REHABILITATION OF THE [PORTUGUESE] TRADITIONAL HERITAGE IN CONJUGATION WITH STEEL ARCHITECTURE

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Abstract
        Heritage is defined in different ways according to the interests of each person. There are numerous combinations of the word heritage used to define something that belong to us, such as the personal, environmental, artistic, historic, cultural and architectural heritage or even the memories.
In the architectural heritage, numerous examples through History could be named, being the Portuguese Traditional Architecture chosen and quite often found in ruins, empty of content, but full of memories left by time; many of them are occupied by the nature which took possession of these uninhabited scenarios.
The rehabilitation of this type of architecture is challenging because it has, in my opinion, particular characteristics; this type of construction "[…] has neither tendency nor urban origins; they are housing clusters that arise from the need and population growth, use local materials which removed from this context lose their identity"[01]. They were built in specific areas to allow the subsistence of the population, at the time, and were abandoned due to the rural exodus. Today, these "ghost places", which still have a strong and own identity, allow the architect's reinterpretation of the way of living, combining the essence of the existing building, where there were few material and financial resources, with the reality and current need.
The rehabilitation of the Portuguese Traditional Architecture as a heritage to be preserved, in conjunction with the Modular Steel Architecture, a reference of the fifties of the industrial age, is a delicate case of study. The traditional architecture consists of buildings "[…] simple, coherent and harmonious, that respond to a functional simplicity, framed in the landscapes around them [...]" [02] with many memories and a very own *genius loci*, where the conjugation with the steel architecture, allows the differentiation of the existing history of the new building, valorising them; besides the new dwelling is adapted to the current needs and respond to the rapid

technological change and is recreated where a scenario full of memories and experiences is an added value.

Keywords: Portuguese Traditional Architecture, Steel Architecture, Rehabilitation and Heritage

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In the Portuguese Traditional Architecture, there are references that should be followed by us while architects, to frame a project or a new recovery with the surrounding landscape and to keep its identity. *"The traditional architecture provides valuable sources for the study of the architectural origins. The clear functioning of rural buildings and its close correlation with geographical factors such as the climate, the economic and social conditions, with a simple and direct expression, without interpositions nor stylistic concerns which disturb the clear and direct consciousness of these relations, or their strong intuition, illuminate certain fundamental phenomena of Architecture which are sometimes difficult to grasp in the erudite buildings but that are revealed, if we are already prepared to understand and appreciate them."* [03]

Traditional dwellings cannot be seen as unfinished buildings whose design cannot be changed, but as constructions that are constantly changing and evolving according to the needs. In this sense, as architects, when designing new buildings, or when recovering the existing ones, we should seek inspiration in the architectural form of this type of architecture as well as to study the processes that led to the combination of building and inhabitation, inherent to that place.

Keil do Amaral in the analysis and study of the organic roots of the Portuguese Traditional Architecture states that *"[…] lessons of coherence, seriousness, economy, ingeniousness, functioning and beauty can and should be drawn and these can greatly contribute to the formation of a today's architect."* [04]

Despite these large differences it is necessary to protect the heritage, which keeps precious lessons in terms of villages and simple, coherent and harmonious buildings, that respond to a functional simplicity, framed in the landscapes that surround them, and that are being refurbished, many of them for worse and without any criteria and valuation. Many villages and towns have lost their main characteristics, due to influences of other cultures brought by emigrants, making it difficult to find buildings where the architecture remains intact. The recovery of properties, which many are in ruins, allows architects to create new concepts and their combination with the existing ones, reinterpreting to fit the reality full of unique stories and experiences that differ from place to place. For proper conservation and

restoration of architectural heritage under the Charter of Krakow, these clusters should be considered and analyzed as a whole, with its spaces and socio-economic characteristics, which are constantly in the process of continuous evolution and change. When intervening in a housing cluster, which is part of the History, such as the Portuguese Traditional Architecture, the morphology, functions and urban structures in its interconnection with the territory, the place and the surrounding landscape should be taken into account during the intervention. In the recovery of an existing building, vacant or not, some important issues are put up, and that lead us to analyze each case in order to decide whether to rebuild it keeping its original look (using different or modern techniques), or introducing something new (new architecture language and materials).

Figure 01 - Dovecote Studio, by Haworth Tompkins, 2009
(London architects Haworth Tompkins have inserted a Corten steel artist's studio into a ruined Victorian dovecote in Suffolk, UK.)

For Zevi, the introduction of the New crosses its characterization in Modern Architecture, as something which must be able to keep in touch with the past without destroying it and without waiving its means of expression.

Gunter Behnisch, sharing the same opinion, and mentioned in a text about "The role of modern architecture in the city: divergent approaches in the historic core", that *"the old is not the new"*, and that *"the new can never be the old"*. Thus, these concepts reflect the importance of linking in the same urban area, as a living organism, where the two periods do not overlap each other and at the same time appreciate each other.

In traditional architecture, the living space is adapted by the man taking into account the way he lives and feels the place, and thus it can be compared to the Le Corbusier "Machine for Living", as both had to answer the psychic, functional and spiritual needs of the inhabitants, through constructive simplicity. At the International Congress of Modern Architecture (ICMA), Le Corbusier and other architects took into account, for the development of the "Machines for Living", the organization of the minimal domestic space, respecting all the movements and needs of the inhabitants For that, it was important to analyze the relation patterns among traditional houses, their streets and the housing clusters as a whole, and the transition elements among them. The interpretation of the evolution of the popular architecture through the classic architecture and ending in modern architecture, respecting the evolution of society is important for a new intervention in the existing buildings, where many have cultural and historical aspects to maintain and respect. On the other hand, the influence of the culture of a place in the spatial organization of the *habitat*, taking into account the experiences of each inhabitant, helps the interpretation of the place of intervention, bringing a perfect combination between the past and the present. The architecture is constantly evolving, but there is a need to turn to architecture reinterpretations throughout History, in order to achieve a better environmental performance, optimizer of the indoor quality with lower costs and of its lifetime. This way, the Portuguese Traditional Architecture based on its comprehensive vision, in its general understanding and current knowledge, allows finding in its contents justification for a more sustainable construction, creating new ways for the future, based on the wisdom of the past.

Figure 02 – Housing Cluster, Portuguese Traditional Architecture, Porto dos Asnos, Fundão.
(Picture taken by the author of the article – cluster in ruins at the foot of a slope)

"Today is built on yesterday, and yesterday is built on the day before yesterday" [05]
A key feature of the vernacular and Portuguese Traditional architecture is its perfect adaptation to the area by respecting the topography and always taking advantage of it. In the analysis of these places, there are many examples of intervention by the man on the landscape, being interventions that will always have an impact on the area - it is observed the existence of respect on the building's implementation and its framing in the area. It is a robust and humble architecture, of modest proportions, controlled, in which horizontality dominates. The houses had minimal areas with a common room, with a floor fireplace where people could cook, and spaces/chambers where a bed barely fitted and where several people used to sleep. The openings to the outside were minimal and there were hardly any chimneys, which caused the smoke to remain inside the houses till going out through the cracks on the tiles, walls and doors; in this sense, the top floor was reserved for areas such as kitchens to allow the smoke to be extracted through the tiles.
The functionalism of these clusters lays in the structure and organization of their habitats, determined by the natural conditions of each place, whether being wild mountains or plains out of sight that shaped the traditional architecture in this type of shapes and models.
With the Industrial Revolution major changes that led to the traditional knowledge to stop evolving, to be put aside or forgotten, began to

appear; given this fact, there was a breakdown in traditions and most of the knowledge and experience that has passed from generation to generation was gradually lost in time. Industrialization allowed the emergence of new materials, such as glass, concrete and steel, with the possibility to be standardized, leading to the formatting of construction, as the way of life of the people, which hitherto depended on the materials available in the area, as for instance, granite, slate, wood, clay and wicker.

In the twentieth century, specific construction methods of the area were forgotten. With the modern movement, new factors and guiding ideas of projecting concepts such as light, air and the sun are introduced. The architects began to design simple, open and clean structures which were of easy and quick construction and which were spread throughout different cultures.
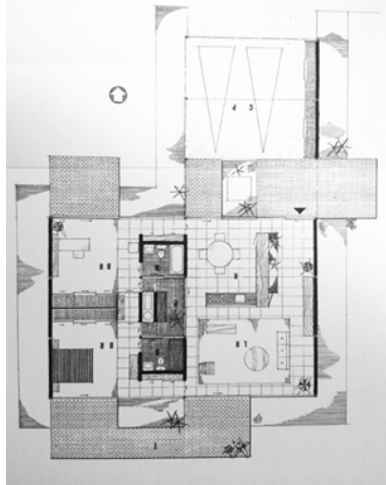

Figure 03 – Bailey House, CSH#21, by Pierre Koenig, 1958-60
(Steel framing house, modular, where the connection between indoor and outdoor is the key element)

"The absence of relationship between architecture and the place led to the rejection by citizens of the Modern Movement. From this rejection, the need to redefine the space of living taking into account the vernacular past was born." [06]

Influenced by technological progress, the architects of modernism broke with traditional forms of construction believing in new architectural ideals and transformations of the living space, reflected in the changing of the way of life of the inhabitants, who sought a better life in the cities for themselves and their families.

This new architecture, designed for customers, was an indicative of progress conditioned by the architects who wanted to teach how to live in such architecture type, the 'Machines for Living' as Le Corbusier named them, without worrying about the historical constraints of the different population groups that had moved to the city. The 'Machine Houses' solved the problem of the period when house shortage was a reality; yet, most of these houses were monotonous and poor, without character and indifferent to the place.

With the evolution of technology and the emergence of industrial materials, this type of construction, techniques and methods have been abandoned, having this knowledge been forgotten at the expense of the industrialized architecture.

With the globalization between cultures and the exchanges of people around the world, and the constant need to rethink the living space, at a turning point, it is important to recover the buildings that were abandoned during the rural exodus and it will be important to go back, reinterpret and understand this type of construction which is intrinsic to the place.

It is also important to understand not only the way people used to live in the past, where a minimal living space was created for large families and which was dictated by the requirements that were felt due to lack of property, but also the characteristics of the typologies and spaces in order to develop solutions or adapt them to the current ways of life.

Modern families are mostly small, so these spaces can be analyzed and reinterpreted for today's society way of living.

The vernacular or traditional architecture is a good example for analysis, since it is based on the repetition of detailed solutions and developed over time and it is present in the concept of sustainability; in the past it was necessary to deal with the few existing resources and, even so, people took advantage of these disadvantages. The architects/builders of the past used technologies and local materials and created dwellings and other constructions which characterize these places.

Projecting a dwelling requires understanding the society, culture, and especially the importance of functionality towards the client. It is necessary

to keep an eye on the lifestyle changes, on the reinterpretation of spaces, on the difference between "intermediate spaces", "semi-public spaces," and "semi-private spaces", on the indoor/outdoor relationships, on the sustainability systems, thus reflecting greater efficiency in the architecture of metal construction and lower costs of that building to be borne by customer, mainly with regards to the family house. The concept of "Machines for Living" was developed by Le Corbusier in order to create a standard model on how the new houses present in the modern society could be, facilitating their functions and responding to the needs of those who would live there. In this sense, an abstract model was created to a standard person covering generalized characteristics.

In these projects, the important thing was to study the minimum dimensions for the living space, organizing the spaces so that the distance between them was not too long and facilitate in any way the movement within the space.

During the development of any project it is important to properly define the spaces, but when it comes to creating houses with minimum dimensions, it is important to project them in a systematic way, so that they can have a proper ventilation and natural lighting, making the houses pleasant, and the internal spaces, designed with certain proportions, provide harmony to whom lives there.

For Le Corbusier, the "Machine for Living" would facilitate all functions of the modern man, and he considered it as mechanical in his daily activity, and in that sense, generalized their needs, their functions and the aesthetic taste. For him, when the modern man works in his space he needs order and harmony, and it is essential that the house is precisely organised and its proportions were adequate for all activities in connection therewith. This way, Le Corbusier had for granted that men work in the same way and, in general, with the same practical needs.

Following this new ideology, and continuing to meet the needs and difficulties they faced, taking advantage of industrial development, John Entenza decided to create the "Case Study House Program" where some architects of that time opted for designing houses where economic concepts applied to prefabricated materials and profiled steel structures at reduced costs.

At the Lamel House, Pierre Koenig, 1953, the structure is all made of steel and it was described as a neutral material without being cold, and allowed, in the architect vision, the house to be opened to the outside, to the tree areas, and thus letting the more light in to the sheltered patios. The modular system used by him allows the versatility of spaces and a direct connection between the interior and the exterior. The slope of the place allowed putting a garage in the lower space, and there was a perfect

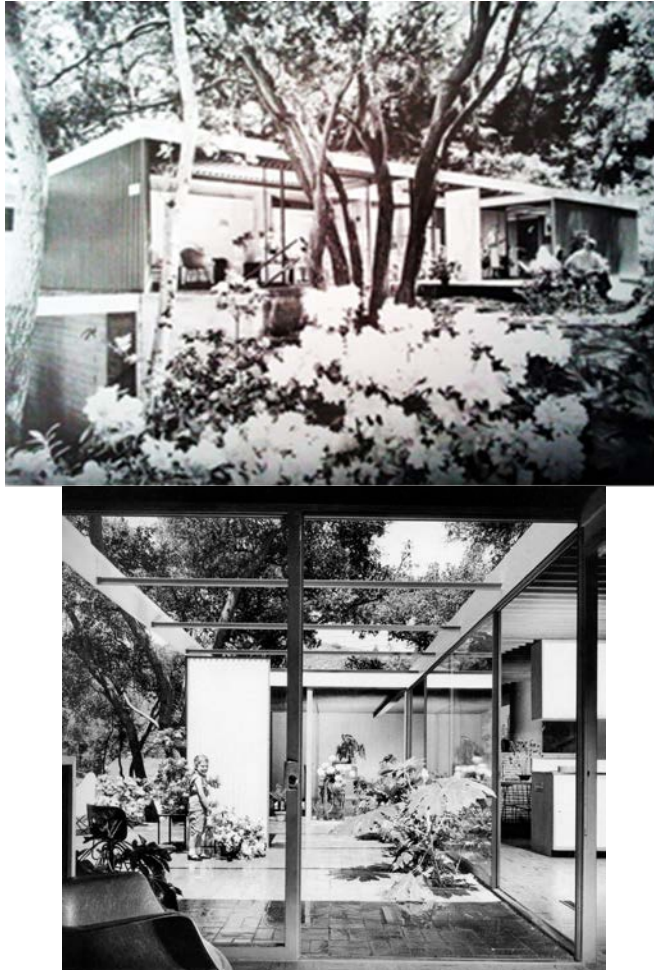integration in place, respecting the morphology of the land and all its surroundings.

Figure 04 – Pierre Koenig, Lamel House, California, 1953.
(relation with the *Genius Loci)*

The identity of a place, before and after the intervention, should not be seen as a static concept, which remains unchanged and crystallized in time. In this sense, the architect has a duty to interpret several factors that evolve in the relationship of its user with the memory and with time, and there is always a change. The intervention in a place can change its original identity, but if we try to keep the existing and add something new, it is possible to re-create new identities that have historical and cultural backgrounds.
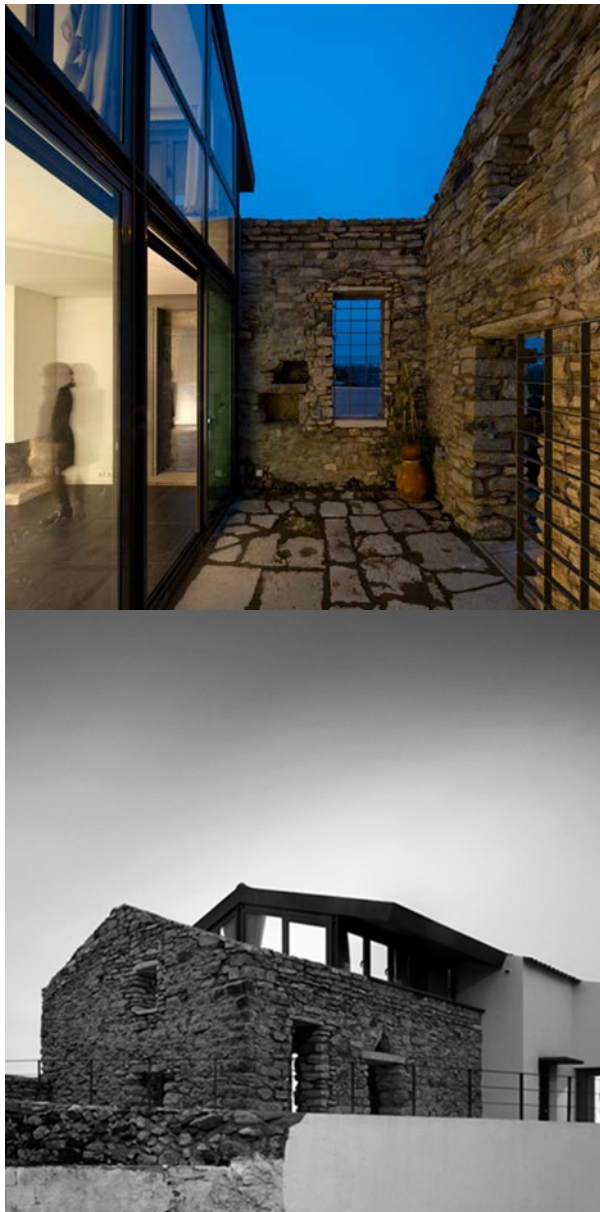
Figure 05 – House in Cabrela, Architect Paulo Serôdio Sintra, Portugal
(recovery of a ruin with the introduction of a structure in steel)

It is necessary to recover the traditions of each place, taking advantage of the essence of this for conjugation with the new, so that the characteristic identities of each place are not lost.

Souto de Moura has worked in rehabilitation of ruins with reintegration, where the project uses the existing ruin in order to remain as inherent to the space and the design of the house. In another conceptual

solution, the ruin is recovered and valued as the main element in which the project is integrated, camouflaging itself in the nature (natural environment). The spaces are designed in order to be comfortable and cosy, closed, and high importance is given to the indoor experience, but at the same time it embraces nature through large panoramic glass walls.
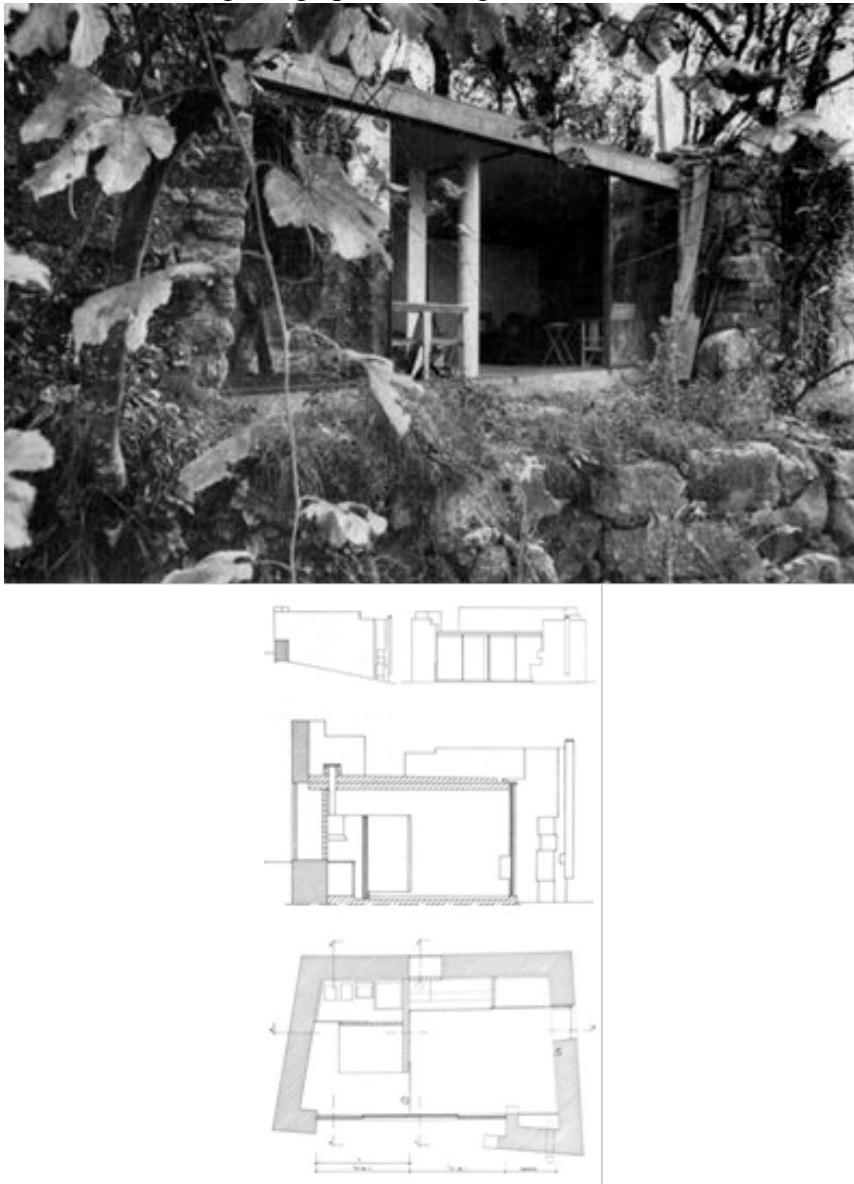

Figure 06 – Eduardo Souto De Moura, House – Reconversion of ruin,
Vieira do Minho, 1980-82
(recovery of a ruin with traditional construction)

In the creative process for heritage conservation with a building system in steel it is necessary to combine some fundamental aspects such as the analysis and influence of the characteristics of the Portuguese Traditional Architecture, ways of living, the minimum space and its functions, shapes and types, the scale and proportion of the spaces, the integration in place and the materials used, with the analysis and influence of some references of modern and contemporary architecture, in steel, respecting the construction process inherent to this type of structures.

It is important to systematize a set of tools to create typologies that allow the adaption to a new living module as a solution to the industrialized housing adapted to current needs. Combining minimalistic simplicity and structural slenderness, and connecting the inside and the outside, analyzing and projecting living spaces with great pragmatism so that they can be seamlessly integrated into any place and respecting their cultural particularities. Even in recoveries of buildings or ruins, in places with specific and special features, adapting it is necessary to adopt and absorb the existing richness and acquire the identity of this place. Two periods, but only one project. The interconnection of the conceptual idea using the steel architecture, restoring the pre-existent, allows to merge these two periods as if they were a living organism, in which a continuous path between interior and exterior spaces of the ruin, through the openings/gaps existent, are aggregated and created. The advantages of the conjugation of the architectural concept with the metallic structures in the field of single-family and/or community housing, is becoming more and more common. The potential of this constructive process in the creative freedom of the architectural design, with better use of interior space and increased floor area, greater flexibility in cases of need for adaptations, extensions, rehabilitation and change in the use of buildings, are notorious. The great compatibility with other materials, shorter execution time, rationalization of materials and work with the adoption of industrialized systems, reduces the waste significantly, and ensures the quality due to the strict control throughout the industrial process and constructive precision.

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