<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN STAGE</td>
<td>06-31</td>
</tr>
<tr>
<td>Critic: Marc Tsurumaki</td>
<td>Cultural Matter</td>
</tr>
<tr>
<td>SCALE x1000</td>
<td></td>
</tr>
<tr>
<td>DATA + ETHICS</td>
<td>32-59</td>
</tr>
<tr>
<td>Critic: Galia Solomonoff</td>
<td>A Think Tank in LA</td>
</tr>
<tr>
<td>SCALE x100</td>
<td></td>
</tr>
<tr>
<td>NON-TOXIC MATERIALS</td>
<td>60-63</td>
</tr>
<tr>
<td>Professor: Catherine A. Murphy - Healthier Building Materials</td>
<td></td>
</tr>
<tr>
<td>SCALE x100</td>
<td></td>
</tr>
<tr>
<td>SLOW VIOLENCE AND LITHIUM</td>
<td>64-93</td>
</tr>
<tr>
<td>Critic: Gabriela Etchegaray &amp; Jorge Ambrosi</td>
<td>Extractive Taskscapes</td>
</tr>
<tr>
<td>SCALE x10</td>
<td></td>
</tr>
<tr>
<td>SEA LEVEL RISE IN ROCKAWAY BOARDWALK</td>
<td>93-97</td>
</tr>
<tr>
<td>Professor: Andres Jaque</td>
<td>Transcalarities</td>
</tr>
<tr>
<td>SCALE x1000</td>
<td></td>
</tr>
</tbody>
</table>
This portfolio includes work from 3 semesters within the AAD program at GSAPP. My goal as an architect is to reveal the hidden realities of contemporary processes and systems, from mining facilities and data systems, to the workings of the garment industry, analyzing their larger social and environmental impacts, making contemporary issues more visible to the public and compelling policymakers into taking action. I have specifically focused on investigating from 3 scopes and scales through the studio courses I have taken at GSAPP: a lithium extraction site in Sonora, Mexico equivalent to 15,000 soccer fields, a master plan for a think tank in LA, and a dance center in Harlem. Zooming in and out between studios, I studied the political and social capacity of our practice and how architecture operates on a larger scale of interconnected resources, materials and people. Instead of designing a singular output, I explored a larger network of relationships to maximize the architect's impact, and more crucially sought to exhibit these relationships in my design and material choices.

Throughout these studios, many recurring relationships and themes surfaced across the different sites and programs. One particular relationship was the impact of natural resources on systems and people, such as water’s inseparable relationship with a majority of the networks. In my summer studio Extractive Taskscapes, where I focused on the environmental and social disruption of Sonora Lithium Project in Sonora, Mexico, the need for and use of water through the nearby Bavispe River closely tied the project to the inhabitants of four towns in an area of 8,000 hectares. Since the tributaries of the Bavispe run directly through the mining site, we brought light to the potential pollution that threatens the safety of the downstream towns that depend significantly on the river as the source of irrigation. In Gaila Solomonoff’s studio called A Think Tank in LA, where my studio partners and I investigated the physical necessities around data systems and the digital world, water also was the key critical component enabling these systems to function. Our research revealed that the typical data center uses an astounding 3-5 million gallons of water per day to cool a data center which is equivalent to the amount of water a city of 30,000-50,000 people would need in a day. We sought to both develop a system which recycled this water, and display the concealed but extreme use of water to maintain global technological systems, by surfacing the water used to cool the data center at various points in our site. Another theme that emerged across my projects was the use of material in relation to the programs of the projects. In the “Urban Stage” design proposal, a dance and performance center for Marc Tsurumaki’s Cultural Matter studio, I explored the intersection of fabric as a material condition and dance as a cultural medium. My goal was to reuse waste fabric to create transformative performing arts and dance spaces. But in doing this, I also sought to explicitly present this process of reuse of fabric to the occupants and visitors of the performance center, by an in-house Textile Reuse Studio.

Material also played an important role in our Think Tank in LA, where we examined concrete, stabilized rammed earth and wood as primary construction materials to create minimal operational energy cost, reduce the human and environmental impact.

Throughout these studios, working across varying scales and scopes, I have questioned the relationships between resources, materials and people, and the architect’s responsibility in exposing contemporary issues and challenges. GSAPP has given me the opportunity and perspective to examine processes and sites in relation to larger global networks of processes and stakeholders, which has deeply shaped my vision of my duty as an architect.
Urban Stage

Advanced V Studio, Columbia University | Fall 2021
Critic: Marc Tsurumaki
Site: Harlem, New York City

Urban Stage explores fabric as a material condition and dance as a cultural medium and looks at their intersection. The project aims to create easily accessible public and outdoor performance venues that can operate year long. It allows waste fabric to be reused on an architectural scale and on costume design as well as providing employment opportunities in the textile reuse studio.

Since the 1920’s Harlem has been the focal point for black culture. This culture has kept evolving over time, starting from the 20s, important movements like Harlem Renaissance, Political Resistance, Civil Rights Movement, and this directly affected the dance and culture scene. Dance in Harlem has always been a social activity in nightclubs to release daily pressure. Many new dance genres were invented by working-class residents in ballrooms, speakeasies, and “buffet flats”.

“Urban Stage” questions how the material quality and assembly of fabric can allow for spaces to be quickly and easily transformable for a variety of activities and events that exists in today’s popular dance and performance arts scene. The proposal provides a system that collects waste fabric from demolition sites, businesses, organizations, and institutions. Then, in-house Textile Reuse Studio processes the fabric to be used for the space and costume design and the downcycles waste fabric to be sold at the Shop.

The site is a L-shaped vacant lot located at East 125th Street and Park Avenue, which is right next to the 125th St Metro North station in Harlem.
Dance in Harlem is a huge part of the culture. There are many well known, major dance companies like Alvin Ailey American Dance Theater from Harlem and the more informal and contemporary examples of dance that take place today in Harlem are seen in the forms of street parade and street festivals.

As defining Harlem’s identity has become increasingly urgent as gentrification started to threaten to alter the historic and ethnic character of the 125th street corridor, performers started to take streets as medium to protest it.
In March 2021, Dance NYC published a study on the impacts of Covid-19 and highlighted two important goals on how to cope with the negative impact. One objective was to find new areas of employment within the sector. The second objective was to make dance more accessible in public locations.

The pandemic had a big impact on the existing art and culture scene of Harlem. Since the beginning of Covid-19, a majority of the dance and performing centers in Harlem closed since they didn’t have any outdoor activity spaces. Many live venues were forced to shut down almost completely, cutting off their ability to bring in crucial revenues and income.

This project addresses these two objectives set by Dance NYC while also reusing waste textiles and fabrics.
"Urban Stage" provides a system that collects waste fabric from demolition sites, businesses, organizations, and institutions. Examples of this collected waste fabric include garment and roofing membranes such as aluminum vapor barriers, tensile roofing systems, ETFE systems or PVC coated net.

The focus on reusing textiles in Urban Stage also benefits craftsmen such as fabric experts, fashion designers as well as interior designers by providing them employment opportunities through the fabric reuse studio. As it can be seen in the 4.i diagram, the fabric here is used as exterior curtain, canopy, exterior double facade, partition and room in a room.

Examples of this collected waste fabric include garment and roofing membranes such as aluminum vapor barriers, tensile roofing systems, ETFE systems or PVC coated net. The focus on reusing textiles in Urban Stage also benefits craftsmen such as fabric experts, fashion designers as well as interior designers by providing them employment opportunities through the fabric reuse studio. As it can be seen in the 4.i diagram, the fabric here is used as exterior curtain, canopy, exterior double facade, partition and room in a room.
The apparel industry accounts for 10% of global carbon emissions. In most of the countries in which garments are produced, untreated toxic wastewaters from textile factories are dumped directly into the rivers. Another major source of water contamination is the use of fertilizers for cotton production, which heavily pollutes runoff waters and evaporation waters.

Instead of purchasing the performance costumes from fast-fashion brands, textile artists in Urban Stage uses upcycled fabric pieces to come up with unique costumes.
In-house Textile Reuse Studio at "Urban Stage" processes the fabric to be used for the space and costume design and the downcycled/waste fabric is sold at the Shop. The goal here is to take advantage of each fabric material's unique characteristics and assemble them to an architectural or costume scale.
the Lindy Hop
Battle
Contemporary

Swing Dance
Ballroom
This proposal challenges the idea of creating wide performance art spaces that can be transformed in a short period of time by using minimal physical effort. I explored how material could divide, reveal and create space for dancers.

After looking at the choreography of some dances such as hip hop, contemporary, battle and swing dance, it became clear that every dance genre needed a different type of space. The curtain allows the performance studios to be organized relative to not a particular geometry of a specific dance but according to general parameters, as one performance might need a lot of space and arrangements but others could be more tight and precise.
Until the summer of 2015, the plaza underneath the Metro-North viaduct at East 125th Street and Park Avenue was known with a reputation among area residents for trash and drug use. Since the summer of 2015, Uptown Grand Central transformed the space underneath the metro-north station into an active community space to transform the East 125th Street into a thriving corridor.

Since then the space below the train platform hosts programs that include live music concerts, exercise classes, a year-round farmers market, and a “pop-up” small business snack shop.
Early study to test the flexibility of the waste fabric materials
The flow of the curtain around the building aims to blur the boundary between inside and outside to create transformable performance spaces. To create a continuous transition between spaces, curtain tracks are installed to fully blend in flush with the ceiling.
Data + Ethics is a think tank focused on effective use, outreach and development of scientific and digital technologies for ethical, transparent and sustainable data and information processes. Located at eastern portion of the Santa Monica Mountains, Data + Ethics features meeting and work spaces for 40 scholars in residence, 15 visiting scholars, an auditorium for lectures and events, a library, dining and catering areas. Providing collaborative spaces for data engineers, designers, sociologists, computer engineers and policy makers, Data + Ethics focuses on digital ethics, information tracking, media and communication technologies. Data center spaces continuously flow at the site along with landscape, water component and circulation path.

We investigated the physical necessities around data systems and the digital world, water also was the key critical component enabling these systems to function. Our research revealed that the typical data center uses an astounding 3-5 million gallons of water per day to cool a data center which is equivalent to the amount of water a city of 30,000-50,000 people would need in a day. We sought to both develop a system which recycled this water, and display the concealed but extreme use of water to maintain global technological systems, by surfacing the water used to cool the data center at various points in our site.
Data + Ethics

Data Waste
- Environmental Justice
- Reducing Waste (Design)
- Social Justice (Policy)
- Earth Science (Toxicity)

Data Loss
- Digital Justice
- Tracking Data (Transparency)
- Saving Data (Privacy)
- App development (Security)

Digital Ethics
- Environmental / Digital Justice
1. Collecting information to visualize and publicising on Social Media
2. Communicating with government, firms, organizations, politicians, air, water, and the environment
3. Supporting self-sustainable think tank infrastructure

Focuses
- Digital Ethics
- Education
- Media/Communication Technologies
- Digital Waste
- Digital Waste Information Tracking
- Education
- Transparency / Censorship
- Policy
- Economics

Irmak Turanli

Masterplan
How can designers create graphic signage that communicates personal data to the visitors?
how can designers create graphic signage that communicates personal data to the visitors?

sample exhibition: by creating exhibition spaces where data is exhibited on the surface to translate the data that is stored in the think tank to visitors to reveal the data collected by people without their knowledge.
Cooling Diagram of a Data Center

Estimated Clean Water Use per day:
- Data Center: 33,000 Gal/day
- Research Center: 1,500 Gal
- Recreation: 500 Gal
- Gym + Cafe: 500 Gal
- Residential: 2,280 Gal
- Sewage Water: 1,330,000 Gal/day

Overall Water Reuse Diagram

Columbia GSAPP

Irmak Turanli
How can designers create graphic signage that communicates personal data to the visitors?
The Facebook Data Center in Prineville stores the digital image of the personal lives of almost 2 billion people. As Rem Koolhaas notes, "At a moment when our collective history is digital, the data center is becoming one of our most significant cultural typologies".
Think Tank Main Institute Section
Located at eastern portion of the Santa Monica Mountains, Data + Ethics Think Tank includes 3 residential buildings which has 40 units for scholars and their family. There are 2 different type of dublex units and every unit has a private yard as well as terrace spaces. The rotation of the buildings aim to face the Atlantic Ocean and the Santa Monica Mountains. A plaza has been created in the center of the residential buildings to bring the think tank community together. The water features becomes a prominent feature of the plaza and it can be used throughout the year.
At a time when we are so acutely focused on human health, vulnerable populations, and the inequity that exists due to a range of socio-economic barriers, the relationships between health and the built environment are more vivid than ever. Through this course, I addressed how architects can overcome the negative health outcomes that have been caused by toxics in building products. By analyzing the use of rammed earth, concrete, and wood as structural materials for my studio project in Los Angeles, I explored the relationships between these building materials and their chemical toxicity, and the environmental exposures that directly impact human health and the communities which are most adversely affected. Based on the health and performance criteria I produced for my think tank proposal in LA, I analysed the health and performance impact of rammed earth, concrete and wood for my think tank proposal. The overall goal was to create a framework for 3 chosen structural materials that engages all stakeholders and understand their construction and maintenance practices that affect long term health conditions.
EXTERIOR + STRUCTURAL

Irmak Turanli + Qingfan Wu

The program of the building is a research includes and it includes offices spaces and a library. Because Los Angeles is located in an earthquake zone, we had to think about exterior and structural materials that would present durable and stable architecture. We also had to consider the climate of Los Angeles which gets very hot in the summer and colder at night.

Site:

HUMAN HEALTH
INDOOR CLIMATE
ENVIRONMENT - ENERGY
ENVIRONMENT - CARBON
AFFORDABILITY
MAINTENANCE
DISASSEMBLY / RECYCLING

Non Toxic Materials
Healthier Building Materials
Columbia GSAPP
1:101:10
Irmak Turanli
Lithium extraction in Huasabas has already started destroying the river, which is the main resource for the town that relies on agriculture.
Extraction is always undertaken for the sake of ‘information’: with this action we are always ‘uncovering’. As we extract ‘information’, we only leave behind the conclusions: an open pit mine, an empty fuel reserve, a data set.

We began with a group investigation on mineral extraction activities whose outputs include atlases and cartographic models, analytic assemblages, image and textual premises that explore the territory, its actors, the processes, and routes that are undertaken in the abstraction to ore products.
For lithium extraction, saline water is evaporated and filtered for salt. Further refined, lithium is extracted by the evaporation process in arid regions with low precipitation rates. The entire process requires a collaborative effort from a wide network of companies, laboratories, and transport systems.

Most extraction processes involve excavating the earth surface, blasting and altering the original landscape.
The river network is a major geographic criteria since mining demands heavy use of water in processing ore. Mining companies usually stored enough water to sustain the operations for more than half the mine’s operating life. However, the rivers are the vulnerable points facing the potential polluted water spill from the mine sites.

Geographically linking the US and Mexico border, the Sierra Madre Occidental is seen here 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 both have an evident population of mining sites.
Since the tributaries of the Bavispe runs directly through the mining site, the potential pollution will threaten the safety of the downstream towns that depend significantly on the river as the source of irrigation.

Sonora Lithium Project is planned to be developed within the boundaries of 4 towns, in an area of 8,000 hectares equivalent to 15,000 soccer fields. The mine site will be sourcing water from the nearby Bavispe River, which has been supporting the towns downstream for hundreds of years.
As of the report in March 2021, Bacadehuachi residences are already voicing doubts about how the mine will affect the town who is already facing poverty and constant drought for the past 30 years.
As architects and designers, how do we capture and visually lay down the violence that is specific and unique to a site? How do we trace and represent the slow violence that is often long-lasting and far-reaching.

― Keller Easterling, Medium Design
Lithium and Violence in Mexico
Advanced Studio IV
Columbia GSAPP

Irmak Turanli

UNDERBELLY OF WHAT POWERS OUR MOBILE DEVICES
The surrounding area is home to watchlisted species: four labeled endangered species have territories overlapped here as it can be seen with different colors. In addition, North American jaguar and forest grey wolf seasonally migrate across the US and Mexico border. At the same time, local horned goats and antler deers inhabit the surrounding landscapes. Farm animals such as mules, cows, bulls, goats, horses make up the livestock industry in the area.
Lithium and Violence in Mexico

Advanced Studio IV
Columbia GSAPP

Irmak Turanli

Storyboard

Camera panning into the border map of US and Mexico [00:18]

(The Guaymas Port and the transportation route to the Asian markets are introduced) [00:22]

(Sonora Lithium Project is getting introduced) [00:24]

(Camera zooming into the concession) [00:27]

Camera panning out to show the concession [00:44]

(The four towns that are within the boundary of concession are getting introduced) [00:52]

[Technical Report on the Feasibility Study for the Sonora Lithium Project are shown] [01:13]

Access route to the town of Bacadéhuachi is shown [00:59]

(Camera zooming out) [02:01]

Camera panning into the border map of US and Mexico, showing the concession [02:09]

Camera panning into the border map of US and Mexico, showing the concession [02:11]

Camera panning into Bacadéhuachi [02:43]

Camera panning into the concession [02:19]

[Nacozari Chino, one of the surrounding town is getting introduced] [02:29]

[Camera zooming out] [02:40]
Sea Level Rise in Rockaway Boardwalk

Through this course, I investigated the ways in which architectural devices of reference, which have shaped the discourse of the field over the last few decades, are characterized by their transitioning through spatial and temporal scales. I tried to explore the agencies architectural devices unfold through transcalar conditions—that is to say, the specific political modes that architectural devices perform, and the way they multiply their reach, influence, and sensitivity: for instance, from the microbiological to the mineral, the atmospherical, the ecosystemical, the genetic, and the planetary.

U.S. Army Corps of Engineers’ Questionable Intervention at Rockaway Boardwalk

Why is sea level rise a military competence? Will the U.S. Army Corps of Engineers be able to bring a sustainable, ecological and long-term solution to the impact of sea-level rise on Rockaway Boardwalk? Currently, the US is at risk of losing land at many coastal areas including the Rockaway Boardwalk, where vital infrastructure and housing for thousands of residents currently exist. Over time, gradual sea level changes magnify the impacts of storm surge, and may eventually result in permanent inundation of this land.

The Rockaway Boardwalk originally opened in 1931 and became a landmark of the peninsula. In the wake of Hurricane Sandy, which struck New York City in October 2012, Rockaway Beach has also become a testament to New York’s resilience, and a model for sustainable rebuilding. (Figure 1) After Hurricane Sandy, more than $140 million was invested to repair and restore Rockaway Beach. As part of this work, intact sections of the boardwalk were repaired, damaged beach buildings were renovated with new boardwalk islands, and public restrooms and lifeguard stations were installed to replace destroyed facilities. Most importantly, long term shoreline protection and anti-erosion works began to cope with the consequences of rising sea levels and hurricanes.
In 2014, in the wake of such need, New York City Department of Parks & Recreation partnered with the U.S. Army Corps of Engineers to reconstruct over 5 miles of the Rockaway Boardwalk as a means to declare sea level rise a military competence. The U.S. Army Corps of Engineers, a separate, permanent branch of the US Army established in 1802, was given the responsibility of keeping pace with the changing defense requirements of the country such as services in environmental management. In 2014, U.S. Army Corps of Engineers started the work in order for the 346,000 cubic yards (CY) of dredged sand to be removed from the inlet and to be pumped further west. (Figure 2) The method was used along Rockaway Beach to replace sand lost due to hurricane Sandy and heavy erosion in March 2018.

These efforts of replacing the dredged sand and the construction of 19 new jetties or “groins” have been controversial and its effects are being questioned. First of all, the replacement of that much sand is questionable due to its ecological consequences to the environment and especially to the hundreds of species living in the sea. Second of all, heavy storms hitting the Boardwalk in the 2021 have called into question the efficiency and effectiveness of replacing sand through dredging. (Figure 3) When a strong storm hit the area in February 2021, much of what the U.S. Army Corps of Engineers accomplished until 2019 had been wiped away. As can be seen in Figure 4, the new boardwalk had been widened and filled with sand in 2019. However as Figure 5 depicts, these efforts of bringing sand seemed to be wiped away after the snowstorm in February 2021.

This questions the efficiency of the method deployed by the U.S. Army Corps of Engineers. Perhaps, such large scale human interventions to the natural environment could also have unexpected consequences. In conclusion, the relatively short-term failure of the actions of the U.S. Army Corps of Engineers challenges their competence in this area and highlights the importance of bringing long-term and sustainable solutions for sea level rising.
Thank You!