



Historic Interaction with the Environment and Implications on Ecological Resiliency

Jordan Moumne

University of Florida

Faculty Mentor: Jeffrey Carney, School of Architecture

Abstract

This paper examines how Paul Rudolph and Carlo Scarpa design buildings in the seemingly harsh environments of Sarasota, Florida and Venice, Italy to connect occupants to that which is around them. It involves the study of Fondazione Quarini Stampalia and Camping Fusina by Scarpa, along with the Umbrella House and the Healy Guest House by Rudolph, analyzing the buildings through methods of site visits, photography, and drawing. Specifically, it analyzes how the architects frame the environment, experiment with the view, explore the visible connection of the ground, plan for the inevitable flooding that will occur, and create a feeling of safety for people to positively interact with what is around them. This study determines that while all these methods are important in designing buildings, it is how the architects develop an appreciation of the environment by the occupants that is imperative in designing for the future. It studies the future of Florida specifically due to the projects addressing issues of flooding, ventilation, and protection which are all large concerns in designing in Florida. For a more resilient Florida that can handle the environmental pressure being forced on it while also developing a design language that makes Florida's architecture stand out.

Keywords: architecture, environment

Introduction

The state of Florida and the nation of Italy are different in many ways; however, certain regions have comparable geographies and ecological conditions. Florida and Italy, both, are peninsulas, so water has had a significant influence on the shape of coastal architecture in each region. More specifically, the intention of architects to engage ground while considering the relationship to water in both these locations is due to being "...coastal lagoon(s) enclosed by a necklace of barrier islands," (Sarasota Bay, N.D., p. 1) allowing architecture to interact with its immediate context. Two influential modernist architects, Paul Rudolph and Carlos Scarpa, had a great impact on architectural design discourse in their time. These architects employed various methods on how to frame the environment to connect the occupants of their designs to their surroundings. They created a sense of belonging in the environment that inspires an appreciation of the environment that did not occur previously through methods of stepping up the building

from the wild, elevating the building, providing clear views to the environment, and bringing the environment into the building (Howey, 1997, p. 43). These methods of the building go farther than the mere construction of a building by creating a shift in perspective for the occupants of the building. This concept is imperative in the future of Florida through ecological resilience. Florida is suffering from a lack of connection with the environment. As more people become aware of the beauty around them, they are more likely to treat it with respect. The way to accomplish this goal is through the methods such as framing the environment, experimenting with views, exploring visible connection of the ground, planning for the inevitable flooding that will occur, and creating a feeling of safety for people to positively interact with what is around them. Florida needs to learn from the lessons taught to us by Paul Rudolph and Carlo Scarpa.

Natural Site and Location

Sarasota, Florida presents itself as a natural paradise. Prior to development, the natural landscape was seen as wild and harsh. The beautiful beaches were sharply contrasted by the innumerable mosquitos and oppressive heat. “Racked by intense summer heat and humidity and pounded by annual seasons of tropical storms and hurricanes, this sometimes hostile place seemed unlikely to invite the unparalleled population growth it has seen this century,” (Howey, 1997, p. 8-10). It became a time positively framing the environment was the way to attract people to the Sarasota resort economy. Paul Rudolph, one of the first architects to intervene in the region in a class of architects called the Sarasota School of Architecture, designed houses to protect occupants from the harshness of nature, while using various tactics to frame nature in a positive light and connect occupants’ to that which is around them including experimenting with the occupants direct line of sight through the framing of the view using windows.

Venice, Italy, while similar to Sarasota environmentally, varies in that it has not been considered “wild” for hundreds of years. Contrary to Sarasota, Venice has been developed and changed over time and becomes an urban prototype for European city living. The memory of nature intervenes in the city through a series of canals, however, even these have been formed and shaped by Venetians over the years. Carlo Scarpa brings nature inside the building by allowing water into the buildings and controlling its movement in certain places, while allowing it to move freely in others. This allows occupants to directly interact with the water through sight, sound, and touch. He also controls the ground through the implementation of pavers. It is important to note that this interaction is not with the wild nature mentioned above, but with an

exterior environment that has been heavily impacted throughout history by various people. Therefore, Scarpa develops this sense of the environment as opposed to letting it happen naturally.

Functional Support Transitioning to an Emotional Environmental Response

Functionally, these architects take two different approaches on how to support the buildings. Rudolph elevates his buildings above the ground, avoiding issues with flooding by lifting the building from the impact of the water. Scarpa, buries his buildings inside the ground and sculpts the path of water through the project.

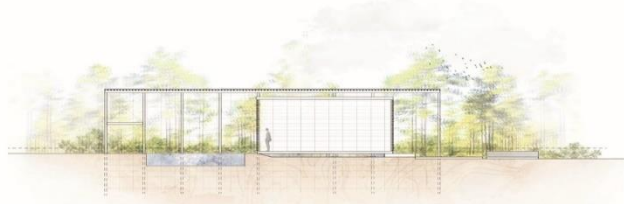


Figure 01. Hand-drawn section based on the Umbrella house by Jordan Moumne.

Controlling View to Change Perspectives

In Rudolph's Umbrella House, the functional raising of the house and the addition of the "Umbrella" portion of the house goes beyond merely mitigating flooding but allows people to enjoy the view and establish an appreciation of nature. Rudolph elevates his buildings often on a pile-driven column grid. This method, increasingly common in coastal regions now, allows water to pass under the building and have minimal impact on the building. It also allows occupants to escape from insects common to the brush of Florida such as ticks and to catch the breeze which is imperative in passive cooling of the houses. What is important to note about this method is not merely the functionality of the choice to elevate, but the impact on the environment and the perception of the environment. Elevation of the house provides more clear views to that which is around it, along with making the occupant feel safe enough to appreciate what is around them. These concepts are seen clearly through his design for the Umbrella House. "In the typical Southern home, the first floor was raised several feet above the ground to keep out dampness and to catch the breezes, and wide verandas shaded the interior of the house from the sun and

protected it from the driving rains,” (Domin et al, 2005, p. 137). Rudolph took this concept of the traditional Southern home in the states and adapted it to the harsh environment of Sarasota. The Umbrella house utilizes the method of raising the house while also implementing the “Umbrella” to protect from the harsh sun and rain as seen in Fig, 01. Rudolph connects people to the exterior of the building through experimenting with the introduction of floor-to-ceiling windows. These do more than just letting in natural light. Through the introduction of louvers, he creates zones in the building where as the louvers are open, occupants can see from one side of the building straight through the other. This creates a connection of what is inside to what is outside that is amplified through the raising of the house to see even more of the view. Furthermore, he creates a gradient through the transparency of occupancy. As the occupant stands on the inside of the building, he visually sees nature and the Gulf of Mexico, without exposure to the elements. As he passes this barrier of windows, he then stands to look at the Gulf of Mexico, exposed to the wind, but is covered by the “Umbrella” portion of the house, in turn still maintaining a visual connection without having the harsh Florida sun beating down on him. This connection was not previously established but was imperative in framing the harsh Florida environment in a positive light. This served to create an emotional connection to the beauty of the Florida environment despite its previous conception as uninhabitable and in addition to the economic boom, helped to bring people to the area (Howey, 1997, p. 08). Therefore, the functional raising of the house and the addition of the “Umbrella” portion of the house goes beyond merely mitigating flooding but allows people to enjoy the view and establish an appreciation of nature.

Rudolph explores these concepts in the Healy Guest House, also known as the Cocoon House. It is notable for the way in which it perches on an inlet of water. The house is seen as an experiment. Rudolph implements the concepts of transparency and structure to connect occupants to nature without direct exposure to the harsh elements. “It had to do purely with the idea of using the least material possible and making it as light as possible and as efficient as possible and the whole notion of it being structurally clear,” (Domin et al, 2005, p. 30). The structure becomes the most prominent part of the house while the louvers and windows allow for visual connection to the Sarasota wildlife. The windows surround the entire project, with only the louvers and the columns blocking any view. This allows the occupant to feel like they are floating out over the water which directly connects the occupant with the moving water below. Furthermore, Rudolph takes his typical approach of lifting above the ground. “The house is lifted

above the land and cantilevered over the water. Despite its independent appearance, the house is very much a part of the site with its deep colors and intimate scale responding to both the surrounding bayou and mangroves,” (Domin et al, 2005, p. 97). While the connection to ground is limited to the pinpoints where the columns of the house meet the foundations that enter the earth, he connects the occupant to nature through the cantilevering over the water as mentioned above. This creates a connection to the water in a similar manner as a boat. Not only is the exterior porch extended, but the house itself creates a feeling of being extended through the creation of a completely glass building. Other than the wooden structure and louvers, the building’s walls are purely transparent glass. This creates the illusion of the ‘glass box’ which makes the occupant feel as if they are on the river. It is this emotional connection to nature which creates a situation for the occupant to respect and honor the beauty of the coastal conditions. It is important to address the misconception in this design. While Rudolph creates an illusion of not disturbing the nature surrounding the house, he implements a retaining wall to separate both the water and the earth. This, undoubtedly, has to do with the functional prevention of erosion, but it does bring to question the actual level of impact Rudolph has on the environment around him. While he does elevate the space through this manner of columns, the actual use of columns is first intrusive during the pouring of foundations and the removal of soil. However, it does allow nature to slowly seep back into the site after construction and grow beneath the home, though it will forever be impacted by the scarring of the earth created during construction.

Controlling Natural Elements to Bring People Closer to the Environment

Scarpa takes the opposite approach in his design for the Fondazione Quarini-Stampalia: he embeds the building within the exterior garden and water surroundings. The garden, “Scarpa raised in order to establish a closer link to the view of those who are seated inside,” (Los, 1995, p. 72). Here, Scarpa raises the garden to make the building feel embedded in the ground. This has another purpose of establishing a view between occupants on the interior and exterior, bring people emotionally closer to the exterior while more literally being a functional response on how to treat ground conditions. Scarpa also allows water to enter the structure. Scarpa constructs a method to bring water into the project by elevating the walkway of the store and allowing water to flow into it from the canals. Specifically, Scarpa builds an area for water to enter from the canal as shown in Fig. 02.



Figure 02. Photograph of Fondazione Quarini Stampalia water entry from canal taken by Jordan Moumne.

“Rather than keeping the water from entering the building, Scarpa worked chiefly to allow it to flow easily out, and to make the building usable even during high water, by raising the floors affected by its presence as needed,” (Los, 1995, p. 68). Functionally, this is to minimize the impact flooding has on the building. If the building is already primed to take in water, any water that enters would cause less damage. As it enters, the water rushes over the stone, creating various levels of depth as seen in Fig 03.



Figure 03. Photograph of Fondazione Quarini Stampalia steps acting as built earth, emerging from the water, taken by Jordan Moumne.

The stone acts as built earth stopping the water from entering in specific locations as seen in Fig. 04.



Figure 04. Photograph of Fondazione Quarini Stampalia catwalk and retaining wall taken by Jordan Mounme.

He brings the idea of water through the entire complex through a series of troughs near the wall. Water does not move through these areas, but the concrete comes up like the city itself forming these movements. It is interesting to note the rushing of water through the release of a pipe which creates this echoing noise through the space. This, in turn, creates a peaceful space of reflection even when the water is not as high from the canal and acts as an auditory connection to the exterior environment. Here, Scarpa uses water to connect visitors to the environment of Venice through allowing it to physically enter the building. He emotionally connects occupants with water, the primary environmental element present in Venice. This creates an appreciation for the environment that alters the perception of the viewer.

In the bathhouse, Scarpa controls water for a more functional purpose, but he uses it to create an axis and uses the ground to create a more privatized space even in a more outdoor or less private area. “It consists of a continuous wall, in bare bricks, that establishes on either side, through a particular shape, the complex of spaces that makes up the various facilities of the campground,” (Los, 1995, p. 45). He does not implement pools of water as he does in his other designs but instead explores repetition and elevation of the ground levels. The repetition of the sinks allows this repetition of water to be contained. As you approach from closer to the ocean, it starts at a smaller scale and then increases in prominence. From small feet washes to showers, and then to bathrooms the impact of the water becomes more present as seen in Fig. 05. He controls this natural resource to create a subtle barrier between the outside environment and the privatized inside the area.



Figure 05. Photograph of Camping Fusina footwash taken by Jordan Moumne.

Addressing the Ground to Bring People Closer to the Environment

The way in which architects treat the visible ground is imperative in the conception of nature. In the Umbrella House, Rudolph steps up the occupants through a subtle progression. Starting in a gravel driveway, the occupant moves upward by then stepping on pavers of a local Sarasota stone. These then move up into a more traditional step that moves the occupant to a higher level and allows him to reach the interior of the house. This stepping up demonstrates a subtle transition towards escaping the metaphorical harshness of nature while at the same time, elevating the occupant for more functional purposes such as flooding. It also creates a sense of privacy that, while extremely subtle, allows the occupant to feel safe. For example, most people feel more protected on a sidewalk than on natural grass. This concept allows occupants to focus their thoughts on the positives of nature without the worry of insects and pests. Scarpa explores this concept through his project Camping Fusina. When looking at how to treat the ground, he starts stepping it up as the privacy level increases. Specifically, Scarpa moves from containing the “wild” by having a barrier of low, garden stones to hold it back as seen in Fig. 06.



Figure 06. Photograph of Camping Fusina restrooms and the stepping up of the ground, taken by Jordan Moumne.

The ground then transitions into the grass, which while still natural, it is tamer than bushes. From here, he transitions to pavers, establishing a more porous, yet still controlled, barrier to nature as it is a place for people to occupy and walk on. As one enters the stalls to the showers and water closets, Scarpa makes a more noticeable increase by implementing a full step and introducing a more solid material: tile. The design then explodes upwards to, "...a continuous wall, in bare bricks, that establishes on either side, through a particular shape, the complex of spaces that makes up the various facilities of the campground," (Los, 1995, p. 45). Not only does he step up the ground, but he steps it up to a particular space to make this space feel more impactful. This method of creating a dissipating barrier to nature creates a sense of privacy while the occupants are still completely exposed to the environment.

Continuing, Scarpa addresses the ground in an eclectic manner in Fondazione Quarini Stampalia. The way the Scarpa creates the garden, speaks on how he builds up land and uses architecture to hold the land. In construction, the foundations of a building hold up a building. However, they also have an impact on the ground itself. For example, retaining walls hold back the land from spilling over. Therefore, it follows that not only does the ground hold the building through the foundations, but the construction also 'holds the ground.' Specifically, this concept is present in the stone pavers as seen in Fig. 07 in the garden.



Figure 07. Photograph of Fondazione Quarini Stampalia pavers and how they "lock" into the ground, taken by Jordan Moumne.

These pavers lock into the ground comparable to puzzle pieces. If following the ideals laid out above, these pavers are in a manner holding the ground as much as the ground holds them. This connection with the earth demonstrates how Scarpa is welcoming nature into his designs and how, in turn, it is treated as a material of substance to manipulate and use as a building tool

in and of itself. This has an impact on the perception of nature through it making occupants aware of the impact architecture has on that which is around it.

Ecological Resilience and Florida

Currently, Florida is suffering. Not only is it suffering from algae bloom issues and the destruction of the everglades, but it also is suffering from flooding issues. Naturally, people turn to common sustainable practices but they are often not enough. “Current approaches to sustainable natural resource management are failing us. They are too often modeled on average conditions and expectations of incremental growth, ignore major disturbances, and seek to optimize some components of a system in isolation of others. This approach fails to acknowledge how the world actually works,” (Walker et al, 2006, p. 14). Ecological resilience is a concept that touches on the ideas of why Florida is suffering. Instead of heavily intervening in the environment, leaving enough able to maintain the resiliency of an ecosystem able to do its job is imperative. But this is easier said than done. People need homes, a place to work, a place to socialize. How to design for the future without diminishing the needs of society is a question whose answer lies in the respect to the natural environment.

Conclusion: Potential for Florida’s Future

The more people are aware of what is around them, the more they implement strategies to reduce their impact. The question lies within why is Florida changing: Florida is suffering from a lack of connection with the environment. While places like Sarasota are forever changed by the impact of Rudolph, the rest of Florida needs to learn the lessons from Rudolph and Scarpa and respond to the changing environmental conditions. Florida does not need to simply raise its buildings. While this is one option and a very viable option, it is imperative that future architecture continues to frame the environment in a positive light and create a space for people to learn to respect what is around them. Florida needs to emerge out of the mindset of creating plastered-over houses that sit level with the ground, with windows that primarily focus on the pool or the neighbors’ bushes, and pushing people to the inside of the house through the pull of airconditioning towards houses that create an understanding and appreciation of the environment. As more people become aware of the beauty around them, they are more likely to treat it with respect. The way to accomplish this goal is through the methods such as framing the environment, experimenting with views, exploring the visible connection of the ground, planning for the inevitable flooding that will occur and creating a feeling of safety for people to positively

interact with what is around them. Florida needs to learn from the lessons taught to us from Paul Rudolph and Carlo Scarpa.

Acknowledgements

I would like to express my gratitude towards Professor Jeffrey Carney, who took the time to guide me in my research, whether down the hall in his office or all the way across the seas. I would like to express my gratitude towards Architect John Potvin, who attended site visits with me and offered insights on Sarasota's culture. I would also like to thank the Sarasota Architectural Foundation for allowing me to photograph and study Paul Rudolph's Umbrella House and Healy Guest House.

References

- Domin, C. M., & King, J. M. (2002). *Paul Rudolph the Florida houses*. New York, NY: Princeton Architectural Press.
- Howey, J. (1997). *The Sarasota School of Architecture: 1941-1966*. Cambridge, MA: MIT Press.
- Los, S. (1995). *Carlo Scarpa: An Architectural Guide*. San Giovanni Lupatoto: Arsenale Editrice.
- Rohan, T. M. (2014). *The Architecture of Paul Rudolph*. London: Yale University Press.
- Sarasota Bay. (n.d.). Retrieved from <https://sarasotabay.org/sarasota-bay/>
- Rudolph, P., Bell, E., & Dixon, J. (2020). *Paul Rudolph: Inspiration and Process in Architecture*. New York: Moleskine Books.
- Walker, B., & Salt, D. (2006). *Resilience Thinking*. Washington: Island Press