THE RURAL INTERIOR
OPENING UP XOCHIMILCO TO THE EVERYDAY LIFE OF THE CITY
MEXICO CITY

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ABSTRACT: The Rural Interior relates the story of the last rural enclave in Mexico City, where still, a strong link to the inhabitants’ lacustrine past can be found. The document describes the challenges and difficulties that Xochimilco has confronted throughout its history, especially after being abruptly incorporated to the expansion process of the megalopolis, as the main water supplier. Based on research and analysis of the past and present, the document proposes alternatives to highlight some qualities that this territory still possesses to improve the current relationship between inhabitants and water. At the same time it intends to provide people with information to generate a platform for discussion about the problematic of water in Xochimilco and in the rest of the city.

KEYWORDS: Xochimilco, Mexico City, rapid growth, local identity, water, culture.

“Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else”.
Italo Calvino, Invisible Cities

1 INTRODUCTION

Nowadays, the subject of water in Mexico City has been one of priority in the agenda of politicians and in the interest of professionals and academic. The mismanagement, misuse and high demand of water have generated constant uncertainty and risks for the inhabitants of the city, such as lack of drinking water, severe flooding and soil subsidence.

The development of Mexico City after its pinnacle in the XVI century has occurred in an arbitrary way. This resulted in a series of contradictions and dysfunctions reflected in a complex urban structure highly disordered and expressly incomplete.

The element that gave birth to Mexico City and to several incipient communities in the Basin of Mexico and that directed the urban structure of this territory, paradoxically, is not present in it, neither in the urban space, nor in the collective memory of the inhabitants.

If an aerial photograph of Mexico City is analyzed, among the salad of lines and nodes which borders extend without any respect for political or geographical limits, some voids stand out. These are hydrological remnants; the only witnesses and last representatives of the city’s lacustrine past. These enclaves are not part of the city’s dynamism, nor spatially, functionally or socially. Marginalized, they exist attached to the city but not incorporate into it.

Although some projects focused on the restructuring of these water voids have been developed during the last years, because of political and economic circumstances, they have been catalogued as simple utopias1.

Given the dimensions, complexity and how the City is governed, big scale proposals have had limited validity so far. What is required are plans with a long term vision but developed through strategic short term projects of lower scale that, in a linked way, have a wide-range effect in Mexico City.

Alternative methodologies must be explored to confront the problematic of water in the Capital. Being an integral part of the city’s past, the introduction of water as a structural element for development can be the first step towards the hydrological regeneration of the basin. Of equal value is re-introducing a new meaning

1 See project “México, Ciudad Futura”. Futura Desarrollo Urbano, fdu.com.mx
to start a new consciousness about the importance of water in people’s mind and way of living.

The natural and cultural vestiges as alternative places might have the capacity to generate new opportunities for the development of this city. They might be a testimony of what can still be done in order to help decreasing hydrological disequilibrium in the Basin of Mexico.

_In a city of intensive and extensive expansion that tends towards homogenization, we must take advantage of the spaces of “difference”_, which have a great power to generate changes. _Many of these places in Mexico City have been shaping from its past and in them is cemented our identity, which is often made opaque._

One of the lacustrine enclaves is Xochimilco, located in the southern part of Mexico City.

2 **FROM A LAKE TO A DESERT**

It is hard to imagine when one walks through this city, that few centuries ago, this solid territory was the house of a network of lakes of more than a thousand square kilometres. Local ancestors knew how to exploit efficiently the vast resources that this land had to offer; not only the lakes but also the springs, rivers, plains and mountains. Around 4000 years ago and with the adaptation of the agriculture as the main method of survival, several of this nomadic groups became sedentary societies settled in villages that quickly grew becoming “amphibian” cities of tents of thousands inhabitants and of a complexity that is considered one of the most advanced of their epoch.

These amphibian civilizations developed ingenious techniques for both farming and controlling the water of lakes and rivers by means of great works of hydraulic engineering, in which the Aztecs and Xochimilcas have been recognized as the most skilled in this field. Water became their main structuring element for production, commerce, communication and social life, as well as the guideline for urban development. In other words, water was their welfare symbol.

![Figure 1](image)

_México Tenochtitlán. Mural by Diego Rivera_

Among other works made in the ‘great Tenochtitlán’ we can remark the “Albarradón de Nezahualcóyotl”, a great dike that separated the two main lakes and sweet from brackish water; numerous aqueducts that were used to supply drinking water from springs, and the extraordinary system of artificial

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2 According to E. Soja “…‘invented’ environments –spaces of difference- are conceptualizations of spatiality that challenge the conventional modes of spatial homotopia. They are meant to detonate, to deconstruct, not to be poured back comfortably in the old containers.”

3 Heidi Sohn. Heterotopology as an alternative urban approach.

4 Arqueología Mexicana, Magazine. 2007, la Cuenca de Mexico. The Basin of Mexico

5 _México Tenochtitlán_ (in classical náhuatl), founded in 1325, was the city that preceded Mexico City.
islands known as “Chinampas”, with its complex network of waterways. The whole system was a hydraulic masterpiece\(^6\).

Of this urban splendour almost nothing is left. With the arrival of the Spaniards and the posterior conquest of the territory in the XVI century, the essence of this region began to be vanished. As the urban, political and social European models were imposed with little understanding of the hydraulic system, culture and territory; the lakes –and the whole urban structure that was supported by them- started their path towards a slow death.

The poor vision during Spanish dominium was the cause of several and severe flooding, being the most serious the one of 1629, occasioning more than 30 thousands deceases and maintaining the city inundated for almost 5 years\(^7\).

To avoid flooding, an extreme idea of moving the whole city to a safer place was considered, but rejected, as the drainage of the lakes, although not less absurd, was at least less expensive. By 1607, the basin bleeding process started. Enrico Martinez, a German cosmography, demonstrated his brilliance by a controversial project for drying the lakes by a great ditch to the north “El Tajo de Nochistongo”. This was the first of a series of complex infrastructures that are still been expanded in order to decrease risks of flooding in the city. By 2008, the drainage system had reached a length of 1353 kilometers of underground tunnels, with a depth of 240 meters in some points.

After the independence from Spain in 1810, Mexico City was declared the seat of the federal powers. Consequently, the city started to grow slowly occupying the in-process drying land of the lakes, attaching the closest old villages. Since then, Mexico City has maintained its hegemonic central space, complemented by a peripheral growing.

It was in the middle of the last century when the formal intensive exploitation of the aquifer started, since the closest springs were totally exhausted by then. Water wells, like a disease, spread all over the Basin of Mexico. Currently, an amount of 50 cubic meters per second are extracted with a system comprised by 2,746 wells. These have a depth between 300 and 700 meters.

Despite being a territory characterized by intense periods of rain, the City’s water infrastructure was never conceived for making use of rainfall. Abuse of aquifers and importation from distant regions are now the main drinking water suppliers. Soil subsidence, generated by overexploitation of the aquifers plus their insufficient recharge, has reached in the most affected areas up to 10 meters in the last 100 years\(^8\). Subsidence, together with the poor maintenance in the water system, provokes leaks that cost a waste of 40% of the total supply, creating a worrying forecast for the City.

Overexploitation of the hydrological sub-basins, contamination of superficial and underground water, malfunctioning of the water management system, serious flooding, soil subsidence, excessive supply costs and, specially, lack of social consciousness about the importance and proper use of water, are situations that the City confronts nowadays because of wrong decision making in the past. History, geography, and the genius loci of the territory were never seen as a possibility for the future in terms of spatial, social or economic development of the Capital.

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\(^6\) The symbiotic condition achieved between people and territory was one of the most astonishing impressions the Spanish conquistadors had when they saw the exceptional and well-executed water system of the Aztec empire for the first time in 1519.

\(^7\) J.Castillo, After the Explosion, The Endless City, Phaidon.

\(^8\) Fondo Para la Comunicación y Educación Ambiental. agua.org.mx
Figure 2 Like in a “positive-negative” relationship and parallel to the urban expansion of Mexico City, the ancient lakes continue shrinking until their almost complete extinction in our days

3 IN THE LAND OF FLOWERS

Xochimilco means “In the land of flowers” (Xochi(tl) ‘flower’, mil(l)i ‘farmed land’, and co ‘in’). It is one of the biggest boroughs that constitute the Federal District, with a surface of 120 square kilometres and a vast richness in its landscape. With 400,000 in habitants, Xochimilco has a high population growth rate of 3.1%, mainly because of the immigration from people attracted by the supposedly availability of “free land” in this territory.

Since ancient times, Xochimilco performed itself as the main garden of México Tenochtitlán, being the provider of most of the agricultural products consumed in the region. It was always developed as a sustainable and autonomous entity whose close relationship with the main city was essentially based on the exchange of goods.

It was not until the end of the XIX century that this condition changed. Following policies that promoted a centralist model in Mexico City, Xochimilco had to follow the norms and processes of urban development of a city that was searching for modernity and progress.

The rapid urban and demographic growth that brought with it the revolutionary phenomenon in the capital (early XX century) created the necessary to increase efforts to establish mechanisms of political control. These mechanisms privileged the construction of public works, communications infrastructure and hydraulic networks with the objective of bringing multiplying effects to the economy of the city. The demand for water in Mexico City became a priority topic in the political agenda.

As the dynamic of centralization settled in the growing and demanding Mexico City, and after having dried the closest water springs, Xochimilco became the main water provider for the city making possible the

9 INEGI. Instituto Nacional de Estadística, Geografía e Informática.
10 Actually, the no-urbanized space in the Xochimilco Borough is part of the ecological reserve of the Basin of Mexico, nevertheless, because of the lack of political control, it is being urbanized either by informal settlements or by real state developers.
urban growth and industrial development during that century. In other words, without Xochimilco’s water, the development would not have been possible and the industrialization policies adopted at that time would not have been achievable.

After exhausting its water reserves, Xochimilco was again, in the spotlight for the government. Its territory was used to empower the intensive urban development to the South of the City—because of the limited possibilities for urban growth in other areas of the city. Never its qualities or its differences were considered in this process, but the opposite, it was completely fragmented and assaulted. In the following years, the urbanization in Xochimilco followed an erratic trajectory, without any regulation or guidance for the social and urban occupation of the space.

Many of its canals were drained and substituted by streets and avenues. Besides, the last water connection to the city—Canal de la Viga, by which different kind of ships transited—, was broken when the canal was piped. In addition, the new inserted highway that connects Xochimilco with the city—Periferico—, does not coexist harmoniously with the landscape; it links but it does not integrate the new city to the lacustrine world.

Within only one century, Xochimilco went from being one of the places of highest natural richness, to the almost complete drying of its water bodies and their later refilling with treated residual waters coming from other parts of the city. This situation has caused severe problems of ecological, social, political and economic nature in the area. After the mistakes made in the past, the designation as Cultural Patrimony of Humanity by the UNESCO in 1987 generated new hope for the site, but up to these days there is no visible result.

However, thanks to the perseverance of its people, an important part of the cultural landscape of Xochimilco has been kept safe from the urban sprawl. But its people demand the redirection of the political decisions that have been made in the last decades. Especially the ones related to land reforms and that have endangered their lands because of real state speculation. It is also necessary to get them out of the forgetfulness by the authorities. Xochimilcas are nowadays in a situation of poverty, if not extreme, of alarming levels and lacking basic services such as education and health. In a contradictory way, Xochimilco has a great deficit of cultural and recreational programs; despite having a vast cultural richness and traditions to position itself in a privileged place in this field compared to the rest of the city.

Water is the scarcest resource and the one for which there is more necessity in this city. With this consideration, Xochimilco’s vulnerability becomes evident: the risk of its complete disappearance. Its physical space and its social identity are kept under a big stress because one depends completely on the other. The destruction of its environment would imply the total dissolution of the last amphibian civilization in the Basin of Mexico.

4 THE RURAL INTERIOR.

Xochimilco, full of inherent qualities, is a rich source of alternatives. It still remains as an unexposed oasis; unexplored and hidden inside the huge urban labyrinth that is Mexico City. Despite its turbulent past and present, Xochimilco has a great spatial, urban and cultural potential; but the most important, it keeps its people’s perseverance.

This document focuses on Xochimilco’s peculiarities as the starting point for the intervention strategy of this rural enclave. Three qualities were chosen to be the most representative; the ones that constitute and manifest the essence of Xochimilco. The three qualities, from now on referred as layers, correspond to: the water structure with its functions and meanings; the Chinampa as a base of Xochimilco’s rural landscape since ancestral times; and its actors: the Xochimilcas, their values and social identity.

Without referents and apparently without models, it is our responsibility to refer to the specificities of Xochimilco in order to find its condition as an exception or singularity in the urban development of this and other cities.

12 Heidi Sohn. Heterotopology as an alternative urban approach.
Xochimilco’s structure is formed essentially by the close relationship of these three layers throughout history. The proficient use of water from the lake gave place to the creation and development of the Chinampa for both housing and production. On the other side, the social identity is based on the close relationship of the natives with their land and landscape. Many of the current traditions were developed starting with the Spanish colonization, when the local traditions melted with the foreign ones, generating a new hybrid culture of great richness. This trio of the lacustrine structure, the Chinampas system and the local culture are closely tied; alteration in one of them means repercussion in the rest.

The water layer has been the most impaired, fact that has had a repercussion in the environment, production, economy and society. Nevertheless, although physically it has been considerably modified, its function and significance remain the same.

Water is the main tool for the execution of this proposal. Given the diverse functions it has, it is the base element for urban manipulation: being a malleable element, it has the capacity to propitiate or hinder some spatial conditions as well as strengthen some local values which reinforcement is urgent and necessary. Water layer is the structural element at different scales of intervention. By improving its quality, management
and use, the effects in the subsequent layers start to become evident.

The first step for the rehabilitation of the hydrological subsystem starts by improving the quality of water through its collecting and flowing, and the reload of the aquifers of the Xochimilco’s sub-basin.

The next step is to give more space to water in Xochimilco –as strategy applicable to the rest of the Basin of Mexico- reintroducing it to the existing urban fabric, propitiating a new consciousness about water, which is an urgent necessity. Additionally, creating more water storage capacity helps to humidify the environment, which has been significantly affected in this zone (rainfall has decreased 30% in the area15). In a similar way, strengthening the water layer in the rural structure implies redirecting the irregular settlements that endanger the Chinampa area.

Better water quality could promote new revenues for the local economy. For example, the production of the “Ajolote” (Axolotl in English), an endemic amphibian species, which is highly valued for its peculiar aesthetics, good taste, and medicinal benefits. Following the same rhetoric, the ecological issue is of great importance. The lakes of Xochimilco are a refuge for hundreds of bird species. However, because of the reduction of the lacustrine bodies, many of them are in danger of extinction. Increasing water storage implies a benefit for the local species of animals and plants.

Additionally, the aquifers recharge helps to slowdown the differential subsidence in the area of the Chinampas, propitiating better conditions for production. Once more, Xochimilco could reposition itself as the main orchard of the capital. By promoting new urban policies for reforestation –as a demonstration of what can be done in the rest of the city- an increasing demand of trees could be translated in a positive impact for the local economy.

Furthermore, reforestation in the urban space, Chinampa area and mountains’ hillsides, could have positive ecological repercussions at different levels. Firstly, increasing the vegetal mass helps to generate more oxygen and improves the micro climatic conditions. Reforestation on the hillsides helps to stop the erosion produced by the excessive logging in the area. The trees’ roots help to the natural recharge of the aquifer in this zone, where optimums soil-infiltration levels are found. Besides, the Chinampa area has experimented erosion problems because of the illicit logging of the “ahuejote” tree, an endemic species indispensable for the well functioning of the Chinampa.

5 A NEW BLUE SCHEME16

A new hydrological scheme for the sub-basin of Xochimilco is the platform for the rest of the proposal interventions in smaller scale. The proposed new water structure is mainly based on: rain water collection in dams in the mountain area; generation of water storage areas; reinforcing the social connection between the old villages through the widening of existing canals; redirecting informal growth by expanding existing water borders in vulnerable zones; reinforcing the connection with the rest of the City by creating a legible access from and to the city through the northern border of the Xochimilco lake; and generating a clear intersection between ‘Periferico’ Avenue and the lake zone, making water evident for the ones that cross Xochimilco during their journey.

The following strategic proposals, as hybrid results from the combination of the three layers, are samples of the spatial and cultural potential of this territory:

According to INEGI (the national statistics institute), it has been estimated that 12,000 houses will be required for 2012 in Xochimilco. Hence, part of the proposal exposed here includes housing as an element of great relevance.

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14 Although improvement of the quality of water to strictly optimal levels depends on many variables, basically political that are beyond the scope of this project, some alternatives presented here can help. The rehabilitation will be partial until necessary measures are taken.


16 Because of content constraints, only some of the projects that are part of the overall proposal are discussed in this report, hoping they will give the readers the basic understanding of the situation and the possibilities for Xochimilco and the City.
6 The Blue Forest

As the foundation of this project is the water, the collecting of rainfall both for the natural infiltration to aquifers and for the utilization in the lake, is the main strategy proposed here. The new structures for collecting water in the hillsides are given an added value: they include housing. In other words, the housing blocks are positioned in a way that they have the capacity to stop and retain water during the rain season, acting as seasonal dams. Subsequently, part of the collected water is channelled towards the lake.

Informal settlements have caused a great damage to the ecosystem of Xochimilco and to the hydrological system balance. The new housing structures, coinciding with the urban border, together with a reforestation program, help to re-direction informal urban growth in the mountain side. Consequent deforestation and paving have altered the natural recharge of the aquifer and the peculiar landscape of this area. This shows the importance of the preservation of the hills’ natural zones and the need for their non extensive urbanization. To alleviate this problem, the new blocks are located over a type of soil with one of the highest permeability levels of the mountain area in the Basin of Mexico. Each block hosts from 30 to 50 houses and is able to store an average of 2500 m$^3$ of water per month, from which, up to 35% could be infiltrated during rain seasons. During times of drought, dam’s basins become public spaces: soccer fields and viewpoints.

Figure 6 Proposed scheme based on the recuperation of the “mountain-lake” relation.

Figure 7 The Blue forest.
The Axolotl mosaic

The area selected for this proposal is one of the most conflictive ones dealing with informal urbanization over the Chinampas' zone. Although the existing informal occupation is irreversible, it is still possible to generate alternatives for the development of areas still free of urbanization.

The proposal links new with existing housing, giving the possibility of supporting hatcheries for fish and axolotl, an endemic specie in danger of extinction and of great qualities. It also includes the alternative to develop family farms next to their houses. The commercialization of these products can be done on the squares and small markets with an easy access by water.

With water as a tool, current and future inhabitants of these settlements get involved, boosting the local economy at the same time that they get an alternative source of income for their households and reinforce the identity of Xochimilco.

In this proposal 100 to 150 houses per mosaic stripe are supplied, that means up to 1000 dwellings—each of them with a certain level of sustainability—for the total studied area in this part of Xochimilco.

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17 These traditional temporary markets known as ‘tianguis’, are part of another proposal not discussed in this document.
Figures 9 & 10  The Axolotl Mosaic. Permutation of different elements.

By generating an ‘envelope’, which can be filled by its different elements –ponds, hatcheries and gardens- the proposal has a level of freedom that allows the actors to combine them and generate a spatial richness in this territory. A very peculiar –multicolour- landscape can be created according to the necessities of the inhabitants.

Figure 11  The Axolotl Mosaic. An heterogeneous and varied landscape.

8  CONCLUDING…

The total proposal neither focuses on the reconstruction nor the restoration of lacustrine enclaves in Mexico City. The search advocates for the reinterpretation of values and main qualities that each of these territories have, for their future transformation, as alternative tool for preservation in our contemporary world. We must advocate against homogenization of cities, against the loss of difference and singularity, which are reflected in places such as Xochimilco.
Mexico is a country with a big potential culturally, socially and spatially. This condition, with some inventiveness and political goodwill, could reposition the country in a privileged place among Latin-American countries in terms of urban development. More concretely, Mexico City could take the vanguard if more efforts were put on long term planning instead of making redundant temporary projects based on political interests, without any clear vision for the future city’s development.

The case of Mexico City, in constant battle against the basin and its geography, should not be repeated in Xochimilco’s sub-basin. We must reverse this process and take Xochimilco as an example of hydrological recovery in one of the sub-basins that form this intricate lacustrine complex in the Basin of Mexico and start the path towards reconciliation with our history and geography.

**MAIN REFERENCES**
