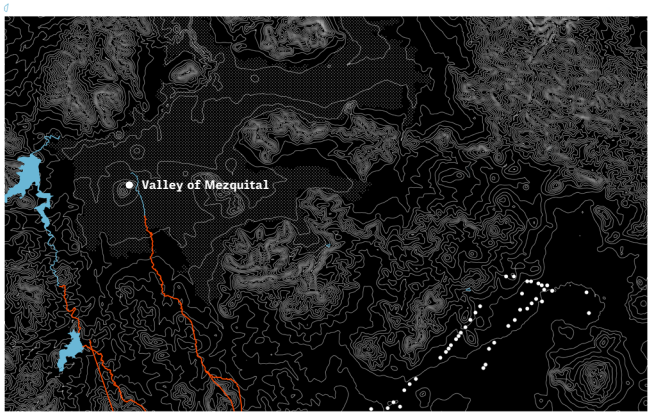
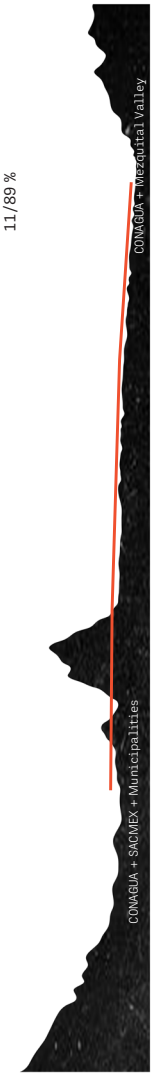
Parched Paradise

A Reflection Report on Modern Water in CDMX and its urban implications

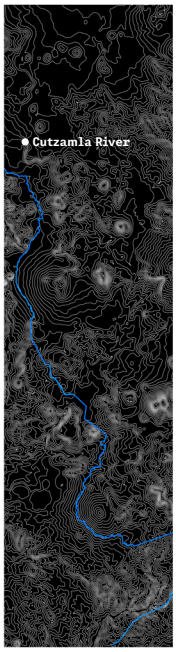


11/89 %

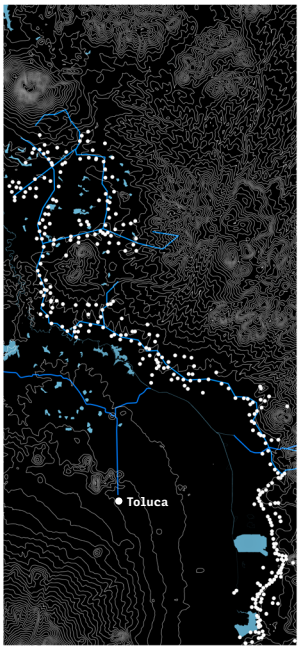


DISPOSAL

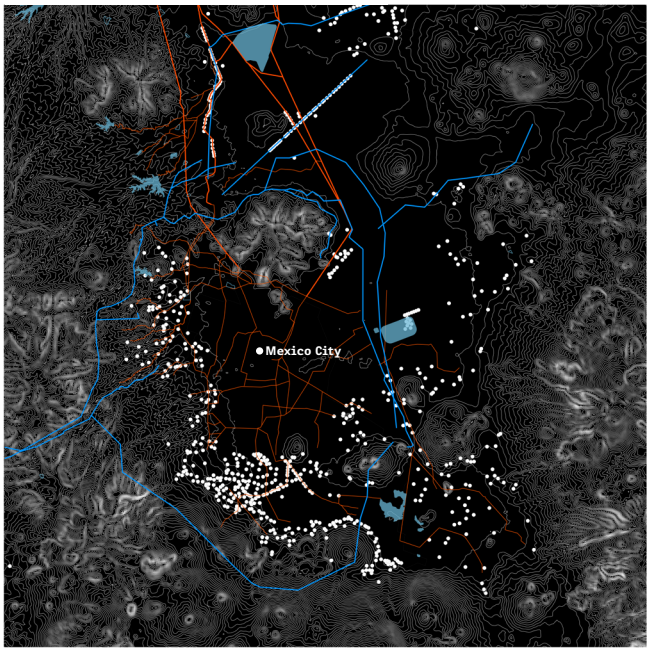
Partial Treatment



Cutzamala River 19%



Toluca Valley: 6%



Valley of Mexico 75%

SUPPLY

USE

Modern Water in Mexico City

GRADUATION REFLECTION REPORT

MSc Architecture, TU Delft 2023/2024

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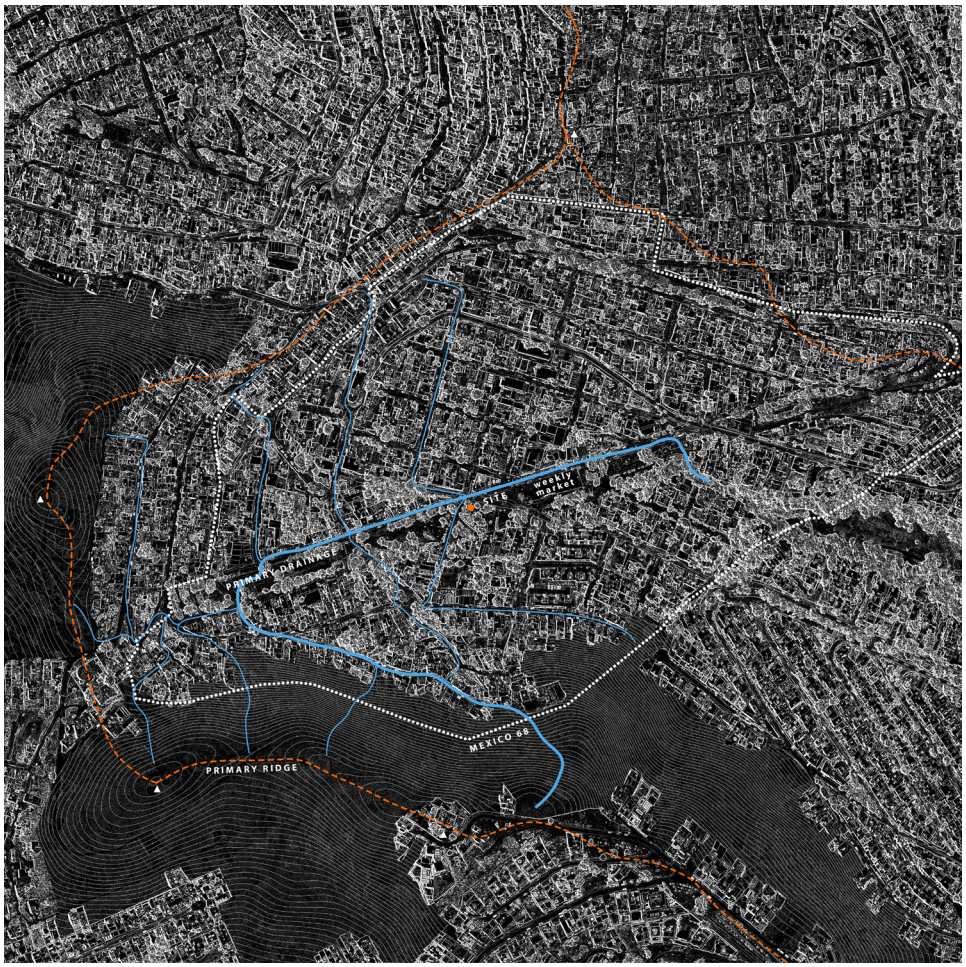

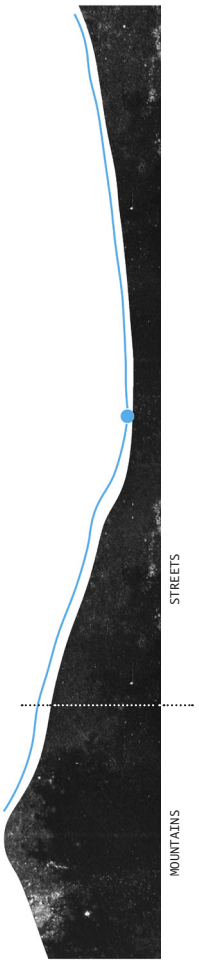

MEXICO 68

WATERSHED SOUTH WEST	RUNOFF COEFFICIENT	PRECIPITATION RATE	PRECIPITATION	TOTAL	COVERAGE
Mountains: 90.000 m² Streets: 61.000 m²	0,7 0,95-0,9	972 mm/m²y 972 mm/m²y	60000000 l 56000000 l	12000000 l	93%

Beyond Modern Water - A Water Assembly

INTRODUCTION

The hydrological landscape of the Valley of Mexico has undergone significant transformations. The Aztec Empire founded their capital city on an island. Located within an interconnected lake system, water was valued as an intricate element of cultural life, vital to the very survival of the city. The onset of Spanish colonization and its systematic lake drainage ensured the erosion of the indigenous aquatic livelihoods. Under the Independent State of Mexico, the antagonistic understanding of water continued into the 20th century. Hydrological resources were exploited to fuel the expansion of the Metropolis. By the latter half of the century, the once-prominent lakes had been depleted, leaving only fragmented remnants in its wake. The loss of the hydrological ecosystem reciprocally shaped what geographical philosopher Jamie Linton (2013) terms the "Paradigm of Modern Water." Water is detached from existing cultural connotations under state leadership. While the relationship between the City and Water has always been paradoxical, historically suffering both droughts and floods, these extremes were exacerbated under Modern Waters's alteration of the watershed. The Metropolis nowadays suffers from a myriad of social, cultural, and ecological distortions, leaving the future of its inhabitants uncertain.
The research aimed to uncover the logic/failings of Modern Water in Mexico and formulated a vision for a decentralized water system. In response, the design formulates a urban runoff capture infrastructure combined with governance spaces in the neighborhood of Mexico 68, addressing social-cultural and practical water requirements. The proposed space is a prototypical starting point for resilient and locally governed adaptations, transferable to different urban contexts in the watershed.

Preliminary Results

Modern Water in the Mexican context foresaw a rapid urban expansion of the city from 300.000 to 20 million in a century. These dynamics made the Promise of Modern Water, universal and clean access, a demanding task. However, government incompetence and/or apathetic intent discerned the Promise Water to be a false one. Under the current system, Water is closely linked to power imbalances as the resource has become a class attribute. Beyond the social distortions, the Paradigm furthered the destruction of the local water cycle. Despite its apparent shortcomings, authorities indicate an expansion of existing infrastructures for the future. Political actors abuse power to advance political goals or gain financially from the dire situation. As climate change threatens to worsen many of the existing distortions, the water system needs to be restructured.

The focus on large water sources of Modern Water overlooks significant water sources that traverse the city. Rainwater collection and greywater recycling offer alternate and considerably more sustainable avenues. These are already exploited in individual cases through decentralized technologies. However, a solely technological approach will hardly overcome Modern Water. Quite the contrary, it could threaten to

perpetuate the existing inequalities, as disenfranchised groups are ‘gate-kept’. Therefore water sustainability adaptations must go beyond the mere physical. Topics such as community governance, water awareness and cultural valuation have got to be an intricate part of the solution.

The concept of water-sensitive communities is at the forefront of the water sustainability discourse. The land and water tenure system, known as the ejidos, addresses numerous attributes outlined in the academic concept of water-sensitive communities.

I visited a specific ejido case study near Mexico City. The site was chosen to resemble the hydrological conditions of the metropolis. The system is comprised of the physical water infrastructure and the social infrastructure to govern decisions. These are located in different spaces in the area. Discussions with locals revealed the positive impact of autarkic governance and ownership over water resources on the community's water awareness. Maintenance of the infrastructure is coupled with communal gatherings, fostering a sense of collective responsibility. Through local governance initiatives, cultural narratives revolving around water were cultivated. The Ejido serves as a noteworthy blueprint for my proposed urban translocation. Although it should be recognized, that the ejido sample is under increasing pressure as climate change is melting glacier water sources beyond recuperation rates.

Another conversation with the NGO Isla Urbana made apparent to me, that rainwater collection is focused on housing roofs. No comprehensive concept for urban runoff is yet been formulated, as far as my research has unearthed.

The urban runoff proposal directly references the spaces from the ejido case study to formulate a novel typology. It comprises the practical requirements for capture and social governance / managerial spaces. The aim was not to design a top-down master plan for the site. Rather the proposal functions as a seed for a self-organized neighborhood transformation. The site analysis was guided by principles from the research such as the ‘Keyline Design’. It allowed a proper placement of the proposal in consideration of hydrological needs and socio-cultural value.

Methodology (How and Why)

The Paradigm of Modern Water is closely tied to its strictly spatial interpretation of Water. To address the Crisis the project is underpinned by a hydrosocial understanding of water. Research and later design inspect the connections of social, cultural, technical and environmental conditions. The Macrohistorical transformation is humanized through the experiences of local perspectives. Therefore the analysis integrated included quantitative data (GIS, statistics, reports, paper analysis) and qualitative records (archives,

newspaper reports, interviews) in a mixed method approach. Lastly, textual findings are synthesized in a collage of maps, depicting the connections between individual layers in a non-hierarchical manner.

The excursion continued the approach in conversation with Ejidatarios, NGO workers, end users and on-site visits of vernacular and indigenous water adaptations. Drawings, notes and photography were used to record the events. Its importance must be recognized, as the spatial qualities of water, or its hydrological distortions cannot be understood from afar. An intellectual understanding does not guarantee an emotional one. This was further developed in excursions to prehispanic temple sites and water spaces.

The reflections on the spatial and emotional qualities of water infrastructure spaces became the backbone of the design. This prompted a deeper examination of vernacular and indigenous artistic and architectural references, aiming to recontextualize the water. Carlo Scarpa's use of Water was an inspiration for the hydrological language. I deemed this a culturally appropriate use as he indirectly references traditional Mexican architecture and art through his inspiration by Joseph Albers. Consultation with local perspectives from my network provided valuable insights into the feasibility of my proposal. In Conversations with hydrological engineers, the importance of the water structure was expanded from human benefits to also include non-human actors by integrating ecologically valuable niches.

Reflection on Methodology

The hydrosocial analysis of the Water Crisis comes with inherent complexities.
The challenge lay in balancing different avenues of information while also limiting the extent of research in the given word frame. The research can therefore only be understood as a starting point for future water research, not a complete picture. Furthermore, the hydrosocial maps were more challenging than anticipated. Mapping social aspects risked trivializing the human perspective by falling into spatial abstractions. I hope to have balanced these issues well.

The feedback after my P2 Presentation by Peter to focus on an individual intervention rather than a system allowed me to develop a building typology during my visit to the Ejido water system. Here the research would have benefitted from a longer observation of the example. The limited observation time was best expanded through contact with a local researcher. Importantly, this does not match the fidelity of first-hand experience.

The design balances the practical requirements of hydrological adaptations with the recontextualization of water as a cultural good. Feedback from Peter Koorstra, Georgios Karvelas and Carola Hein helped me to develop an architectural language for the recontextualization of water, making it the primary 'building material'. This calcified in a design through atmospheric modeling, challenging my material pallet and the importance of micro-water situations (this order references my tutors mentioned before). The approach allowed me to break free from a purely analytical perspective, beyond a practical proposal. The crux of designing a culturally important site lay in choosing the correct references and transforming these, as I am unaware of any precedent for such a building. Especially important for me was to transform cultural references and not merely recreate prehispanic notions. This process would have benefitted from on-site discussions, integrating more local perspectives than the limited social network established during my trip.

The methodology started with an abstract understanding of sociohydrology and developed organically by integrating spatial, cultural and local perspectives. It underscores an open/critical engagement with more than what is visible, aimed at developing spatial visions for sustainable adaptations beyond the practical.

Reflection Question

- How would a co-production process for the water governance space have been organized to cover a comprehensive range of opinions? How would they have been translated?
- The building complex is considered a Prototype that could be adapted to other contexts. How would the transfer process be executed? Which aspects are locally bound, what are the prototypical qualities of the proposal? How would these systems interact with one another?

Lessons

The Crisis of Modern Water is not limited to Mexico. Many urban regions worldwide face similar albeit distinct distortions. Consequently, different adaptation strategies have emerged, such as water-sensitive urban design and wetness. While becoming more prevalent, architectural discourse is still strongly terrestrial. The research aims to depict adaptations not only as technical matters. As modernity abstracted the water cycle from its site-specific conditions, the liquid became culturally invisible. Architecture could function as the frame to reverse this process, by recontextualizing in the process of sustainable adaptation. It underlines the importance of social and cultural values as an intricate perspective on sustainability and resilience.

My informed but open approach to research led me to question the role of architects as the sole producers of 'brilliant' ideas. As da Cunha attests, I appeal to a participatory and emancipatory ideation process for sustainable solutions. At the base lies my now skeptical perspective on the power dynamics in our sector.

Designing for people is often used as a sales slogan for powerful interests. Here we must question the underlying intention; is it truly for people? Architecture must question power. I have become convinced of this if we want to shape a truly sustainable solution.

Outlook

The complexity of sociohydrology as a basis for water sustainability is best explored in an open-ended process. By nurturing the interplay between ecological, cultural, and social insights, Explore Lab enabled the design of a holistically planned and resilient water infrastructure. Reflecting the complexity of the issue the proposal intersects with other master tracks. The communal governance space touches upon an alternative management idea in the built environment. Furthermore, the governance space is envisioned as a seed growing into the hydrological adaptation of the neighborhood, tackling issues of urban design and landscaping solutions. The vision thus dissolves master track boundaries and invites an overarching discourse. This interdisciplinary conversation is paramount to many aspects of the field of sustainability going beyond just water-sensitive design. Therefore the approach naturally lends itself to other topics. Ultimately, it aims to refocus sustainability thinking on both human and non-human actors to create a future that is not only green but also desirable.