"...how do you drop through a trapdoor and engage the flip side of these logics?"

These projects and writings examine and discuss the extraction, displacement, mistreatment, neglect, and misuse within our current Anthropocene, which is more prevalent than ever currently in 2022. Through an architectural lens, these interdisciplinary research and design aim to lead to a future of personal endeavors and hope to spread discussions to all eyes.

This portfolio contains work of both Advanced Design Studios and electives taken during Summer 2021 to Spring 2022.

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Lithium, the main component of fast charging, electricity storing lithium-ion batteries, has become the most forthcoming mineral globally. The demand for lithium ore is growing triple folds, responding to our desire to be constantly connected on electronic devices and the worldwide transition to 'green' electric cars. In the hope to lead to a social consciousness of the invisible violence and shorten the distance between us and this industry's productional, environmental and societal impact, we are investigating the processes and relationships from the birthplace of lithium—the mining site.

By drawing the taskscape of a new lithium mine in Sonora, Mexico, we examined the violence brought on by the production of this mineral, which lies hidden behind a facade that the developed world comfortably ignores. A mineral that supposedly helps construct a greener future for us while the burdens are imposed upon the invisible many.
Metal elements and their products are widely used in aerospace, jewelry, finance, investments, electrical & electronics, machinery & equipment, construction, chemistry, safety & security, and transportation & infrastructure industries.

Among non-metal elements and their products, coal, crude oil, and natural gas are widely used in the electricity & energy industry. Apart from that, they also play a role in health care & medicine, textile, agriculture, food processing, package machinery, plastic & resins, cosmetics, and automotive industries.

Geographically linking the US and Mexico border, the Sierra Madre Occidental is visibly rich in mineral deposits, acting as a canal bringing in northern investments and mining sites. When it comes to the States, the Sierra Nevada mountain range between California and Nevada and the Rocky Mountain range between Utah and Colorado have an evident mining site population.

Three panels are drawn collectively to analyze the complex landscape of extraction between the Mexico and US border:

Mining demands heavy use of water in processing ore. The principal mine water source is the "rainfall" and nearby major water bodies around the mining area. The river network is a primary geographic criterion. Mining requires displacement but at the same time generates thriving mining communities, which draw people from the closest cities for employment. 20% of jobs are directly employed at operating mines, 35% are employed in the mining industry, and 45% of mining supplier and service jobs related to the mining do not necessarily have to be on-site. They are located mainly in the closest metropolitans. Extraction processes are broadly determined by the physical state of the ore to be mined and its location in the strata. Extraction steps are, in concept, similar to all methods with the same goal of extracting ore with the most efficiency.

Lithium became our main focus of this extractive taskscope.
Using video format, our investigation starts by looking at the proposed mine site’s environmental and societal impact. Tracing the existing plan of the Sonora Lithium extraction project, we identified the towns at risk of water and air pollution and also potential labor violations. In addition, following the stream of the Bavispe River, the primary water resource in the surrounding areas, we found it is only 9 miles away from the extraction site, which is under dire concern regarding the future lives of residents.

https://vimeo.com/583492708
This interpreted extractive landscape is drawn to showcase what the potential future of the town of Huasabas could be: river polluted, mountains removed, wildlife habitat disrupted, and all without the promised employment from the mining companies.
Domestic Migration in South Korea: 1970s and Onward

Despite these recent economic changes and rural-urban migration, social life in South Korea remains embedded in Confucian culture, especially in rural areas, where the emphasis is placed on family and kinship. The patriarchal Confucian deficit of the family has an immense impact on domestic migration across Korea. Confucianism underscores that family is a cardinal virtue and that marriage and procreation are the eldest son's most important social obligations. (Hsu 61)

A traditional Korean nuclear family, according to Confucian values, has four formal criteria:

1. The nuclear family (가족 (가족)), the eldest man in the family, holds significant rights and privileges.
2. The successor to the head-of-house (가족대문 실탄 (가족대문 실탄)), which is the eldest son.
3. The estate is considered family property (가족주택 (가족주택)).
4. Other relatives through female kinships are considered outside family (외가족 (외가족)). Therefore, when a daughter marries, she will be immediately called "an outsider," leaving the family unit. In other words, she joins her husband's family and is responsible for her domestic duties, including serving him and his parents, thereby maintaining traditional family customs and reputations.

Because of these traditional family practices, more men remain in rural areas than women, contributing to the decline in birth rate that has persisted in Korea since the 80s. The gender imbalance in rural South Korea caused a sharp drop in population in rural towns. As a part of the revitalization program of these rural municipalities, local governments started to provide subsidies for marriage migration and therefore to foreign brides, starting in the 90s.

International Migration to South Korea

In the 1990s, 35 rural municipal governments started subsidizing private marriage brokers to introduce unmarried male farmers to ethnically Korean women in China and women from other Asian countries, paying the brokers 4 to 10 million Korean won (back then, around $3,800 to $12,000) per marriage. These policies were established in an attempt to address the aging population by encouraging these unmarried men to find a wife and eventually reproduce to increase population growth. However, after 30 years of this practice, in 2021, government subsidies started to be removed. As a result, in South Korea, between 2000 and 2005, such marriages increased almost fivefold, from 6,945 to 30,719 (Korea National Statistical Office 2011a). Now bolstered at more than 334,000, these marriage migrants (immigrants and naturalized by marriage) account for 16.7 percent of all immigrants in South Korea. Renowned as a monocratic country, Korea is now demographically and politically shifting towards becoming a multicultural society.
Marriage migrants have also been expected to maintain the patriarchal hierarchy by acting as compliant and submissive wives, limiting their career growth and eventual integration into Korean society. Language barriers, cultural differences, and financial dependencies contribute to the characteristic isolation these new immigrants face in the so-called homogenous society in which they must remain as an ongoing social and cultural concern. However, this phenomenon would reveal much more conflict on the scale of international affairs. Therefore, a probable different approach would be to trace back these marriage migrants to their home country by collecting data on their remittance and investigating how this money drives the supply of potential migrants.

Citations


Francis L. K. Hsu, “Confucianism in Comparative Context,” 61.


Fireside, Documentaries Film “Take of Multicultural Inlaws - The Hidden story of a daughter-in-law who is always hungry”, 2015

In this section, we are translating the architectural space inhabited by a marriage migrant from Vietnam- Pham, through the images portrayed in the documentary film “Tales of Multicultural Inlaws.” By reconstructing the typical rural house where a marriage migrant lives in Cheongsong, we transform this narrative into a more intimate one. Her hierarchy in the household becomes visible to the viewers - you can see the limited access she has to a lot of the house and her workspace in her living quarters, including the kitchen, living room, and kids’ room. This clearly shows her unequal position and traditional feminized role in the family. Still, despite these unfortunate circumstances, more and more individuals have broken this stereotype and become visible in Korean society. In addition, multicultural support centers in communities help integrate new immigrants. Furthermore, policies such as the “Female Marriage Migrant Family Social Integration and Support Policy” and the “Foreigners in Korea Fundamental Integration and Support Policy” help ensure their successful entrance into Korean society.

While these domestic support policies and groups are significant in helping these marriage migrants, the economic benefit these women sent home and the numbers of unmarried men in rural Korea, which remains a phenomenon, means that this marriage migration will not disappear in the short term, and must remain as an ongoing social and cultural concern.

Conclusion

The research exposes the so-called homogeneity of South Korea through the lens of marriage migration at various scales, from the global to the intimate. The story visualizes how urbanization in one country has an impact across the border between countries and permeates everyday life in South Korea—combined with the Confucian culture, which is deeply rooted in rural areas. The urbanization of South Korea has created an unbalanced gender ratio in the rural towns in addition to the more common issues exacerbated by urbanization, such as population decrease and underdevelopment. As a result, female marriage migrants from neighboring countries have been filling up the voids created by urbanization.

This phenomenon has caused adverse effects, revealing how South Korea’s so-called homogeneity, a distinct characteristic and pride of the county, is forever transformed. This research is conducted from the perspective of Korean society, which mainly investigates through the data visualization of population movements. However, if conducted through a political and economy-driven approach, this phenomenon would reveal much more conflict on the scale of international affairs. Therefore, a probable different approach would be to trace back these marriage migrants to their home country by collecting data on their remittance and investigating how this money drives the supply of potential migrants.
With a 56% reduction in prison population since 2000, 26 prisons in New York State have closed and more are set to be closed. Layering these closures with policies, economic and community impact, pushback, political positions, environmental concerns, as well as the decentralization of the criminal justice system, this research seeks to envision post-prison futures in the rural towns of upstate New York. It also explores the flows and interlocks through the prison economy that interconnect these towns and New York City. A range of visions focus on prisons, towns or the system of mass incarceration, and consider state infrastructures: carceral, water, food, power, waste- as urban exostructures.

In the city of Rome, a prison has been closed since 2011. And I ask this question: What if the old Erie Canal acquires ‘soft edges’ in Rome, NY, to promote an alternative town adapting to annual flooding and reflect on past exclusive history with inclusive, conscious planning and building programs?

Currently, Rome is considered to have a major risk of flooding. Where 14% of all properties in the city have more than 36% chance of being severely affected by flooding over the next 30 years. For the past 10 years, multiple redevelopment projects and proposals have been raised by the local and state governments surrounding the Erie Canal, while none of them have been realized, they also don’t address the issue of changing floodplains and the equity of local residents. Instead, they focus a gentrified, tourism based future, while ignoring the changing edge of the river itself.

My proposal is in contrast, soft-edged, explores a new way of designing cities, one which places adaptation of climate change, wellness, and connection to nature at the forefront. This proposal aims to establish a blueprint for urban design for the future, whereby examining a range of strategies- from designing flood mitigation and resilience architecture to flood edge public place-making for the community- could suggest a different approach to the exostructures in Upstate NY.
Current Carceral Landscape of NYS

https://palejelly.github.io/MassIncarceration/
"We have spent millions of dollars on making sure the water that we take from this reservoir is pure. We spend money to make sure it is safe to drink, so we need to protect it at the source. You can't continue to spend the precious capital unless you have pure drinking water in good order after it's been treated.

"- Philadelphia Mayor Nutter Richeson"

"There's a lot of bad blood between keeping these hills clean and people being happy. It's more important to keep the people up here happy.

"- Mountain Glen resident laminate candidate"

"I have not seen the water this green. It's been a bottle of water. I cannot see where the source has been. I don't want my children playing in the water."

"- Former resident now living away from the area"

"What seems basically acting of the court, and invents a new water purification which is a great solution for you, but it's just another downstream.

"- Brookhaven's Dan Shapiro"

The New York City Watershed

spans nearly 2,000 square miles, with a labyrinth of 19 reservoirs and aqueducts to provide 1.2 billion gallons of drinking water daily to 8 million New Yorkers. By 2018, the city had already spent 2.8 billion dollars on this unfiltered water supply system.

Communities around the watershed

While being cornered on the drinking water, the NYC watershed’s immediate surroundings have been accustomed to environmental and tap water pollution complaints.

NYC Watershed

- Inequality Around Water Exostructure
The Erie Canal, 363 miles long, is known as the ‘MOTHER OF CITIES’ because it gave rise to so many cities, towns, and villages in New York: Albany, Syracuse, Rochester, Buffalo, and Rome...

Erie Canal
- the Water Exostructure as Driver of Urban Development
Mapping Urban Development
- Parallels in growth around Water Exostructure

Timeline of Oneida's Development

1817
1st Erie Canal built

1874
2nd Erie Canal built

1917
3rd Erie Range Canal built

In order to fill the new canal with enough water, a reservoir was constructed on top of the town of Delta, displacing hundreds of residents and two cemeteries.

1968
Oneida Correctional Facility opened on the site of the previous State School, a medium facility, it houses 988 men along with 611 employees.

2011
Oneida closed down

Rome population has been in decline since 1980s

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Mapping Urban Development
- Parallels in growth around Water Exostructure

Flood Risk in Rome, 2022
Approx. 813 properties have a 5% chance of some amount of water reaching their building in 2022.

Points of homes, roads, businesses and services at risk in Rome. Rome is currently considered to have a major risk of flooding over the next 30 years.

Currently Rome is considered to have a major risk of flooding. Where 14% of all properties in the city have more than 26% chances of being severely affected by flooding over the next 30 years. Every summer, water overflows the Delta Reservoir and surges down into Downtown Rome.
Transformative Programs
-Plug-ins Along New Edges
New Adoptive Edge of Rome
-Flood reclaiming 1st Erie Canal
Soft-climate-conscious-Edge
-Re-engaging Erie Canal as the economic driver of Rome
Before 2015, when ascending uphill through line K of the Metro cable car, three black polyhedrons stand atop the undulating landscape of Bogotá’s favelas made of black bricks and concrete slabs. But now, the Parque Biblioteca España has remained walled-up, its façade stripped and its cores wrapped in black fabric. Labeled as Medellín’s “white elephant” by locals, it had failed to meet its promised goal, which is to provide “long-term social rejuvenation” to the community.

Outside acknowledgments flooded in: MoMA acquired the original model of the library; winning the V Latin American Architecture Biennale; getting approval from the Guardian for its effort to “make poverty visible”; Iñaki Ábalos received Medellín’s “triumphant creation of public space.” Likewise, Justin McGuirk’s Radical Cities reflects on the collaborative efforts of architects combating violence to reunite the city’s citizens. But failures began to appear in 2013. It turns out both the facade system and concrete quality were not built to the specification and standards. This resulted in inadequate waterproofing, and slate plates started falling off when it rained. After closure in December 2015, its been under reconstruction, which would result in another three million dollars.

It turns out the poor construction quality was not directly linked to the architectural approach and the mayor’s office and architect firm have been sued the corrupted contractor. But why constructing something so grandiose and expensive that did not suit the local construction reality in the first place? Donated by and named after the country of Spain, the library’s three black polyhedrons stand over Medellín’s Santo Domingo Savio, “folded atop the undulating landscape of the favela’s makeshift red bricks and concrete slabs.”

BIBLIOGRAPHY


The construction of the BQE has historically established a division and segregation among communities. It has created inaccessibility among the trench next to cobble hill, and also made the view from the promenade at brooklyn height a part of the privilege of the local residents. 20 mins is the average time people spend commuting for food and groceries, the site has a projection that connects to these communities that have a high level of food insecurity, namely Columbia street waterfront, Red Hook, downtown Brooklyn and Gowanus.

The project is located at the end of Brooklyn Bridge Park’s pier six and sandwiched between Atlantic Avenue and Furman Street, acting as the receiving end of the newly occupied BQE. Because of the unique accessibility of the promenade to visitors from outside the Brooklyn height residents, this market street would act as a receiving end of visitors through public transportation and from Atlantic Avenue.
1.5M+
New Yorkers are struggling to feed themselves and their families right now—a 39% increase over pre-pandemic figures.

1 in 3
Or more than 520,000 children in New York City are experiencing food insecurity—a 64% increase over pre-pandemic figures.

21.5M+
Visits to NYC soup kitchens and food pantries since the start of our pandemic response in March 2020—a 46% increase over pre-pandemic figures.
Site As Access Point of Brooklyn Bridge Park

Current On-Ramp Route At Atlantic Ave Intersection

Proposing Re-Routing Under Atlantic Ave Intersection Bridge
CONTAINER TRUCKS
REFRIGERATED TRUCKS

SORTING & STORAGE & LOADING

SUPERMARKET

LOCAL DISTRIBUTION IN-PERSON SHOPPERS

Traditional Supermarket typology

CONTAINER TRUCKS
REFRIGERATED TRUCKS

SORTING & STORAGE & LOADING

SUPERMARKET

LOCAL DISTRIBUTION IN-PERSON SHOPPERS

European/Asian market typology

CONTAINER TRUCKS
REFRIGERATED TRUCKS

SORTING & STORAGE & LOADING

SUPERMARKET

LOCAL DISTRIBUTION IN-PERSON SHOPPERS

Circular market typology

LOADING DOCK

FOOD/PRODUCE STALLS
IN-PERSON SHOPPERS

COMMERCIAL STOREFRONTS

LOADING DOCK

FOOD/PRODUCE STALLS
IN-PERSON SHOPPERS

COMMERCIAL STOREFRONTS

STORAGE & SORTING

COMMUNITIES IN NEED

FOOD BANK

COMPOST

BBP VISITORS BH RESIDENTS

DINING

FREIGHT TRUCKS

FREIGHT TRUCKS

FREIGHT TRUCKS

FREIGHT TRUCKS

Traditional Supermarket typology

European/Asian market typology

Circular market typology
Market Street Occupancy with movable market stalls

with move-able market stalls

atlantic ave

bridge park dr

FARMER'S MARKET

NIGHT MARKET

OCCUPANCY

market hour nightlife

1 4 8 12 4 8 12

2a 3 5 6 7 9 10 11 1p 2 3 5 6 7 9 10 11

ATLANTIC AVE

ATLANTIC AVE

BRIDGE PARK DR

BRIDGE PARK DR

FURMAN ST

FURMAN ST

FOOD BANK

FOOD BANK

LOADING DOCKS

LOADING DOCKS

COMPOST

COMPOST

AMPHITHEATER

AMPHITHEATER

DINING

DINING

STORAGE & SORTING

STORAGE & SORTING

downtown

bklyn

columbia street

waterfront

red hook

gowanus

crown heights

bed-stuy

atlantic ave

60 61
A Celebration in the Slum:
ON THE DESIGN MUSEUM DHARAVI

How do we draw attention to poverty without dismantling and naturalizing its existing urban fabric? The Design Museum Dharavi responds to this question by posing itself as a celebratory medium that promotes the creative potential of the homegrown neighborhood in Mumbai, India—founded by Spanish artist Jorge Mañes Rubio. The museum has become a platform for showcasing goods and services produced within the community. It is designed to fit inside a caravan that could operate like a mobile store, traveling through Mumbai and offering visitors a glimpse into the lives of its inhabitants.

First opened in 1983 during the British colonial era, Dharavi grew as a result of the influx of people who migrated to Mumbai in search of jobs. With a population density of over 277,136 per sqkm, it is considered one of the most densely populated areas in the world. In contrast, Tokyo only has a population density of 27,321 per sqkm. With a population of just 3 square kilometers, it has a population of about 1 million.

Through its notoriety and complexity, Dharavi has been the backdrop of many Bollywood classics, from Deewaar (1975), Nayakan (1981), to Gangster Trilogy (1998–2005). Although in the West, Dharavi was most notably introduced to the public in the British film Slumdog Millionaire (2008), which made “slum tours” a popular attraction for westerners visiting Mumbai. Despite being made up of thriving clusters of talented workers who have made Mumbai their home for generations, this neighborhood is still perceived as an eyesore by the Indian government, many Mumbaikars, and the rest of the world. The development surrounding the locality also bolstered the potential real estate land value. In 1999, the Indian cabinet approved a redevelopment plan to relocate the residents and transform the locality into a thriving business hub. Companies worldwide have bid to redevelop Dharavi, including Lehman Brothers partnered with Foster + Partners, Dubai’s Limitless and Singapore’s Capitaland Ltd. Nevertheless, the realization processes have remained unsuccessful for more than two decades, caused by the cost of relocation and general investment. In 2020, it was estimated to cost 31,000 crores (US$4.2 billion) to redevelop.

With a display of colorful chai cups and saucers, terracotta water filters, brooms and fans created by the local artisans, and cricket bats painted by the local cricket player to honor their team pride, the museum has become a ground for community dialogues and gatherings. The intervention was intended to display the regional artistic rendition of commercial products found in Dharavi to create “a platform for these products and their makers so that the displayed objects were used immediately in cricket tournaments or exchanged between visitors with other items. Despite only a year of operation, the Design Museum Dharavi has successfully brought international attention to the humanized perspective of the “slum” and its own Biennale, continuously posting local artist online since 2013. It was a celebration of resilience and creativity in Dharavi, decorated by and for the people.

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The project is an exercise in exploring different methods of leveraging BIM to enhance architectural design processes.

First, the historical yet outdated Seagram Building is constructed in Revit. Jan Zalasiewicz coined it as a ‘techno-fossil’ for the sheer material footprint the metal shell of the building took. While the building remains a fossil, the interior comfort level needs to depend on manual shading and cooling wholly.

We intended to design a value-engineered addition to the existing structure for the most efficient adjustment to the interior comfort level. Therefore we utilized multiple software: Rhino, Rhino Inside, Grasshopper Honeybee, Ladybug, and Revit to analyze and design a strategy of additional mullion to adjust the solar radiation on the west facade.
1. 3D Modeling

2.1 Benchmarking Facade Solar Analysis

2.2 Benchmarking Interior Daylighting Level

3. Examine Renovation Design Possibilities of West Facade

4.1 Batch Testing for Solar Radiation Simulation Select Best Strategy

4.2 Batch Testing for Interior Daylighting Simulation Select Best Strategy

5. Hybrid Selected Strategies & Produce Design Iterations

6. Evaluate & Improve Overall Performance

7. Loop Optimization

8. Optimal Design Generated
According to the solar radiation analysis of existing Seagram Building, an additional layer of undulating mullions is extended from the west facade to reduce the amount of direct solar radiation gain.

The ratio of energy content to mass was identified as the most telling indicator of the construction ecology in this case. The technomass and technofossils are understood as the index of natural and social processes, and moreover how such processes mix to yield uneven and asymmetric world-systems.

The term ‘technofossil’ was coined by Professor Jan Zalasiewicz and colleagues at the University of Leicester, to describe the material footprints that humans will leave behind through their material goods.

The world’s technomass — the sum of all the world’s non-living technology and technologically-created production (and non-organic waste).

The world’s technomass amounts to 1.78% of the Earth’s mass, and it continues to grow at an accelerating rate. The technomass, step-by-step, will obliterate the natural world as the Earth’s life support systems are overwhelmed and degraded.
"MANI·FOLD"

II

Bodies of Water