WATER TOWERS:
FUNCTIONING MONUMENT TO OCCUPIED LANDMARKS
Maggie Swinford
Master of Architecture, 2019
School of Architecture
Tulane University

Advisor: Ammar Eloueini
CONTENTS

7  Statement

7  Abstract

9  Essay
   Introduction
   Logistics of Water Towers
   Residual Uses
   Through Mediums
   Studies of Infrastructures
   Hybrid Resources
   Functionality vs. Monumentality
   Conclusion

38  Annotated Bibliography

41  Precedents & Case Studies

57  Works Cited

59  The Design
   Program & Distribution
   Modularity

Maggie Swinford | ARCH 5980 | Ammar Eloueini | Spring 2019
STATEMENT

Water towers should be celebrated and designed in the same amount of significance as they provide to the function and identity of a community.

ABSTRACT

Water towers are critical structures in the functioning of a community, both as a resource supply and marker of community identity. Since the addition of reservoirs in the late 19th-Century, water towers have not developed aesthetically, except in size and efficiency. Water towers have become landmarks and identifiers that define their rural context because they are grossly out of scale in comparison. The size of a water tower is directly related to the community they serve. The height of a water tower depends on how far the water stored must be delivered, and the size of the tank is determined by the amount of water that must be made available at times of peak demand. Water towers are navigational aids to motorist and aviators, an automotive lighthouse. In addition to being largely out of scale with their context, to optimize the function, the geometric forms increase the obtrusive presences of the water towers. To small American towns, the water tower is a billboard, with welcome signs or painted to resemble some sort of food sacred to people that it serves. These water towers become the primary marker of civic identity a visual representation of town pride, and some even making it on to the list of heritage registers. With so much symbolism tied to a structure, why aren't these structures celebrated and designed in the same amount of significance. Water towers should be designed with a more intentional relationship to their context and to the community that they serve.
INTRODUCTION

Water towers, compared to their rural context, are grossly out of scale in size; but because of their large size and height they are able to provide communities with the necessary pressure and storage to receive constant water. Since the addition of reservoirs in the late 19th-Century, water towers have not developed aesthetically, except in size and efficiency. However, compared to their sized, water towers are vastly underutilized in terms of function for the community. Water towers have the opportunity to provide more than just water to a community and should be seen as an existing frame for architecture to provide a service greater than carrying water. The shell created by the structure of the water tower can create additional opportunities for community engagement through additions of other resources or programs. Because of their visual impact alone, water towers should at least be designed in regards to their visual disruption in the landscape. The unresolved shift in scale has been tried to mitigated by towns through branding the water towers. Since their presences can not be questioned, towns have adopted them as welcome signs and 200 foot billboards, painting the town’s name across the reservoir. Contemporary water tower typologies are designed to stand out and have no relationship to the context in which it exist and serves, for a structure that sole purpose to provide a service to a community, the design aesthetically does nothing to engage or respect its community.
LOGISTICS OF WATER TOWERS

WHAT IS A WATER TOWER?

A water tower is an elevated water reservoir, that used gravity to produce enough pressure to distribute potable water to the residents of their community. Additionally, the reservoir is used to store enough water to keep a consistent pressure during peak hours and to provide emergency storage for fire protection. To accommodate for such means, the size of the reservoir is directly proportional to the size of its municipal and to provide for growth. The height of the water tower is also directly related to its community, the height is determined by the area and distance in which the water system must reach.

HOW DO THEY WORK?

First, the water is treated to be potable at the water treatment plant. The water then travels to the pump station at the base of the water tower, which allows the water to travel vertically in order to be stored in the reservoir located at the top of the water tower. Using gravity, the water is pressurized to travel from the storage tank through the main water line to the consumers. In order to create enough pressure of supply, the reservoir must hold all the water needed for the day, the supply is then replenished at night when the consumption of water is at its lowest. In big cities, tall buildings often solve their own water pressure problems.

WHAT IS THE ALTERNATIVE?

The alternate for communities that do not use water towers are continuously run water pumps, which increase the amount of energy used and in proportion cost, on the other hand these communities do not have to pay for the structure and maintenance of the water towers.
RESIDUAL USES

The residual effect of the size of water towers have transformed the structures to become city identifiers, landmarks, signage, branding, and monuments.

As an attempt to design in regard to aesthetics, water towers are painted a light “clean” color, however, this creates an extreme contrast to the natural landscape, and additionally gets stamped with the name of the town or city that it belongs to. This contrast has emerged as a vehicle for these water towers to serve as welcome signs for a community, with visibility from miles away, a visibility that is not otherwise achieved. Some municipalities include water towers in their branding scheme, having identical size, form, and signage, seeming as if the city’s corridors weave together held together through these large structures.

Some city branding are more whimsical, using the infrastructures form as a canvas for decorative paintings to resemble objects and foods. A flared steel column water tower style resembles a ball on a top of tee, the Tipton, Missouri water tower (figure C) takes advantage of this resemblance by painting the reservoir as a 8 ball. The water tower nce held water vital for the manufacture of billiard tables. The city of Circleville, Ohio, utilized the shape their multi-columned water tower by painting it to resemble a pumpkin (figure B), promoting their annual Pumpkin Show Festival. In both cases the painted designs on these water towers have become landmarks for these cities, by both visitors and residents.

Some water towers, either through there humorous design or through its historical presence are identified as monuments for these residents. They serve as a symbol for their culture and community, abandoned water towers, replaced by newer and bigger towers, are monuments to a different time. In fact, some abandoned water towers are being renovated into programed buildings, such as residents, because their structure has historical symbolic significances, not just to the people that it once served but as a symbol for infrastructural lineage.

Chateau d’eau by Bham Design Studio, located in the Belgium village of Steenokkerzeel was a water tower used until the early 1990’s (figure F). During World War II, it was used as a watchtower by the Nazis when they took over Belgium. “In 2004, it was placed under protection as a monument, and in 2008, its conversion into a single-family home commenced. To maintain the building’s identity as a water tower, concrete elements in the interior such as the ceilings, stairs and the 54,992-gallon water basin have all been preserved.”

A. "Tales, AL. One of Two Water Towers That Stand Sentry over This Growing Tourist City," http://www.city-data.com/jpg/003/3006.png.
CITY IDENTIFYING

In Image of the City, American urban theorist Kevin Lynch, observed that way in which people take in information about a city and concluded that people form mental maps of their surroundings based on five basic elements: paths, edges, districts, landmarks, and nodes. Analyzing water towers through these elements, it is evident that water towers are crucial in mental identification of a city.

Landmarks: As previously mentioned, due to their aggressive size and juxtaposition to the natural landscape, water towers have established themselves as landmarks in the landscape, landmarks for directional wayfinding but also as mental landmarks for moments and people.

Paths: These landmarks reside along paths, or the streets of these cities, either physically or visually. Water towers are designed in respect to projected growth, hence their existence along interstate systems, the most popular means of travel in America.

Nodes: These water towers along the interstate system is used to string together these wayfinding nodes and as intersection of the main artery to the towns that appear to have been cut through the interstate.

Edges: With the addition of signage and the visual presence along the interstate, these water tower 'welcome signs' have also developed to be spatial definitions for edges.

Districts: Divisions by these visual edges created areas or districts maintained by these boundaries. Additionally, through the adoption of uniform branding water towers by regions, they are used to remind visitors of the district in which they are occupying.

---

UGLY AND ORDINARY

Robert Venturi wrote on ugly and ordinary architecture in the book, Learning from Las Vegas. Infrastructures such as grain elevators and contemporary water towers are perceived as ugly and ordinary due to the lack of originality and lack on contextual understanding for the design of the structure. As well as the solution of stamping and painting these types of water towers with two-dimensional ornamentation, rather that solving the problem through architectural form.

Venturi argues Ugly and Ordinary over Heroic and Original, through the metaphor of the Duck and the Decorated Shed.1 “The Duck is said to be ‘Heroic and Original’, symbolically implicit, connotative and abstract, and therefore impoverished through its rejection of ornament. The Decorated Shed is the opposite: Ugly and Ordinary, explicitly symbolic, denotative and familiar and therefore, even though Sheds may be seen as too humble a form for architects, Decorated Sheds are enriched through their layers of meaning.”

The Duck can be compared to the humorous design of water towers as objects, such as foods, while the Decorated Shed can be compared to the traditional treatment of water towers with regional signage and branding. The Ear of Corn water tower, in Rochester, Minnesota, is a duck of a water tower. It’s form might be successful in terms of a tourist attraction and “powerful symbol of the community’s roots in agriculture and the land,” as described by the Rochester Convention and Visitors Bureau, aligning with the description of Heroic and Original. The Biloxi, Mississippi water tower, as seen from over a mile on Interstate 10, is an example of Ugly and Ordinary. Its form is familiar aside from its color blue and label for the city of Biloxi.

---

THE COST

Pensacola Beach, FL

Constructed in the early 1900’s, the icon beach ball water tower no longer holds the burden of holding the islands water supply, it’s main function now is a local landmark. Before it took its current appearance of a beach ball, the water tower originally was labeled simply with ‘Pensacola Beach’ and for a period of time was painted to resemble a golf ball sitting a top a tee.

In recent years, the value of maintaining the beach ball has come into debate between leaseholders and officials. Since the ball no longer serves any major use as a water tower, residences have accused the upkeep as a waste of leaseholders’ money, however Beach officials say it’s a valuable marketing tool. Thousands of people take photos of the beach ball each year and is one of two main market images on souvenirs and brochures for the island.

In 2012, it cost the Island Authority $200,000 to totally refurbish and repaint the water tower. To prevent another large maintenance expenditure, the Island Authority has agreed to a contract, costing $9,000 annually. Eventually, in 10-12 years the tower will need to be repainted. Including the contract cost and the 2012 refurbish, during the 12 years till the next repainted, it will cost $25,000 annually. Comparatively, a large billboard serving the same function cost $130,000 a year.¹

New Orleans, LA

This year, the New Orleans Sewerage and Water Board finished the completion of two new 200 ft water towers. Each tower has the capacity to hold 2 million gallons of water, the construction is to prevent drops in water pressure “that can cause boil-water advisories and damage to the system’s pipes.” As of Sept. 20, 2017, the city has had 12 boil-water advisories in the past 7 years. Funded by the Federal Emergency Management Agency (FEMA), the twin water towers were estimated to cost $48 million.

In March of 2015, the Uptown Messenger published an article about the historical concerns of the addition of the two towers in the Carrollton neighborhood skyline. The aesthetic suggestions by preservationists include colors to resemble smoke stacks from the area and a non contemporary water tower structure.

It is unknown the cost to maintain the appearance of these water towers. A water tower along interstate 94 in Woodbury, Minnesota, is of similar size at 186 ft tall with the capacity if 2 million gallons of water, was estimated to cost $1 million to repaint for the first time since the water tower was built, 20 years previously.

THROUGH MEDIUMS

IN TELEVISION AND MOVIES

Due to their use as city identifiers, water towers have made appearances in many movies and television shows; often mentioned as 'The City Water Tower,' suggesting there is only one in the city and thus inferring a strong cultural significance to the city in which the fictional show takes place.

In the movie 'The Little Giants,' for example, the view and transition of the town’s water tower opens and closes the story. The 1994 movie is centered around the story of the O’Shea brothers in the fictional town of Urbania, Ohio: a stereotypical small town that is centered around football, where success is measured by one’s sports ability. The movie opens with what seems a typical brother relationship, a bigger, stronger older brother and a smaller, weaker younger brother, who look up at the town’s water tower as a benchmark for success. The movie then moves 30 years forward and we see the rise of success of one brother, leaving one brother behind. By the end of the movie, the two reestablish their definition of success and there worth to one another. The development of the water tower correlates to the development of characters and the story. In the story, the water tower symbolizes the success of the individual brothers in relationship to their town and to each other. The story breaks down the meaning of a town hero who deserves their name atop the water tower, tackling the imagine of small town America.

Infrastructures in industrial and rural settings have been subjects of examination through artist, theorist, and architects. The most famous examinations of infrastructure typologies, comes through the artist lens of Bernd and Hilla Becher. The Bechers spent the majority of their lives capturing photographic portraits on infrastructure typologies, including water towers, grain elevators, and cooling towers.

"The Bechers' 224 photographs of watertowers comprise a unique, single minded, even obsessive mission. They were taken from as many as 8 angles, over a period of 25 years, with a stylistic approach so consistent that photographs juxtaposed from the 1950s and 1980s suggest a minute to minute account deadpan portraits of unadorned metal, concrete, and wooden structures. Always taken in overcast skier, or in the hazy sunlight of industrial zones, these seemingly artless photographs belle the elaborate process and decisions involved in creating them— elevating the camera on scaffolds or ladders, waiting for clouds to block the sun, enlisting the cooperation of plant foreman and security guards to remove all signs of human life from the scene."  

These portraits romanticize the ordinary, through the rigorous frontality of the portrait views, that capture their rich density of detail. "Their work is distancing, deliberately unglamorous, departing from the usual style of architectural photography. Almost everything they photograph is eventually demolished." The "typologies" contributed to the definition of objective photography. Sets of these industrial structure typologies, often associated with ordinary people and industries, have been collected by for the category between art and photography in museums, such as the Tate (figure A) and MoMA.
Water Towers | Maggie Swinford
STUDIES OF INFRASTRUCTURES

Industrial Infrastructures have served as inspiration for both artists, like Bernd and Hilla Becher, and architects. There are not many studies and works include water tower as the main subject, because of this it is valid and important to study other design thoughts and movements that have been inspired by other infrastructures. It is also critical to analyze how other types of infrastructures have also become synonymous with a city’s identity.

GRAIN ELEVATORS

Forty years before the Bechers studied infrastructures, Walter Gropius compared the monumental power of grain elevators to the buildings of ancient Egypt. Gropius produced a set of 9 photographs from grain elevators from Germany and America, including were two from Buffalo, New York and one Baltimore, Maryland, in his manuscript of the Monuments Kunste und Industriebau lecture. Gropius concluded his 1911 lecture with the introduction of the 'new monumental style,' through the projection of these nine concrete grain elevators (figure A).

The projections of grain silos by Gropius inspired sketches by Erich Mendelsohn, work by futurist Antonio Sant’Elia, and French architect Le Corbusier. In his manifesto, Towards a New Architecture, Le Corbusier included the Gropius’ nine portraits of grain elevators to demonstrate how these structures were profoundly beautiful in their simplistic function to serving people. Before including them in his manifesto, Le Corbusier, ‘retouched’ the photographs with gouache. “The grain elevator photographs went ‘viral’ and were reprinted dozens of times in at least six different countries over a 100-year span. By the late 1920s, the grain elevator photographs were considered icons of modernity.”

MOONLIGHT TOWERS

Moonlight towers were erected in the late 19th century as means to lighting several blocks at once. In some places they were used when standard street-lighting were impractically expensive. Austin, Texas contains the only remnants of moonlight towers, which make up the city's historical landscape. Seventeen of the original thirty one moonlight towers still stand in Austin. These 165ft infrastructure have created a cultural identity in the city of Austin, validating their remains and prompting a $1.3 million restoration of the towers.¹ In 1993, each tower was dismantled and bolt, turnbuckle, and guy-wire were restored. In 1995, the completion of the restoration was celebrated with a citywide festival. The city of Austin has adopted these retired infrastructures as apart of their city identity. Although the origin of moonlight towers differs from the lineage of water towers, both infrastructure have symbolically become more than a resource for the community, possibly due to their shared height and visual presence in the landscape.

**A NEW INFRASTRUCTURE**

The Water Tower Ghlin, in Belgium, designed by V+, focused on the understanding that “water towers are infrastructures which, in addition to their technical role, participate in the drawing of the great landscape.”¹

The form is generated from the function of the water tower and mimics the traditional segments of a water tower, pillars and a reservoir. Instead of four legs of table, the structural pillars were formed by the intersection of a X and V. Resting at the top of the structure, is the water reservoir, a circular tank, recessed within a rectangular perforated metal grid. In traditional typologies, the vat is a continuation of the structural form of the tower, but V+ designed the two components to be separated entities, a mass resting atop of a support. The structure “was intended as unconventional interpretation of water towers, as well as a “strong signal” and landmark for the industrial estate.”²

This infrastructure, questions the static typology of water towers and tackles the relationship of the structure’s form in the larger landscape. It is an unachievable to make a water tower look natural in a landscape and the traditional approach of a ‘nice’ paint job is not remedying the scale shift. Architects take on the responsibility of designing our built and occupied environment. In the traditional sense, water towers are not occupied, they are not buildings, however their presence manipulates spacial and visual boundaries and redevelop skylines and landscapes. A structure that combines just a high demand resource as water, the identity of a city, and tools for wayfinding, while disrupting the landscape, should be designed as a piece of architecture.

---

HYBRID RESOURCES

In rural areas across America, water towers are commonly the most expensive single structure built for the community, yet these structures are hardly designed beyond their primitive function. This means that the visual effects of water towers, i.e. their size, color, and form are not acknowledged and thus left to be painted with the community’s name. The size of the water towers are critical to the function and efficient of the dispersal of water and is directly related to the community they serve. The height of a water tower depends on how far the water stored must be delivered, and the size of the tank is determined by the amount of water that must be made available at times of peak demand. Water towers are necessary infrastructures that break up the natural landscape and because these must exist and at the size that they do, the present an underutilized opportunity to activate the space created within the large and robust structure and the vantage point of the height of the structure.

Atelier Ramdam Architects, a French architecture firm, proposed a solution to the underutilization with their project Castle in the sky (figures A and B). This project reimagines what a water tower is and what it signifies. The location in which this proposed project sits, is historically devoted to water management. The function and program of ‘Castle in the Sky’ aims to “become a symbol for ecological issues.” In addition to be a water reservoir, this project contains a vaporization system that creates its own rain. By allowing the tower to be occupied and explored by the public, it invites visitors to experience the precipitation system and the advantage point, by the height of the tower. Combined an occupational program with a water tower creates learning opportunities about how water towers work and their importance of existing. At the very minimum is allows for directly interaction with the community in which the water tower serves. During the procession to the various destinations and summit of the tower, vegetation is added to enhance the water management influence, which benefits from the precipitation created by the towers vaporization system.

At a much larger scale, The Amager Resource center (figures C and D), combines a power plant, a visual community signal, and public leisure activities. The power plant was completed in March 2017 and included a signular smoke stack and denoted with blowing a smoke ring, a reminder of the city of Copenhagen’s carbon footprint, every time 250 kilograms of carbon dioxide has been released into the atmosphere. The final piece, the nature filled public roof, will function as a ski slope in the winter and as hiking trails and playgrounds during the summer. The rooftop will also serve as will serve “as a generous ‘green bomb’ that will radically green-up the entire area.”

---

FUNCTIONALITY VS. MONUMENTALITY

According to the Oxford Dictionary, a monument can be created as "a statue, building, or other structure erected to commemorate a notable person or event," or a monument can be developed over time to be "a building, structure, or site that is of historical importance or interest." Through the analysis of water towers in the lens of Kevin Lynch's 'Image of the City,' the role of water towers in an American small town is crucial. Water towers serve as identifiers and wayfinding tools, but also through time and branding, have developed into iconic symbols for the town, both physically for visitors and symbolically for residents. The previously mentioned residual uses can be summarized as creating a monumentality existence of these water towers. These monuments have helped shaped the form of the small town and the shape of these monuments are designed through the functional needs of a water tower.

To commemorate World War II battlefields and celebrate the struggle of Partisan armies that challenged Hitler after he conquered the region, Yugoslav president Josip Tito commissioned the spomeniks (figures A). The spomeniks are a collection of concrete and metal monuments, throughout the six republics of Yugoslavia. The sizes, forms, and materials resemble that of water towers, specifically the photography series of Irish water towers by Jamie Young (figures B), who was inspired by the work of Bernd and Hilla Becher. Although, these water towers tell the story of the infrastructural and architectural history of Ireland and are in their own way, monuments. These historic water towers are not far in design from the same intensity of purpose of the spomeniks.

What if a water tower was designed with this final existence of monumentality in mind? What if these monuments were designed to represent the small town through form? Instead of limiting the functions of the water tower to visual monumentality and water supply, these structures could be an occupied monument, both a manipulated space for monumentality and functionality. This thesis addresses the monumentality of water towers through designing for its functionality. The approach in designing for monumentality through functionality is to introduce a occupied program that further strength the symbolic relationship between water towers and their small town. The program would be centered around public space and community resources.

CONCLUSION

Water towers are first a pressurized water distribution system, second a visual identifier, either for wayfinding or through branding, and is third a symbolic structure for visitors and or residents. However, the latter is a symbol created through time and proximity, not through design. The residual effects and uses of water towers, primarily caused by the size and juxtaposition to the natural landscape, are what define the structures with cultural and historical importance.

The symbolic relationship between the appearance of water towers and their small towns should be strengthen through design, both through architectural design and physical relationships. These infrastructures deserved to be designed with their indirect monumentality in mind, through design representation of these small towns greater than a ornamentation paint job. The relationship could be strengthen through the addition of a public program. This program would be an experiential representation of the relationship between water towers and small towns.

With so much symbolism tied to a structure, these structures should be celebrated and designed in the same amount of significance. Water towers should be designed with a more intentional relationship to their context and to the community that they serve.
ANNOTATED BIBLIOGRAPHY


This book serves as a general introduction of Brutalism and addresses the narratives and themes of the movement. The book dives into a series of case studies of Brutalist architecture and addresses how these buildings of Brutalism stand today. This research will help me in my thesis in understanding the designs of water towers in other countries, that arose due to the Brutalist movement and understanding the repercussions of a worldwide design movement.


The book is a catalog of the all the photographs taken by Bernd and Hilla Becher in their typology series ‘Water Towers.’ The forewords address the art and vision of their work and the impact of studying typologies of our past. This collection and the interviews of the Bernd and Hilla will provide provocative conversations about city infrastructure.


Klingman examines our cultural need to brand as architecture and the negative and positive repercussions of branding. In ‘brandscapes,’ buildings are not objects but as advertisements and destinations. Klingman discusses the roll of architects for branding as a strategic tool for economic and cultural transformation. With water towers being used as branding for cities, this research will clarify the cultural implications that come with water towers aside from their architectural form.

This book is a collection of case studies of ornaments in the twentieth century. The function of ornament is discussed as while as the idea the ornamentation is an application to buildings, that is discrete or non-essential. The studies serve as a conversation between ornamentation and materialization and well as discuss the disconnect between the interior exterior functions of a building. This collection will help my thesis in understanding what ornamentation is and the implications of 'adding' to already form that functions ideally.


Treu analysis the history of signage and its cultural and economic impact, through tourism and the 'main street.' Treu addresses the regression of signage design and historical lineage through reforms and modernizations. The author addresses our current signage culture of repair and reinvention. I will use the lineage of signage regression along the history of water tower designs or non-designs and the transformation of the 'main street,' to help clarify the regression of designing infrastructures.


The studio studies ornament and symbolism in architecture, specifically through the lens of Las Vegas. Understanding cultural icons and symbolism, especially through signage will help my thesis in recognizing cultural identities without preconceptions and understanding the development of the urban sprawl compared to that of the interstate corridor of 'main street' and its identifying qualities of water towers.
PRECEDENTS AND CASE STUDIES
MARINILLA EDUCATIONAL PARK
EL EQUIPO DE MAZZANTI
ANTIOQUIA, COLOMBIA, 2015

The program of the park is designed to combine the ideas of meeting, play, walkabout, watch, and farm. Because the park is comprised of interior spaces connected by larger 'halls' this allows for multi-use of spaces that are both prescribed and unprescribed.
NEWBERN TOWN HALL
AUBURN RURAL STUDIO
NEWBERN, ALABAMA, 2013

The Town Hall, as the primary community and civic building in Newbern. It functions as a meeting place for the Town Council, provide a place to teach community classes, become a voting location, and will be available for other miscellaneous community events.
COMMUNITY SHELTER
FRUNDGALLINA
MOLLENS, SWITZERLAND, 2010
The water tower in Antwerp sat abandoned for 29 years, after being replaced by four new water towers in 1937, before it was reimagined as a residence in 1996. A landscape architecture, Jan Moereels, saw the potential of the historic structure and commissioned architect, Jo Crepain to design the apartment. The design of the apartment respects the original typology of the reservoir and its historical significance to Antwerp, by keeping the original four concrete pillars and incasing the structure with glass to enclose 4 floors of occupied space, underneath the water reservoir. The transparent panels showcase the concrete structure while keeping a minimum profile of additional materials. More volume is added at the bottom of the structure through the addition of a double height ground floor with a mezzanine.
WATER TOWER GHLIN
V+
MONS, BELGIUM, 2014

"The water towers are infrastructures which, in addition to their technical role, participate in the drawing of the great landscape" ¹

This infrastructure, designed by V+, questions the static typology of water towers and tackles the relationship of the structure's form in the larger landscape. The form is generated from the function of the water tower and mimics the traditional segments of a water tower, pillars and a reservoir. Instead of four legs of table, the structural pillars were formed by the intersection of a X and V. Resting at the top of the structure, is the water reservoir, a circular tank, recessed within a rectangular perforated metal grid. In traditional typologies, the vat is a continuation of the structural form of the tower, but V+ designed the two components to be separated entities, a mass resting atop of a support. The structure “was intended as unconventional interpretation of water towers, as well as a “strong signal” and landmark for the industrial estate.” ²
The iconic Jægersborg former water tower was transformed, by Dorte Mandrup Arkitekter, into a mixed-use building after being supplemented by a new water tower in the 1960’s, due to population growth. The transformation focuses on the inclusion of the main two identifying components of the original water tower, the 12 structural columns and the large circular water tank. “Throughout the conversion process, Dorte Mandrup's approach has been to strengthen and maintain the tower as a local landmark by retaining the large-scale columns and the iconic tank.”

The Jægersborg structure addressing the disproportioned scale of water towers through the introduction of program at the human scale. The program is comprised of student housing on the upper floors and the lower floors are occupied by a youth center and large multipurpose rooms. The residential units are framed into the existing column grid and add a sculptural layer of “crystal” balconies, that provide unobstructed views while emphasizing the landmark characteristic of the water tower.
CASTLE IN THE SKY
ATELIER RAMDAM ARCHITECTS
UNBUILT

This project reimagines what a water tower is and what it signifies. The location in which this proposed project sits, is historically devoted to water management. The function and program of 'Castle in the Sky' aims to “become a symbol for ecological issues.”

In addition to being a water reservoir, this project contains a vaporization system that creates its own rain. By allowing the tower to be occupied and explored by the public, it invites visitors to experience the precipitation system and the advantage point, by the height of the tower.
"Typologies," the body of work by Bernd and Hilla Becher, is composed of black and white photographs of various examples, typologies, of industrial structures. "The rigorous frontality of the individual images gives them the simplicity of diagrams, while their density of detail offers encyclopedic richness... The typologies emulate the clarity of an engineer’s drawing, while the landscapes evoke the experience of a particular place." The photographs have been labeled as the most important body of work in independent objective photography.
MOONLIGHT TOWERS
UNITED STATES
1880's -1890's

Moonlight towers were erected in the late 19th century as means to lighting several blocks at once. In some places they were used when standard street-lighting were impractically expensive. Austin, Texas contains the only remnants of moonlight towers, which make up the city's historical landscape. In New Orleans, at the intersection Canal St and Bourbon St, once contained sets of Moontowers, illuminating the Mississippi River levee, to aid the loading and unloading of cargo ships at night.
PRECEDENTS: WORKS CITED

TEXT


FIGURES

01-04. www.archdaily.com/785024/centro-educativo-marinailla-el-equipo-de-mazzanti
05-08. www.archdaily.com/400565/newbern-town-hall-auburn-rural-studio
13. dornob.com/bare-bones-water-tower-fleshed-out-into-a-5-story-house
20. By Author
21-25. www.archdaily.com/778636/chateau-deau-v-plus/ ISSN 0719-8884
26. By Author
28-30, 32. www.dortemandrup.dk/work/jaegersborg-water-tower
27, 31, 33. www.archdaily.com/6748/jaegersborg-water-tower-dorte-mandrup-arkitekter/?ad_source=myarchdaily&ad_medium=bookmark-show&ad_content=current-user
46. notevenpast.org/city-lights-austins-historic-moonlight-towers
47. www.kut.org/post/will-austins-missing-moontowers-return
**PROGRAM**

**WATER RESERVOIR**

The most important program in designing a new typology of water tower is the pressurized water system. The function and program of a water reservoir takes priority and must remain in complete function. However, it is crucial in the characteristic of the water tower that it is categorized as the primary program.

**MONUMENT**

The secondary result of monumentality that has been generated through time and visual representation, is the driving program for the redevelopment and study of water towers in towns; because of this, it is critical that the monumentality and traditional aspects associated with water tower typologies are not lost in the redevelopment.

**PUBLIC SPACE**

An occupied program is the only new function being introduce in this new typology of water tower. A public space would strengthen the symbolic relationship of a water tower and small town to an experiential relationship. In this case the public space can be broken down into five categories:

1. Observe: an advantage point of view
2. Play: a shelter where children can interact
3. Gather: a space for different size groups of the community
4. Rest: a moment to relax and be present
5. Learn: an opportunity to share how a water tower works, the natural components of the community as well as the history

**DISTRIBUTION**

Zone 1: Observation Deck, Signage/Branding
Zone 2: Meeting and Classrooms
Zone 3: Farmer’s Market, Landscape Park, Water Collection
ADDITIVE DESIGN APPROACH

Water towers are designed in terms of efficiency, thus it is crucial that the form and efficiency of these towers remain the same with the addition of new program. In order to accomplish this, an additive approach was introduce, with independent and self-sufficient structure and form.

MODULAR STRUCTURE/ KIT OF PARTS

The size of each water tower is dependent on the community it serves, because of this water towers come in different sizes and forms. This can also be applied to the different towns and areas these towers serve. A modular kit allows for the additive design to be adaptive for its community in terms of amount of and types of program, as well as size and type of the water tower.

The primitive kit of parts includes aluminum T-slotted structure with railing components for exterior programs, curtain wall systems for interior programs, and stair modulars for circulation. These same structures can be dispersed along the ground level to create stands for markets and a further division into pavers, planters, and water retention.
WATER TOWERS:
FUNCTIONING MONUMENTS TO OCCUPIED LANDMARKS