FORMULA H2O

H2O as having agency an international borderless bio-form with rights to Exist Expose Heal

Formula H2O explores the following questions: What agents can lead the humanitarian efforts of speaking up for the Tijuana River? Formula H2O proposes a dual system consisting of human and non-human agents to represent this voiceless entity. First, a binational organization that can monitor and govern, and secondly, spaces of cultivation and remediation using various human and non-human agents.

PAGES 3-10

BORDERLAND BIO-STRUCTURES

summer 21

Instructors:
Ersela Kripa & Stephen Mueller

Section Leader:
Yara H. S. Saqafalhait

PAGES 15-16

INVERSE PANOPTICON

Our proposal examines opportunities for re-introducing farms to an urban setting by producing a localized and sustainable farming solution. An early analysis of immigrant communities such as Afghan Muslims and Asian communities examines the relationship between non-western food consumption and environmental implications. We then identify typologies unique to flushing Queens, finding spatial opportunities to mediate co-existence between humans and chickens. These typologies consider private and public realms of single-family homes, houses of worship, abandoned buildings, and community gardens. “Non-building” architecture is explored through mesh and timber construction, emphasizing the ease and flexibility.

PAGES 17-37

INFORMAL / INFORMAL

fall 21

In Collaboration w/ Joyce Zhao & Richard Sa

PAGES 38-42

URBAN CHICKS

URBAN FLUCTUATION OF IDENTITY

Our research delved into the historic spatial context of exclusion within society. The Yacoubian building symbolized the product of the cycles of creative destruction and social disconnection in 20th century Cairo. This pattern of creative destruction in the Yacoubian building created the characters in the film, each emblematic of a specific aspect of Egyptian society. The patterns led us to investigate spatial typologies in Cairo that possess characteristics similar to those our protagonists share.

PAGES 43-58

PRE-WAR / WAR-WAR / POST-WAR

PWP Housing Typologies investigates Typologies in Syria, specifically within Damascus and Aleppo, beginning its documentation in the early 19th-century maneuvering through war and post-war conditions. This study extracts two main typologies within each war type category, documenting them through collected images and architectural plans to further understand their resiliency and informal urbanism characteristics.

HEAL NYC

“Heal NYC” is an outpatient and impatient treatment clinic that aims to bring healing into the forefront of New York City. The recent pandemic has had many short and long-lived consequences forcing us to reassess how we build and engage with one another. NYC saw a surge of substance abuse during COVID-19, with studies showing a 21% increase in overdose cases in 2020 compared to 2019. As a result, medical staff often switched between handling overdose and covid-19 cases.
Formula H2O understands the Tijuana river as a bio-form. Formula H2O unravels the qualities and conditions of the river and the conditions surrounding this body of water. What comes to the surface of the investigation are pollutants leaking through canyons along the USA-Mexico border and illegal dumping and stealing of the water by more than 50 American corporations conveniently located close to the Tijuana River and to clean water aqueducts. Formula H2O is concerned with the Tijuana River as a bio-form with the right to be understood, medicated, and healed.

In February 2020, an independent audit of Baja’s water agency CESPT commissioned by Governor Jaime Bonilla and investigated by a private auditing firm Fisamek alleged that uranium depositing employees colluded with giant international corporations in the stealing and illegal dumping of water. Corporations like Walmart, Coca-Cola, Samsung, and The Home Depot have not paid their entire water bills for years and dumped sewage into the Tijuana River. Unfortunately, America has carried on this narrative which positions Mexico as the waste dumping agent onto USA beaches. Formula H2O poses that this is a bi-national problem and that these large American corporations need to take accountability for the pollution of the river.

Formula H2O explores the following questions: What agents can lead the humanitarian efforts of speaking up for the Tijuana River? Formula H2O proposes a dual system consisting of human and non-human agents to represent this voiceless entity. First, a bi-national organization that can monitor and govern, and secondly, spaces of cultivation and remediation using various human and non-human agents. This organization would work with existing entities such as CESPT, The National Oceanic and Atmospheric Reserve, and specific American corporations operating within the Tijuana watershed. Ultimately holding corporations accountable through visibility of crime and corporate involvement. The framework posed by the Binational Monitoring and Governing Agency would create initiatives such as the Phyto-Pods project. Phyto-pods propose a layer against corruption and spaces for remedial action by using macrophytes to absorb pollutants. Additionally, the pods would act as containment pods for crime visibility. Macrophytes are very useful in reducing aquatic contaminants through the bioaccumulation of pollutants. There would exist two pods, one for cultivation and one for healing. Cultivation ponds are dug out and lined with silipauline sheets, a slurry made of cow dung and superphosphate, which mixes with water. Fresh Azolla is then placed in the water and quickly grown under a shade structure. In conclusion of the Phyto-Pods initiative, we revisit the initial pollution sites. The framework BMEA established requires large corporations to take accountability for their impact over the Tijuana River by enforcing fees and involvement in the Phyto-Pods Project. Ultimately and assumingly, these large corporations will be at a financial loss and fleeing Tijuana, leaving the city with vacant lots and buildings, a significant decrease in water theft, and waste dumping. Empty Buildings such as The Home Depot and Coca-Cola will develop as spaces of Macrophyte cultivation, greenhouses, vegetation growth, farmer markets, and areas of social organization around a common goal.
FORMULA H2O/

Action 1: Investigate

Tijuana River Channel

Aqueduct Channels

Open and Closed Stormwater Drainage

Waste-water Treatment Plant / Collectors / Pumps

Flood Depth

WaterDepth

Open
Closed

Pumps Constantly Breaking Down, High Flows
30" Conveyance Pipeline / Flowing out to KO
12", 16" & 20" Conveyance Pipeliner

Ankle: Kneew
Knee-Waist
Waist-Head
Above-Head

Ankle: Knee > 0.11 - 0.45m
Knee-Waist > 0.45 - 1.0m
Waist Head > 1.0 - 1.7m
Above Head > 1.7 m
Tijuana River (Low Flow)
FORMULA H2O/
Action 1: Investigate

U.S. A
Corporations
water theft and
waste water dumping

Waste-water treatment plant / collectors / Pumps

Yogurt Canyon
Does not directly drain to the Tijuana River

Goat Canyon
Second Largest Canyon, includes concrete tunnels from the border to the canyon collector. This site has water flowing regularly throughout the year

Smugglers Gultch
Largest of 6 Canyons. Floors are downhill of the treatment plant so a lift station had to be constructed which conveys the flows captured by the collector to the treatment plant.

Canyons as vessels of waste into the Tijuana River

Aqueduct Channels

Network of Basins and Tunnels
Network of basin-sand tunnels built 30 years ago to try to capture the sewage from Tijuana. The metal grates must remain open at times of high flow.
In February 2020, an independent audit of Baja’s water agency CESPT commissioned by Governor Jaime Bonilla and investigated by a private auditing firm Fisamek alleges that former utility employees colluded with giant international corporations in the stealing and illegal dumping of water. Corporations like Walmart, Coca-Cola, Samsung, and The Home Depot have not paid their entire water bills for years and dumped sewage into the Tijuana River. Unfortunately, America has carried on this narrative which positions Mexico as the waste dumping agent onto USA beaches.

Governor Bonilla
Commissioned an audit that alleges former employees of the utility colluded with giant international corps. “What they are doing is criminal. And they want to be the victims?” - B
“Even in Mexico, it is illegal to dump toxic material into a water channel. We are doing the right thing.” - B

Manuel Garcia
President of the company FISAMEX. Commissioned by Governor Bonilla To date, the FISAMEX businessman has collected more than one billion pesos from the collection of water rights. From CESPT, CESPM and the rest of the commissions in the entity, from hundreds of companies installed in Baja California.

Juan Pablo Guerrero Mercado
Deputy director of CESPT. At least 80 employees of the state water agency have been suspended or fired.

Anonymous Businesses
The CESPT’s deputy director notified many corporations of their debt of several million pesos detected by an external auditor FISAMEX and given short notice to repay the debt. “They’re charging for like ten times the amount of water you used. Its way too high,” said one businessman who asked not to be named. “And you have to go wait five to seven hours in line to pay the bill. We were only consuming five cubic meters, and they charged us for fifty.”
FORMULA H2O/ Action 1: Investigate// The Watershed as a Bioform
FORMULA H2O/ Action 1: Investigate// Theft & Dumping of Waste

The Home Depot
Typical Water Usage:
1 Gal of Paint / 13 Gallons of Water.
1 Ton of Steel / 62,000 of Water
1 Ton of Cement / 360 Gallons of Water

Audit Report: One Million 782,000 Pesos Worth of Water Hasn't Been Paid.
FORMULA H2O/ Action 1: Investigate// Theft & Dumping of Waste

Coca-Cola
Typical Water Usage:
500 ml bottle of Coca-Cola takes roughly 1.9 liters of water to make

Audit Reported to use 51/ Sec of Water.
51/ Sec = Amount Needed Per Person / Apartment
FORMULA H2O/ Action 1: Investigate// Canyons as Ground for Dumping// Smugglers Guitch - El Matadero

Largest Drainage Canyon of the 6 Canyons.
The Storm Water Drainage Infrastructure that was reconstructed in 2008 by the U.S. Department of Homeland Security. The Infrastructure Included Concrete Tunnels From the Border to the Canyon Collector. This Site Has Water Flowing Regularly During the Entire Year. The Capacity of the Collector in This Canyon is 4.7 MGD (205 lps) With a Peak Capacity of 14 MGD (613 lps). The Flow From this Canyon are Downhill of the Treatment Plant, So a lift station has to be constructed at Hollister street, which conveys the flows captured by the collector to the treatment plant.
Formula H2O/ Action 2&3: Govern & Monitor // Existing Governing Agencies

Formula H2O proposes a dual system consisting of human and non-human agents to represent this voiceless entity.

First, a binational organization that can monitor and govern, and secondly, spaces of cultivation and remediation using various human and non-human agents. This organization would work with existing entities such as CESPT, The National Oceanic and Atmospheric Reserve, and specific American corporations operating within the Tijuana watershed, ultimately holding corporations accountable through visibility of crime and corporate involvement. The framework posed by the Binational Monitoring and Governing Agency would create initiatives such as the Phyto-Pods project.

1. BMEA Bi-national Monitoring and Governing agency: CESPT Comisión Estatal de Servicios Públicos de Tijuana, CESPT employees: Coordinated effort with BMGA volunteers in working sites to ensure that no illegal drainage or piping to a water source is activated. If criminal activity is found, the CESPT must investigate the duration and enforce a penalty on the company for a currency amount/ pot of water used. The fee fined must be used towards BMGA.
2. CESPT: Comisión Estatal de Servicios Públicos de Tijuana
3. BMGA Bi-national Monitoring and Governing agency
5. National Ocean and Atmospheric Administration, Tijuana River National Estuarine Research Reserve
6. CESPT’s wastewater treatment & towards BMGA PHYTO-PODS Initiative, National Ocean and Atmospheric Administration currently provides funding, national guidance, and technical assistance. Through this entity BMGA will utilize its research efforts, volunteers and the shared interest of the betterment of the Tijuana watershed. BMGA will also campaign for endorsement from NOAA towards the PHYTO-PODS INITIATIVE
7. Factories & Corporations operating within the Tijuana Watershed must adhere to the standard of water consumption per specific factory needs. In addition these factories must contribute 5% of profits earned to the PHYTO-PODS Initiative in medicating the Tijuana River
FORMULA H2O/Action 4: Cultivate & RemEDIATE // Phyto-Pods // Remediation of the River

- Excavate a pit of 2 x 2 x 0.8 m
- Cover pit with plastic gunny to prevent the roots of the nearby trees from entering the pit and spreading over the plastic gunny

- 10 - 15 kg of sieved fertile soil is uniformly spread over the silkscreen sheet.
- Shredded sawdust or 2 kg cow dung and 30 g of Super Phosphate mixed in 10 liters of water is poured onto the sheet.

- 0.5 - 1 kg of fresh and pure culture of Azolla is placed in the water. This will grow rapidly and fill the pit within 10 - 15 days. From then on, 500 - 600 g of Azolla can be added.

- Shade needed for cultivation of plant

- Agent: Livestock for Cultivation (see page 4 for agent locations)

- Agent: Azolla japonica

- Grates are installed in the healing pods in order to contain object waste and slow down the flow of water in order to re-mEDIATE

- Citizen Participation in the transfer of harvested Azolla into the healing ponds

- Azolla japonica is transferred to the healing pods. Water is diverted from the Tijuana river to flow into the healing pods

Benefit: The ability of the water fern Azolla japonica to re-mEDIATE phosphorus (P), nitrogen (N), and iron (Fe) contamination. Azolla floats on ponds and grows fast, fixing nitrogen in the air, and stores it in leaves. Additionally, this macrophyte has a high absorption rate of the critical wastewater pollutants, ammonium, and phosphorus.
FORMULA H2O
Action 5:
Spaces as Agents// Consequential Vacancy &
a Vernacular Alternative.

The Space Utilizes Rain Harvesting & Grey-Water System to Irrigate Vegetation

Vegetation Growth

Glass House To Shelter Cultivation Pond

Roof-Less Spaces
Grocery Store At Ground Level Employment Opportunities

DEMLOSH & EXCAVATE
Pollutant Agent: The Home Depot
The framework BMEA established required large corporations to take accountability for their impact over the Tijuana River by enforcing fees and involvement in the Phyto-Pods Project. Ultimately, these large corporations were at a financial loss and fleeing Tijuana, leaving the city with vacant lots, buildings, a significant decrease in water theft, and waste dumping.

1. Vacant Spaces to Serve as Spaces Of Cultivation and Employment OPPORTUNITIES.
2. Vacant Concrete lots to be demolished and used for vegetation.
3. Through Visibility and Accountability Large, Medium, and Small Companies are Less Likely to steal and dump.
4. Vacant Lots to use Temporary Permanent Construction of Green Houses.
5. Phyto-Pods / Streams / Cultivation Pond
6. Concentration Of Phyto-Pods Resulting in a Return to Stable Native Ecosystem.
The Presidio Modelo in Nueva Gerona, Cuba, inspired by Statesville Correctional Centre follows the theory of Jeremy Bentham's Panopticon. Presidio Modelo was built prior to the Cuban revolution representing a time of poverty, colonization, and rebellion. Reflective of its time, the prison represents an infrastructure of control and domination that later turns against itself representing a failed operating model. Jeremy Bentham, an English philosopher and social theorist, devised a process by which spatial design may intervene in the natural orchestration of human movement and freedom. The initial concept of the panopticon was not only exclusive to prisoners although this concept became hyper-focused on prisons and became the "symbol for modern authority and discipline in the western world." [1] I believe Bentham's Panopticon philosophy has informed modern thinking on the right of power, social control, and surveillance. What once stood as a concrete structure of control has shattered, fragmented, and spread internationally. The carefully devised spatial system of the panopticon extends from materials, spatial arrangement, and hierarchies of programs and ultimately into the mental infrastructure of the prisoners. The tower amidst a sphere of cells is the point of complete social domination. The tower stands alone and, at times, is void of any guards; yet its mere presence establishes an authority that penetrates the minds of prisoners and creates a system of self-regulation.

The prison consists of five circular blocks, each surrounded by cells monitored by a single central tower. Post Fidel Castro's revolutionary coups in 1959, Presidio Modelo became home to anyone considered a threat to the regime of Gerardo Machado, political and social dissidents such as counter-revolutionaries, Japanese and German prisoners. [4] The prison was set for the capacity of 2,500 but quickly grew to 6,000 following the fall of Machado. In this model of surveillance and brutal imprisonment conditions, the model of the panopticon turned on itself, resulting in the space of rebellion and home to the planning of the Cuban revolution. [6] The dictator Fulgencio Batista assigned all the political activists to the same hospital wing; this oversight resulted in the congregation of political activists whereby meetings were held and strategies contrived to overthrow the dictatorship. [6] "What a fantastic school this prison is! From here I'm able to finish forging my vision of the world ...". [6] The museum was closed shortly after Castro's victory in 1959 and has been used as a museum to the revolution with photographs of each activist over their bed as tribute. [6]
Fig. 1. Prisoners stand at attention outside their cells in one of the rotundas c.1940.²
Fig. 2. Interior of the abandoned Presidio Modelo.³
Fig. 3. "The preserved hospital wing at the Presidio Modelo, a former prison that held Fidel Castro, has become a shrine" [6]
Fig. 4. Fidel and Raúl Castro leaving Presidio Modelo at 1955[7]
Fig. 5. Tourist navigating Presidio Modelo [6]

1. Brown, "Internalized Authority and the prison of the mind: Bentham and Foucault's Panopticon"
2. John Ryle, "A visit to the Panopticon"
3. Tod Seelie, "Inside an abandoned panopticon prison in Cuba"
4. Kaziwara Pato;wary, "The abandoned Panopticon Prison of Cuba"
5. McAleen, Ben, "Forgotten Structures (pt. 4) - Presidio Modelo"
6. PressReader.com – "From prison to paradise"
7. Hidden Architecture, Panopticism: Presidio Modelo
Our proposal examines opportunities for introducing farms to an urban setting by producing a localized and sustainable farming solution. An early analysis of immigrant communities such as Afghan Muslims and Asian communities examines the relationship between non-western food consumption and environmental implications. We then identify typologies unique to Flushing, Queens, finding spatial opportunities to mediate co-existence between humans and chickens. These typologies consider private and public realms of single-family homes, houses of worship, abandoned buildings, and community gardens. “Non-building” architecture is explored through mesh and timber construction, emphasizing the ease and flexibility. A typical house explores coexistence between humans and chicken. In contrast, a community garden interweaves public human activities with chicken coops. The abandoned building then includes exhibitions and a butcher adhering to non-western poultry practices catering to Halal, Kosher, and non-faith-based meat processing. Finally, the House-Mosque serves as the table end restaurant and herb garden engaging visitors and chickens. A system currently exists that is inherently immigrant-based revolving around chicken farming. This system is more sustainable than large scale industrial farming. Co-existence allows for a deeper understanding of immigrant-based farm-to-table process.

URBAN CHICKS
Flushing, Queens
Instructor: Phu Hoang
In Collaboration with: Joyce Zhou & Richard Sa
This diagram compares the typical process of farm to table to that of halal meat processing. The top row shows the process of large scale beef production in Pennsylvania. Located 250 miles away, the population of Flushing relies on long-distance transportation for their food. In contrast, a butchery located in the basement of a building in Flushing serves local communities within a 3 mile radius.
Looking at Flushing we examined the typologies that make up Flushing’s land. These include about 32 abandoned buildings, 1,200 houses, 100 houses of worship, and 2 community gardens. By localizing the food distribution and production we observe that these spaces are all possible sites. We are proposing a system to connect these possible sites through technology smart farming.
Through the repurposing of the attic space of a single family home, we transformed the attic into a chicken coop. It is sloped to allow for the collected greywater to clean the surface. Attached to the single family home is an impermanent structure that is comprised of 2x6 that gets denser closer to the building. The house has chicken only programs, human only programs and programs that allow for human and chicken interaction. The splitting of the programs can be seen in the model, where behind the mesh, are the chicken designated spaces. Where as the areas not enclosed in the mesh are shared areas between the chickens and the inhabitants of the house.
URBAN CHICKS / House-House

EXPERIENCE
An Afghan Muslim community currently utilizes a house renovated in the 90s to function as a mosque. This community has gathered donations and is now building an adjacent formalized mosque. In addition, we’ve considered the old mosque-house as a site for our urban chicken farming. Starting at the roof is a coop housing 45 chickens and an herb garden. The herb garden serves as the space for chicken and human co-existence. The first floor is a restaurant promoting social engagement, and the basement acts as a space for incubators to fully capitalize on the existing/unused areas. A vertical shear occurs at the split between the herb garden and the coop to allow roof access to the adjacent mosque, which both chickens and humans access. The structure uses 2x6 joists; the joists level of density depends on the program. For example, a more dense network implies chicken concentration, whereas an open structure implies human concentration or circulation. The 2x6 members connect through sheering and define experiences such as benches and vertical planters.
URBAN CHICKS /
House-Mosque

EXPERIENCE
URBAN CHICKS / House-Mosque
URBAN CHICKS / Community Garden

The third site is a community garden housed in Kissena Park, which caters to an older Asian immigrant demographic. The garden intervention expands 8’ into the community garden, bridging 8’ over the sidewalk, and extending 8’ in the opposite direction onto the street. This modular design sits along with the community garden, housing a variety of programs. The coop connects by a seemingly floating bridge leading to human activity through the vertical shift. When the module repeats, the Chicken coop is connected to a playground, chess adult play, and a market where produce from the community garden is sold. The sheds that do not connect by bridge consist of support spaces such as restrooms, cisterns, organic waste storage, farmer tools, and a space to house chicken tractors. This shed-like structure shears vertically, creating a bridge marking the movement overlap between the chicken and humans. The structure uses 2x6 joists with the members sheering to make benches. The enclosures at the chicken coops are semi-enclosed with hay insulation sandwiched between a double corrugated wall.
URBAN CHICKS /
Community Garden
The training center is designed to educate those who are not co-existing with chickens through a variety of programs such as chicken rearing coops, a kitchen classroom, classrooms and lab spaces. In addition, there is a butcher, an IT office and exhibition spaces in order to facilitate casual learning. The exhibition space will showcase the technological advancements of contemporary farming methods that will be used in our poultry farming system.
In Collaboration w/ Jon Liang

Professor: Yasser Elsheshtawy
Course: Arab city in Film

The Yacoubian building was set during the early 1990s and portrayed Egyptian society after the revolution of 1952. With its plot and the arcs of each of the film’s protagonists, the movie demonstrated a fragmented Egyptian society and the clashing social identities represented throughout the levels of one building. Our research delved into the historic spatial context of exclusion within society. The Yacoubian building symbolized the product of the cycles of creative destruction and social disconnect in 20th century Cairo. This pattern of creative destruction in the Yacoubian building created the characters in the film, each emblematic of a specific aspect of Egyptian society. The patterns led us to investigate spatial typologies in Cairo that possess characteristics similar to those our protagonists share.

The Yacoubian Building:
The Yacoubian building was formerly a luxury apartment owned by the elite of Egyptian society. The vertical layer of each building possessed an identity. At the ground level, the doorman and janitor. The apartments housed the wealthy, and the roof was initially designed to support the units serving as laundry and storage spaces. (The Yacoubian Building) Following the Fires of 1952 and the dissolution of the kingdom of Egypt, foreigners and the rich moved out of downtown Cairo. Population growth, rural-urban migration, and the lack of affordable housing led to the modification of storage and other service spaces into informal housing for the poor.
The Shepheard hotel was built in 1937 and constructed by Hagop Yacoubian, a second infrastructure we explored further. This hotel possessed a British colonial identity during its height and was a space of leisure for the British colonizer. It was known for its opulence, famous guests, and role in creating a European Cairo identity. Its stained glass windows, Persian carpets, lavish gardens, terraces, and great granite pillars reinforced the European influence in Downtown Cairo which isolated itself from the rest of the city. (Elshehawy 215) After the revolution, the shepheard hotel attempted to reconcile Arab and western identities while shedding glamour and other associations to its predecessor.

The Shepheard Hotel and Esbeckiah Square served as a cultural center and a base for the military. The spaces both represented a formal attempt (architecturally and militarily) to alter the Egyptian urban landscape and identity to a European city while also moving away from native and vernacular identities. (Elshehawy) On January 26, 1952, the hotel was completely destroyed during the Cairo Fire and the anti-British riots that led to the Egyptian Revolution of 1952. (Elshehawy) The new Shepheard Hotel sought to incorporate Western modernism with classic Arabic lines. It was presented as the "face of a new Egypt," symbolizing the country’s movement towards modernism and nationalism under Nasser’s leadership but losing the connotations of luxury associated with its predecessor. (Elshehawy)
Manshiyat Nasser:
On the outskirts of Cairo, "Manshiyat Nasser" is a city of more than 16 million people with no organized trash removal system. This site represents a substantial fragment of Egypt's society marked by 90% majority of Coptic Christians in a Muslim-majority country. The village is home to around 60,000 Zabaleen – Arabic for garbage collectors. Its economy revolves around the collection and recycling of Cairo's garbage. It lacks infrastructure and often lacks running water, sewers, or electricity. Despite the grand scale of trash, through the shattered walls and informality of infrastructure lays order and discipline as family units start their days together at dawn, making journeys to Cairo collecting the cities garbage. The community recycles 80% of the trash they collect, a ratio much higher than the European average. (PHmuseum Dream Land)

In the mid to late twentieth century, private developments were influenced by American consumerism. Egyptians, who were becoming more saturated with American symbols of wealth and prosperity, tried to emulate Western developments that embodied the lifestyle of success. (Elsheshawy) However, these developments only catered to Egypt's "super-rich" minority (Mitchell 28), which only accounts for less than 5% of the total population. Dreamland was based on the ideals of creating gated communities which are exclusive to only those who can afford it. Private developments in Egypt and the Middle East continued to be the catalyst for social inequity and further promote and exclusive and insular mass consumerism and consumption community based on the idealistic and symbolic perceptions of American and Western prosperity. (Ritzer G) The developers (Baghat) aimed to model Dreampark after Disneyland, seeing the American park as a symbol for affluence, success, and a primary source of capital growth. (Baghat)

Shepherd Hotel

The new Shephard Hotel sought to incorporate Western modernism with classic Arabic lines. It was presented as "the face of a new Egypt," symbolizing the country's movement towards modernism and nationalism under Nasser, but losing the connotations of luxury associated with its predecessor.

Cairo Hilton, Egypt 1957
Typology: "Luxury" Hotel

On the outskirts of Cairo, Manshiyat Nasser, is a city of more than 16 million people with no organized trash removal system. A slum settlement was founded to store garbage in 1737 at the base of Mokattam hill.

Manshiyat Nasser, Al Abqaryyah, El Khalifa, Cairo Governorate, Egypt 1976
Typology: Informal Housing

The community recycles more than 80% of the trash they collect, a ratio much higher than the European average.
Findings and Conclusions:
The Yacoubian Building is a symbol of a city with a plethora of clashing identities, yet it is still trying to find its own identity to this day. The film, its characters, and the city's architecture might serve as a critique of 20th century Egypt's desire to fixate itself on one cohesive national identity, especially when this elusive identity could possibly be found in its diverse cast of characters and typologies.

Works Cited:
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Private developments in the mid to late twentieth century were influenced by American consumerism. Egyptians, who were becoming more saturated with American symbols of wealth and prosperity, tried to emulate Western developments that embodied the lifestyle of success.

However, these developments (excluding the golf course) only catered to the "super rich" minorities of Egypt, which only accounts for less than 5% of the total population of Cairo.

Dreamland was based on the idea of creating gated communities which are exclusive to only those who can afford it. Private developments in Egypt and the Middle East continued to be the catalyst for social inequality and further promote and exclusive and insular mass consumerism and consumption community based on the idealistic and symbolic perceptions of American and Western prosperity.

The developers (Baghat) aimed to model Dreampark after Disneyland, seeing the American park as a symbol of affluence, success, and a primary source of capital growth.
Pre-War

War-War

Post-War
PWP Housing Typologies investigates Typologies in Syria, specifically within Damascus and Aleppo, beginning its documentation in the early 19th-century maneuvering through war and post-war conditions. This study extracts two main typologies within each war type category, documenting them through collected images and architectural plans to further understand their resiliency and informal urbanism characteristics.

Prewar housing typologies in Syria vary based on its modernization timeline, which shows a movement from a multi-generational courtyard style home to a more traditional-style family structure, consisting of husband, wife, and children, often housed in a mid-rise tower.

The second phase of documentation identifies the reality of how Syria's vernacular architecture transformed through the crises of war. Through various acts of war such as airstrikes, buildings often lose their facade structure and privacy to the outside world. As a result, informal settlements are created underground and in undocumented locations. (2) Underground Housing became a tool for protection where families were now sleeping, storing, playing, cooking, eating, and living underground. (2)

Camp Settlements became a part of Syria's housing infrastructure during and past 1948's Palestinian exodus and illegal occupation of Palestine. Camp Settlements began as tent structures and evolved into low-rise permanent settlements with schools, hospitals, and social ecosystems. (1)

Through first-hand personal knowledge, vacant lands became used by opportunist squatters claiming ownership over land and property. In addition, vacant homes left behind by those who have fled Syria were also prone to be used by internally displaced refugees.

Post-War Housing is what is left behind after the war has "ended." The most common typology is what I am defining as "Face-less" housing.

How does Architecture respond to needs arising from religiously, geopolitically, relevant, and war-prone regions?

THE COURT YARD HOUSE

The most crucial form of Housing in Syria, historically and architecturally, is the Court Yard House belonging to the urban fabric of "Bilad Al-Sham," the region between the two rivers Tigris and Euphrates. The concept of the Court Yard House was a response to the environmental condition and the need to provide shelter and security to cattle. (5) This early idea utilized tents designed around an open space.

(5) The Court Yard House can be found in various areas within Bilad Al-Sham with variations specific to its region. The emergence of the Islamic world in the 7th century further shaped the transformation of the Court Yard House's architectural elements positioning privacy and boundaries between openness and closeness in the center. The cultural conditions of extended family structure housing drove the scale of the courtyard house. They programmed the space with the possibility of semi-independent subunits functioning independently but still maintaining strong family ties.

(4) The courtyard house typology consists of unique elements that repeat throughout buildings. The primary sectional program consists of a basement floor, a ground floor comprising the main living area "Al Salamah," and a first floor including the private rooms called "Al Haramlek." (4)

With the slow migration into more urban midrise development in the mid-1900s, more damascene-style homes became vacant and later transformed into hotels or restaurants.


PRE-WAR/ COURTYARD HOUSE

1. Al-Burj: with marble fountain or lake in its center and 2 rooms, one in east and the other in west.
2. Luxury drawing room located beside the open yard or Al-Burj.
3. Living rooms, not that important as the drawing room.
4. Service bedrooms and kitchen.
5. One room or more relatively located in the middle above corridors or service zones, and it is called "Al-Nandaqah".
6. First floor consisting of northern room open to the south.
7. Stairs made of stone having decorative iron handrail.
8. The living room which is a sitting room at the highest roof with windows in each of its four walls.
9. Wooden stairs, from the first floor to the roof, with walls and inclined ceiling "[4]

Fig 1: Courtyard style house variation of layout
Redrawn by Zeinab Sakramini
Fig 2: Ground Floor 1/16" = 1'-0"
Redrawn by Zeinab Sakramini
Fig 3: 1st typ. Courtyard House floor plan[4]

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PRE-WAR/COURTYARD HOUSE

Zenah Sakacemini inside Azem Palace, once a home now a museum

courtyard & kwan [6]

Private Living room [6]

house to hotel [8]

INVESTIGATE
PRE-WAR/ URBAN MID-RISE

1. Guest Living Rm.
2. Family Living Rm.
3. Bathroom
4. Bedroom 1
5. Bedroom 2
6. Great Balcony Leading Views to the neighborhood block.
7. Family Living rm. 2
8. Toilet
9. Kitchen

Fig. 4: Floor Plan of a TYP. single family housing unit in a midrise building in Damascus, Syria. The Floor plan was drawn from memory from my uncle's house to which I grew up in on and off from ages 2-7.

Fig. 5: My Uncle Red Sabbath and I inside Family Living rm 2 taken by Marwa Sakaamni, 2008

Fig. 6: Midrise Housing, Image by Zenah Sakaamni, 2008

Fig. 7: Midrise Housing, Image by Zenah Sakaamni, 2008
Vacancies in both Damascus and Aleppo resulted from previous occupants fleeing the war and the destruction of buildings. Syrians who stayed in Syria, affected by the war, sought shelter in underground spaces. Underground Housing created an informal housing typology that connected the occupant with the street level uniquely. Occupants living underground would only leave to get food and air out wet laundry. Adults created make-shift furnaces, storage, sleep, and play areas.

Below are excerpts from an article:

1. “The family seen in these photos had been living largely underground in the beleaguered eastern Ghouta neighborhood as the Assad regime sought to gain control from the rebels.” [2]

2. “The living conditions underground were inhospitable at best, according to the International Rescue Committee.” [2]

3. “There is little fresh air and the high humidity in close quarters was causing mold and respiratory infections to flourish. Cooking, cleaning, playing, and sleeping all had to be done below ground to protect from air-strikes. To go upstairs and outside to retrieve household items or food rations was risky at best,” the IRC said.” [2]
“Syrian children climb out from their underground shelter in eastern Ghouta.”
Abdullah Hammam / International Rescue Committee 2018 [2]

“Sitting next to her family’s belongings, U said, “I hope the world will look at me, listen to my voice, and stand with me. I wish to go back to my home with my family. Many are worried that the structures they live in won’t take any more shelling — and are especially worried for the fate of their children.”
Abdullah Hammam / International Rescue Committee 2018 [2]

“The children living in the basement bunker make time to play. P’s family and the other people living with her can’t turn on any lights for fear of being spotted or attacked. U said, “They [her grandchildren] describe it as if they’ve been buried alive or like living in a grave.”
Abdullah Hammam / International Rescue Committee 2018 [2]

“Laundry clothes pose a serious risk to families in Douma, as they must go outside — the poor ventilation and high humidity of the underground basements make drying their garments impossible.”
Abdullah Hammam / International Rescue Committee 2018 [2]

“P’s family and the other people living with her do not have access to a proper kitchen — the basement isn’t prepared for such use.”
Abdullah Hammam / International Rescue Committee 2018 [2]

“Due to the siege, food prices in eastern Ghouta are on average five times higher than elsewhere in Syria — the cost of bread has increased by 150%.”
Abdullah Hammam / International Rescue Committee 2018 [2]
"Syria has nine official refugee camps and three unofficial refugee camps, [1] and 499,189 registered refugees.” [3]

Jericho Camp in Syria following al-Nakba [1]

"Jericho Camp is a 0.05-square-kilometer (7.6-acre) Palestinian refugee camp in the outskirts of the city of Damascus. The camp was initially populated by refugees from the 1948 Palestinian exodus, and later by Palestinian refugees who had moved to the Galaa Heights and were forced from their homes in the 1967 Palestinian exodus. During the Syrian proxy war, the population of the camp rose from 18,000 to 40,000 due to an influx of internally displaced Palestinian refugees from other parts of Syria, including the Yarmouk Camp.” [5]

"Yarmouk Camp is a 2.11-square-kilometer (520-acre) district of the city of Damascus, populated by Palestinians, with hospitals and schools. It is located 8 kilometers (5.0 mi) from the center of Damascus and within municipal boundaries (but not initially when established in 1957; Yarmouk is an "unofficial" refugee camp. Now depopulated, it was home to the largest Palestinian refugee community in Syria. As of June 2002, there were 112,599 registered refugees living in Yarmouk.” [1]

During the Syrian Civil War, Yarmouk camp became the scene of intense fighting in 2012 between the Free Syrian Army and the FSA-GC supported by Syrian Army government forces. The camp then was consequently taken over by various factions and was deprived of supplies, resulting in hunger. [21] Diseases and a high death rate, which caused many to leave. By the end of 2014, the camp population had gone down to just 2,000 residents.” [1]
"Using satellite imagery captured between 2013 and 2017, UNOSAT (UNITAR-UNOSAT—Operational Satellite Applications Programme) has conducted a comprehensive damage assessment of eight of Syria’s largest cities. Detected damaged structures are assigned one of four categories: 1) moderately damaged, 2) severely damaged, 3) destroyed, or 4) no visible damage. Eight of Syria’s largest cities were assessed, namely Aleppo, Damascus, Daraa, Deir ez Zor, Hama, Homs, Idlib and Raqqa." [9]

"Moderately damaged structures
Aleppo comes in first place in number of moderately damaged structures with a total of 16,256 structures. Followed by Damascus, Raqqah, Homs, Deir ez Zor, Hama, Idlib and Daraa, respectively." [9]

Aleppo comes first in number of severely damaged structures with a total of 14,671 structures. Followed by Damascus, Homs, Raqqah, Deir ez Zor, Hama, Daraa and Idlib, respectively." [9]

Hama comes first in number, 90% of Hama’s damaged structures are destroyed." [9]

"Syrian government forces on a destroyed street in the Hajar al-Aswad area on the southern outskirts of Damascus." [16]

"Syrian soldiers walk in front of a destroyed building in Aleppo, Syria. The Syrian government is advertising Aleppo, along with other destinations in Syria, at the ITB International Tourism Trade Fair in Madrid. (AP)" [10]
Syria is a region prone to war due to its geopolitical significance and historical context. Therefore, we can assume that Syria and adjacent countries of similar vernacular and cultural identities are prone to conflict. With this in mind, how can we think of post-war spaces and architecture?

The architecture of protection should be both flexible and resilient. Materiality is crucial to consider when designing for "Post-War" living. Materials of war consist of micro-reinforced concrete, S.E.B. walls, blast-resistant glazing, and a temporary solution for access to electricity and filtering the air coming in from the outside. These are potential solutions should the economy develop in Syria and access to such materials become available.

So what of vernacular solutions?

Syria's historic formal vernacular language and the Courtyard house are identified in this essay as a protection strategy: The walls of the courtyard house are made of thick stones with very minimal punctures in both quantity and size throughout the exterior facades of the home. In addition, subunits are a defining element of the courtyard house that allows multiple families to occupy the same protected area. I propose that the thick black and white stones used in the damascene courtyard house be considered a "cushion" and a space within a space yielding protection and an extended time for occupants to seek cover. The basement level of the courtyard house, previously used as a storage space for dried foods, can continue to serve that purpose and extend to provide cover for occupants during a war. In addition, the subunits of the courtyard house can provide placement for internally displaced refugees and create an underground network that connects communities.
"During a detonation event, materials adjacent to the source (such as the casing of a bomb) are converted into "primary fragments." In close proximity, this shrapnel is deadly. But for most building occupants, the main concern is the "secondary fragments" generated from the disintegration of building materials themselves in reaction to the shockwave released by an explosion." [11]

"One strategy is to construct a secure building envelope, increasing load resistance and debris containment using enhanced reinforcing." [11]

"Micro-reinforced concrete systems employ multiple layers of densely spaced "MicroMat" steel reinforcement for increased strength and blast-resistance. The technology is ideal for securing bulk structural concrete as well as concrete used in building facade assemblies, and may be employed in both site-cast and precast applications. High ductility and energy-absorption, with a tensile strength of up to 2,000 psi, an elastic modulus of up to 4,600 ksi, and a compressive strength of up to 18,000 ksi. The system may be applied to existing as well as new structures, and the MicroMat’s flexibility and 1/2-inch minimum thickness help facilitate construction." [11]

"Another approach is the transformation of multi-material assemblies into tightly interconnected composites. This strategy is exemplified by the SEB-Wall, an enhancement of the conventional cold-formed steel (CFS) stud assembly. Developed by Simpson Strong-Tie & Heger, with support from the U.S. Army Research Laboratory, the system uses the inherent lightness and multilayered qualities of the steel stud wall to help resist explosions. Critical augmentations include the use of Sure-Board sheathing panels (sheet steel and reinforced cement board) on both sides of the studs, shear stiffeners, and additional lateral bracing. The resulting composite assembly is ductile, stable, and structurally redundant, with predictable behavior. It resists high blast threats equivalent to large vehicle bombs or very long duration vapor cloud explosion events." [11]

"The SEB-wall system relies on the flexural capacity of ei-
"The tough plastic interlayer holds the glass together after an impact, and with the proper framing systems, the glazing will be retained in the opening. Thus, the amount of flying glass, as well as the consequential injuries, can be dramatically reduced. This glass can only perform as intended when installed in a qualified framing system designed to meet each project-specific application, with the proper framing system and anchoring design. Glass fragmentation hazards have been identified as a main cause of injury in the targeted site, as well as the peripheral sites; sometimes many blocks from the site of the bomb." [15]

In addition to building materials and strategies to use - the need for backup electricity is on the list of post-war and war readiness design. Adding solar panels may not be a secure solution seeing as it’s placed in a vulnerable setting. Having a portable power generator may be more realistic for conditions of war.

Access to clean air is now associated with providing virus proof environments. Air Purifying systems can extend to protecting residents from the remnants of war and ongoing explosives. [17]

The filters that are the most effective at removing particles of toxic chemicals from the air are industrial HEPA air filters and gas phase filters. HEPA filters, AKA High Efficiency Particulate Air filters, are capable of absorbing tiny particles of either liquid or solid air pollutants. [18]
POST-WAR /
Vernacular Solutions

"The major material used in building walls is limestone, and some frameworks can be made from alabaster or other kind of decorative stones with thickness of walls 60–80 cm. This thickness is built with two fronts that would be linked together where the outer front is made from trimmed stone while the inner front would be built rather from trimmed stone or from coarse stone. As for the filling, it is made of small stones, clay, and mortar prepared from crushed limestone which helps in fixing the mixture in the wall. The carrying walls lift the vertical structure of the building whereas the horizontal structure is represented by intersecting and continuous cells in Al-Iwan and the rooms especially the upper floor rooms." [19]

"The outer walls are left empty and as abstract unless for the shown stones that are curved; however the inner walls are strained with lime in blue color. Besides, we could find base of floors in some rooms made from ceramics with height 1.5m. Paving is done with the yellow stones in the courtyard and the inner rooms with using alabaster in crucial zones. Also, it is possible to find a courtyard paved with black and white stones" [19]


"Heal NYC" is an outpatient and inpatient treatment clinic that aims to bring healing into the foreground of New York City. The recent pandemic has had many short and long-lived consequences forcing us to reassess how we build and engage with one another. NYC saw a surge of substance abuse during COVID-19, with studies showing a 21% increase in overdose cases in 2020 compared to 2019. As a result, medical staff often switched between handling overdose and COVID-19 cases. A response to the reverberating effects of the pandemic and the ongoing substance abuse crisis, NYC HEAL NYC questions how to rebuild communities to foster healing in a post-pandemic setting. The site takes over an abandoned building on a 25 x 100’ corner lot and utilizes its FAR to maximize its vertical usage. The ground floor extends vertically to the second floor, as spaces where social lines blur between community, clinic staff, and patients. Each level includes socialization pods that utilize curtains made of both wool and shear to allow for comfort and light to flow in from adjacent windows. The use of frosted glass at the storefronts and curtains rather than walls for the social pods promotes the notion of softness and plays with the idea of semi-public and private spaces.

Housing begins at the third level for inpatient accommodation and offices for staff while levels 4-6 accommodate staff housing. The scissors stairs allows for two modes of access to both the clinic and housing. Balconies provide access to air and light—a common element on each floor and an open atrium connects all housing levels. "Equity" was an element that drove each unit's spatial organization: reverberating the idea that visitors could become patients as well as staff members echoing the notion of healing as a cycle.

The use of materials and colors were intentional throughout the design. Hues of blues, yellows, and greens are associated with enabling cognitive functions (blue), yellows with and joy and socialization, green with peace and relaxation. The pigmented baked earth terracotta used at the facade invokes protection and comfort. Perforations are soft and intentionally placed to provide views into social spaces where curtains are drawn. Communicating the use of space. Throughout the project are ways of blurring the lines between the outside and inside, private and semi-public, introverted and extroverted.

HEAL NYC
Manhattan
Instructor: Hilary Sample
GROUND FLR

Legend
a. gallery
b. Storage
c. G.N RR
d. living pod
e. cafe
f. conversation Storefront
g. living Storefront
h. mech.
HEAL NYC //
Built To Come apart.