

Xochimilco

The Struggle for Survival¹

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Mexico City. Streets and houses as far as the eye can see. Looking at the enormous asphalt and concrete mass, it is hard to believe that Greater Tenochtitlan was built on a lake and that the power and splendor of the Aztec empire was due in great part to its inhabitants' efficient use and management of water.

The arrival of the Spaniards and the establishment of colonial power changed the look of the city, as did different hydraulic works down through the years. Through it all, however, the lake continued to be an important resource.

At the end of the nineteenth century, the city still had a wide network of canals through on which canoes and other vessels circulated transporting agricultural products to market. It is not surprising that these canals were one of

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the things that most attracted the attention of the men the Lumière brothers sent to shoot the first film ever in Mexico 100 years ago.

Today, several centuries after the conquest, it is still possible to catch a glimpse of what life was like in pre-Hispanic Mexico when you go to one of Mexico City's surviving lake regions, Xochimilco.

Considered by many a picturesque tourist attraction, Xochimilco lake offers much more than that and has resisted more or less successfully being absorbed by the metropolitan area. Certainly, Xochimilco is not what it used to be, but its 187 kilometers of canals still hold surprises for us.

AN UNDERWATER UNIVERSE

Its origins are in the water. The apparent calm on the surface of the canals and lakes contrasts sharply with the struggle for survival under the surface.

Thanks to chlorophyll, the algae and water plant cells get the energy they need from the sun to produce nutritious substances that a veritable universe of microorganisms depend on to live.

Untiringly, the ciliata absorb and expel water from which they obtain bacilli and other bacte-

ria. The *borticella* do not move, but their crowns of cilia create whirlpools that act like tiny vacuum cleaners, pulling the food in.

Protozoans are in turn the main food of larger animals such as the nematodes, or roundworms, constantly seeking prey. But, in terms of voracity, it is the insect and crustacean larva that are the best examples of how to eliminate everything that crosses their path; the pitched battles among them for food are truly surprising.

Here in Xochimilco also lives a kind of fresh water shrimp, the *acocil*, as our ancestors called it,



Xochimilco Ecological Park.



Xochimilco, an endangered paradise, has resisted more or less successfully being absorbed by the city.



which has a voracious appetite as well. Considered a parasite that feeds on carrion, it is fussy not only about eating, but also about mating, which can take several hours. Most of its young will be food for other larvae. However, some will survive and live to reproductive age, and so begin the cycle again. But even in old age, they cannot be assured of peace, because the *acocil* is the favorite delicacy of a singular inhabitant of the waters of Xochimilco, the axolotl, a kind of larval salamander.

The axolotl (from the Nahuatl word for “water monster”) is an amphibian of the sala-

mander group. However, adult salamanders develop lungs, leave the water and return only to lay their eggs. The axolotl lives all its life in the water, breathing through its elegant collar of gills.

This behavior, called neoteny, caused confusion and led people to think the axolotl was not a salamander at all until in 1865 when a few held in captivity in France went through their complete metamorphosis. Later, José María Velasco continued his observations based on the work of the French, describing how during draughts, the axolotl developed lungs and behaved like genuine salamanders. He accompanied his findings with magnificent sketches.

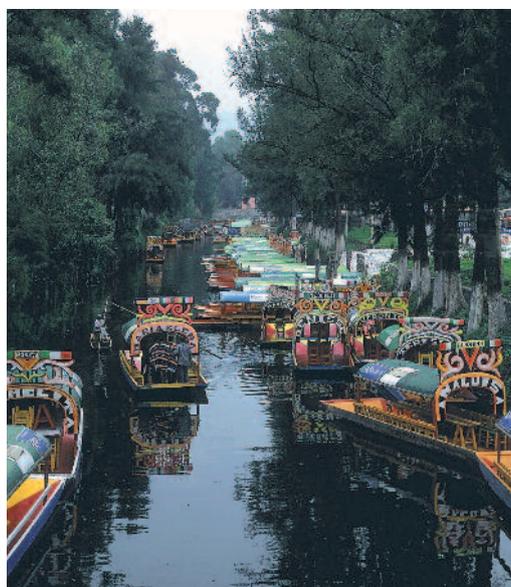
But no one can describe the axolotl like Julio Cortázar did.

An inexpressive face, with no feature other than the eyes, two orifices like pinheads of transparent gold, totally lifeless, but watchful, letting me penetrate it with my gaze, that seem to go beyond the golden point and lose itself in a diaphanous interior mystery.

It was its calm that first fascinated me about the axolotl. I felt darkly that I shared its secret will, that I eliminated space and time with indifferent



Flower garden. Xochimilco Ecological Park.



The apparent calm on the surface of the canals and lakes contrasts with the struggle for survival underneath.



The water lily, introduced in the early twentieth century, became a blight, constantly choking up the canals.

immobility. Later I learned to know better; the contraction of their gills, their tiny legs feeling their way along the rocks, their suddenly swimming off. All this proved to me that they were able to come out of that mineral-like lethargy in which they spend hours at a time.²

Axolotls' reproduction is not easy to observe. Apparently, the male deposits his sperm on the bottom and the female immerses herself in it to fertilize the eggs. Afterwards, she deposits them one by one among the vegetation. Slowly, the young develop in capsules until they emerge, looking very like the adults, to continue their growth outside.

Another peculiarity of the axolotl is its enormous powers of regeneration: it is capable of producing a new member if it loses one. But no regeneration is possible when it comes up against the water snakes so common in Xochimilco and one of whose favorite foods is axolotl.

In addition to the snakes that come to the surface, the banks of the canals boast an enormous number of insects that need the lake either for laying their eggs or for food. The most surprising thing about all this is that the banks of the canals are man-made.

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ORIGINS

Using the resources they had at hand, our ancestors thought up an ingenious agricultural system that provided them with a constant supply of food: the *chinampas*.

Chinampas are artificial agricultural islands where water is literally a stone's throw away. The "fields" are fertilized with mud rich in nutrients dug up from the bottom of the lake. Today pre-Hispanic practices are still used in the care and maintenance of the *chinampa*.

Originally, a *chinampa* was begun after finding a shallow place in the lake where lots of silt and mud were deposited. A thick layer of rushes, reeds and other grasses were put there, on



The axolotl, a legendary inhabitant of the canals.



Pre-Hispanic techniques are still used in the care and maintenance of the *chinampa*.

The *ahuejote's* deep, wide roots form a mesh that keeps the *chinampa* in place, preventing its moving or disintegrating. It also protects crops from strong winds and hail.

top of which more soil was placed. Later, rows of *ahuejote*, willow trees native to Mexico, were planted around it to fix it. The *ahuejote's* deep, wide roots formed a mesh that kept the *chinampa* in one place, preventing its moving or disintegrating. Its vertical branches did not make much shade, but did protect crops from strong winds and hail. In addition, the wood of the *ahuejote* is resistant to humidity and therefore was used to make different tools for cultivation. The small, tender branches were used to make baskets, and its young buds had medicinal uses, given their analgesic properties similar to those of aspirin.

Thus, the lake not only guaranteed its inhabitants the security of a good crop,³ but its native fauna was also a permanent source of

animal protein. In the markets of Xochimilco you can still buy *acocil*, frogs and axolotl prepared in different ways, and they continue to be a favorite dish of many locals.

AN ENDANGERED PARADISE

But problems came to this paradise, too. The city's excessive growth depleted the underground springs that fed Xochimilco. Streets and avenues made their appearance and now the tall *ahuejotes* guard sidewalks as the only testimony that in the past they had surrounded *chinampas*.

The water lily, introduced in the early twentieth century, became a blight, constantly drying up the canals. Rodents proliferated in the fields; the proof is the abundance of rattlesnakes that feed on them.

By the end of the last century, the lake was in danger of completely drying up. However, after prompting by local inhabitants, proud of their past and traditions, the UNESCO declared Xochimilco a World Heritage Treasure in 1987, and the Ecological Recovery of Xochimilco project began.

Today, the lake's water is treated and returned free of contaminants; a tireless struggle against



No other place in the world offers the variety of flowering plants that Xochimilco markets do.

the water lily is being waged; and an environmental educational center and a research center for local fauna have been built.

Some progress has been made, visible in the increase in the number of birds on the lake. More and more migratory birds land there, like the Canadian ducks that find refuge and food in its waters in their flight from cold winters. The number of bird species that are permanent residents has also increased, such as the widgeons, that find there the materials they need to make their nests. Different kinds of herons also make their home there, gracing the scenery with their form and flight.

The lake is a good provider and each species of bird manages to find its own kind of food: some go fishing, some go hunting and others start the day with cereal. Others get stuck in the mud, either without staining their feathers or impervious to the mud because their feathers are water-proof.

THE LAND OF FLOWERS

No, it is not like it once was, when Xochimilco could supply the whole city with vegetables. Not any more. But they still have not taken the

name from us: Xochimilco, from the Nahuatl words for flower, *xochiil*, and cultivated land, *mili*.

Although flowers are brought in from elsewhere for sale, the *chinampas* continue the tradition of producing different varieties for sale in Xochimilco's many markets. Probably no other place in the world offers the buyer the quantity and variety of flowering plants sold here.

But not only people are attracted by the flowers. They also attract other visitors, who in their search for sweetness, help in reproduction.

Perhaps the best example is the hummingbird, an efficient pollinator. Specializing in long-necked flowers, it doggedly searches for nectar, sticking its straw-like tongue out of its beak, as long as the rest of its body, to suck the nectar out of the flowers. Hummingbirds depend completely on flower nectar from which they obtain sugar and therefore the enormous energy needed to feed that tiny body with the muscle structure it takes to beat their wings 60 times a second. Their movement would have to be shown in slow motion 100 times less than normal speed to be able to distinguish their wings, which beat both back and forth, giving them the ability to stay suspended in the air or fly backward, something no other bird can do.

Hummingbirds are an example of the constant struggle for survival that all the inhabitants of Xochimilco wage when each battle could be their last.

And that's life. **MM**

NOTES

¹ This article is based on the script of the same name, made into a video and produced by the UNAM Dirección General de Actividades Cinematográficas.

² Julio Cortázar, "Axólotl," in *Cuentos Completos 1* (Mexico City: Alfaguara, 1994), p. 382.

³ "In Xochimilco, nobody dies of hunger" goes a local saying. Although few live from agriculture today, almost any kind of vegetable, countless fruits and the traditional corn can all be grown on the *chinampas*.