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Thesis Presentation Text

As humans first began to build and settle, nature was a determining factor throughout the course of our lives. We regarded forces of nature as gods - something to be feared, coveted, and relied upon for food, safety, and survival. But regardless of weather conditions or terrain, there has always been a constant element we have followed and pursued: the presence of water. Our ancestors have looked to water to complete simple, yet necessary, rituals that we still participate in thousands of years later: hydration, cleansing, and farming.

At its onset, architecture was a necessity crudely built from the most basic resources and primitive technology. Under the influence of changing seasons and availability of food, our homes and communities could not be considered permanent. In the face of continual changes, we looked to water as a something steadfast. Societies settled near rivers, lakes, and shorelines out of necessity to sustain their lifestyles. Early tribes recognized the significance of the elements in their lives and regarded them as gods among men.

Indigenous Ojibwe tribes participated in the Rain Dance Ceremony through song and dance, fasting, and bodily sacrifice, to ensure that the coming year would bring rain to sustain themselves and their crops. The Rain Dance also existed to give thanks for what nature provided to them, acting as the tribes' way of giving back what they had taken and acknowledging their standing in the world.

On a cliff-side overlooking the Aegean Sea stands the ruins of the Temple of Poseidon. The temple overlooks a bay that saw the arrival and departure of battleships returning to southernmost point of war-fortified Athens, marking a monument fitting to the god who determined the mood of the waters. This temple represents the beliefs and stories that the fabric of Ancient Greece is built upon. The architecture speaks to reverence in which the Greeks gazed upon their deities.

Our reverence to water was not only expressed in large gestures, but small ones as well. Within a sacred crypt in France resides the Well of Strong Saints where early generations of Christian pilgrims congregated to worship and to draw water for baptisms and medicinal cures. The site that held the Well of Strong Saints is now home to the Cathedral of Notre Dame.

The presence of sacred waters helped shape this cathedral in more than just a physical way – the well became a symbol of spiritual and cultural preservation, framed by the cathedral standing above it. However, years of decay and being shrouded by the stone foundation had left the well and the waters a shadow of the spiritual destination it had once been. By this point, there was a distinct separation in our relationship with the elements that was reinforced through advancement in building technology, just as the foundation overshadowed the well.

The scale of these technological advancements expanded exponentially over time. As we welcomed the Industrial Revolution, our newfound reliance on steamboats, factories, and shipping and rail industries resulted in shorelines becoming prime real estate for new cities. The flourishing of industry turned into the wilting of water quality as toxins were churned out into our lakes and rivers. We began to disregard the health of our resources and nature evolved from the most significant influence on our lives into something that we physically conquered and reshaped. With a disregard for our surroundings in the wake of a revolution, we found a sense of reverence within our own technology – an all-encompassing and man-made element of our lives.

Martin Heidegger, German author and philosopher of the 20th century, explains an equilibrium between man and nature through his concept of the Fourfold. Divided into the categories of Earth, Sky, Divinities, and Mortals, each piece of the fourfold is intertwined and influential to the others. Our role as Mortals in the fourfold is to recognize our temporary nature as humans and be aware of how our actions influence the Earth, Sky, and Divinities, even past our own lifetimes. In recent years designers have attempted to respond to this through sustainable measures within our architecture.

However, sustainability has become a title to be flaunted rather than a measure of a building's longevity and contribution to environmental health. The Bank of America Tower in NYC, New York boasts all of the technology and qualifications to be called a Leadership in Energy and Environmental Design (LEED) Platinum building. But despite its laundry list of sustainable measures and technology, the tower emits more greenhouse gases and consumes more energy than comparably-sized high rises.

In this way, we have become lost. We no longer settle into the site, but redefine the site. The canal system in Hamburg, Germany serves as an example of this lopsided relationship. We have exercised our ability to control and redirect a body of water for our own agenda. But over time the canal has exercised its ability to reclaim its place. Years of constant water movement against the warehouses have created instability that threaten the structure of the foundations.

Man and nature thrive when working in tandem rather than one attempting to overpower the other.

Gadamer goes on to say that it is our responsibility as humans to “direct our attention away from ourselves back in the direction of the vast, balance-sustaining rhythm of the natural order.” This is a call for action to create designs that bring us toward a more balanced equilibrium and true sustainability

Biomimicry directly translates into ‘imitate life.’ This mantra encourages inspiration of architectural design to be drawn from naturally-occurring systems to create more efficient and understandable architecture.

Within the hillsides of Vals, Switzerland lies a bathhouse designed by Swiss architect Peter Zumthor. Between the stone palette and the underground entrances, this bathhouse embodies graceful integration into a site. The surreal interior is created from the slow, ramped approach into the baths while the light, steam, and water reflect off one another. The interior and exterior of the architecture work in tandem to create a smooth transition from the hillsides to the very individual experience within the baths. This architecture acts not just as a room to be filled, but as a careful consideration and extension of its surroundings.

Most architecture is not so conscientious of its impact. As a result, the shift in the equilibrium between man and nature has been pushed to a point of destruction in terms of our environment. Heidegger speaks of the concept of ‘friede,’ meaning “preserved from harm and danger.” To free something is to save it. Biomimicry attempts to remedy the damage done not by further mastering of the earth, but by allowing the solutions nature has already found to come forth within a design – the freeing of nature’s essence.

History has taught us that water is the lifeblood of humanity, found at the core of every community. Gaston Bachelard, a French philosopher well-versed in sciences and poetics, explains how water can be a source of private contemplation: allowing us to see our reflections and by engaging our senses, as Zumthor’s bathhouse illustrates. But it goes beyond being an individual experience. Lakes create universal interactions by uniting communities, providing a meeting point, and indicating a place of settling.

Although the surface of our earth is 70% water, merely 2.5% of this is freshwater. Less than half of that is accessible for purifying, consuming, and carrying out daily rituals in which we have all

become accustomed. As we continue to build and industrialize, we need architecture that refuses to further contribute needless waste into resources that we cannot replace.

*In the face of industry-dependent cities, we must turn to natural systems and site-specific architecture to remedy the damage done to our limited reserves of freshwater.*

### ARTEFACT

14,000 squares of paper were transformed through the soaking and evaporation of freshwater, leaving them to dry as they may. Each paper stands as an individual “fingerprint” left in water’s absence, creating forms that are reminiscent of what is missing.

Deeper immersion into the artefact is created through recorded audio of wave-like movement of the accumulated papers. Even in the hollow absence of water we can sense its presence, and in this we are reminded of the weight in carries in each of our lives. Its constant presence has become so commonplace that we have unknowingly become blind to it, and this attitude of disregard is the biggest contribution to the diminishing health of freshwater.

The purification of our irreplaceable resources can only be accomplished through the passing of time and ritualistic tending-to of the individual piece. Similarly, this artefact aims to re-instill a sense of reverence to water that has been overshadowed by technology and industrialization. The program of my thesis provides a solution to the ruination of freshwater in a similar way: through the creation of a freshwater research center that allows us to once again see freshwater in its purest form.

Preindustrial Duluth originally belonged primarily to bands of Ojibwe tribes. An abundance of resources like ore, wheat, and lumber brought an influx of settlers to the area. However, Lake Superior became the biggest draw to the area, acting as a direct connection between ocean ports as well as being an essential source of freshwater.

As Duluth was founded and flourished upon consumption of resources and geographic connections, the path was laid for rapid industrialization. Like countless other shoreline cities, the price of industrialization came at the expense of our freshwater’s health.

Lake Superior’s water quality is a clear example of the reciprocal relationship between us and our surroundings. As water quality deteriorates so does our quality of life, and vice versa. The program of this thesis lies in the creation of a freshwater research center in Duluth, MN. The primary program of this building consists of research and laboratory spaces that exist to further the development of filtration systems and agents to counteract the effects of toxins being

emitted into freshwater bodies. This project encompasses the concept of “friede” in order to preserve what is most essential.

## ARCHITECTURE

### SITE/FORM

Much like the thousands of papers creating the artefact, this architecture of this building becomes a host for the cycles of water throughout the seasons. Water is welcomed across the geometry of the buildings, rooflines channeling it back onto the site to accommodate foliage growth. The southeast face of the building directly confronts the shoreline, shrouded in Corten steel panels. These panels transform over time, the presence of water indicated through a patina and corrosion of the metal, carrying the weight of time that is felt near a body of water. Simplistic forms frame and draw attention back and forth between Lake Superior and the individual, providing us an opportunity to see how they are connected.

### PLANS

On its interior, this building houses the intersection of two primary uses. The lower level accommodates the unknown of what happens below the surface – the technical and scientific approach to cleansing our freshwater within the laboratories. Research labs call for more specialized and privatized spaces that don’t interfere with the circulation of the visitors.

The second floor houses the more intimate and introspective experience with the pursuit of knowledge and growth through the library stacks, archives, and the overlooks that isolate the individual. Technology areas, conference rooms, and observation areas offer varying degrees of interaction through the pursuit of knowledge, whether utilized by visitors or the employees.

In between the scientific and the introspective lies the ground level, a point of mediation between the two. The lakewalk is extended within the building, inviting the general public within. Where the lakewalk meets the primary entrance, a point of convergence is embodied within the sharing of knowledge within the auditorium, providing a space for conference and presentations. Encounters between the visitors and employees are encouraged throughout the café and areas of open circulation within and next to the lakewalk.

## LONG SECTION

This section perspective gives us a clearer look into the events transpiring within each level of the research center. From the northwest, the lakewalk is extended across the channel between two piers and into the ground level slightly below grade. This offers an opportunity to allow a lightwell along the path to let natural light into the subterranean labs. At the same time, a series of three reflection pools create moments of pause along the path while allowing additional natural lighting into the lower level. Overhead, the individual is called out and isolated within one of the three second-floor observation areas that reflect the position of the reflection pools, standing as two opposing moments of looking toward the complexity within and out at the simplicity of the whole. Additionally, the geometry of the roofline, in combination with diversion channels, are conducive to the shedding and return of precipitation onto the site.

## LAT SECTION

Within this northwest section we can more clearly see the difference in elevation between the lakewalk path and the open communal spaces of the ground floor. This difference in elevation also acts to pull the body closer to surface level of Lake Superior and better aligns our line of sight with the reflection pools. Through this drawing we can see several instances of displacement occurring between the site and the architecture. This will be addressed in upcoming perspectives, but the reflection pools hold a thin layer of water, a small fraction of the Great Lake it is held up against, while allowing a distorted view into the unknown of the lab spaces. Further than that, just as glaciers carved and shaped the face of the earth, the mass of the subterranean labs uproots a significant amount of soil. This soil is mirrored back on to the site where it houses the mechanics for a living machine and the vertical wetlands that it feeds within the community areas.

## LIVING MACHINE

For those that are unfamiliar, a living machine is an on-site water purification system that cleanses the water through a series of tanks embedded in the earth filtered through a series of wetlands – in this case, vertical living walls that align with the reflection pools. Once filtered by the wetlands, the water can be held on-site to be used as non-drinking water. This moment of biomimicry – allowing nature's systems to coexist productively with the technology we've produced – is repeated along the lakewalk three times. At each reflecting pool the individual is offered a moment of being within the cycle: comparing the water of the pool to the simple

expanse of the lake, a distorted view into the labs, and a view of the displaced soil that allows for the growth of the interior green walls.

## ENTRY

The main entry is comprised of a sloped limestone ramp that embodies a sense of submergence into the space as you approach the lake walk and descend closer to surface level. Vertical slate walls drawn from local sources reflect the bedrock of Duluth while acting as a simple frame to draw attention toward Lake Superior. Further than that, the weight of these walls not only act as a canvas to host the reflections from the lake, but also as trombe walls that help hold a steady interior temperature within the space as time passes throughout the day. These materials act as a nod to the Notre Dame cathedral that precedes it as well as a nod toward Duluth's aesthetic.

## AUDITORIUM

Acting as the meeting point between the public lakewalk and the entrance from the site, the auditorium offers a glimpse of the individual and the complex: Overhead, the individual is isolated and pushed out over the water, putting them in place that allows to look out beyond themselves, back at the patina of the corten steel, and framing them alongside the elements.

## LABS

The labs embody the most primary use of the research center, although what happens within is not readily always readily apparent to the visitors. The view from the lightwells into the labs can be compared to looking into the depths of deep waters – we can may recognize it at surface level, but the particulars allude us. However, recognition and exposure to these events is one of the reasons for drawing the public in the space. Drawing the necessity of cleansing freshwater closer to our day-to-day lives through the experience of this building reminds us of our responsibility to be mindful of our resources.

## REFLECTING POOL/LIGHTWELL

Here we can see an example of how the reflecting pools create a moment of pause between the user, the architecture, and the site. A simple plane of water is both help up against the great lake while diverting your attention down into the lab spaces. This way, the viewers are caught in a moment between the micro and the macro, between the simple and the complex.

## PATH

Looking down the path of the lakewalk, we can see the culmination of materials and interaction between user and architecture. The ground and upper levels play against one another through the use of frosted structural glass floor panels. This allows for the muted distortion of light to reflected the shadows and movement within the archives above.

## INDIVIDUAL

Finally, we see the individual in a moment of introspection within the second floor observation area, drawn slightly away from the interactions of the library archives. As the architecture cantilevers out, we are brought closer to the horizon, blurring the lines between the floor that is being stood upon and the expansive surface of Lake Superior.

This project aims to emphasize the idea that industrialization has had its repercussions on many aspects of our environment. That's not to say we need to abandon these advances or future ones. Rather, we need to recognize when to tend to what has existed long before us, when to implement our technologies, and that the two can exist in tandem, not despite one another.