The historical heritage of domestic architecture is a reliable model for a satisfactory design. The case of the Mediterranean region (May 2014)

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Abstract—The purpose of this paper is to present the importance of observing cultural systems present in a territory as a benchmark for the design of urban infrastructure in the new cities and regions of rapid development. If we accept the idea that architecture is an instrument or cultural system developed by man to act as an intermediary to their environment, it is necessary to understand the elemental interaction between man and his environment to meet the ever growing demands of society.

To illustrate this purpose, we present the case of the Mediterranean region, where the architectural culture acts as an instrument or system adaptation to the environment formed by an ancient process of selection. From simple observation of architectural types, construction systems and environmental tactics treasured in Mediterranean archaeological and architectural heritage we can extract crucial information about the elemental interaction between man and his environment.

Mediterranean culture has mechanisms or environmental tactics responding to the needs of habitability and passive conditioning. These environmental tactics can be basis of an innovative design without compromising the diversity and lifestyles of human groups in the region. The main fundament of our investigation is the determination of the historical heritage of domestic architecture as holder of the formation process of these mechanisms.

The result allows us to affirm that the successful introduction of urban infrastructure in an area requires a model that meet the needs of adaptation of man to his environment, understood and accepted by the inhabits and with reliable behavior. These conditions are more important when the implementation of urban infrastructure takes place in areas that are developing rapidly where there is no architectural culture itself formed by a process of adaptation based on this elemental interaction.

Index Terms—architecture, culture, design, domestic, dwelling, heritage, history, Mediterranean

I. INTRODUCTION

Researchers [1] - [2] from various disciplines consider that the possibilities and the limitations offered by the environment for the human adaptation are materialize in instruments or cultural adaptive systems that act as intermediaries between the group and its environment. Tetsuro Watsuji [3] explains how man discovers himself as existing when becomes aware of its environmental conditioning, when it is reflected in instruments such as the home and clothing to protect against cold and heat. When we accept the environmental conditioning of human existence we can consider architecture as an instrument or an adaptation cultural system developed by man in their interaction with the environment.

By accepting the environmental conditioning of architecture we discover new opportunities to get crucial information on the interaction between man and its environment, the closer we get to understanding this basic interaction we find easier to design satisfactory infrastructure for basic needs of human societies or groups. The environmental conditioning of architectural culture is appreciated through reflective observation the adaptive mechanisms deposited in domestic architecture and understanding of their slow formation process.

Our research experience reveals the importance of observing the cultural systems present in a territory as a reference for the successful design of new urban infrastructure in new vertical cities and in regions of rapid development. To illustrate the importance of this consideration we present the mechanisms of environmental adaptation obtained as a result of our research in the Eurasian Mediterranean region.

II. DOMESTIC ARCHITECTURAL CULTURE OF THE MEDITERRANEAN REGION

Of the five Mediterranean ecosystems in the world, the Eurasian offers the best documented set of cultural systems developed by the process of humanization, with more abundant and diverse data. The Eurasian Mediterranean ecosystem is the cradle of Western civilization and millennia ago that welcomes human activities. To mark their territory, stretching from the Iberian peninsula far surpassing the
geographical basin of the Mediterranean Sea to overflowing the Iranian plateau by the East, has been taken as reference the geographic scope homogenized by the Mediterranean macrobioclimate. This macrobioclimate has been proposed by Salvador Rivas Martinez [4] in his bioclimatic classification of the Earth.

The architectural culture developed in this region is formed over millennia by an evolutionary selection process remaining in spontaneous awareness of the Mediterranean peoples. This evolutionary process which covers the period from the Neolithic revolution to the industrial revolution is a crucial reference where we find new opportunities for study. To find these opportunities we have initiated a thoughtful observation of the Mediterranean household architectural heritage, where is manifested more clearly the environmental conditioning of architectural culture and the traceable its evolution. The invariants of this architectural heritage show us a cultural system own of the region. This system is endowed environmental mechanisms that verify the efficiency of its nature and correspondence with proper environmental conditioning of human groups of the region. These mechanisms are specialized by their origin in specific tactics and comprehensive strategies.

Environmental architectural tactics are devices, systems or habits that are integrated into a plan or strategy designed by the groups in each area for the greatest welfare in built spaces. They are justified by minimize the spontaneous actions reducing the margin of error and help to arrange architectural resources. The tactics serve a specific purpose or need arising for reasons of basic habitability, ethnics or thermal conditioning of spaces. Its concretion is based on an idea or principle and depends on the availability of resources and technical capacity of man. It is the group that dominates each territory who gives birth to the idea and materializes the tactic.

Overall, the Mediterranean tactics are widespread throughout the region and are known by all people who live there. We organize them into three groups according to their specific objective is related to needs of basic habitability, ethnics or thermal conditioning.

Basic habitability tactics intend architectural spaces that meet the requirements for a healthy life, are the first to appear in the historical sequence and are materialized in the systems for protection against to climate factors, how to preserve and renew indoor environments and supply. Basic habitability tactics are typical of a people or human community with affinities in their way of life, their social organization, their family relationship, in the exchange relations or in the technical capacity to manage physical resources. These tactics respond to the human relations and reciprocities in the context of practical everyday activities, to their specific affinities and ways of life. They arise when the human groups have dwellings with basic habitability, begin to organize in complex societies and houses are arranged by zone, are related forming urban fabric and are used according to the comfort of the

Fig. 1. Delimitation of the Eurasian Mediterranean territory based on the Worldwide Bioclimatic Classification System proposed by Salvador Rivas Martinez. Author.

Fig. 2. Iterative process of tactics formation. Author.
Fig. 2. Classification of basic habitability tactics observed in buildings of architectural heritage in the Mediterranean region. Author.

Fig. 3. Classification of ethnic tactics observed in buildings of architectural heritage in the Mediterranean region. Author.

Fig. 4. Classification of thermal conditioning tactics observed in buildings of architectural heritage in the Mediterranean region. Author.
The thermal conditioning tactics are the last to show up in the historical sequence, they are more complex, and aim to improve the basic habitability. They are based on physical principles of heat transfer, thus requiring complex technical and scientific knowledge. Appear in more advanced civilizations that have developed systems of thought.

The arrangement of these tactics in the building is due to plans or comprehensive architectural strategies that respond in different extent to the bioclimate of each territory. Each strategy is a cultural fact that depends on the technical expertise and knowledge of the group that operates. Both mechanisms, tactics and strategies, form the basis of a territorial cultural system which in its essence carries the environmental own of human existence.

The first architectural types emerged in The Eurasian Mediterranean region was environmental in its essence and they formed the basis of all subsequent architecture. Their ambient mechanisms have been spreaded by the entire region from the hands of their inhabitants, reaching high levels of beauty and excellence during periods of maximum diversity and cultural tolerance that political action of the Assyrian, Roman and Persian empires promoted. Currently remain in the built heritage of the region, with different intensity, forming the basis of an architectural culture endowed with a singular environmental conditioning.

We present the most singular Mediterranean architectural tactics whose main objective is to protect the indoor environment of the building. These are materialized by the provision in the building of spaces endowed with own atmosphere that mediate the relationship of indoor spaces to the outside environment. The following table shows the evidence of historical anchor in their evolutionary process and how continues today in the spontaneous consciousness of the Mediterranean peoples.

The reflexive observation from the architectural heritage of household in the Mediterranean region shows that the evolutionary process of formation of the Mediterranean culture is not replaceable by a method based on predefined building types.

Much of the recently implemented urban infrastructure in the region show the loss of the related environmental mechanisms, among which we highlight by its greatest impact those specific to the envelope of buildings and those that mediate the relationship between indoor and outdoor environment.

The vertical architecture that has emerged in the region in response to the economy of means or as a symbol of economic power shows architectural invariants opposite to the bioclimatic invariants that characterize of the region. Their invariants compromise the comfort of the interior spaces and the traditional lifestyle. There are simple and flat enveloping characterized by smooth panels, unshaded and equal openings evenly arranged on the facade, devoid of specialization. There are unprotected spaces harboring indoor environments in direct relation with the outside, under the scourge of the wind and the sun. Welfare depends on the functioning of complex air conditioning systems by the supply of expensive energy with little presence in the territory of the region.

These vertical architectural systems have their origin outside the territory of the Mediterranean region, in general, meet needs of a culture that began with the industrial revolution and has established in Temperate macrobioclimate. They constitute the essence of an architectural culture own of a civilization that operates independent of its environment.

The results of our research in the Mediterranean region we suggest the following basics as essential:

1) The design of urban infrastructure for rapidly developing regions should be based on observation of cultural systems in the territory, or should be taken as a reference the systems developed by humans in similar bioclimates that life in a similar way.

The architectural culture formed by the interaction between man and the environment, which resides in the spontaneous consciousness of the people, offers an ideal cultural system as a basis for new urban infrastructure. By contrast, a global architectural culture is a limitation to the possibilities offered by each territory and to the cultural response of human groups.

2) New towns should be popular, that is to say, must be accepted by the human groups that dominate the territory because its transmission and preservation depends on them. Should incorporate infrastructure to make them recognizable, understandable and justifiable in its transmission to new generations and must to get a closest reciprocity possible between the needs of the group inhabiting the territory and the response provided by the design.

3) New infrastructure should be integrated in the cultural panorama of each area and, therefore, in their evolutionary process. The evolutionary process of formation of the cultural system of each territory does not disappear and cannot be replaced by static global models. The presence of a static global system into a cultural context in progress cause marginal spaces where chaos, poverty and dependence appear.
III. CONCLUSIONS

Moving towards a satisfactory design in new urban infrastructures requires decisive reflection about the environmental conditioning of human existence. The new urban infrastructures should ensure efficient response to the needs of human adaptation to the environmental setting that meets basic habitability goals, ethnic and thermal conditioning. This requirement must be based on deep and thoughtful understanding of those cultural systems present in each territory because they are instruments of mediation between man and his environment and they have adaptation mechanisms formed by an evolutionary process in the spontaneous consciousness of the people.

The architectural culture own of a territory is a gifted cultural system of environmental mechanisms that we provide crucial information on the interaction between man and the environment. We can observe these mechanisms in the architectural heritage and take them as a reference for the design and implementation of new urban infrastructures in vertical cities and regions of rapid development.

This elemental information will allow new urban infrastructures to wear on their essence the environmental conditioning own of the human existence. The closer we get to understanding this environmental conditioning will be easier to design infrastructures that meet the needs of human groups.

Urban infrastructures must be understood and accepted by native human groups from one territory for completing a cycle of efficient and sustainable living. It is important that each structure is appreciated not only for its beauty but for its ethnic adaptation without compromising traditional ways of life, avoiding the imposition, by its utility and by its degree of interference with the environment.

Same time we must face a period of reflection that allows us to reach sure knowledge of the successes and failures that show existing vertical cities. In world regions where the vertical architectural system has thrived this has broken into

### Table 1

<table>
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<tr>
<th>Tactic</th>
<th>Historical evidence</th>
<th>Current evidence</th>
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<tr>
<td><strong>Patio</strong></td>
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<td><strong>Enclosure</strong></td>
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<td><strong>Underground floor</strong></td>
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the process of adaptation of the dominant groups of the territory and generated powerful centers of attraction as well as alarming situations of marginalization and poverty among these native groups. Therefore, it is necessary to reconcile the new urban infrastructures in the evolutionary process of the cultural systems own of each territory. The planning of new urban infrastructure should ensure equal opportunities for lifestyle exist in an area and ensure preservation of cultural diversity.

REFERENCES

Redman argues that man's interaction with the environment is the reason for the changes that led to the advent of civilization.

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