

# Knitting networks: transforming Chalco Channel, Mexico City

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## Abstract

This study is part of a much larger effort by many stakeholders, called Water Caravan, to implement a rescue Master Plan for the Lake Chalco and Xochimilco basins. Our study focuses on an integrated strategic urban proposal to upgrade an area between three important boroughs of Mexico City, specifically the waterfront of Lake Chalco, the Cuemanco Ecological Park and its surrounding areas. This is an area of great ecological, cultural and historical relevance for our city. Nonetheless, an unregulated urban sprawl, as well as local population increase, has seriously deteriorated the area. The selected site, along with Chalco and Nacional Channel acquire a great significance as the gateway to this highly valuable region of cultural and historical relevance. This work proposes a Master Plan to make local scale interventions: connect bordering neighborhoods, reorganize its land use and activate the Park and Chalco Channel, in order to incrementally revitalize the area.

*Keywords: urban tissue renewal, connecting neighbor communities, restoring ecological environment, reinforcing local identity, preserving a traditional way of life.*

## 1 Introduction

The Valley of Mexico, where modern Mexico City is settled, is a large endorheic basin. When the Spaniards arrived in the sixteenth century, the Valley had many shallow lakes and wetlands. Lake Xochimilco is one of the few remaining lakes today. It's well known for its *chinampas* or floating gardens [2]. In 1987 it was selected as World Cultural and Natural Heritage Property along with Mexico City's Historic Center by UNESCO, and *chinampas* were considered one of the most sustainable, efficient and economical forms of agriculture. Until the



beginning of the twentieth century, Chalco Channel – a historic waterway – was used to transport produce grown in Xochimilco’s *chinampas* to supply the farmers markets in downtown Mexico City. Unfortunately, in the present time it is mostly in a state of abandonment and decay. The waterway, along with Lake Xochimilco and its *chinampas* have a great historical, cultural and environmental relevance for the city but are under a lot of pressure from local population growth and unregulated urban sprawl.

There have been several efforts to revert or at least stop the deterioration of both the channel and the lake. In 1986, the Mexican government declared the area as an ecological preservation zone (ZSCE) [3]. It’s called “Ejidos de Xochimilco and San Gregorio Atlapulco” and it’s located in the southeast of Mexico City and to the north of the Xochimilco borough. It has an area of 2,552 hectares (6,306 acres). In this area there is some cultural and outdoor sports infrastructure already in use: Xochimilco Ecological Park, Cuemanco Sports Center and the Olympic rowing channel, the Flower Market, and the Acuexcomatl Center for Environmental Education (Gonzalez [4]).

At the Metropolitan Autonomous University campus Xochimilco (UAM-X) we have the mission to link teaching, research and community service as part of our daily work. The “Taller the Vivienda” (TAVI) is a research group within the school of architecture, of which we are members. TAVI’s main research line has been informal settlements and low-income housing. Since its creation in 1986, TAVI has partnered with other universities, institutions, government agencies, non-profits and community groups. It has a large curriculum of work, publications, contributions and research on the field of housing.

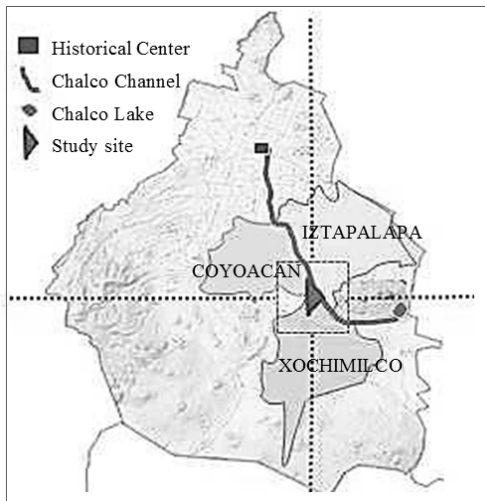


Figure 1: Chalco Channel and study site locations in Mexico City.

This ongoing research – to develop an integrated strategic urban proposal to upgrade the waterfront of Chalco Channel adjacent to Cuemanco’s Ecological Park – is a small part of a much larger effort by many stakeholders organized into what is called “Caravana del Agua” or Water Caravan, a non-profit whose main purpose is to implement a rescue Master Plan for lake Chalco and Xochimilco’s basins. Faculty at TAVI and our architecture students have contributed to examine and analyze the study area and its context, and worked with community members and stakeholders to identify important issues to address (Zingl [5]).

## 2 Analysis

### 2.1 Context

The study area’s context encompasses the Ejidos de Xochimilco and San Gregorio Atlapulco’s ZSCE. Chalco Channel makes the diagonal northeastern boundary. It contains the Cuemanco and Xochimilco Ecological Parks as well as what is left of Lake Xochimilco and its *chinampa* areas. The Xochimilco Ecological Park has a series of amenities and cultural activities for recreation and tourism. Lake Xochimilco and its many channels are a main tourist destination in the city and famous for its promenades in *trajineras* (local traditional boats used to transport produce) [6].

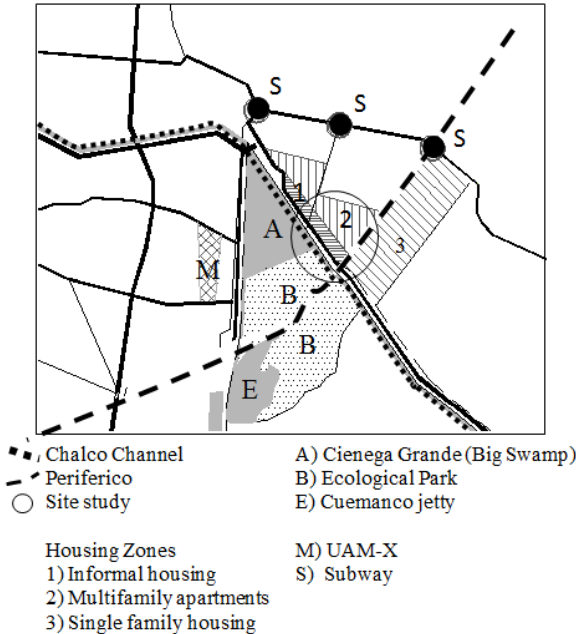


Figure 2: Study zone land use.

## 2.2 Site

The study area was selected for the following reasons:

It is an emblematic site where Nacional Channel splits into Chalco Channel forming a triangle with the two waterways ending in Xochimilco's Lake. It's a node in the city where three boroughs – Coyoacan, Ixtapalapa and Xochimilco – with very different characteristics merge. Triangular in shape, it is located in the northern tip of the Ejidos de Xochimilco and San Gregorio Atlapulco's ZSCE. In Coyoacan (our University is located to the west) it's limited by Nacional Channel; In Xochimilco, we find the Cuemanco Ecological Park, limited by Canal Nacional, Canal de Chalco and Periferico, a main artery in the city; and in Ixtapalapa (to the northeast) there is a strip of informal housing called Chinampas de Santa Maria Tomatlan. Behind it, there are several multifamily apartments. A road named after the Channel, Chalco Avenue, runs along Chalco's Channel.

## 2.3 Site analysis

The site analysis was made with a sustainable approach on the natural environment and with a socio-economic and cultural focus the site analysis (Zlotnik [7]).

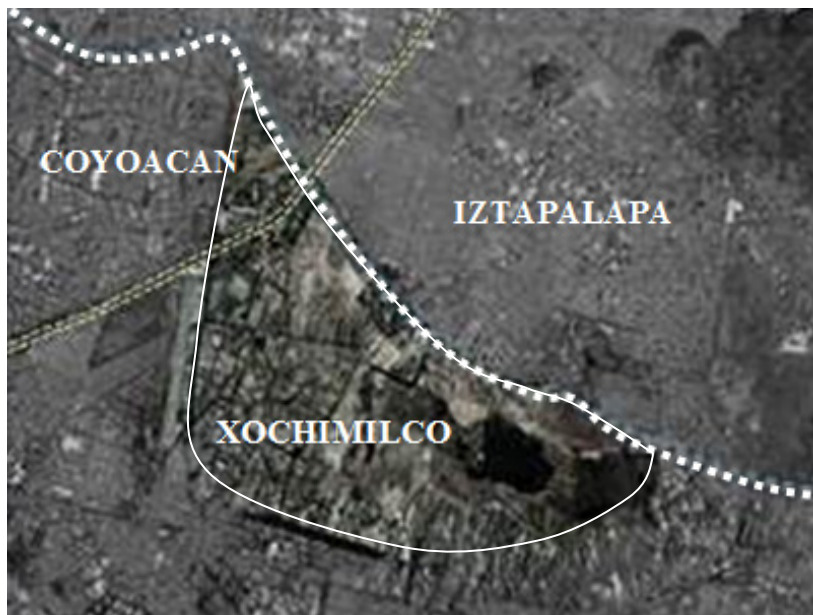


Figure 3: “Ejidos de Xochimilco and San Gregorio Atlapulco” ecological preservation zone.

### 2.3.1 Natural environment analysis

Only 20% of Xochimilco's borough land is urban, the rest is mostly natural reserve. In the urban area 14 towns settled along the north boundary of Xochimilco Lake basin form a crescent moon, where most of the remaining *chinampas* are located – mainly in San Gregorio and San Luis Tlaxialtemalco towns. To the south, a hilly area that is part of the natural reserve limits the urban area. As stated before, *chinampas* have a pre-hispanic origin that has persisted for more than thousand years on the site. They are a highly sustainable and economic way of agricultural production and have a strong impact on many of Xochimilco town's local culture.

### 2.3.2 Socio-economic and cultural analysis

In order to get a better understanding of the daily lives of the communities living in the area, a set of previously designed interviews were applied to four different groups: the community that lives or works in the informal settlement; the community that lives or works in the housing projects to the northwest of the informal settlement; the community that lives or works to the southeast – in Coyoacan's borough – of the Cuemanco Park; and the community that works or visits the Cuemanco Ecological Park.

From the interviews we learned the following:

Most people in the informal settlements are either native or direct descendents from the old “chinamperos” from San Antonio Tomatlan's town whose *chinampas* were at the border of Lake Chalco. The rest come from other towns or different neighborhoods of the city. Some work in the car shops, wash cars or in the mom and pop shops. Others work in the city, mainly in the informal sector. Their main concern, apart from the economic and work instability, is security. A little open chapel to the Virgin of Guadalupe in Chalco Avenue is well maintained and kept by the mostly catholic locals. They cannot access the Park because a fence and the channel prevent them to do so.

People in the housing projects are middle to low-income families that work elsewhere in the city. A few are UAM-X students. They don't have easy access to services such as small produce stores, drugstores, diners, etc. nor to recreational areas. There is only one access to the area via Periferico, making even the short trip to the university in public transportation a hurdle. Their main concern is the lack of nearby services.

People working in the Park live in Xochimilco borough and complain about the lack of day care services for their children. There are two different types of visitors to the Park, mostly during weekends. The first are people who come to buy plants and flowers in the Flower Market; the rest are people who come for sports or recreational activities. Both groups acknowledge the lack of infrastructure such as public restrooms, benches or eating places. Kids from this group were enthusiastic about a small artificial lake in the Park.

People in Coyoacan, to the southeast where UAM-X is located, have little contact or knowledge of the Cuemanco Park and Flower Market mostly because of the difficult accessibility to the site.



### **3 Diagnosis**

#### **3.1 Problems**

The main problems detected on the site were: lack of connectivity; insecurity; and pollution.

##### **3.1.1 Lack of connectivity**

There is no physical or social connection between the three boroughs adjacent to the Park. This lack of connectivity prevents UAM-X students from visiting or using the Park's basic services and visitors to the Park cannot use UAM-X's cultural infrastructure. Residents of the informal settlement are completely separated from the Park and its services by a fence and by the polluted Chalco Channel, which is considered filthy and unhealthy. This adjacent community lives in a fringe of informal single houses that is also disconnected by a wall from all the communities that live in the housing projects behind it. Residents of the housing projects do not have direct access to Chalco Avenue. These two barriers – the fence and the channel – pose great challenges and create opportunities for livelier and healthier communities.

##### **3.1.2 Insecurity**

The perceived insecurity is mainly along Chalco Avenue, and is due to the fact that it faces the informal settlements. The informal area is perceived by the other inhabitants as dangerous and unattractive. The real insecurity derives from the dangers originated from the badly designed street as well as from its isolation from adjacent communities.

##### **3.1.3 Pollution**

Chalco Channel, in front of the informal settlement, is full of trash and polluted with served waters. It frequently stinks and the rotten smell goes beyond the channel to the housing settlement.

#### **3.2 Opportunities**

The area has many assets. The most important are: its historical and ecological value; its strategic situation; and several catalytic sites.

##### **3.2.1 Historical and environmental value**

The site is the gateway to Xochimilco's neighborhood, providing it with a very important symbolic, cultural and environmental meaning, characteristics acknowledged by the UN and FAO. Both sides of the large open area are flanked by two important waterways: Nacional Channel, which has been invaded by water lilies; and Chalco Channel, which receives served waters from the local settlements. People throw garbage into both of them. There is great opportunity to restore the channels and the large green open area. The Park is part of the area protected for ecological conservation and offers a unique opportunity to create a local destination that will help tear down the existing barriers that separate the



surrounding communities. The site also offers high potential for innovative landscape architecture and green infrastructure.

### **3.2.2 Network connections**

The Cuemanco Ecological Park has the potential to be a natural connection between the communities of the three boroughs. Residents from Coyoacan who live nearby would visit more frequently if more services and easy access were offered. The informal settlement could profit from more visitors by providing friendly services instead of car shops. Services like a Cultural Center, a market place or board rooms for UAM-X students. Car shops could be moved and concentrated on Chalco Avenue where it meets Periferico. To create network connections, some of the small alleys perpendicular to the main avenue could be connected into the housing projects behind the informal settlement and into the Park in front of it. This would give easy access to everybody in the area. Chalco Avenue is a two way narrow street along the channel. In its west sidewalk three water pumps protrude into the street making pedestrian and vehicular circulation difficult. Several car shops and mom and pop shops (laundries, diners, etc) as well as precarious houses and large empty pieces of land conform the informal settlement streetscape.

### **3.2.3 Catalytic sites**

Several sites within the study area: the Park; the channels; and many large lots along Chalco Avenue in the informal settlement, which are either unbuilt or partially built with non-permanent materials, provide an excellent opportunity to add vitality to the area and spur further positive and sustainable growth.

UAM-X campus is located to the southwest of the site. It hosts a student population of about fifteen thousand -a quarter of which comes from other states or countries. Since 1975, when it was founded, it has helped spur housing development and services in the area surrounding the university. There is very little knowledge or use of the available services offered by the Cuemanco Park at the moment, either by the students or the local residents.

This Park and the Xochimilco Park are only connected by one pedestrian bridge over Periferico. In this part, Periferico has kept a broad green median making it difficult to cross. There is a great potential to attract UAM-X and local communities to the site by making Periferico underground in that part, facilitating access for bikes and pedestrians.

## **4 Conceptual framework**

From a sustainable point of view, a conceptual framework for Chalco Channel's transformation was proposed by our group, underscoring three important aspects of it: environmental; socio-cultural; and economic.

### **4.1 Environmental**

This site is an important ecological reserve for the city. It is also a place where every year migrating birds from Canada and United States come to rest. There



are some very unique endemic native fauna and flora such as the *ajolote* and *ahuejote*. UAM-X has an important Documentation Center on Xochimilco and several research and internship projects related to the area. Restoring its environment and revitalizing the site is of utmost importance for many stakeholders.

## 4.2 Socio-cultural

Xochimilco's basin still preserves in its borders the *chinampas*' way of life. The historical character of this particular place – the importance that Chalco Channel had as a main waterway connecting Chalco and Xochimilco lakes with downtown Mexico City – states important reasons for its revitalization. This way of life is still alive in fourteen Xochimilco towns, in spite of the huge impact that Mexico City's sprawl strains on them. It is a very unique way of life where religious activities are of great importance – a hybrid between pre-hispanic and catholic cults – and where many of our old cultural Mexican roots are still current.

## 4.3 Economic

With more regulation and some change of land use on the fringe along Chalco Channel's Avenue, this place could turn from being an isolated and dangerous place into a major network to connect the area. It could also offer some business opportunity for the families living in the informal settlement. Opportunities like offering much needed services for the housing projects' community, cheap housing for UAM-X students as well as week-end services and activities, such as restaurants, cafes, farmers markets, etc.). The latter would solve some of the main problems of the local communities.

The lots identified with potential for intervention can create job growth and revitalize the community with a mixed-use development. This development can provide services for the Park users and employment for the residents. Some cheap rental housing is also needed for the great demand generated by out-of-town students that enroll every year in UAM-X. The University does not offer in-campus housing.

Particular physical areas in the informal strip could be changed to improve civic capacity and compatibility of land uses in specific areas. Strategies could include new land use, new workforce training programs and expanded housing solutions.

Some programs focused on improving skills, building capacity and expanding resources for the community are already being implemented. Others need to be planned in accordance with the proposals for the Park [8].

## 5 Master plan

A preliminary urban Master Plan was designed by the students with our guidance. It is divided in two different zones: the built zone to the north of Chalco Channel and the green open zone to the south. The design idea was to





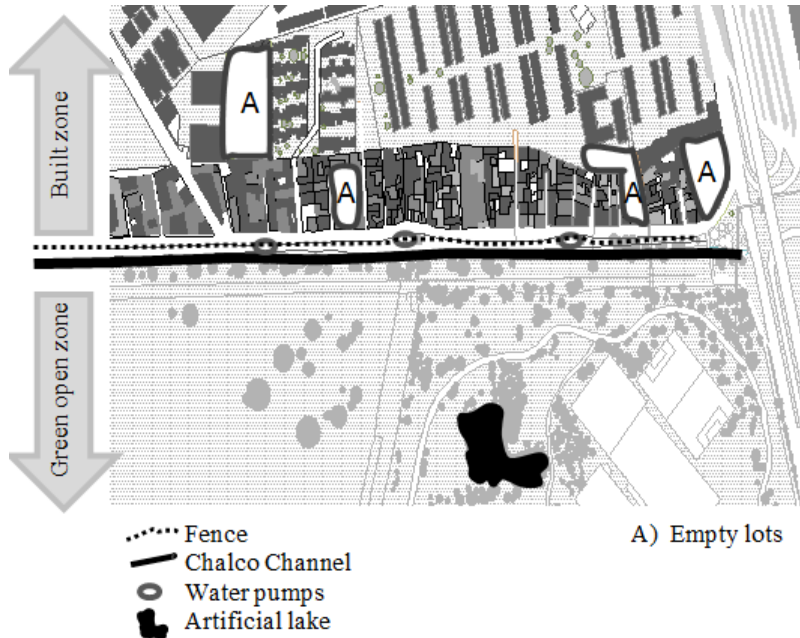


Figure 4: Site analysis.

achieve a visual and physical connection between the two zones; and to overflow the green open space into the built zone. To achieve this we proposed the following punctual interventions.

## 5.1 Built zone

### 5.1.1 Chalco Avenue

To renew the Avenue, the following actions proposed: repave the Avenue and its sidewalk; add a bike path; make it a one way street from Periferico; make it a pedestrian street on week-ends to make room for street coffee shops and restaurant extensions.

### 5.1.2 The narrow alleys

Repave and add street lighting to the narrow alleys of the informal settlements perpendicular to Chalco Avenue, to increase security in the area. On the other side of the channel we proposed to add narrow channels continuing the alleys to underscore the linear pattenr of the extinct *chinampas* in the area. The channels would be flanked by *ahuejotes* and illuminated to stress the continuity with the streets by night too.

Extend two of the alleys towards the opposite side of the channel to connect Chalco Avenue and the Park with the community that lives behind the informal settlement. There are two strategic points where this can be easily achieved without demolishing permanent structures.

### **5.1.3 Land use regulation**

This is necessary for the incremental renewal of the streetscape. Buildings should not exceed 4 levels and should have 25% of each level surface as green roofs or terraces. The noisy and polluting shops, like the car shops, should be banned and substituted by more friendly and needed services to attract locals and weekend visitors.

### **5.1.4 Land tenure security**

In order to improve the houses in the informal settlement, a deal with the local authorities could be done. There is room for new additions to provide cheap rental housing to attend UAM-X student demand.

### **5.1.5 Services needed**

There are large empty lots that could accommodate new services and infrastructure. Most needed in the area are: an Environmental Training Center; a Cultural Center; and a shopping mall.

## **5.2 Green open zone**

### **5.2.1 Dirt road**

The dirt road on the other side of the channel could be enlarged, paved and used as a two way street to attend weekend traffic.

### **5.2.2 The rehabilitation of Chalco Channel**

Clean and widen its bed; remove the existing fence; grow native plants, like *ahuejotes*, in its banks.

### **5.2.3 Create new narrow channels (as stated in 5.1.2)**

Some narrow channels could be converted into *chinampas*. These *chinampas* could be used as experimental field for a proposed Agricultural Training Center to grow organic produce and make a statement to the advantages of preserving this way of life.

### **5.2.4 Small artificial lake**

A small lake could be created by feeding it with some of the small channels as to create a waterway circuit navigable by *trajinera*.

### **5.2.5 Small open chapel, bike paths and farmers market**

A chapel to honor the Virgin of Guadalupe is proposed to be the focal point of the waterway circuit, since it is of great interest to the local population.

## **6 Conclusions**

After a preliminary analysis, and looking into the problems and opportunities of the site, a set of working goals and focal areas were defined as follows: strengthen the social, economic and ecological networks connecting with all the communities coexisting in the area; enhance neighborhood identity through



community building as well as by rescuing the Channel and improving the Park; improve real and perceived neighborhood safety; create employment opportunities and cultural-recreational infrastructure.

The Master Plan proposed is one of many possible ways of urban and architectural intervention on the site. Our proposal aims to achieve the stated goals by knitting social networks and slowly demolishing virtual and physical barriers in the area. By restoring the historical value of the place and maintaining alive a traditional way of life, this place could create a unique sense of identity not only at the local but also at a national level.

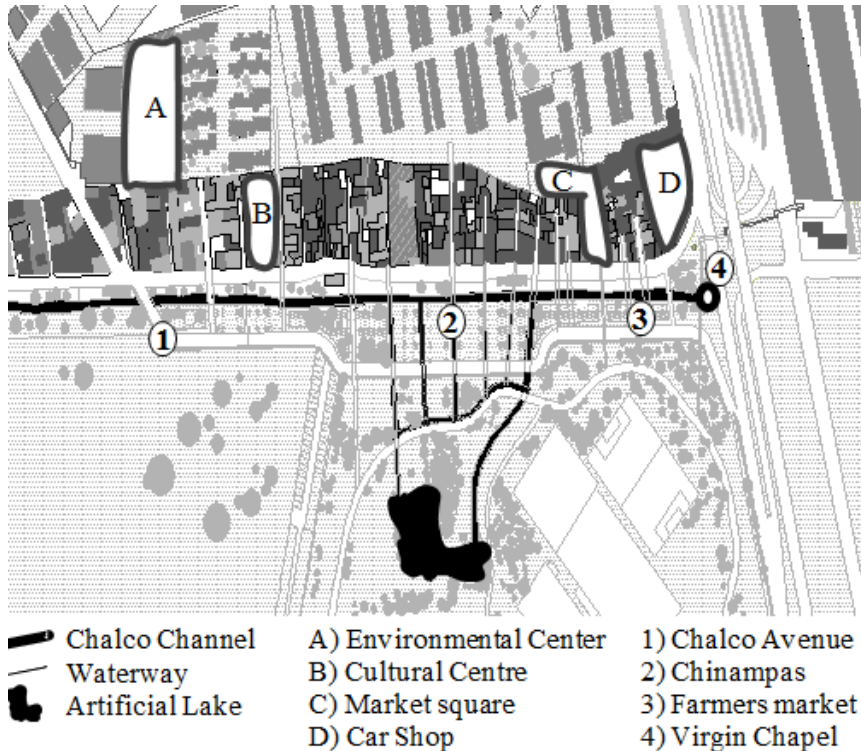


Figure 5: Master plan.

## References

- [1] Caravana del Agua (non-profit org), Information dossier, Mexico D.F., 2010.
- [2] <http://en.wikipedia.org/wiki/Chinampa> **Chinampa** (Nahuatl: *chināmitl* is a method of ancient Mesoamerican agriculture which used small, rectangle-shaped areas of fertile arable land to grow crops on the shallow lake beds in the Valley of Mexico.

- [3] Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT) [http://www.paot.org.mx/centro/programas/anp-df/mapa\\_zonas.html](http://www.paot.org.mx/centro/programas/anp-df/mapa_zonas.html)
- [4] Gonzalez, J., LA CITTÀ: MESSICO, Il recupero ambientale e culturale di Xochimilco. *L'altra Architettura: città, abitazione e patrimonio*, ed. Jaca Book SpA, Milano, pp. 66-72, 2000.
- [5] Zingl, K., Connecting Canal de Chalco: engagement with historical and social environmental structures, Thesis draft, Viena University of Technology and UAM-X, 2012.
- [6] Artes de Mexico, Xochimilco, Artes de Mexico, No. 20, D.F., 1991.
- [7] Zlotnik, A., *Sustentabilidad: hacia una visión integral*, ed. Patronato del Parque Ecologico Xochimilco, Mexico D.F., 2009.
- [8] Foro Cultural “Tejiendo redes” Unidad habitacional Xacalli y vecinos de avenida Canal de Chalco, Programa comunitario de Mejoramiento Barrial 2012, Secretaria de Desarrollo Social-Mexico D.F., 2012.

