Architecture Thesis

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Architecture Thesis

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Thesis Description
“A political system focused more on the creation and expansion of business opportunity, than on the well-being of its citizens results inevitably in Gentrification” – as conveyed by Peter Moskowitz in his book, “How to kill a city”. Urban inequality has impacted numerous cities around the world.

Modern day India is witnessing rapid development. The city of Mumbai, with a population of more than 18 million people, is the financial capital of India and has always been a city of dreams. Various factors contribute to the beauty and life of the city, including the heritage old chawl housing system. Chawl is 3-4 storeyed building divided into single room apartments, offering cheap & basic accommodation. My area of research concentrated on a specific chawl community known as BDD, i.e Bombay Directorate Development Chawl, built during the early 20th century for textile mill workers of Mumbai. The single rooms in the chawls have extremely small floor area catered to low-income households. In a city where rents are skyrocketing, chawls prove to be a savior for these low-income households.

Government has proposed plans valuing $2.1 billion dollars for the redevelopment of Bombay Directorate Development (BDD) chawls, spread out on 92 acres of land in South Mumbai. It houses nearly 40,000 people in 121 buildings. The essence of living in a chawl is about the community. People engage with each other throughout the day, children play together, and housewives spend their gossip sessions at each other’s home; for them chawl is family. The government plans are less considerate towards the community and only concerned for the new development. However, they also face the challenge of deteriorating building condition, small space living and common toilets.

Through a series of extensive research, I studied about the living conditions in these chawls and the characters that I wish to preserve in my architectural proposal. Firstly, investigating the disputed pasts and projected futures, I realized the aspects of rent, cost of living and the migration patterns to be a crucial factor in the existence of chawls. Next, concentrating on the several mapping exercises to study the existing neighborhood and their relation to the BDD chawls projects the importance of the location and the high land costs. Finally, site analysis aimed to study the character of the chawl. Their composition, lifestyle of people within the single room apartments and how they functioned as a big community. Every aspect is studied in detail to understand the importance of various spaces like rooms, corridors & community ground.

Redevelopment is inevitable but it should not lead to community displacement. In order to preserve the special character of the chawls, I aim to provide a mixed-use development composing of low-rises for the relocation of chawls, mid-rises and high-rises to bring in a mix of social background and compensate the cost of redevelopment. The single room apartments of 120 sq.ft. will now be more than doubled to accommodate the basic necessities and the overall development will provide for many more apartments. In addition to increasing the apartment size, the development aims to provide courtyards, community gathering spaces, public parks, local commercial shops, primary school and parks which is aimed towards the betterment of the chawl residents. My vision aims toward cherishing the everyday life of chawl residents and preserving their identity within the bustling neighborhoods of Mumbai.
Studio Course
Architecture Thesis

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Thesis Description
How does one reactivate a ghost town? In the tropical and complex Bordertown of Brownsville, Texas, the once lively Downtown is now full of deserted historical buildings. To reactivate these buildings, one must understand the memory of the city that once was. Businesses such as theaters, cinemas and hotels were places that existed within walking distance in the downtown. What once was the center of the city, has now become a place with vacant storefronts and crumbling infrastructure. Along the border, Brownsville is next to Matamoros, Tamaulipas, Mexico. What separates them is the border wall and the Rio Grande River. Only a few miles away lies Starbase, Texas; the location of Space X's newest launching center. With new people moving to Brownsville and workers needed immediately, Brownsville is expected to grow tremendously. The problem is that there isn’t readily available housing for the incoming workers of Space X. Here is where Brownsville’s downtown comes to play. How can a city come back to life, while respecting its past? El Jardin Hotel was built in 1926 and was the cultural center of the city. Once housing Frida Kahlo and Amelia Hart, this Art Deco Hotel has been abandoned since the 60s and will now become the housing for the future workers of Space X. With modular walls including built in kitchenettes, furniture and more, the units will be ready for move in immediately while also providing spaces for community such as an urban garden with its restaurant using the food they grow on site as well as a rocket launch rooftop deck, where people can gather and watch Space X’s rockets go to Mars. By combining the history of Brownsville with the future of the city, El Jardin is the perfect opportunity to bring back the life that is missing in the downtown. This project will serve as a catalyst to bring back the heart of the city.
Studio Course
Architecture Thesis

Student
Jason Brostoff

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Thesis Description
Throughout the history of urban and suburban sprawl there has been contention about whether having areas of large residential developments was good for the environment and community around it. While this is a very important question to answer, it is not the question we will answer.

Instead, what about the forgotten edge product of these suburban sprawl moments? How can a space that seems to be an afterthought become a change for the better?

Opa Locka, Hialeah and Miami Gardens are a perfect example of this suburban sprawl. The area is almost entirely ranch style homes, but at the edge of all three areas is an industrial wasteland. This space is mainly warehouse style buildings, large asphalt lots and other industrial style buildings and features. This space between these suburban hubs, is almost the complete opposite of the suburban surroundings.

Opa-Locka is one of the most unique cities in Florida and maybe America. Founded by internationally known aviator Glenn Curtiss in 1926, it has the largest collection of Moorish Revival architecture in the Western Hemisphere. The famous work of literature, 1001 Arabian Nights, inspired Curtiss and would be a recurring theme throughout the planning and building of the city. However, the surrounding area has no mosque or center of Islamic faith.

Welcome to Mega Mosque Opa Locka.
Studio Course
Architecture Thesis

Student
Michael Cahn

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Thesis Description
Resiliency through pedestrian urbanism examines Miami’s road network and reimagines a cityscape that can be conquered by the bicycle and micro mobility. Miami’s tropical climate provides a realistic environment to traverse the city outside. The thesis suggests a way for Miami to deal its growing population, in the face of climate change – envisioning the city as a model for how to reduce reliance on the automobile.
Studio Course
Architecture Thesis

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Thesis Description
“Micro Housing and Social Infrastructure”

The growing gap between wages and residence costs are creating a shift in housing preferences. Millions of Americans are cost burdened, countless individuals are homeless, and the need for more affordable housing is critical now more than ever. Micro housing is a burgeoning interest in Miami and other cities across the globe because it creates more affordability by reducing square footage, energy consumption and environmental impact. By living micro, one can reduce their carbon footprint while being a short walk from the most desirable parts of the city. Today there is a critical need for more transformable, efficient, and shared use of space as population density continues to increase.

Through the lens of designing greater social infrastructure for homeless individuals, micro housing can bolster a sense of community and improve the quality of living in urban settings. The site for this proposal is located in southeast Historic Overtown, right at the edge of downtown Miami which contains the largest count of homeless individuals in the area. They have been pushed to the fringes of society, and the idea is to integrate them back into the working sectors of the city. The program is two-fold, activating the communal ground floor with social infrastructure in the form of a health clinic and a café. The upper levels function as living quarters for the homeless, including communal dining spaces and terraces, as well as a separate tower that incorporates classrooms, workshops, and gymnasium space. Not only does this thesis investigate how micro housing can have a larger impact to the underserved population in Miami, but also how social infrastructure and supportive services can create an armature for change.
Studio Course
Architecture Thesis

Student
Polan Durak

Thesis Advisor
Patrick Reuter

Secondary Advisor
Joanna Lombard

Thesis Description
“Whole Within”

Whole Within is an architectural exploration in Overtown, Miami. The project focuses on solving the current segregation problem within the district and bring healing to the community as well as its individuals. The wastelands of the current highway is taken as an inspiration to be transformed into civic facilities without causing relocation of the current dynamics of the town. By extending the current streets surrounding the highway, a new highly wired grid is introduced to the urban fabric. The complex offers an Abuse Center & Kindergarten, A Healing Center and a Library for the community to benefit from, in order to be self-sufficient to its own authentic problems. The goal of this project is to provide healing to the community by eliminating the reasons of this great suffering and improve their life expectations from various perspectives. Understanding that the area is in an everchanging meeting point between the infrastructure and nature, it proposes a dualism in-between. It further examines how natural movements (such as change in water levels and the reaction of the vegetation through different seasons) affect the way the infrastructure works, as the impermanence in the area between these two forces are very dominant. This thesis takes nature to be the connection point between the community – nature - infrastructure trio. The architectural language is very much sensitive to the ongoing obstacles of the community and emphasizes the importance of existential sense through its architecture to achieve an everlasting existential satisfaction.
Thesis Description
From the liberation movements of the 1970s to the contemporary fight for gender inclusion, the gay bar has remained a tangible source of identity for LGBT individuals. They are a fundamental element of the community; however, the nature of a bar or club limits the space from being fully inclusive across all age groups. Furthermore, there is a decline in spaces catering to LGBT women and people of color.

How can architecture leverage these differences - age, race, sex, and gender - to comprehensively address the lack of equity in the LGBT community?
Studio Course
Architecture Thesis

Student
Johnny Laderer

Thesis Advisor
Florida Sauter von Moos

Secondary Advisor
Rocco Ceo

Thesis Description
Subtropical Somewhere is an exploration into understanding the tropics, the boundaries of which are expanding, as a whole and what the future of architecture in the tropics might look like through a tropical tinted lens. Rather than simply a climatological response, Subtropical Somewhere seeks to respond to the identity of the tropics. To experiment freely, an imaginary island is used as a framework in which the architect can respond to various sites and conditions by drawing on the arrière-garde and models of radical indigenism to draw up a utopian vision of pure building rooted in land stewardship and the identity of the tropics both real and imagined.
Studio Course
Architecture Thesis

Student
Jennifer Ann Lamy

Thesis Advisor
Glenda Puente

Secondary Advisor
Germane Barnes

Thesis Description
In the United States, homeownership is one of the gateways to not only financial success but also tax and social privileges. Property taxes, which play a significant role in local revenue, are used towards amenities and infrastructures such as roads, schools, fire stations, and parks. In addition, since homeowners often remain in an area for long periods of time, there is an incentive to participate in local politics and community organizations which in turn also contribute to the makeup of that community; not only its infrastructure but also its demographics. Such privileges, however, have and continue to result in exclusion. Due to several racist practices such as Jim Crow segregation – which only ended 53 years ago – redlining and restrictive covenants, the Black community was not extended the same opportunity and has faced historic, and on-going displacement and exclusion. Single-family homes were designed to accommodate a white nuclear family consisting of a mother, father, son, and daughter. Having very little say about which spaces they could inhabit, Black families were forced fit into the ones they were given and figure out how to make them work.

Many of the codes that we continue to follow today when designing are rooted in systems that perpetuate racist disparities and inequities. Consequently, in an effort to challenge architecture’s agency in liberating the built environment from this history of racist and discriminatory practices, my speculative proposal combines issues of race, space and identity, to reimagine the single-family home through the lens of blackness.
Studio Course
Architecture Thesis

Student
Yingqi Li

Thesis Advisor
Patrick Reuter

Secondary Advisor
Rocco Ceo

Thesis Description
“Dade Corner”
*Introduce a smooth transition from the natural to the urban and develop the urban edge area.*

Miami-Dade County is located in the southeastern part of Florida, with the Atlantic Ocean on the east and the Everglades on the west. The city development originated on the coast and expanded to the west, giving this county a unique planning grid. The city grid shifts with the coastline and creates a corner space between SW 8th St. and SW 88th St. This corner, located at the edge of the county, is a transition zone from the Everglades to an urban space. Because of the differences between natural and urban spaces, there is a clear boundary line at the edge of the county. The main premise of this thesis is to introduce a smooth transition zone between the natural and the urban features of this area, and to create a space for people to enjoy and relax.
Studio Course
Architecture Thesis

Student
Eli Mahiantoosi

Thesis Advisor
David Trautman

Secondary Advisor
Veruska Vasconez

Thesis Description
A beating heart for Tannaf Valley!

How does architecture respond to the hardship and inequality that has occurred in the site? Architecture should help the breaking down of barriers, a reduction in inequality, and the creation of a sustainable and stable environment. Gender equality is crucial to the construction of an equitable society in which everyone, on the basis of background and resources, can make a fundamental contribution to sustainable development. Architecture should act as a healing tool to help people and solve all kinds of problems! The process of healing scars is: learn, remember, heal, and transition, and this is what healing architecture shares in common too.

My goal is to create a design, which women of society will be able to come, be involved in their society, and feel valued! They should feel safe and have access to education, medical care, and mental services and a presence in the decision-making processes that will promote a sustainable economy that benefits society and humanity as a whole. I imagine this project as a place of harmony and offering diverse experiences. The project draws two different phases, with the second phase being built by the women of the local community. The first phase draws three concentric spaces where all women can blend harmoniously:

- The awareness center provides healthcare and educational services to women to help them to learn and improve their knowledge;
- The opportunity center which will help them to activate the knowledge that they learned and become independent women; and
- A sacred area at the end of the project can bring people together and help their mental health and well-being. This area can be a place of transition.

It is a place where people feel safe to be in society, band together, interact with one another, heal their scars, and look forward to the future.

The character of the building is iconic yet still simple. The spaces are monotonous and, at the same time, create a lot of experience, and this is all under one roof that can connect the different experiences and bring freedom at the same time!

My design aims to be respectful towards the environment and using traditional, local, natural materials, such as brick, stone, and local wood. Humble yet present, the intervention does not compete with the surroundings but instead celebrates Nature. It trusts Nature up to the point where architecture becomes one with it. Rainwater is harvested into the tanks for farming and sanitary purposes. The wooden structure alternates mangrove branches and large fabric areas, stating a connection to local materials and crafts and the expression of the local community. On the other hand, the breathing facade is an expression of another theme that plays a relevant part in my project – environmental comfort. The building is devised with passive cooling techniques and solar panels.
An obvious observation throughout time is that human beings wear clothing. Clothing is a feature of all human societies and we do it to protect our bodies against cold or hot conditions. Wearable textiles provide us with a hygienic barrier while keeping infectious or toxic materials away from our body and skin. Clothing directly mitigates us from our immediate environment. As our environments change, so do the materials of our clothing to provide us with the protection that we need. What if we took the same approach with textiles among architecture? Climate change, is constantly challenging architecture as our world’s environment becomes more and more extreme and harsh. Miami, for example, is the poster child for a major city in big trouble. 12,000 homes in Miami beach are in danger of chronic flooding within the next 30 years. In a rapidly changing environment, our buildings and infrastructure need to adapt as quickly as our clothes do. My thesis aims to offer architectural solution to two major issues as a result of environmental changes: water inundation and rising climate.
Studio Course
Architecture Thesis

Student
Shannon Newberry

Thesis Advisor
Joel Lamere

Secondary Advisor
Nicole Banowetz

Thesis Description
My thesis focuses on the strange yet important role that humor can play when it comes to problem solving and space making. My research has shown that anyone can use the power of architecture to enact necessary change by meeting three design criteria: disarming with humor, creating an ad hoc architectural space, and easily deployable with little capital.

A sense of humor can encourage a flexible mindset while embracing solutions that would otherwise be considered unorthodox. Inflatable architecture is inherently whimsical because it challenges accepted ideas of what buildings entail. They lack straight walls, they seemingly oppose the forces of physics, and they jiggle. They’re just kinda funny.

Additionally, their ability to pop-up suddenly within any space contributes to their bizarre nature. Not only that, but traditional building types require capital and resources, limiting their production to the wealthy.

Inflatable architecture however, can be rapidly deployed with inexpensive material, making it accessible to more demographics while proposing an avenue of construction that requires minimal means for maximum ends.

My thesis is both scholarship and activism; it seeks to utilize the material and spatial advantages of inflatable architecture to create a series of designs that catalogue uncomfortable urban conditions for individuals who identify as women. The project employs a variety of fabrication methods, each embodying a different contextual situation that causes discomfort to a passerby. The aim is to spread awareness of the limited mobility women experience in the built environment, particularly in public space that is often discussed in idealistic terms.
Today, the Dominican Republic welcomes more than five million tourists a year—more than any other Caribbean country—and is home to 25% of the region’s hotel rooms. The sector has enjoyed steady growth over the last four decades. About 65% of the country’s tourists arrive in Punta Cana International Airport (one of eight international airports), which is surrounded by all-inclusive hotels. As one industry insider points out, “tourism is the oil of the Dominican Republic.”

Tourism is dominated by all-inclusive resorts and cruise tourism, which pose additional challenges for creating linkages to local economies in the absence of strong institutional frameworks. Despite positive employment impacts and potential integration with the agricultural sector, the all-inclusive model still faces a major challenge in dispersing tourist spending.

Without a process for building and expanding tourism, Dominican communities will continue to miss out on this important revenue stream. Public-private partnerships are necessary to create the infrastructure for tourists to leave the resorts and explore local towns—thereby spreading tourism dollars further and creating better linkages with the local economy. Taking a closer look, during 2018 more than ninety thousand foreign visitors and non-resident Dominicans reported that the main reason for their visit to the country was for business or conferences. 90% of them reporting the use of hotels as the main accommodation option. Due to its connectivity, hotel offers and presence in important industry events, the Dominican Republic has an excellent growth opportunity for business and conference tourism, which, according to the WTO, this represents around 20% of total tourism in the world. Business travelers are now more open to the idea that a work trip can double as a holiday, leading to the growing popularity of “bleisure” trips that combine business with leisure. Bleisure travelers extend their stay in a country or incorporate sightseeing and other activities within a business day.

These trips allow delegates to meet and network with like-minded peers in a relaxed environment outside of the event. Participants also get to experience the local culture of the country.

Therefore, by exploring the growing demand of MICE tourism interested in midscale hotels in Punta Cana there is a possible diversification of the hotel offers in the area. The propose project will expand the envelope of what it means to be a sustainable building that is also financially viable generating a great benefit to the environment and to the country.

The MICE – Meetings, Incentives, Congresses and Exhibitions – industry forms a substantial component of both the tourism industry as well as of the economic development in destinations and is growing at a tremendous pace.
Studio Course
Architecture Thesis

Student
Lauren Oates

Thesis Advisor
David Trautman

Secondary Advisor
Joanna Lombard

Thesis Description
“Creating a new architecture typology through the principles of biophilic design”

Human health and the quality of life are suffering in the spaces in which we work, live and play in today. Majority of the human life span is spent indoors, limiting and disconnecting us from social engagements and interactions with the natural world. Our physical, mental and social well-being depend on bridging the gap between humans and nature through the integration of biophilic design in our everyday spaces. Through light, occupiable green space, voids, and framed views, my project engages humans with nature throughout the site while also allowing a more productive and overall happier environment for workers and residents. The goal of this thesis is to explore how nature can be the design driver of a mixed-use occupancy as biophilic design should no longer be a trend in today’s realm of architecture, but should set a new standard for the way in which we design the spaces we inhabit.
Studio Course
Architecture Thesis

Student
Ricardo Perez Moshenek

Thesis Advisor
Florian Sauter von Moos

Secondary Advisor
Veruska Vasconez

Thesis Description
“View out the window: Imagining a new Downtown Miami”

Living in downtown Miami during the 2020 pandemic was an experience to realize key factors and issues that downtown Miami has. From a personal point of view and based on the day to day living during this unprecedented time these key factors showed ways in which the architecture of the city can improve.

Some of the key factors in the architecture and design of Miami that affected a healthy living for most of the people in similar circumstances are basic characteristics like natural light or cross ventilation. Circulation, both vertical and horizontal, around buildings has not been treated as the experience it is.

Miami is a city with a constant environmental thread that makes the issue of the ground plane something to consider. The connection between buildings and between building users is important in a city that its density is growing rapidly.

With the current “boom” of Miami, developers, architects, city authorities and the people in general have the opportunity to create an iconic city. A city in which architecture molds the way people live, with a constant connection back to the environment and to the surroundings.
Studio Course
Architecture Thesis

Student
Tanya Rivera Diaz

Thesis Advisor
Elizabeth Plater-Zyberk

Secondary Advisor
Veruska Vasconez

Thesis Description
“Architecture is called to do a lot more than to guarantee the public health, safety and welfare of building users. At its highest, architecture has the ability to turn geometric proportions into shivers, stone into tears, rituals into revelation, light into grace, space into contemplation, and time into divine presence.” It takes on the role of moving us from the ordinary to the extraordinary and from the profane to the sacred. This project transforms the ruins of the Observatory in Arecibo, Puerto Rico into a sanctuary where worshippers of no particular religious affiliation heal and connect to the transcendental. Stripped of the religious connotations of the sacred, this thesis hopes to create an architecture that balances between the individual and the collective, fosters both introspective reflection and extrospective contemplation, and proposes architecture for experiencing the sacred. Architecture can serve as the platform for the transcendental experience which can be achieved through a thorough understanding of criteria this thesis has identified as constituents in creating a sacred space. Light and shadow, progression, threshold, plaza, nature, materiality and silence constitute the design, being led by the reading “The Church Incarnate” by Rudolf Shwarz where we are introduced to the seven sacred plans. The project will include a sacred structure that sits on a site once used for scientific and astronomical findings, serving as a direct connection between the divine and humanity.
Studio Course
Architecture Thesis

Student
Behzad Tavakol

Thesis Advisor
Elizabeth Plater-Zyberk

Secondary Advisor
Allan Shulman

Thesis Description
“Adaptation of Urban Coastal Hotels to Climate Change”

Case Study: Miami Beach
Miami Beach is a coastal resort city with its economy tied to tourism. The city, only a few feet above the sea-level, is vulnerable to flooding and sea-level rise. To address this issue, the city of Miami Beach is using a “gray” infrastructure, which includes pumps, sea walls, and raising roads. There is no doubt that for the holistic plan we need engineering. However, as a tourism destination that depends on the natural environment and aesthetics of the built environment, Miami Beach should also consider the nature-based design to address the issue. Both infrastructure and buildings faced a critical threat. This thesis will study one essential building type, the hotels, which are mainly along the ocean are in danger and need an architectural solution to be adapted. This study will examine four different hotel types according to differing building and infrastructure conditions.
Studio Course
Architecture Thesis

Student
Siying Chen

Thesis Advisor
Jean-François Lejeune

Secondary Advisor
Esteban Salcedo (Architect at Juan Herreros Architects, Professor ETSAM, Madrid)

Thesis Description
“RECYCLING THE INDUSTRIAL INFRASTRUCTURE: The Cuatro Caminos Metro Depot in Madrid, Spain”

This thesis focuses on one of the most significant industrial infrastructures in Madrid, the Cuatro Caminos Garage located to the north of the historic center and built in 1918-19 in connection to the opening of the first metro line. The original structures, influenced by examples in New York and Detroit, were the works of one of the greatest architects of industrial modernity, Antonio Palacios (1874-1945). Now abandoned, the original warehouses and their extensions are threatened of demolition for a 35-story housing tower. Rather than erasing the memory of Madrid’s early modernity, the thesis intends to make the site an example of urban palimpsest. Built around and on top of the industrial structures, restored to accommodate various social, health-oriented, and cultural places, a linear complex of modular housing and public spaces reveal the rich architectural and cultural significance of the area. It reactivates the site, opens it the surrounding neighborhoods, and reimagines the way of working and living.
Studio Course
Architecture Thesis

Student
Michael “Misha” Ganom

Thesis Advisor
Jean-François Lejeune

Secondary Advisor
Nate Furman (Professor of Parks, Recreation, and Tourism College at the University of Utah)

Thesis Description
“DISSOLVING MONUMENTS: Examining the Intersection of Utah’s Mining Infrastructure and Water at the Tintic Reduction Mill”

Utah’s mining industry has bolstered the economy for over 160 years. The adverse effects of mining, extraction, and refinement have led to extreme environmental degradation in the state. Currently, sites like the White Mesa Uranium Mill serves as an example of industry confronting nature, culture, and tourism. As politicians and citizens of Utah feud over current and future affairs, ghosts of Utah’s mining past are embedded in the landscape, steadily affecting it to this day.

The Tintic standard reduction mill was an ore processing facility active from 1921 to 1925 that has caused severe damage to its mountainside context. 100 years after its closure, the impressive foundations of the mill still stand, but remain closed off to the public because of severe lead and arsenic contamination. The mill overlooks watershed areas, farms, warm springs, and Utah Lake, the state’s largest fresh body of water. My thesis examines inserting new architecture to preserve the historically designated site while acting as a mechanism for environmental remediation.
From the 1970s, Lebanon and the Middle East region as a whole have been suffering from unremitting conflicts and civil wars that have brought physical and human destruction and death. Children are the biggest victims. They are suffering from displacement, lack of education, forced labor, child violence, child marriage, and other persecution. Many have nowhere to escape and often become the victims of adults’ crimes. This thesis focuses on how to improve the living conditions of refugee children in the ruins of the city after the Beirut explosion that took place in August 2020. Using the data provided by UNICEF, a shelter village accommodating two hundred children will be established in the urban wasteland of the Karantina district. Within the environment of sleeping, learning, practicing, working, and playing provided by the village, the children can grow, integrate into the community, and become citizens of the city. In doing so, the urban ruins can be converted into city hope for all children.
In the 1860s, under the political and economic pressure of western capitalism, the Meiji Restoration started and over forty years ruled the intense process of modernization and industrialization of Japan. Rich coal resources were discovered below Hashima Island, to the southwest of Nagasaki, and the Mitsubishi Corporation began intensive mining hundreds of meters under the surface. Prior and during World War II, Japan led a conflict of aggression and demand for coal increased sharply. Chinese and Korean prisoners of war were used as forced labor, a bloody period that resulted in many casualties. When the mining ended and the population was evacuated in 1974, the small island had close to 6000 residents and nine times the population density of today’s Tokyo. Most buildings for housing, industrial, and public uses are relatively well preserved, and constitute an extraordinary architectural heritage of concrete construction, now recognized by UNESCO. The thesis proposes to build an international film school by renovating and adding to the rich historical resources of the island. At the same time, it intends to use the school to reveal the island’s complex history as a warning for the future.
“DFC: Design for renewable and resilient Cross-Laminated-Timber products in a built environment”

The end cycle of building materials is waste. In 2017, the generation of wood in (MSW) was 18 million tons. This equaled 6.7 percent of total MSW generation that year. This process poses a negative effect on the building cycle both on material efficiency, and the eco-system. The critical nature of this process is that most building materials are limited or have a finite material supply. My thesis will investigate methods of improving building material processes through the reduction and eventual elimination of the end life cycle [waste] specifically interrogating the tectonics of building with solid wood.

I propose the design process needs to evolve to be inclusive of the assembly and disassembly of buildings - specifically wood buildings, so the material can remain in good quality for building construction after the disassembly process.

The reason why recycling is such important matter is we can reduce waste, mitigate the climate change, and increase the life span of the certain material. Use wood for example, by adopting and implementing the concept of resource cascading, we acknowledge wood’s expanded lifecycle and embed the strategies of re-use within the design process. Resource cascading is a method to enhance the efficiency of resource utilization by a sequential re-utilization of the same unit of a resource for multiple high-grade material applications followed by a final use for energy generation.

My focus is on how to keep the wood always as good quality for building construction after disassembly. Simply put, my focus is to evolve how we build with wood. My research will use [CLT] as the test subject. One method to maintain that kind of required quality for reconstruction is update the current assembly process.

Replacing the metal nail with wood nail, eliminating glues from the assembly process, or evolving wood tectonics that engage wood joinery techniques through methods of constructability and de-constructability. There are 2 places to investigate the construction of the panels themselves and the construction of space-the panel to panel joinery. All these methods will make a disassembly process easier and reduce the impurity of wood. So eventually, the recovered material is good for re-sue for building construction again. Since the recycled quality is ensured through the adopted resource cascade practices.
Energy Waste + Environmental Impact

Wood Nail

Wood Glue; Innovative Joinery

Traditional way of manufacturing

Sustainable Logging

Circular Economy

Circular Ecology

Foresty

Landfill

Energy Waste + Environmental Impact

Energy

chemicals

fiber-based products

particle-based products

veneer products
Studio Course
Architecture Thesis

Student
Haley Smith

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Jessica Colangelo

Thesis Description
Exploiting the role of architecture in planning pre/post spontaneous events, such as natural disasters; the discipline should address the development of rapid-deployment structures that bolster a sense of community. Community resilience hinges on a planned, prompt response and the ability to deploy this scheme in an anticipated method. History proves climate and disaster events are expected, yet remain spontaneous in their delivery, force, and impact on communities across the globe – and their frequency and severity are increasingly dynamic.

We need to develop solutions that apply to a range of scales and withstand urban shifts and transitions through the lens of community. Quonset huts were used to build community, during a time of war, through aggregation and making place in placelessness. While yurts are an excellent example of a kit of parts that utilizes a frame and skin structure that has prefabricated components that assemble and disassemble.

Digital fabrication using mass timber’s inherent malleability and ability for mass customization shows remarkable promise in this field. Existing responses to assist victims of spontaneous events is fairly rigid, does not relate to location of the event, and can be costly; prefabricated shelters are usually deployed. A new way of planning for post spontaneous events should include the community in the building process while also striving for a solution that is digitally fabricated, mass customizable, deployable and demountable, requires little site preparation, is pre-fabricated/componentized and uses mass timber as the primary building material. These structures will bolster a sense of community while helping individuals recover from spontaneous events in spaces that reflect their direct needs.

Cross-laminated timber panels can be broken down into sizes that are able to be assembled by a couple of adults, which places rebuilding into the hands of the community. The smaller size of CLT panels explored in this thesis draw from methods of traditional wood joinery, deployed through digital fabrication processes, which are used to create a climate refuge that can be quickly assembled and disassembled without glue or mechanical fasteners, at the scale of the person and independent of large machinery logistics.
ASSEMBLY INSTRUCTIONS

1. CUT DOWN 2x4S TO MAKE PEGS
2. JOIN FL OOR PANELS ASSEMBLE CORNER PANELS
3. FIRST CUT 4.125"
4. SECOND CUT - DOWN CENTER
5. FIRST JOIN PANELS ASSEMBLY STRIPS
6. THEN JOIN STRIPS TOGETHER
7. STACK BOTTOM PANELS
8. STACK TOP PANELS
9. THEN JOIN TOP AND BOTTOM PANELS
10. JOIN WALL PANELS
11. PLACE ROOF PANELS
12. PLACE WALL, CORNER, AND WALL PANELS ASSEMBLED
13. PLACE BEAMS INTO WALL OPENINGS
14. SECURE BEAMS WITH PEGS
15. ROOF PANELS ARE JOINED LAST
Studio Course
Architecture Thesis

Student
Peyton Fraser Smyth

Thesis Advisor
Shawna Meyer

Secondary Advisor
Elizabeth Plater-Zyberk

Thesis Description
Cross-industry logistics optimization for the expansion of Mass Timber building products: A proposal for local-level tertiary production.
**Studio Course**
Architecture Thesis

**Student**
Nonyelum Ogbodo

**Thesis Advisor**
Elizabeth Plater-Zyberk

**Secondary Advisor**
Germane Barnes

**Thesis Description**
The analysis of Climate Change Mitigation and the study of advanced measures, utilizing guidelines for decreased energy usage in Sport Venues—with the intent of emission reduction and the minimization of mass carbon footprint.

As time and technology advances, architects and engineers of large-scaled Sports Venues are now designing with the intent of being energy efficient or green building certified. With new sports venues it is less challenging to implement new technology measures for energy efficiency, but what happens to the older venues? What measures of renovation would have to be implemented into existing buildings to advance them in attributes such as energy efficiency, waste management, or resiliency?

PROPOSED SOLUTION: A RATING SYSTEM SPECIFICALLY FOR SPORTS VENUES

Considering the various number of green building certification standards in conjunction with the various number of sports venue standard building requirements—my proposed solution is a dynamic design of a rating system dedicated to Sports Venues. “SPORTS-VENUE PERFORMANCE & OPERATIONAL RESILIENCY TARGETING SUSTAINABILITY” (SPORTS). The goal of SPORTS is to establish a set body of resilient and sustainable measures for the construction of new sports venues and renovation of existing sports venues.