04 Showers 300 ft^2

Showers for individuals preparing to return from exercise along the trail or river should be installed with stalls. The architect should consider connecting this to the outside environment to enhance the procession of ritual between the city and the type of activities occurring in the natural environment.

2.05 Sauna **150 ft^2**

The sauna should have a connection to the outside environment. The sauna will be used as a prolonged ritual between engaging the city and the activity along the trail and river. A central heating unit should be installed. The architect should consider submerging or hiding the heating unit to create a more open space, creating exterior connections instead of interior ones. A bench and a raised bench level should be installed. When the conditions of the river and the trail become too difficult for use, predominantly in the winter months, the sauna will act as the connection or activity occurring in the natural environment.

2.06 Dock Access **200 ft^2**

Access to the docks from the boat storage must occur along a path through the natural environment. A connection to the existing docks consolidates space for the natural features of the trail, river, and park to inhabit.

3.00 ANCILLARY SERVICES: **7,000 ft^2**

A. General Description:

This segment of the program is dedicated to services that accommodate the efficiency of the transitory hub as well as the music venue.

B. General Relationships:

The support of service include those in relation to patrons, staff, and equipment required for building functionality. These spaces should not have direct relationship to the event space and should be hidden from direct views from the park.

3.01 Production Room **150 ft^2**

This space resides in the music venue and should be in close proximity to the mix position and indoor stage. The users of this space are staff and sound engineers connecting to the audio instillations of the music venue. These spaces should be able to support the electrical and production requirements of a performance. There should be equipment installed to connect the mix position and indoor stage of the music venue, however this space should not be in close proximity to the main floor.

3.02 Bar Storage **150 ft^2**

A space to store the extent of the music venues food and drink capacity should be in direct relationship to the kitchen and bar. This space is not accessible to the general public. There should be a refrigerator and freezer for the storage of perishable foods. Shelving units for food and drinks should be installed as well as racks to accommodate higher value items.

3.03 Venue Storage **200 ft^2**

Storage space for movable furnishings, and janitorial closet with installed shelving should be accessible only to staff. There should be a close relationship to the main floor and bar.

3.04 Bathrooms **200 ft^2**

The W.C. should be divided into male and female facilities. The location should reside in both transitory hub as well as the music venue. The location in the transitory hub should be in direct relation to the locker rooms, while the location in the music venue should be in close proximity to the main floor and bar, it should not reside along any dominant view corridors.

3.05 Musical Storage **200 ft^2**

This space should provide easy access to the stage and should house staging equipment for a variety of performance types. This space should not be accessible to the general public.

3.06 Mechanical Room **150 ft^2**

Provide a fireproofed space for H.V.A.C. system. There should be one located in the transitory hub to accommodate the sauna as well as one in the music venue to accommodate staff and patrons.

3.07 Transitory Hub Circulation **1,000 ft^2**

Provide ample circulation between the locker rooms, sauna, and boat and bike storage. Architect should allow this path to fluctuate between building and environment.

3.08 Music Venue Circulation **3,850 ft^2**

Provide ample circulation between the indoor and outdoor stage, bars, mezzanine level. Architect should allow this path to interject with the new park as well as interact with the waterfront.

4.00 PARK: **26,000 ft^2**

A. General Description:

This segment of the program is dedicated to connecting the Capital Crescent Trail and the Georgetown Waterfront Park, while engaging the water. The park will give a sense of natural place along the water. By using a variety of landscape typologies the passive recreational path, which inhabits a natural landscape will connect to the lawn of the Waterfront Park. The procession from the trail to the Georgetown waterfront will scale in landscape typology to connect the lawn to the natural elements of the trail.

B. General Relationships:

The park connects Capital Crescent Trail to the Georgetown Waterfront Park and the Potomac River. The new park will be a continuous natural landscape that will blend with architecture and urban fabric. The existing elements of the Francis Scott Key Bridge and Whitehurst Freeway will be connected to the natural landscape, and not dominate it.

4.01 Forest Grove **1,500 ft^2**

This space will connect to the natural landscape of the Capital Crescent Trail, the grove will rely on a designed approach with a corresponding density to the density of the canopy surrounding the trail. The undergrowth should be designed along with the path that patrons of the park will experience. Consideration to minimizing noise pollution should be taken by the design.

4.02 Pier Overlook **500 ft^2**

The park should engage the water in a variety of ways. Projecting over the water places the park patrons closer to the water as well as giving places to watch the boating culture as well as observe open water canoe and crew competitions.

4.03 Garden Retreat **500 ft^2**

A secluded space from engagement with the music venue as well as waterfront will incorporate a haven for individuals or groups to engage each other. This should be have selective views to the waterfront and urban fabric while maintaining a sense of privacy for park patrons. The architect should consider a variety of ways to create privacy using topography as well as landscape typologies.

4.04 Passive Recreation Path **15,000 ft^2**

This circulation path should connect the Capital Crescent Trail to the Georgetown waterfront. Interaction with the waterfront, music venue, outdoor stage, create a procession from urban to landscape. The path should not be direct and there should be consideration to areas of refuge and display.

4.05 Growing Gardens **2,000 ft^2**

Areas of the park should be allowed to grow and change through time. Designation to areas where natural elements will adapt and change the character of the park and landscape. These spaces should not be manicured and give freedom to the flora to design its own space over time.

4.06 Waterfront Dock **500 ft^2**

The dock should allow for water activities to temporarily engage with the park as well as park patrons to engage directly with the water. Consideration to connecting to the garden retreats should be given, as the retreat gives refuge from the open water. There should be consideration of connecting the dock to the outdoor stage adding capacity to the music venue.

4.07 Green/Lawn **1,500 ft^2**

Open space should enact views of the water as well as engage the outdoor stage of the music venue as additional seating. Park patrons engage activity and exercise in a specific place as a comparison to the trail's passive recreation. Consideration of a connection to the Georgetown Waterfront Park should be paid as it is similar in landscape typology.

Normative Program Implications

Music venues designed for mobile and fixed settings have different structural and material implications to achieve the same quality of musical experiencing. These versions of venues tend to differ in materiality and stage construction. Electrical and lighting equipment are placed on the stage or hung from above by truss systems.

In the mobile structure, trusses supporting overhead equipment must be supported by vertical trusses to brace from any movement that occurs due to natural forces. Residing predominantly in the landscape, the stages of mobile venues often consist of a raised panels sitting on trusses. Trusses elevating the stage open space underneath for a variety of electrical and lighting equipment to be run under the stage out of sight of the audience. Stage panels are often paired with materials like wood and fabrics that absorb sound to aid in the dampening of superfluous sounds from on stage movements.

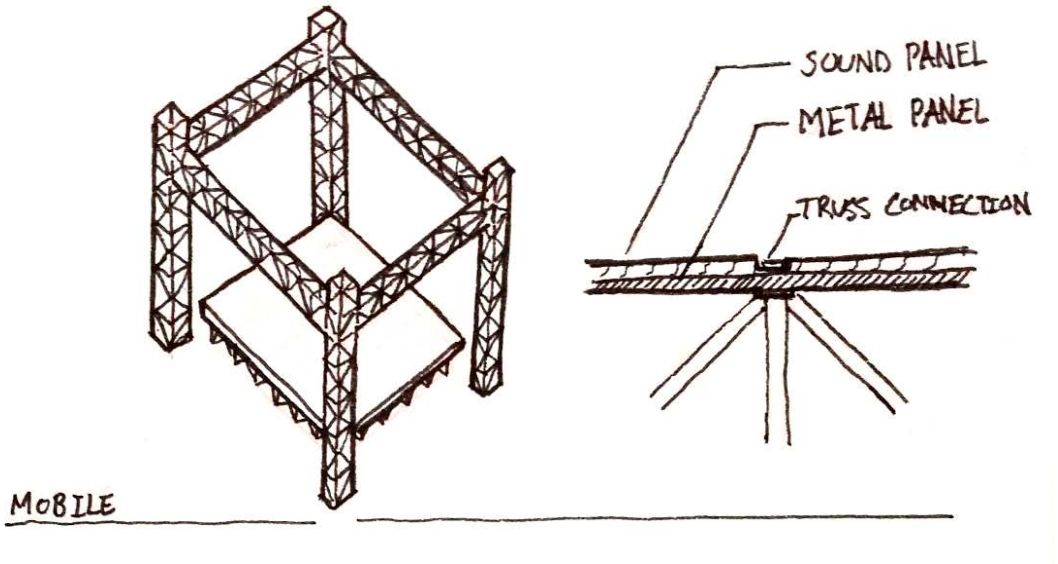

Figure 101: Mobile Music Venue Structural Implications
Image by Author

Fixed music venues tend to inhabit adapted buildings, adding more control to how sound is experience, as opposed to how sound is projected in mobile venues. Instead of sound reduction, there is a focus on how materials like wood are installed to distribute sound equally about a space. Fixed stage construction tends to draw attention to the edge of the stage for safety reasons as well as add space for sound and lighting equipment overflow. Due to the limitations of overhead space with fixed venues, adaptability is designed into the stage floor and surrounding spaces to allow for variety in types of performances. With designed space for systems, stages tend to exist as solid forms in fixed venues, however can allow opportunities for adaptability.

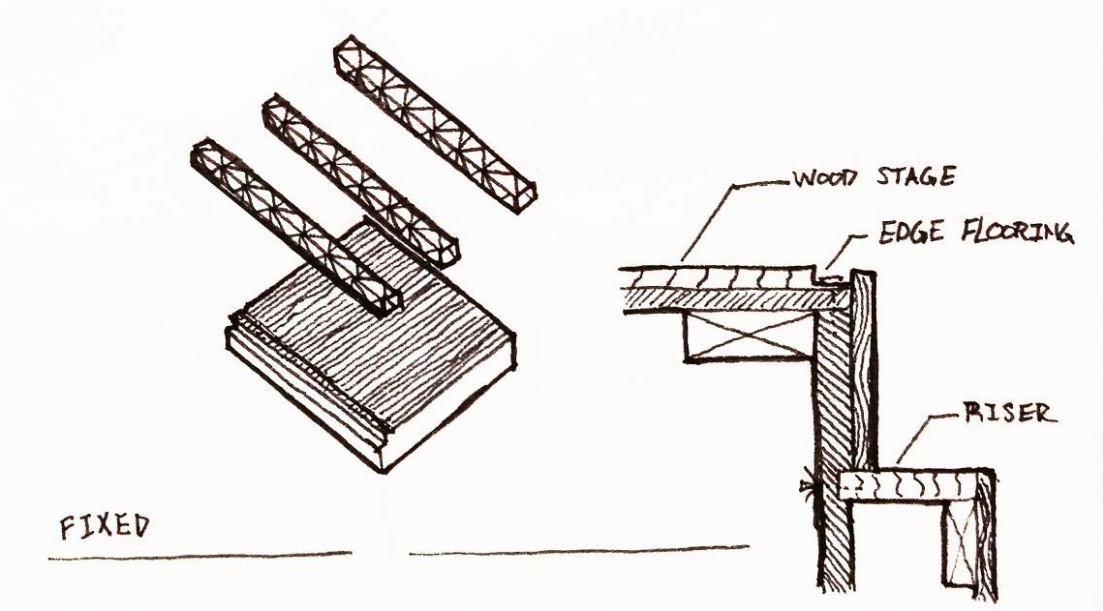

Figure 102: Fixed Music Venue Structural Implications
Image by Author

7: Design Solution

Urban Park

Figure 103: Urban Park Section
Image by Author

Creating an engagement of natural and built forms begins with the connection of green space between the Capital Crescent Trail and the Georgetown Waterfront Park. To go a step further this design accepts the flow of traffic along the M Street corridor as a commercial asset to Georgetown. Connecting the three topographic elevations that relate to city (M. Street), canal, and Trail/Park (Potomac River) allows for the engagement of naturally distinguished spaces to be connected through an architectural instillation.

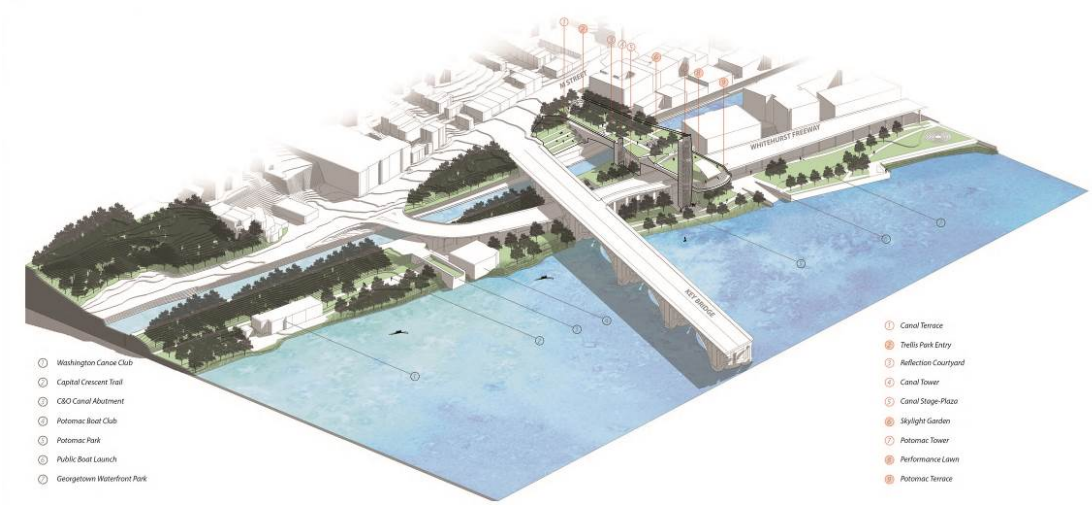

Figure 104: Proposed Green Connection Axon
Image by Author

Through the appointment of an urban park that projects beyond the Whitehurst Freeway, the built environment of Georgetown is allowed to extend past the restraints that hold back the built environment from the waterfront. M. Street is afforded the opportunity to connect with boating and recreational traffic that enters Georgetown from the West. With minimal public transit and no metro station, the urban park accepts the boating culture launches connecting to the Potomac River as well as the Dupont Circle to Rosslyn Circulator bus route as means of access into the site.

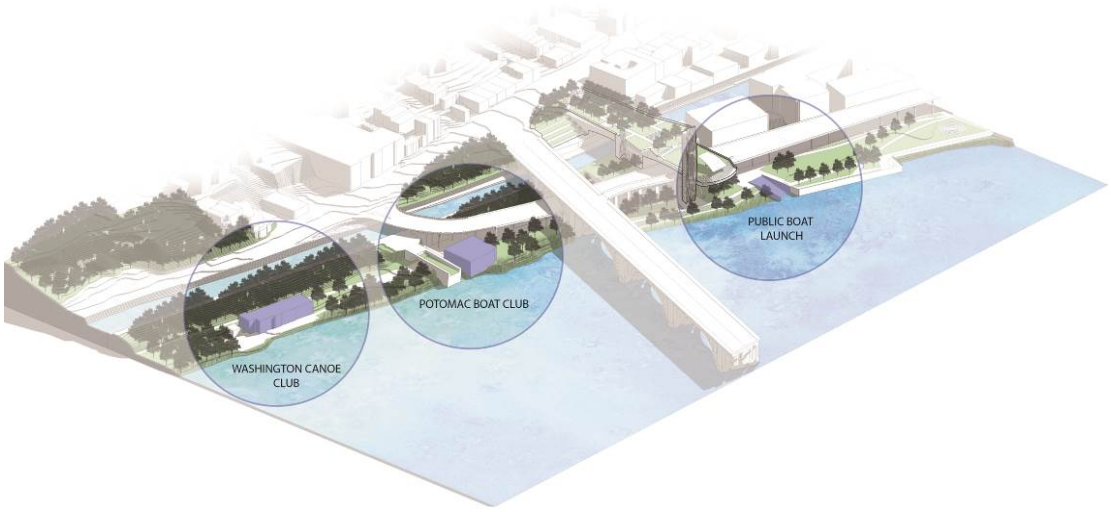

Figure 105: Proposed Boating Culture
Image by Author

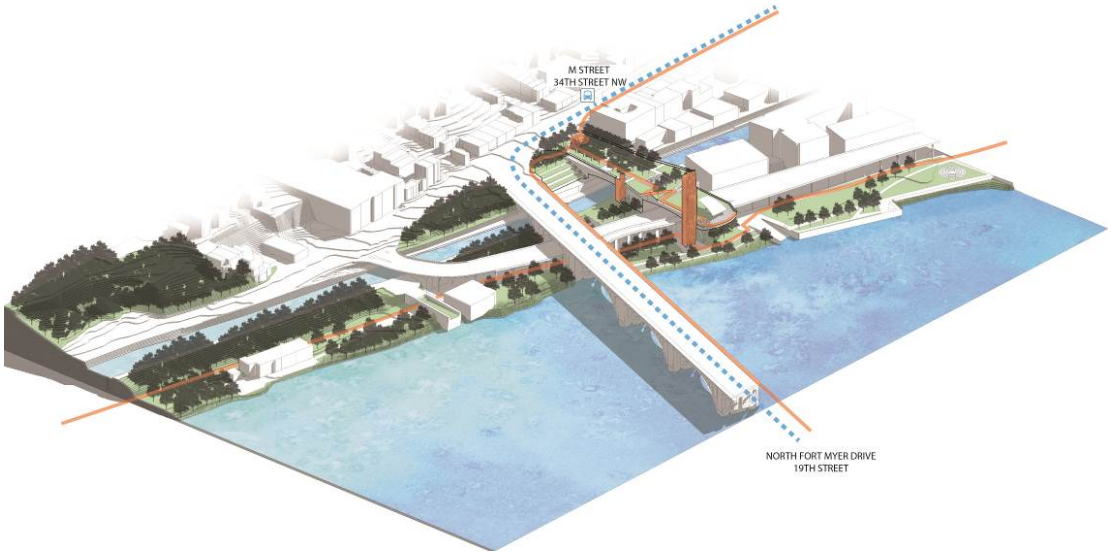

Figure 106: Proposed Circulation
Image by Author

Connecting pedestrian access to the waterfront via an urban park across the freeway dismantles the power of the Whitehurst Freeway as an urban element. However, engaging the natural environment of an Urban Park must go beyond waterfront voyership. As this park creates observation of the Potomac watersport

community of rowing and crew competitions by local Universities like Georgetown, there is still a temporary disengagement of the natural environment until the canopy of the new Potomac Park along Water Street grows to a mature size that puts this observation platform in the canopy of the trees as evident in Figure 108. To connect pedestrian movement down to Water Street vertical circulation will be an integral role in the design of the levitated Urban Park.

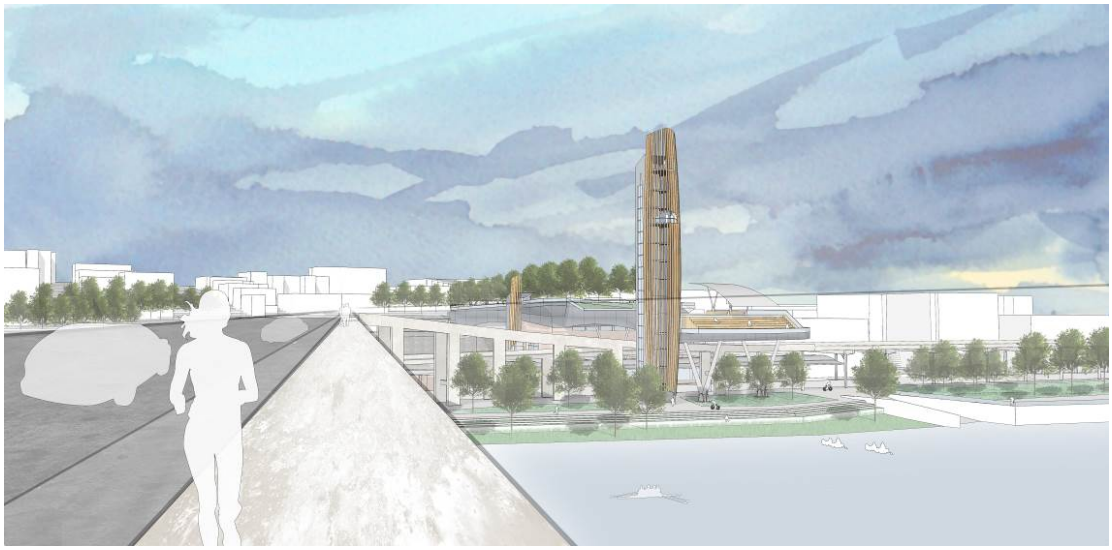

Figure 107: Key Bridge Approach Perspective
Image by Author

A monumental tower constructed with a wooden facade allows circulation between these drastically different topographies while maintaining a material connectivity to the natural realm. As the tower takes the shape of a supersized rowing shell that is under construction, the wooden façade privileges views from the tower to the Washington Monument, The Kennedy Center, Roosevelt Island, the United States Air Force Memorial, Rosslyn Virginia, and the Head of the Potomac Waterfront. To elevate through the tower a large freight elevator manifests the grand movement of the ground plane to root patrons in the transformation of urban to natural engagement

as they observe the tilt of the horizon to a host of perspectives of the natural environment. Accepting voyership of the natural environment along with engagement allows for a tower design that permits materiality of facade to engage directly with how the connection to natural environment is perceived by users. As the glulam wood façade engages an individual's engagement of privileged views of nature from observation platforms, visual spectatorship is paired with tactile engagement of wood materials that relate to the forestry prevalent along the waterfront. As the wood material of the tower frames views to the environment, the physical engagement of the material properties of the tower bring patrons to the waterfront as they follow the path of descent.

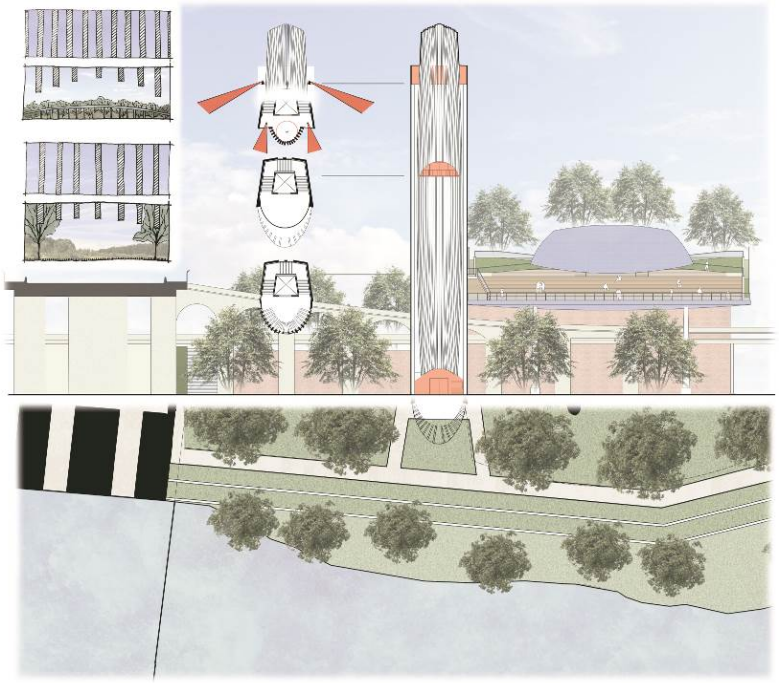

Figure 108: Tower Engagement Diagram
Imager by Author

As the tower experience engages a primitive connection to the natural environment through its material connectivity and ability to express different

perspectives to the natural qualities of Washington D.C, it also engages the city on a larger scale. The monumentality of the tower becomes a beacon that defines Georgetown's commercial and recreational functions through the attraction to a gateway landmark in which waterfront, Key Bridge, and Whitehurst Freeway traffic must circulate around when approaching the M Street corridor from the West.

A second tower abuts the Urban Park before the projection over the Whitehurst Freeway to connect circulation to the canal towpath. Smaller in size and similar in design to the monumental tower, the secondary tower retreats into the maple tree grove that grows from the Urban Park. Withdrawing into the landscape allows the monumental tower along the Potomac Park to be the beacon that welcomes patrons to Georgetown without competing with other design motifs. As the canal towpath tower connects to the natural features that are disconnected from the Potomac River by the freeway, the tower also allow for M Street pedestrian access to connect to the performance venue that resides along the towpath in the underbelly of the Urban Park.

Figure 109: Urban Park Plan
Image by Author

As the urban park is approached form M Street, the garden trellis takes users away from the vehicular circulation to a sheltered vantage point along the regulated forest grove (Figure 110).

Figure 110: Trellis Perspective
Image by Author

Along the projected Urban Park are moments of retreat where patrons are afforded opportunities to disengage with the formality of path and reflect to views along the canal. In these retreat spaces the linear approach to the waterfront is broken and the canal is brought to the forefront of the parks' obligation to connect with the natural realm.

Beyond the Reflection Garden is a Skylight Garden that opens up the spatial regularity of the grove path and enacts a spatial quality that is intertwined with the performance venue below. The skylight is elevated above the ground plane to create a sculptural place where growing plants and park patrons can engage simultaneously. The skylight allows outside light to engage with interior performances as well as reflects a canvas that light performances and music events can project upon. This connection enables how a space is used to change based on the type of event that is occurring in the conditioned space of the performance venue or the conditions that happen in the natural realm.

Figure 111: Skylight Garden Perspective
Image by Author

Beyond the Skylight Garden the Urban Park maintains a Performance Lawn which allows for performances to occur in a natural setting. The use of the lawn is tied directly to weather conditions. However, with the approach of descending planes towards Ronald Reagan Washington National Airport the use is also dictated by urban context, allowing an assimilation of natural and urban features to how performances engage this lawn. When performances are not taking place, the lawn functions as a gathering space for patrons to emerge from the garden and descend into a manicured realm that exposes the human condition to all elements of the natural environment with no barriers. The monolithic tower engages with the Performance Lawn to accommodate higher volumes of foot traffic for performance events as well as gives a sense of place and connectivity to the Potomac River over the exaggerated horizontal ground plane.

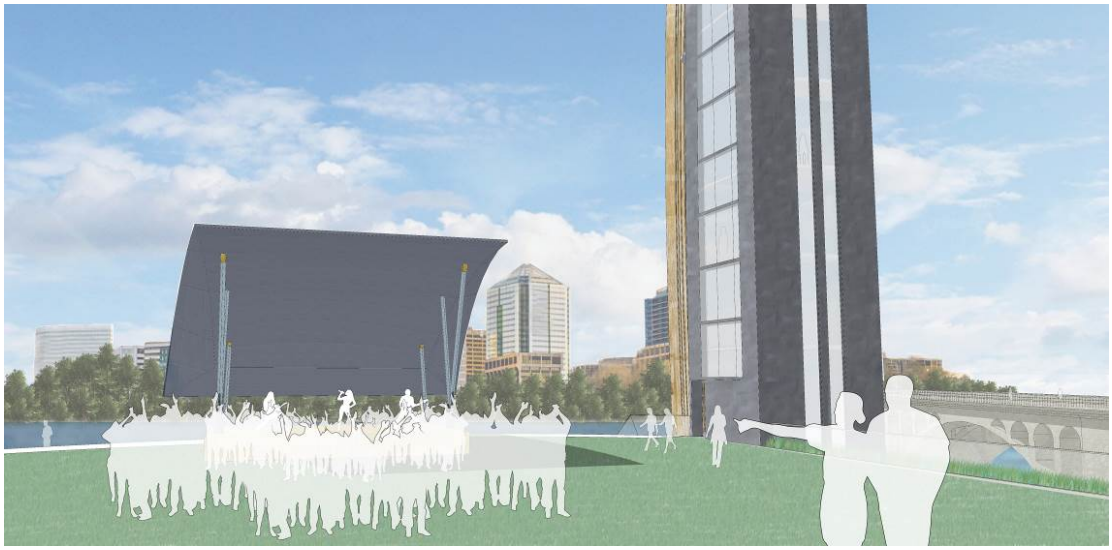

Figure 112: Performance Lawn Perspective
Image by Author

The ground plane of the Performance Lawn project out towards Rosslyn, VA. Protecting the vantage point of the Potomac Terrace from event spectators. As the Potomac Terrace is sheltered from engaging with the Performance Lawn, the bandstand doubles as a shading device for the spectators of the water sports that take place along the Potomac River. As time passes, the Potomac Waterfront Park will mature and will place the spectators of the Potomac boating culture in the canopy of the park forestry, spectating from the natural environment. The wooden material of the seating along the Potomac Terrace engages a tactile relationship to the park beneath in the same manner as the wooden façade of the monolithic tower engages the user in a relationship to the natural elements of the Potomac Park. As the terminus of the Urban Park projection from M Street, the Potomac Terrace relates the wood texture between the tower and terrace to draw patrons into the tower to utilize the methods of vertical circulation to connect to the waterfront.

Figure 113: Potomac Terrace Perspective
Image by Author

Performance Hall

Presiding along the C&O Canal, the performance venue adds event space to the South-West edge of Georgetown that is active year round along with outdoor spaces that can be engaged dependent on natural conditions. Turning away from the Whitehurst Freeway, the Performance venue utilizes the undercarriage of the Urban Park to gain the required height for sound quality while allowing the protrusions of the Urban Park composite paneled underbelly to create continuity of event space to the canal as well as Potomac Park. Parallel to the performance venue is an outdoor stage plaza which allows for outdoor stage sets to be constructed in a variety of performance types, where patrons can engage along the Canal Terrace sunken below street level at the Key Bridge terminus into Georgetown as seen in Figure 116.

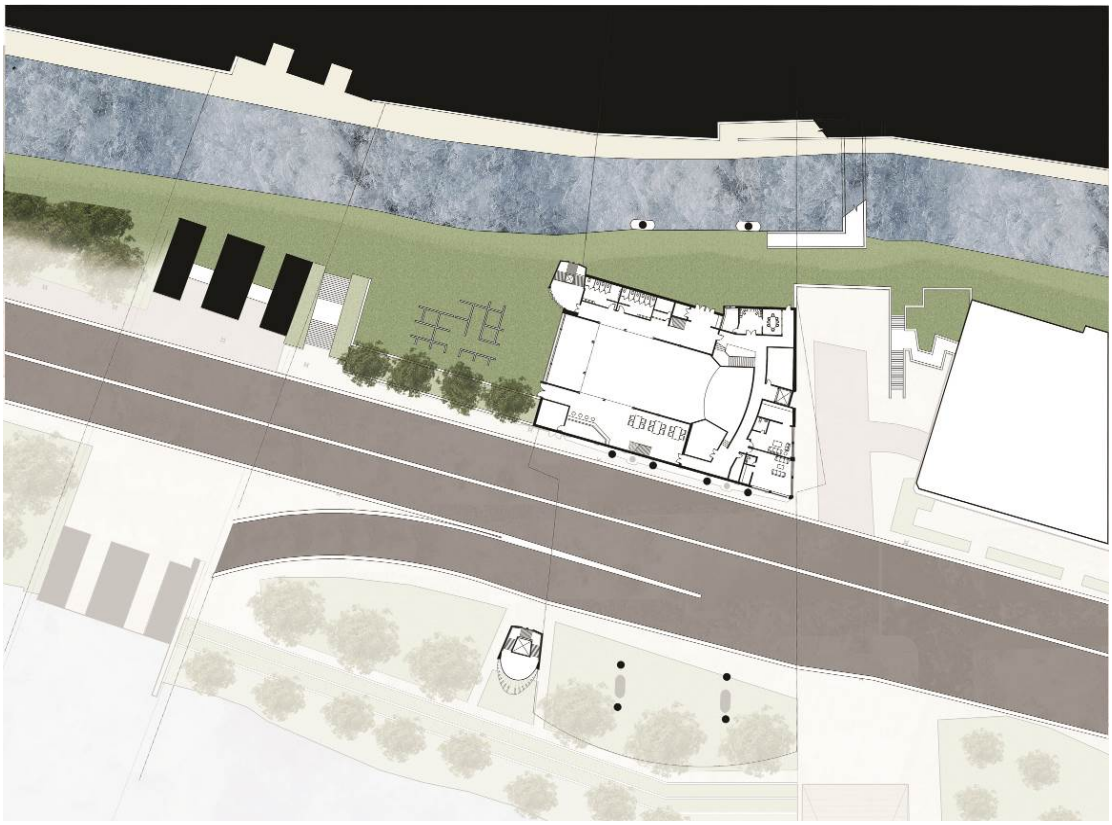

Figure 114: Performance Venue (Canal) Plan
Image by Author

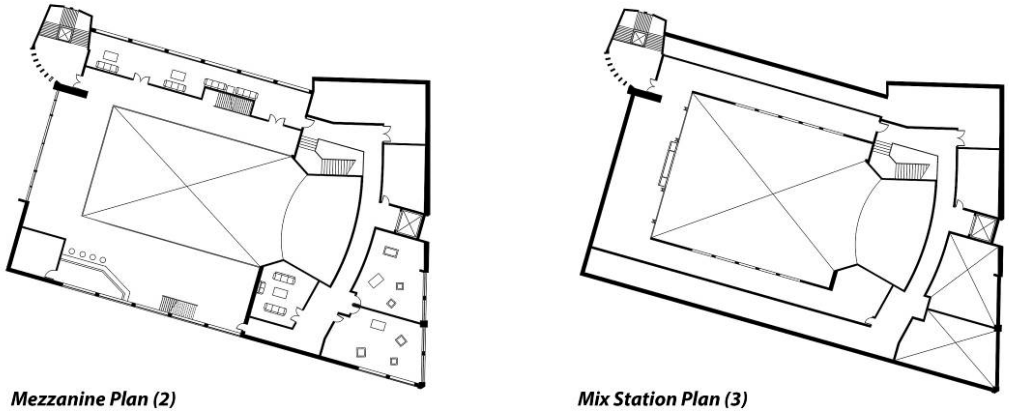

Figure 115: Upper Level Performance Venue Plans
Image by Author

The Performance Venue is divided into two halves, the artist and administration side as well as that of the patron and concertgoer. Using a wood

finished interior allows for better sound absorption among a noisy nestled space next to the freeway. The second mezzanine level houses practice studios to allow for continuous use when there are no events scheduled for the venue, allowing function of the venue to adapt to necessity.

Figure 116: Cross Section Stage Plaza & Canal Terrace
Image by Author

Creating areas of refuge from events allows for patrons to disengage with the finite architecturally defined space and engage with the natural environment outside the venue along the graceful curvatures of the underbelly of the Urban Park.

Figure 117: Sectional Spatial Connection Diagram
Image by Author

Workout Gym

Figure 118: Gym Plan (Water Street)
Image by Author

The gym underneath the performance venue supports the recreational functions of the Potomac and Capital Crescent Trail for year round functions. Creating spaces for boat and bike storage as supporting functions of current recreation, along with a gym that supports yoga and dance studios and a workout area for off season training and year round fitness. While creating a new parking zone for gym staff, Water Street is terminated in a definitive way, giving the Capital Crescent Trail a true place underneath the Whitehurst Freeway and Key Bridge.

The Potomac Park differs from the Georgetown Waterfront Park by allowing the water to define its own edge through its kinetic nature while moving the terraced seating closer to the Capital Crescent Trail extension to draw trail users to the waterfront as well as the base of the monolithic tower which services vertical circulation to M Street.

The steel columns that support the Urban Park are 'Y' shaped to mimic the profile of a tree, allowing a formal relation to the natural environment while assisting in distinguishing the structure of the Gym/ Performance Venue from that of the Urban Park. With a diversity of structural elements supporting the infrastructure of the Whitehurst Freeway (steel columns) the off ramp of the Key Bridge (reinforced concrete columns), and the Urban Park ('Y' shaped steel pin connections) added to the diversity of the Potomac Parks foliage create a diverse language of natural and architecturalized 'trunks'. Emulating a thick foliage of urban and natural forces continues the experience of natural dissemination among foliage that renders the edge between city and nature indistinct, with both elements aiding in the reading of place, yet neither being privileged above the other.

8: Conclusion

Summary of Lessons

Working through the design process and final proposition, it is evident that site conditions drive the majority of design. Either allowing design propositions freedom or constraining them. In this proposition the Whitehurst Freeway played a dictating role in the development of engagement with the Potomac River and the C&O Canal.

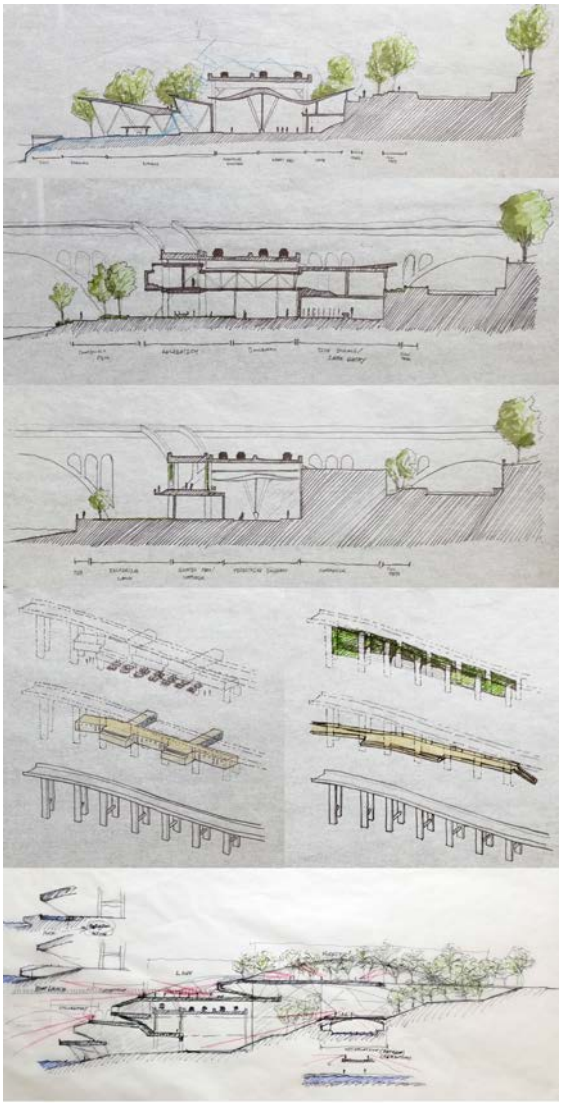

Figure 119: Process Sketches
Image by Author

Moments of escape into the natural environment are afforded through an architectural language that mimics the elements and patterns found in the natural realm. Whether regulated, simplified, or expressed with the abstract nuances of nature, the pattern can be adapted to a variety of engaging experiences between architecture and nature.

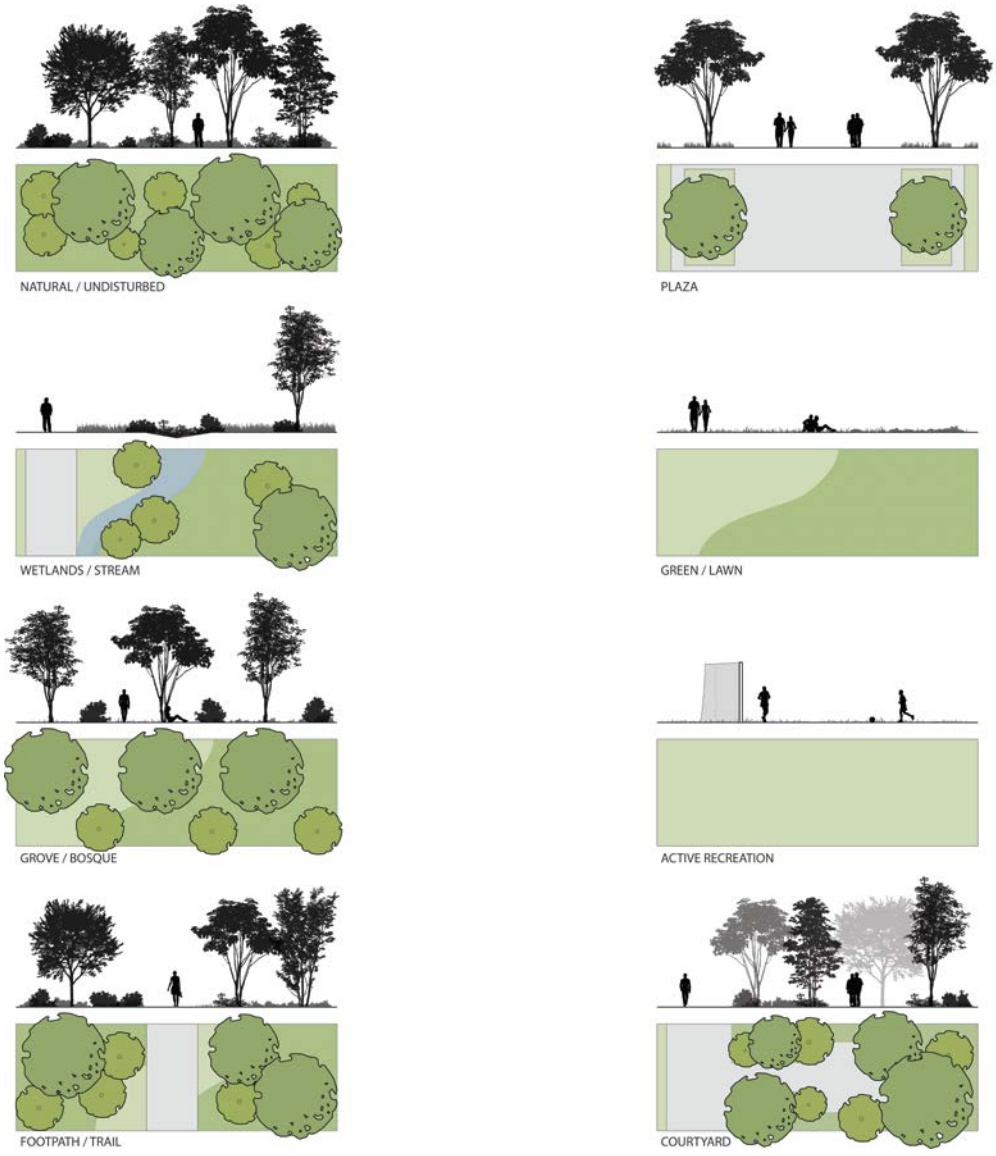

Figure 120: Landscape Typologies
Image by Author

Contrasting and mimicking the materials found in the natural environment begins to draw users through a space and calls attention to architecturalized elements as well as natural elements depending on the percentage of material used that relate to these element that is the object or void of focus.

Finally it is evident that working at urban and building scales require a similar theory to participate with the nature but different methods of application to attain a relation to the natural environment due to the difference in user responsibility that occurs at the social scale compared to that of the individual.

Reflections on Proposition Development

After the public review it is evident that more engagement of the Urban Park could be obtained by not only blanketing the site with a projection of the natural environment and carving out the interior of the park to accommodate performance space. Furthering the exploration into opening up the park to the performance venue and allowing the park path to descend into the space disintegrates the level plane of the Urban Park and allows users to move through a variety of levels of foliage upon approach.

The issues created by the juxtaposition of directionality the performance venue and gym create by facing the C&O Canal as well as the Potomac River at different elevations could be solved by a unifying element that circulates patrons through all levels of the program as voyeurs until the desired event space is reached.

The monolithic tower draws M Street patrons and Potomac River users to the natural features of Georgetown, however it competes with the Potomac terrace of the Urban Park. A clear distinction of which is dominant should be interposed and will

assist in the way the path is read from a formal aspect of the city to a natural undisturbed connection to the natural features that surround the Capital Crescent Trail.

Having freight elevators in the towers continues the reading of an adaptable human experience based on the distance from natural contexts and transition from active participant in the environment to voyeur, however the circulation traffic of trail users to M Street necessitates a larger volume that goes beyond experiential means. Practicality of the tower circulation would impose further analysis of the tower design and size. If the monumental tower were to expand in size to accommodate large pedestrian traffic, the Potomac Terrace and Performance Lawn may be required to shrink in size. Thus creating a character of the Urban Park that is not bisymmetrical in its reading or the way it is experienced.

Bibliography

Barrows, E.M. "Glover Archbold Park, Washington, D.C." Biodiversity Database of the Washington D.C., Area. Last modified January 14, 2010, Accessed November 23, 2015. http://biodiversity.georgetown.edu/searchfiles/infosearch.cfm?view=all&IDNumber=1520.

Bejarano, Cristina. “Highline.” Cristina Bejarano & Flickr. Last modified September 8, 2009. Accessed January 15, 2016. https://www.flickr.com/photos/cristinabe/3902089357/in/album-72157623465567495/

Berrizbeitia, Anita and Linda Pollak. *Inside Outside : Between Architecture and Landscape.* Gloucester, Mass. :; Cincinnati, Ohio : Rockport Publishers ; Distributed to the Book trade and art trade in the United States by North Light Books, 1999.

Brown, Timothy. “Fondazione Querini-Stampalia, Carlo Scarpa, 1963.” Timothy Brown & Flickr. Last modified June 22, 2008. Accessed January 15, 2016. https://www.flickr.com/search/?l=commderiv&q=Querini%20Stampalia.

Brown, Timothy. “Vals Therme, Peter Zumthor.” Timothy Brown & Flickr, Last modified June 15, 2008. Accessed January 15, 2016. https://www.flickr.com/photos/atelier_flir/2659152772/in/album-72157606105576450/.

Cohen, Annabel J., Angelo Campanella, Lynne Marshall, and Christin Grant. “PERSPECTIVES ON ACOUSTICS IN ENVIRONMENTAL DESIGN”. *Journal of Architectural and Planning Research* 4 no.2. (June 1987): 162-79, Accessed January 18, 2016, JStor. http://www.jstor.org/stable/43029490.

Crowe, Norman. *Nature and the Idea of a Man-made World : An Investigation into the Evolutionary Roots of Form and Order in the Built Environment*. Cambridge, Mass. : MIT Press, 1995.

DCinruins "Aqueduct Bridge Abutment." Last modified December 2, 2013. Accessed November 23, 2015. https://dcinruins.wordpress.com/aqueduct-bridge-abutment/.

Gros, Frédéric. *A Philosophy of Walking*. London : Verso, 2014.

Heschong, Lisa. *Thermal Delight in Architecture*. Cambridge, Mass. : MIT Press, 1979.

Jackson, John Brinckerhoff. *A Sense of Place, a Sense of Time*. New Haven: Yale University Press, 1994.

Marras, Amerigo. *ECO-TEC : Architecture of the in-between*. New York : Princeton Architectural Press, 1999.

Maryland-National Capital Park & Planning Commission Department of Parks. "Capital Crescent Trail / Georgetown Branch Trail Survey Report." Montgomery Parks. Last modified May 1, 2007. Accessed January 7, 2016. http://www.montgomeryparks.org/PPSD/ParkTrails/documents/CCTrail_Survey_2007web.pdf.

McHarg, Ian L. *Design with Nature*. Garden City, N.Y.: Published for the American Museum of Natural History by the Natural History Press, 1969.

Nash, Roderick. *Wilderness and the American Mind*. New Haven: Yale University Press, 1967.

Newman, Robert B. “Teaching Acoustical Science to Architects”. *Journal of Architectural Education* 10 no.1. (Spring, 1955): 23-25, Accessed January 18, 2016, Jstor. doi:10.2307/1423769.

Pallasmaa, Juhani. *The Eyes of the Skin : Architecture and the Senses*. Chichester, West Sussex: John Wiley & Sons, 2005.

Pounds, Richard, Daniel Raichel, and Martin Weaver. “The Unseen World of Guastavino Acoustical Tile Construction: History, Development, Production”. *APT Bulletin* 30 no.4. (1999): 33-39, Accessed January 19, 2016, Jstor. doi:10.2307/1504707.

Price, Travis. *The Mythic Modern: Architectural Expeditions into the Spirit of Place*. Novato, CA: ORO Editions, 2012.

Quinn, Daniel. *Ishmael*. New York : Bantam/Turner Book, 1995.

Tanizaki, Jun'ichirō. *In Praise of Shadows*. New Haven, Conn.: Leete's Island Books, 1977.

Radford, Anthony, Selen Morkoc, and Amit Srivastava. *The Elements of Modern Architecture: Understanding Contemporary Buildings*. New York, New York: Thames & Hudson, 2014.

Shankland, Robert S. “The Development of Architectural Acoustics: The Application of the Science of Acoustics to Architectural Designs Has Produced

Greatly Improved Halls for Both Speech and Music". *American Scientist* 60 no.2. (March-April 1972): 201-209, Accessed January 19, 2016 Jstor. http://www.jstor.org/stable/27843021.

Sheridan, Ted, and Karen Van Lengen. "Hearing Architecture: Exploring and Designing the Aural Environment". *Journal of Architectural Education* 57 no.2. (Nov., 2003): 37-44, Accessed January 18, 2016, Jstor. http://www.jstor.org/stable/1425798.

The Coalition for the Capital Crescent Trail. "Profile of the Capital Crescent Trail." Profile of the Capital Crescent Trail. Accessed November 23, 2015. http://www.cctrail.org/CCT_General_Info.htm.

Tom "Abandoned Washington and Great Falls Railroad." Urban Ghosts. Last modified May 3, 2010. Accessed November 23, 2015. http://www.urbanghostsmedia.com/2010/05/surbexing-dc-abandoned-washington-and-great-falls-electric-railroad/.

Torresi, Lucas. "DSC00240," Lucas Torresi & Flickr. Last modified July 16, 2009. Accessed January 15, 2016. https://www.flickr.com/photos/unrosarinoenvietnam/3784052486/in/photostream/.

Torresi, Lucas. "DSC00370," Lucas Torresi & Flickr. Last modified July 16, 2009. Accessed January 15, 2016. https://www.flickr.com/photos/unrosarinoenvietnam/3784091448/in/photostream/.

United States National Park Service. "Designations of National Park System Units." National Parks Service. Last modified December 4, 2015. Accessed December 5, 2015. http://www.nps.gov/goga/planyourvisit/designations.htm.

United States National Park Service. "Washington, DC List of Sites." National Parks Service. Accessed November 23, 2015, http://www.nps.gov/nr/travel/wash/sitelist.htm.

Ursprung, Philip, Kate Goodwin. *Sensing Spaces: Architecture Reimagined*. London: Royal Academy Publications, 2014.

Weisman, Alan. *The World without Us*. New York : Thomas Dunne Books/St. Martin's Press, 2007.

"District of Columbia Water and Sewer Authority." Glover-Archbold Park Sewer Rehabilitation Project. Accessed January 6, 2016. https://www.dcwater.com/workzones/projects/Glover_Archbold_Park.cfm.

"Potomac Boat Club History." Potomac Boat Club. Accessed January 7, 2016. http://www.potomacboatclub.org/about/.

"The History of the Club." Washington Canoe Club. 2004. Accessed January 7, 2016. http://www.washingtoncanoeclub.org/CMSMS/index.php?page=club-history.