

The towns of the Popocateptl Volcano. Territorial symbolism, cultural identity and vernacular architecture

Berenice Aguilar Prieto¹

¹ Mexico National Autonomous University, Mexico, berenice.aguilar@fa.unam.mx

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Abstract

This paper addresses the link between territory and identity from a cultural geography perspective. Small villages that lie in the Popocateptl Volcano in central Mexico are used as cases of study. The paper is based upon natural and social features as well as in the meaning and symbolism that underlies the attachment of the people of the Volcano villages to this place. It is supported by the results of field research carried out over three years in two villages where university students, me as professor and local people joined together. The methodology utilized for the research was basically a hermeneutical approach to interpret the socio cultural changes of the analyzed regions over the last two decades. In addition, to carry out field work an ethnographical approach was used to describe, analyze and try to understand the changes that the rural communities of the Popocateptl region are going through. The significance that ancestral territories hold for ethnic groups, as well as their attachment to these territories explain the concept of anchoring collective memory. Streets, trails, complementary spaces and elements of daily community life such as orchards and barns, hold historical identity for these people. However, governmental policies, real estate and housing, market interests and the business mechanisms of the cement companies have disrupted the local quality of life together with both the tangible and intangible architectonic and urban historical elements that were present two decades ago in the Popocateptl Volcano region. Only a few decades have sufficed for the globalization interests disguised as progress, to make local people abandon their ancestral knowledge of building dwellings and how to compose their public spaces. All this has been detrimental to the region's natural resources leading to a loss of balance between human space and nature.

Keywords: adobe dwellings; traditional knowledge; capitalist economic order.

1. The cultural background, crops and food staples of the volcano villagers

Popocateptl is the name in Náhuatl of an active volcano located in the center of Mexico (Fig. 1). It is part of the neo-volcanic axis, the mountain range that crosses the country from the Pacific Ocean in the West to the Gulf of Mexico in the East. About 35 hamlets and villages lie dispersed at an altitude of 2,300 meters above sea level. Subtropical mountain climate prevails and has created forests of fir trees, cypresses, oaks and

cedars. During the Viceroyal period (1535-1821), diverse ethnic groups that lived under the rule of the Aztec Empire settled in this region. Indigenous population beliefs and myths were absorbed by Christianity and a certain syncretic form developed and prevails today.

The closest villages to the volcano crater have a Nahuatl ethnicity. Nahuatl, their language, is the most widely spoken after Spanish. Their villages and towns that do not form a political unit are scattered throughout various states of Mexico. Since flat land is scarce the inhabitants grow

maize for family consumption exclusively. They cultivate vegetable orchards on mountain terraces. Plums, apricots, apples, avocados, blackberries and varieties of lettuce and cabbage are among their crops. In Mexico, the staple food since the pre-hispanic era is corn in the form of tortillas. Corn dough with added fat is used to cook other types of traditional meals. Poor rural communities in Mexico eat mainly corn tortillas and pot beans. As cutlery is generally in short supply, a spoon shaped piece of corn dough named tamal or a tortilla is used and then eaten.



Fig. 1. Location map.

2. Volcano ash: a possible additive that improves the performance of adobe bricks

Local architecture is built in adobe, featured by dwellings of two and a half stories which is theoretically too high for adobe houses, normally built as one and a half levels to prevent the risk of structural failure caused by seismic or volcanic activity. Wooden beams rest directly on top of the thick adobe walls. However, these houses have proven to resist vibrations caused by the active volcano. A compression ring could certainly help distribute the weight of the beams concentrated on points in the adobe walls that tend to develop cracks that can weaken them.

Despite their unusual height proximity to an active volcano, construction errors and sometimes scarce maintenance, the adobe dwellings in this region have stood for at least one hundred years (Fig. 2). This may be attributed to the type of clay used for adobes

which contain ash from the volcano. The ash may have increased resistance. In 2018, the National University of Toribio R. Mendoza in Peru carried out a research project where 6 - 8 percent of ashes was added to an adobe mix. The result showed that the addition of ashes increased compressive strength by 65% (Mendoza, 2018). Presumably, the people became aware of the resistance of their adobes and consequently built houses of two and a half stories.



Fig. 2. Adobe house in Ocuituco (Source: Aguilar Prieto, 2001).



Fig. 3. Adobe house in Hueyapan (Source: Aguilar Prieto, 2001).

3. Ancient wisdom disregarded in long lasting dwellings villages

Another particular feature of these houses is the steep slope of the tile roof. Normally, tile roofs support an angle of up to 30 degrees with a maximum of 35 degrees. However, in the Popo region they build slopes of more than 50 degrees (Fig. 4). We believe that it is largely because of the use of flat tiles which are very light in contrast to the much heavier curved tiles. A subjacent story says that these tiles were used as ballast on Spanish ships during the Colonial

period. It seems that Spaniards' ships arrived loaded with tiles and left loaded with gold. Presumably flat tiles were manufactured in some town nearby the Volcano region. To prevent adobe walls from erosion caused by rain water local builders widened the angle at the lower end of the tile roof (Aguilar, 2008). Empirical knowledge after long years of observing the natural elements guided them. They might not know other places or other building techniques but they thoroughly understand their region, its ground, climate and local materials. Besides including eaves to protect the adobe walls they know that the earthen walls should be separated from the ground to avoid erosion from ground humidity, essential in a region of heavy rain (Aguilar, 2008). To prevent erosion they extend the stone foundation above the ground level between 60 cm to 1.20 m depending on the street slope.



Fig. 4. Daily life in Hueyapan (Source: Aguilar Prieto, 2001).

4. Types of grain storage in the Volcano region

The dwellings are frequently occupied by a workshop or a store at ground level facing the street. The kitchen and dining room are on the back side overlooking the yard from a portico. Access to the second floor and to the attic is solved using a ladder through an opening in the ceiling boards. Besides being used as a grain storage room, the attic allows keeping a warmer

temperature inside the house as it helps isolating the outside cold temperatures during the night, winter months and rainy season. In their patios or yards, another common element for storing grain is the *cuexcomate* (granary in Nahuatl): Large pot-shaped clay containers with a stone base. They have a thatched roof with an opening to allow pouring buckets of cobs. The cobs are pulled out by a small hole on the base. A ladder is used to reach the top (Fig. 5).

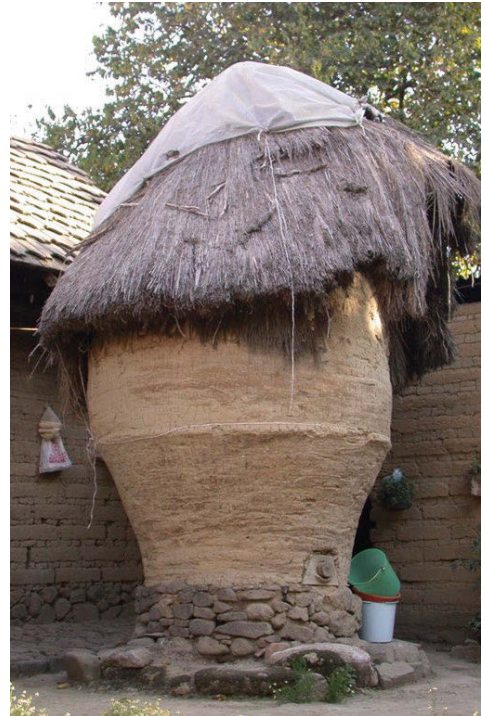


Fig. 5. A cuexcomate (Source: Aguilar Prieto, 2001).



Fig. 6. Market day in Hueyapan (Source: Aguilar Prieto, 2001).

5. Time and people have proven empirical building validity

The intuition of the inhabitants that guides them in the development of techniques and skills through trial and error should be highlighted. In this sense, vernacular building methods don't differ considerably from scientific knowledge. Both types of knowledge require vast experimentation. It is always the people who accepts or rejects the outcome. In the scientific method, the experimentation that provides empirical validity is carried out by a single person: a scientist while in the social environment it is carried out by hundreds of people over several generations until it is improved. The inhabitants test it by putting it into practice (Durkheim, 1968).

6. Territorial attachment persists as globalization policies erode socio cultural values

In the beginning of the twenty-first century, the people of the Volcano region led a life that was in harmony with their surroundings and was based on their traditions and culture. Their attachment to their territory has always proven to be very strong. For land owners land is not only where they grow their crops. It is also a fundamental part of their territory to which they are attached in a symbolic and profound way. The territory is apprehended at different levels of geographic scale. One is the local one which in a rural area would be the towns and villages. The village or town for the inhabitants, is an object of attachment and identity (Giménez, 2016, p. 154) "Globalization, like modernity constitutes an unequal process" (Giménez, 2016, p. 158). When the Volcano erupted in early 2001 and the inhabitants had to be evacuated, elderly people were reluctant to leave their land and their animals saying they would rather risk dying under the ashes than leave their homeland. Nevertheless it wasn't the volcano activity that brought destruction to the Popocateptl towns.

About two decades ago globalization disguised as progress and decadence dressed as modernity arrived in this region. Local people succumbed to the temptations of what they believed to be progress. Ignored by state governments these isolated and marginalized communities have been affected by poor health services and the low quality and shortage of schools and other public services. Therefore, anything that seems to be an improvement is accepted. Social structures condition people minds whose choices are not made according with their own culture but subordinated to the market interests. Furthermore the construction of their traditional and vernacular houses implied a way of life that had become unsustainable because of the external interference and influence of the market as well as unattractive due to the overwhelming influence of the media and marketing. Values promoted through public education have played a role as well. Westernized mass media influence and pressure is devastating and reaches so deep at the socio-cultural level that the communities tend to abandon their traditional homes and instead utilize industrial building materials. What they believed was progress caused material and intangible destruction of their construction traditions and the balance achieved in the region over centuries. Moreover, it corrupted their historical knowledge. I believe that the disdain towards their historical assets comes from the dominant sociocultural representations that associates traditional dwellings with poverty and vernacular architecture with ignorance.

At the end of the twentieth century concrete blocks began to be commercialized in the Popocateptl villages and towns (Aguilar, 2008). Local governmental building programs encouraged the suppression of traditional houses as they became obstacles to financial gain. It was and is to this day a compelling cultural mechanism that considers indigenous people as backward and don't recognize their traditional life style. As a consequence, knowledge acquired over centuries and

transmitted from father to son gives way to a general contempt for adobe houses and collective building. Adobe must be made when it is not raining but block that can be used at any time of the year which contributed in a significant way, to make it popular.

Another factor that makes a dramatic contribution to the abandonment of the traditional practice of building adobe dwellings is the widespread phenomenon of immigration to the United States and to the richer northern Mexican states where poor peasants find work as laborers. Demographic movements are the consequence of the lack of means of subsistence — a desperate way to earn a salary and improve living conditions. But at the same time immigrations potentially causes the uprooting of populations and the modification of socio-cultural values. It is very strong because it underlies the narrative of discrediting one's own home and encourages competition with one's neighbor which did not exist when communities were more homogeneous and mutual aid prevailed. Their cultural heritage was colonized without the inhabitants noticing. One might ask if traditional knowledge and practice are inferior to modern technology? Even when the former has proven its usefulness and relevance (E. Dussel, 2018). Let us remember that modernity starts from an individualistic, mechanized and quantified standing point, while rural people have distinguished themselves by their collective organization and their community values (Dussel, 2018).

Had it not been for the overwhelming marketing propaganda these towns could have fought for their economic self-sufficiency and food autonomy and they would had found the resilience necessary to prevent the social and environmental collapse warned by Carlos Taibo (Taibo, 2020) among other social critics. Instead they were dragged into the maelstrom of the world economic order that has been implanted in most communities world wide.

7. Authoritarian use of force and insensitivity combined for the destruction of vernacular cultural heritage

The cobbled stone streets of these towns are built driving the stones into previously packed earth. In addition to durability the flexible packed earth pebble stone pavements allow rainwater to penetrate and recharge the water table. In these villages people are used to walking long distances (Fig. 7). Trucks are mainly used to carry crops from the surrounding mountain orchards.

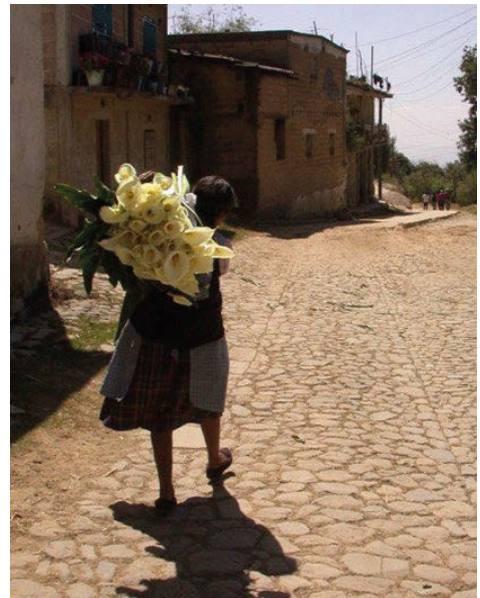


Fig. 7. In these towns streets are made for walking (Source: Aguilar Prieto, 2001).

Persuaded to modernize their villages and make them resemble modern cities instead of traditional towns, together with a lack of knowledge that would encourage them to undertake sustainable projects for real community benefit, local authorities decided to invest financial resources for public works in widening the traditional cool cobble streets and pave them with concrete slabs overlooking the consequence of blocking the recharge of the subsoil. Additionally, the concrete paving was poorly done without providing for

drainage without which, the streets were often flooded during rainy season. Unlike the cool, cobblestone streets (Fig. 8) the concrete slabs substantially increase the heat of the streets blinding people as the sun's rays hit the concrete. In rural towns where life still takes place outdoors closer to nature, streets are for walking more than for vehicles.



Fig. 8. Serene cobbled stone streets (Source: Aguilar Prieto, 2001).



Fig. 9. Adobe houses ordered to be demolished against people's will (Source: Aguilar Prieto, 2001).

In the early days of this century less than fifteen vehicles each day travelled the streets of the Popocateptl Volcano towns. Yet, local authorities' goal was to widen the streets to resemble the avenues of large cities. Consequently, they ordered the demolition of one meter of all the adobe houses on both sidewalks. During the night while they were sleeping excavators were sent to the homes of the inhabitants who opposed the measures. Terrified, they fled and the intruders proceeded to partially demolish their property, obviously

without the consent of the owners. These atrocities against the people's properties took place at the beginning of the century. My group of social service students and I witnessed the deliberate destruction of these towns. The urban physiognomy that had been created in harmony with the local scale and the way of life of these villages had been altered permanently (Fig. 10). The place had lost its sense of identity and its *genius loci* which had been born out of interpreting its natural surroundings (De Albuquerque & Ferraz, 2009).



Fig. 10. Widened cobblestone street and concrete slab create loss or harmony in these towns (Source: Aguilar Prieto, 2001).

We shared the satisfaction of the people who maintained their adobe houses and kept them in good condition. Ernestina was an elderly lady who lived at the entrance of one of the villages. She owned several housing units on the land that made up her property; her own house and one for each of her children.



Fig. 11. Mrs Ernestina at the entrance holding pride of her house (Source: Aguilar Prieto, 2001).

She kept her yard very clean and placed flowers above the threshold to welcome travelers to stop and admire her dwelling. When we arrived she was standing in front of her piece of land smiling with pride and willing to be photographed (Fig. 11). Fortunately her property did not obstruct the project to widen the streets of the local authorities and she was not forced to demolish her dwelling.

Another neighbor was convinced of the benefits that adobe provides as a shelter from the cold and the heat. He argued that in contrast with concrete waste that contaminates and devastates nature, adobe is clay that simply reintegrates to the earth when it degrades. He opposed having his house torn down and fought to keep it safe. The intruders were unaware that the carpenter assistant was sleeping there. Fortunately the young man became aware of the smoke in time to flee to safety. However the entire workshop was destroyed. To destroy it was the mechanism to make the home owner aware that he was bound to comply. In remote towns the law is that of the strongest and in this case it belongs to the one that has the political power. There is no legal protection whatsoever.

8. Conclusions

In conclusion, I would like to state that knowledge is an essential resource for rural people. Along with their history, it forms their strength as a communities. Knowledge is a form of capital. As the sociologist Pierre Bourdieu states: knowledge constitutes a capital in itself but its value is subject to the possession of another capital: that of recognition (Bourdieu, 1986).

The historical wisdom that rural communities of the Popocateptl region possess is reflected in how they grow crops, use medicinal herb and confront different features of their territory such as volcano activity and its risks. This wisdom also includes the techniques used in building their traditional dwellings. As a consequence of the problems that the villages are experiencing, is that regional historical knowledge has ceased

to be transmitted and put into practice by new generations. Cultural marginalization in rural and indigenous communities adds to socioeconomic alienation created by the prevailing socioeconomic order.

Technology is developed to improve the quality of life for millions of people. Nevertheless, scientists, engineers and politicians usually do not measure its negative effects on nature or society. In contrast, the simple life of rural communities becomes exemplary because its consumption is more balanced and does not overexploit natural resource^{5s} (Dussel, 2018). Now, to live a simple life is a natural response to human needs as a group. Rejecting their building traditions and cultural values is not something they have chosen but the result of long internalization processes about the ethnic condition stigma that indigenous and rural people have suffered from society.

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