

Influence of New Materials in the Transformation of Traditional Home Building Technology in Michoacán, Mexico

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ABSTRACT: This paper presents the actual situation of the traditional building technology, specially the transformation of the traditional house in areas with a large indigenous "tarascan" presence in Michoacán. The principal problem that has been detected is the negative cultural effect in the preservation of this cultural heritage, mainly because this kind of technology is transmitted from parents to sons. And this new generation is actually influenced by the United States architecture, as a product of the migrant culture. In addition, the money that the migrant workers send back to their Mexican families, allow them to use the newest building materials available, without even considering using the traditional technology, which has proved among years, to be the most adequate in terms of climate comfort. Basically, this study presents the transformation of the traditional building technology (earth and wood) by the influence of new building materials (steel and concrete).

INTRODUCTION

The state of Michoacán in western Mexico has the second highest migration rate in Mexico generating an enormous impact, both economic and cultural, on the rural communities that provide migrant labor to the United States. This paper examines the traditional dwelling of the Lake Pátzcuaro basin and the ways in which it is being transformed in relation to the migration phenomenon.

The Lake Pátzcuaro basin is located in the northern area of the state of Michoacán, and it's the core of the ancient Purepecha empire. Actually, is inhabited by the descendants of this old culture, which had it's moment of maximum splendor in the years before the arrival of Hispanic conquerors.

The present group Purhépecha comes from a mixture of Chichimecas, Nahuatl and pre-tarascos that inhabited the shores and islands of the Lake of Patzcuaro at the end of the twelfth century. The Purepecha live in the lake and mountain regions of the State of Michoacán, they called them selves "p'urhépecha". When the Spanish conquered these people, they imposed the name Tarascan and it was not until recently that the Purepecha were able to get their name back. The Purepecha region covers about 6000 sq kilometer in the center of the state. It is traditionally divided into four regions: Japóndarhu (place of the Lake), Eráxamani (Meseta), Lyon of Eleven Pueblos, and Zacapu.

This culture has special traditions, and an extraordinary cultural heritage, than in our days are in extreme danger of disappearing, because of several factors, including political, cultural and economic issues that are transforming the traditional way of life, including the traditional home building technology.

THE CONSTRUCTIVE TRADITION IN THE RURAL DWELLING

The rural architecture is a cultural manifestation, a very important part of the cultural heritage of the Mexican people. As Valeria Prieto says, those buildings give a personal and unique character to every part of the country (Prieto, 1978, pp.68-120). In addition, the environment is one of the factors that determine the particular characteristics of the constructive tradition and the morphology of the human settlements. In general, the geographic conditions establish the specific elements that conforms the rural architecture in Michoacán, such as urban design, squares, facades, colors, materials, constructive systems, roofs, etc., giving as result an architectural typology.

The origin of this architecture is a product of blending the Hispanic and the Tarascan cultures, the union of two different constructive techniques and two knowledge of building procedures, through the environmental adaptation process.

The rural architecture begins as a response to the functional and formal needs of the people that inhabit a specific area, and determined by the specific use of natural resources, so that, there's no such place for theoretical presumptions or extravagant esthetic demands. The rural architecture is an integral part of the culture and the human society that settles in a specific place and environment. Humans contribute with their customs, the location gives the resources, so, the architecture of a place is unique by definition (Rapoport, 1972, p.12) Therefore, the geographic environment defines the rural architecture, so, there is a necessity to analyze those characteristics in order to identify the natural resources that provide the construction materials. Like we said in the introduction, there are different climatic zones in Michoacán, but in order to analyze the most representative rural architecture, we're selecting the core of the Tarascan area: the Lake Pátzcuaro basin. This is a cold area, with a very important rainfall, and some woods (but their almost gone).

This means that horizontal roofs are non functional in this area, because the water could damage the structures, that are obviously made of wood, in despite of the natural resource that the surrounding woods area offers. The trojes or traditional dwellings, had being made in the same way that several centuries ago, as the principal ancient document available about the Michoacán history presents in the *Relación de las ceremonias y ritos y población y gobierno de los indios de la provincia de Michoacán* (figure 1).



Figure 1: Detail, lamina XXVIII, *Relación de Michoacán*.

As a result of these physical characteristics, the structure of the dwelling depends directly on the fir planks. The planks, with a thickness of up to 5 inches are placed horizontally and joined by notches at the inside corners of the building. Boards are fixed to the walls to form the loft. The four shed pitch roof is supported directly by the loft with fir poles that carry slats to carry tejamanil, or fir shakes that complete the structure (figure 2) with a support made of earth bricks or adobe.



Figure 2: Traditional dwellings in La Zarzamora, Michoacán

The characteristics of the built landscape in the region were amply documented through a multilateral agreement established in 1940 between the Smithsonian Institution, the Instituto Politécnico Nacional and the Mexican Department of Indigenous Affairs which set in motion the "Proyecto Tarasco"; this project generated a great deal of research on the indigenous culture including literature on house types and settlement patterns (Ettinger, 2004, pp.1-25).

THE MIGRANT CULTURE

There has been a massive immigration to the US from Michoacan as in many other indigenous regions of Mexico. This immigration is so common that in some areas there are not enough workers for full agricultural production. Many towns are now receiving long over due attention. The states with the highest numbers of Mexican people are California (8,455,926; equivalent to 25% of the state's population), Texas (5,071,963; 24.3%), Illinois (1,144,390; 9.2%), and Arizona (1,065,578; 20.7%) (Kemper, 2004, p.1027). Specially, Michoacan's migrants are located in Chicago, where they have already form a Mexican-American community with very unique traditions and social practices.

This migrant culture had being studied by Robert Kemper in 2002, making enphasys in the people of one town in the Lake Pátzcuaro basin: Tzintzuntzan (Kemper, 2002). Yet, migration cannot be characterized only in terms of economic impact and must be understood in its social and cultural dimensions. In Michoacán living in two cultures has become a way of life for many families; it is very common to observe divided families, men with children and other close relatives in residence in the United States while the wives stay in Mexico with other members of the family. As some of the family members acquire legal status in the United States periodic visits increase as does the possibility of moving whole families to the north. The complexity of the phenomenon defies simple quantification and the census carried out by the Mexican government provide only an approximation of reality; it is difficult to ascertain in terms of percentages the dimension of permanent versus temporary migration, although at least 30% of those who migrate to the U.S. return periodically (Ettinger, 2004), bringing with them a whole baggage of cultural differences.

Many villages and towns have almost no male population between the ages of 15 and 60 during several months of the year; in the fall, as the Christmas holidays draw near, towns and villages fill up with young men in pick up trucks with U.S. license plates. The young men return, not only with gifts and money, but also with cultural and spatial experiences radically different from their traditional lifestyles. Their arrival coincides with a boom in construction that will last a few months, testimony to their success in the north (Ettinger, 2004).

But numbers are relevant in this matter. At least in the last decade, the remittances that the migrant people send to their families have supplanted the federalized cost that send the Presidency of the Republic to the state of Michoacan and the budgets in social programs and productive investment that have destined the three last state administrations, these means, about \$1,135,000,000 US dollars just in the first semester of 2008 (Aguilera, 2008).

This important amount, in many cases is applied in the construction area. All the migrants travels to the United States to find a better way of life, working hard to send enough money to their families, so they be able to buy a lot and build a home that reflects the economic level of the head of the family. Some times, they even send pictures or blueprints of houses they've seen in the cities where the work, especially in the state of Illinois. As a result of this kind of practice, it's easy to locate the homes of these migrants (figure 3) for example, the use of bay-windows, as an imported formal element.



Figure 3: Contemporary building next to traditional dwellings in Erongarícuaro, Michoacán

THE NEW MATERIALS

Actually, in almost all indigenous towns with more than 400 habitants, it's easy to find a construction materials store, that provides and encourage the use of the cement and iron instead the wood and the adobe, for the traditional buildings. The accessibility to these modern materials, is an important factor of transformation and even lost of the vernacular building technology. The horizontal roofs (built with concrete systems) are substitut-

ing the four shed pitch roof. The vertical outline that defined the image of the traditional villages, is now changing slowly to an horizontal outline.

The introduction of mortars to cover the facades, are damaging the walls made of adobe, because this new material doesn't allow the earth brick expel the humidity that comes from the soil. In addition, it's easier to locate workers that have the knowledge to make cement bricks than earth bricks. The new building technologies are causing the gradual lost of the traditional building technologies.

CONCLUSIONS

In attempting to understand the vast transformation of the built landscape in the lake Pátzcuaro basin it's not possible to isolate migration as its sole cause; it is important to understand migration as but one component, a facilitator of a process set in motion by a myriad of factors. One of them is the non controlled exploitation of the woods, resulting in a lack of trees large enough to provide the planks to built the traditional dwellings. As wood becomes scarce and expensive large retail chains of cement, steel and other "modern" materials have established businesses in virtually every small town in the lake basin. Their bright orange facades call attention to their offers of free delivery and credit in the purchase of building materials. For the design of the new houses, the local masons, in conjunction with the owners, make the decisions, creating fantastic designs derived from diverse imagery (figure 4).



Figure 4: Contemporary building in San Jerónimo Purenchécuaro, Michoacán

Another, is the influence of different life styles, in which the younger people are not interested in learning the ancient ways of traditional building, so the traditional techniques are almost lost in this cultural crisis. The media are bombarding the indigenous groups through the television, making them dream on different ways of living. As a final reflection, the words of Paul Olivier:

Dwellings may outlast lineages and in some cultures may be re-occupied and adapted, their survival to the present being a testimony to their responsiveness to changing life-ways [...]When cultures change, old buildings may be adapted and new ones modified in form, while the depletion of some materials and the substitution of others may require new technologies (Olivier, 2003, p.16)

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