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VERNACULAR HERITAGE OF NORTHWEST PORTUGAL: THE VALLEY AND THE MOUNTAIN RANGE FARMHOUSE

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ABSTRACT

Vernacular farmhouses are one of the most notorious and authentic elements of the European rural cultural landscape. For centuries, such structures proved their resilience and adaptability to social and economic changes and are part of rural populations cultural identity. Nonetheless, they are a slowly fading heritage, due to the progressive loss of traditional ways of life and the industrialization of agrarian production methods. Being heritage authenticity and identity features identification a key element to any heritage preservation methodology, this research was set in motion to identify such features regarding Northwest Portuguese farmhouses. The goals were to create a database on vernacular farmhouses context and their role in the construction of the rural landscape, but also to identify representative morphologies and typologies, construction features and durability issues.

Taking into consideration the strong loss of authenticity or the severe state of ruin of the majority of most existent examples, the research methodology was based on: *i)* deep literature review to set the methodologic framework; *ii)* guided exploratory visits to representative areas of the studied region, to assess in-situ heritage's main features and state of preservation; *iii)* selection and analysis of representative case studies of buildings and rural landscapes; *iv)* assessment and identification of vernacular heritage main design and construction principles; v) guidelines for heritage farmhouses preservation and rehabilitation. Being and ongoing research, the three first steps revelled the existence of a strong regional identity, shaped into two more specific local identities. Agrarian strategies, adaptation to geography and to natural building resources were identified as directly responsible for buildings design, construction principles and specific identity elements. This paper presents the preliminary results of the research and contributes to enlighten researchers to the deep cultural value and importance of preserving this European endangered vernacular heritage.

KEYWORDS: Vernacular heritage; Heritage preservation and rehabilitation; authenticity and identity; masonry; farmhouse; farmstead.

1. INTRODUCTION

For centuries, Northwest Portugal was occupied by rural communities that had in their farmhouses simultaneously a tool to ensure survival and a symbol of status and socio-economic power to ensure farmers families a place in the community. Nowadays, due to severe changes in the traditional way of life and agrarian production methods, this very rich and valuable cultural heritage is endangered. Such potential loss does not come only from vernacular buildings loss of authenticity, but also from the loss of identity of settlements and rural landscapes. In order to contribute to the effort of preserving this severely threaten cultural heritage, a research is being carried out to study regional farmhouses and their fading knowledge. The undergoing research combines literature, field visits and case study analyses, in order to assess building and settlements main architectural and constructive parameters, but also to identify threats, major risks and overall state of conservation. The final goal is to assess vernacular heritage reuse and rehabilitation potential, and present guidelines for such purpose. From a methodological point of view, it became clear the overwhelming amount of heritage to preserve, and, therefore, the need to rate their cultural significance as a necessary step to develop successful preservation tools and methodologies. To achieve such goal, the first necessary step was to characterize identity features of Northwest Portuguese farmhouses. The territory was studied, and representative areas were selected for further detailed analyses. Due to the severe shortage of still authentic and fully functional examples, scientific literature from different fields of expertise, specifically produced until the mid-20th century, was analysed. Then, farmhouses global principles were identified and confirmed with field visits. The last step was to select representative case studies, and perform detailed morphological, constructive and damage analyses. This paper presents a synthesis of the main authenticity and identity features found in the Northwest Portuguese farmhouses.

2. BASIC PRINCIPLES OF NORTHWEST PORTUGUESE FARMHOUSES

From a methodological point of view, farmhouses should be addressed as multi-functional systems [1], used to ensure human basic needs (shelter and protection), but mostly to support communities in turning their natural landscapes into agricultural areas. Therefore, being a key element of a survival strategy, the individual farmhouse is part of a system formed by a settlement, its positioning in the territory and all different landscape areas functionally connected to it. In this system, farmhouses were the neuralgic points of wide and diversified agrarian territory, organized by the construction of farm walls, shaped by farm terraces, interconnected by a vast network of rural paths and roads, and productive due to a large diversity of agrarian production buildings and infrastructures [2]. Farmhouses distinguish themselves from rural houses, for being a self-sufficient agrarian unit.

Besides its practical agrarian purpose, farmhouses were also an interconnected economic and social endeavour. Estate size, complexity and production outputs were directly dependent of the amount of owned or rented land. Possessing land was mandatory to Northwest Portuguese rural populations to achieve wealth, thus being its preservation in the family a priority. Such was achieved by elaborated arranged marriages that resulted in labour assistance obligations between different farmhouses. Based in this system, the agrarian estate could safely grow, but also maintain its productivity by ensuring all required help. In this elaborated economic dependence system, larger farmhouses would also support smaller ones, and the failure of one could ultimately affect all. In the Northwest rural society, the family status would ultimately be the farmhouse status, meaning that larger estates, with higher production capability and enlarged assistance networks, would ensure a higher social-status position in the community. Therefore, the proprietor's enlarged family life [3] (direct, indirect relatives and employees living at the farmhouse) was organized around the farmhouse needs, being its main source of manpower.

For being a central element of rural life, farmhouses construction and management were based in centuries old rural rational and functional principles. It meant that the use of resources, buildings layout or volumetric changes, or any planned maintenance task, all underwent a carefully balanced cost/benefit analysis. Typical farmhouses layout presented regular base plan with parallelepipedal proportioned buildings. When needed, base plans would adopt the irregular border of the owned property to rationalize the use of soil for buildings. The production complex was built near the farmland, to cut on travelling time, but also to ensure protection to the farmland. Northwest farmhouses are known for their

austere and simple aesthetics, but also a typical volumetric resembling a fortification. Therefore, farmhouses traditional image is one of enclosed agrarian complexes, shaped by one-storey buildings placed over the perimeter and open to the internal open area. A two-storey building, with the owners dwelling in the upper-floor would protect the complex and guard the oxcart portal. In more productive farmhouses, a second two-storey large granary was common. Decorative elements were reduced to the indispensable minimum, and mortars and lime paint were restricted to the dwelling buildings, improving its status. To the exterior of the complex, windows were built always at the upper-level, and narrow and small ventilation openings at ground-floor level.

3. THE LANDSCAPE: AN IDENTITY CRITERION

From all context elements and functions associated with farmhouses, which define their identity and authenticity principles, the landscape prevailed over all others. Northwest Portugal, see Figure 1a, presents a natural amphitheatre-shaped landscape configuration [4], divided into a region of valleys, plateaus and smooth hills facing the Atlantic Ocean to the West and the southern plains, known as *"a ribeira"*, being named Lowland in this research, and a mountain range area to the North and East, known as *"a serra"*, and named Highland in this work.

Figure 1 – (a) study area, based in [5] and Maps for Free ®; (b) typical Lowland landscape; (c) typical Highland landscape. Satellite views based in Google Earth Pro®

With high availability of fertile soil and very abundant water sources, Lowland rural communities developed agrarian territory occupation strategies based in yearlong policultivation and livestock. In this sub-region, dense human occupation and a strategy of family based self-sufficient farmhouses, resulted into strong territory fragmentation due to small property, see Figure 1b. On one hand, such strategy successfully ensured survival, on the other hand, diminished wealth creation and restricted social mobility. Agrarian labour rationalization and property protection concerns led farmhouses to be placed either isolated or forming small groups, near owned farm and forest land, and anchored to a road, thus ensuring mobility an access to markets. As a result, typical Lowland settlements presented a very dispersed or nebula shape, characteristic of the Northwest or *"Minho"* region [6]. The farmhouse developed by this system is known as the *"casa de lavoura Minhota"*, see Figure 2a, named valley farmhouse in this research, and it is recognized as regional cultural identity trademark [7].

Due to a very harsh natural territory and climate, marked by the mountain range and its stiff slopes and very narrow and deep valleys, Highland rural communities developed agro-pastoralist territory occupation strategies, based into spreading very compact and dense settlements around the mountain range and placed near pockets of fertile soil, but also in shaping the surrounding mountain range slope into large areas of farming terraces, see Figure 1c. To complement the system, seasonal vertical transhumance pastoralist strategies allowed communities to use and make productive the mountain range high altitude plateaus. In these remote locations, livestock and farming were possible by the construction of short or prolonged stay settlements, that provided seasonal shelter and support for livestock and shepherds/farmers. Therefore, Lowland traditions and way of life were readapted to face the mountain range. To face the shortage of space and fertile soil, and the severe isolation caused by geography, the use of soil for buildings was reduced to a minimum, and shared labour strategies were

developed to optimize the use of the scarce natural resources. As part of this system, the valley farmhouse functional layout was deeply readapted and shrunken, to become the *"casa de lavoura serrana"* (mountain range farmhouse), see Figure 2b.

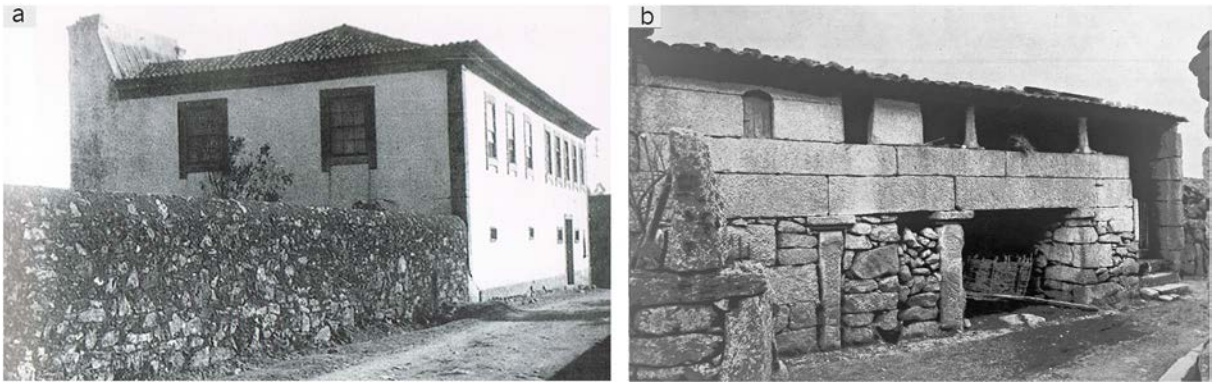

Figure 2 – Northwest Portuguese vernacular valley (a) and mountain range (b) farmhouses [7].

3.1. The valley farmhouse

As shown in Figure 3a, the valley or *"Minhota"* farmhouse can be described as an agrarian estate formed by different types of land used for different purposes, which has at its functional centre an agrarian production complex. Farmhouses productivity was dependent of a successful combination of different types of properties, divided between farmland, used to cultivate and produce fodder for livestock, and forest land, used to collect all required materials for the farm (e.g. wood or vegetal materials to make manures). At the estate head was the farmstead. Estate size and complexity varied from very small farmhouses (2 to 5 ha estate [8], owned or rented to larger farmhouses, see Figure 3b, to very large farmhouses (> 10 ha estate [8]) that could include additional farmsteads, mills (water or wind powered) or water management infrastructures (e.g. aqueducts or small dams), see Figure 3c. Having at its basis the farmhouse model, the large higher-status *"Quinta"* distinguishes itself for their specialized productions and complex organization, but also for generally presenting an urban style dwelling and courtyard, generally independent from the agrarian farmstead [6]. The farmhouse distinguishes itself from the rural house for its construction scale, but mainly employing all extended family members as workforce [1]. The rural house's external areas were limited to a few support buildings and not a fully functional farmstead, being any owned small portion of land or kitchen garden used for survival farming and livestock (e.g. chickens, pigs or even one cow).

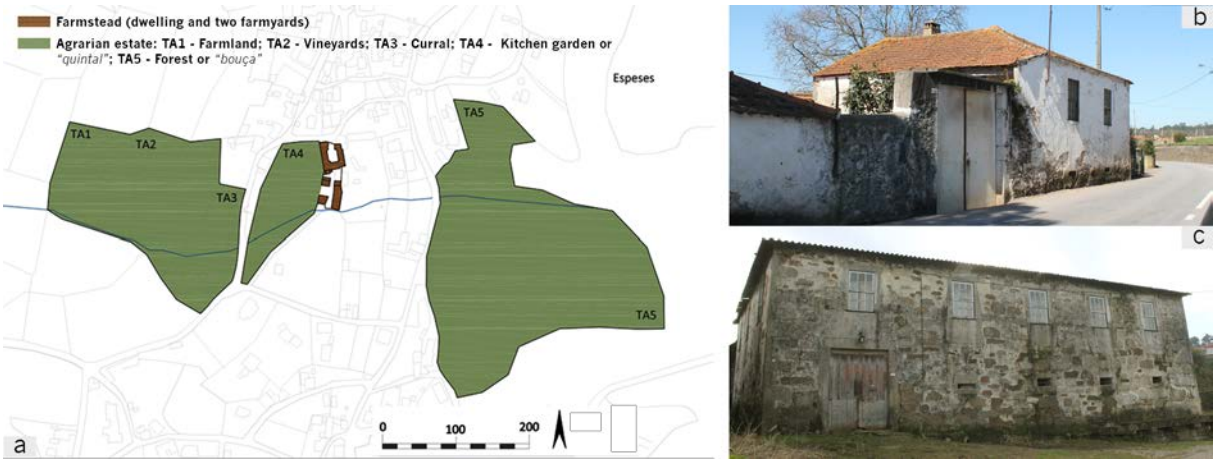

Figure 3 - (a) Example of farmhouse of *"Malheiros"* agrarian estate (Barcelos) [9]; (b) Example of a small farmhouse (Póvoa de Varzim); (c) Farmhouse of the *"Capitão"* (Barcelos); [2].

As shown in Figure 4, farmsteads were generally large and fully walled compounds (2 m height masonry walls), accessible from the exterior by oxcart portals. Farmsteads configuration and complexity could vary considerably accordingly with the size of the estate. Basic configuration was of an external area or courtyard, used for all daily agrarian and family life tasks, shaped by the proprietor's dwelling and all required agrarian buildings. From the courtyard was possible to enter or exit the farmstead, and to access buildings, generally without internal connections among them. As shown in Figure 5, farmstead configuration could vary from very simple single (I shape) or two sides occupation (L or II shape), to three (U shape) or full occupation layouts (O shape). Larger farmhouses farmsteads could present mixed or combined layouts that could include additional independent areas. An example of a large valley farmhouse is presented in Figure 6.

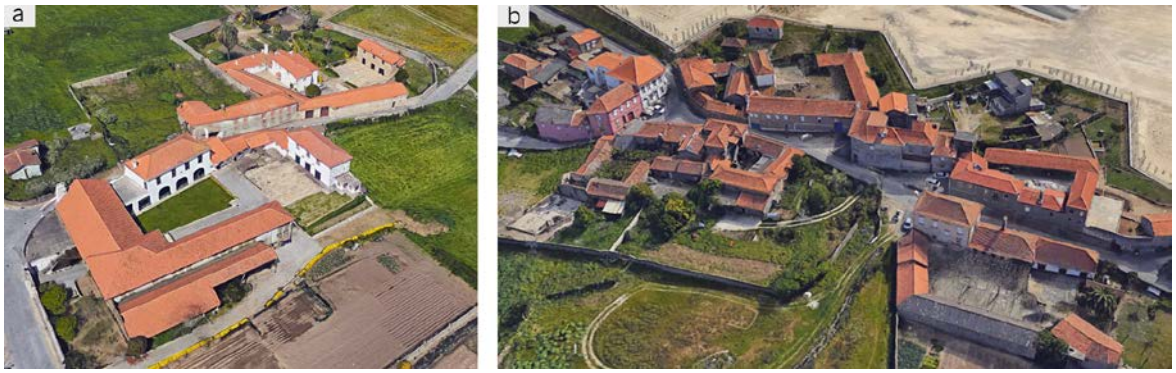

Figure 4 - Groups of large valley farmhouses (Matosinhos) (3D images from Google Earth Pro ®).

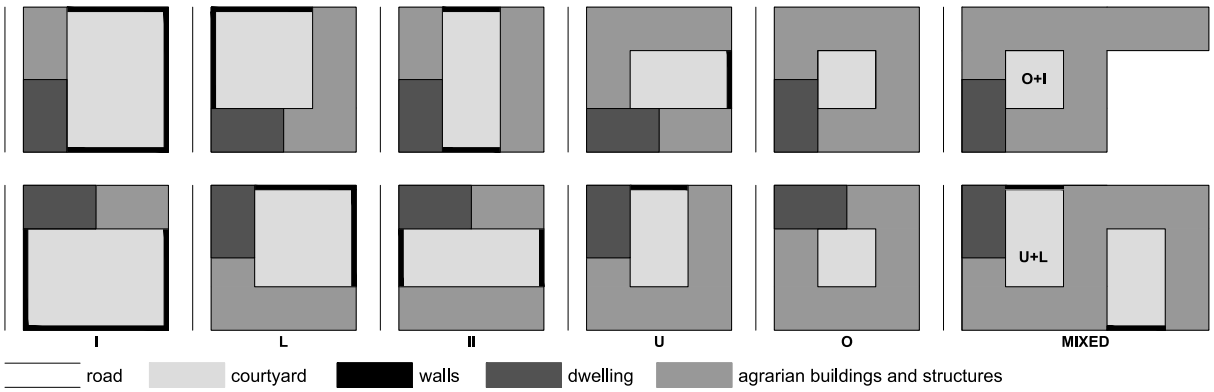

Figure 5 - Schematic representation of typical farmstead occupation: I - single side; L - two sides; II - opposite sides; U - three sides; O - full occupation; MIXED - combined layouts.

Regarding buildings, the one containing the dwelling was the main and the higher status one. Either being a one or two-storey volume (with stables, winery or storage in the ground-floor and the dwelling in the upper one), it generally faced the road, and was accessible through an exterior masonry staircase facing the courtyard. Dwellings organization could vary from very simplified (single compartment or common + private area) to very complex layouts (kitchen + several common and private areas), see example in Figure 6. Common areas prevailed in importance over private areas. The living-room was the main and highest status compartment, gaining a more ceremonial use in larger farmhouses. The kitchen, located in the same or in an independent building, for being the only internal heat source of the house (fireplace), was used for all daily and work tasks. Large size *"fumeiro"* chimneys, see Figure 7a, used to make smoked sausages are an important identity feature in these farmhouses. Bedrooms were less important compartments, being small or reduced to simple alcoves. As a main identity feature, valley farmhouses are known for their large-size balcony (two-storey buildings) or porch (one-storey building), generally facing South. Access to the dwelling was from the courtyard to the balcony or porch, and from them to the living-room, and from it, to the remaining compartments. Kitchens could also have a direct access to the exterior. It was common to add additional bedrooms or working compartments to the balcony. Typically, toilets were non-existent or were external compartments.

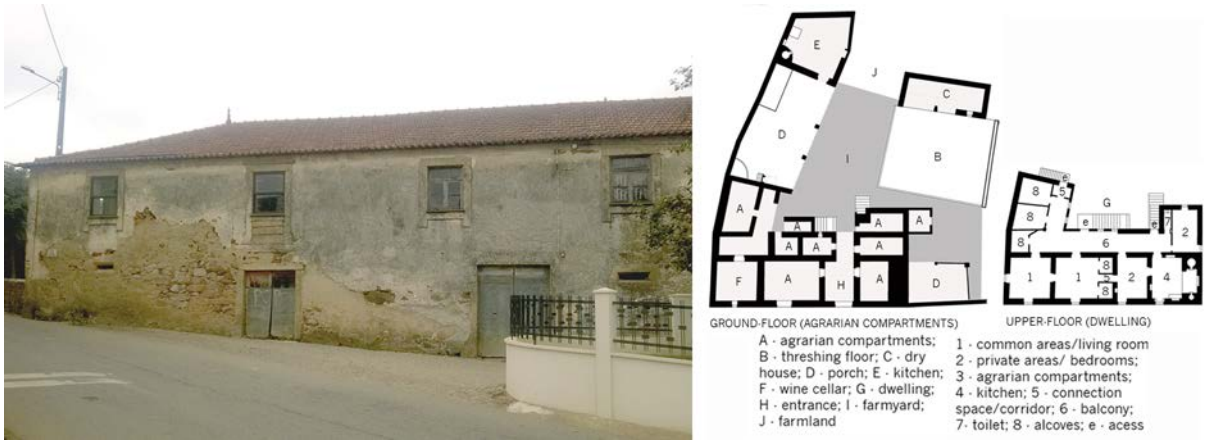

Figure 6 – Example of a large valley farmhouse (Esposende) [2].

Being recognized as part of Northwest Portuguese regional identity, the grain production structures were a vital farmhouse infrastructure. The group had at the centre the threshing floor (*"eira"*), a large paved area made of large granite, slate slabs or built over a granite outcropped, used to separate grain from straw and to dry grain. Next to it was the two-storey large granary (*"varandão"*, see Figure 7b), fully open to the threshing floor (grain storage and drying), porches (to protect grain from rain) and one or several small elevated granaries (*"espigueiros"*, see Figure 7c). In larger valley farmhouses, these structures could vary significantly in size and number (e.g. with several or three-storey granaries), in some cases placed outside the farmstead facing the farmland or forming a specific complex.

Figure 7 – (a) *"fumeiro"* chimney (Barcelos); (b) threshing floor and *"varandão"* (Braga); (c) two elevated *"espigueiros"* (Ponte da Barca).

3.2. The mountain range farmhouse

To answer to geography and climatic challenges, Highland communities shaped their natural landscape dealing with agro-pastoralism and vertical transhumance, see Figure 8a. The valley farmhouse model was adapted to answer to lower productivity and soil shortage. From the conceptual point of view, the Highland farmhouse became an element of common labour management systems. Farmhouses passed from being placed near their owned farmland, to become part of dense and compact settlements. To do so, farmhouses partially lost the typical fortified aesthetics, to take part with rural houses in the shaping of streets and open spaces. As shown in Figure 8b and c, through a process of simplification and downsizing, large farmhouses from Lowland were here reduced to a main building and a small farmstead formed by a simple courtyard and a few storage and livestock stables. Being in most cases surrounded by roads, the farmstead layout became more elastic, and thus able to fit the narrow and often very irregular geometry of owned property inside settlements. Farmsteads became permeable to the exterior, with open courtyards without enclosing walls or with its buildings being directly accessible from the road. The settlement's open spaces became part of the farmhouse, meaning, it was used to perform the daily farming tasks, that in the valley farmhouse were exclusively performed inside the enclosed complex.

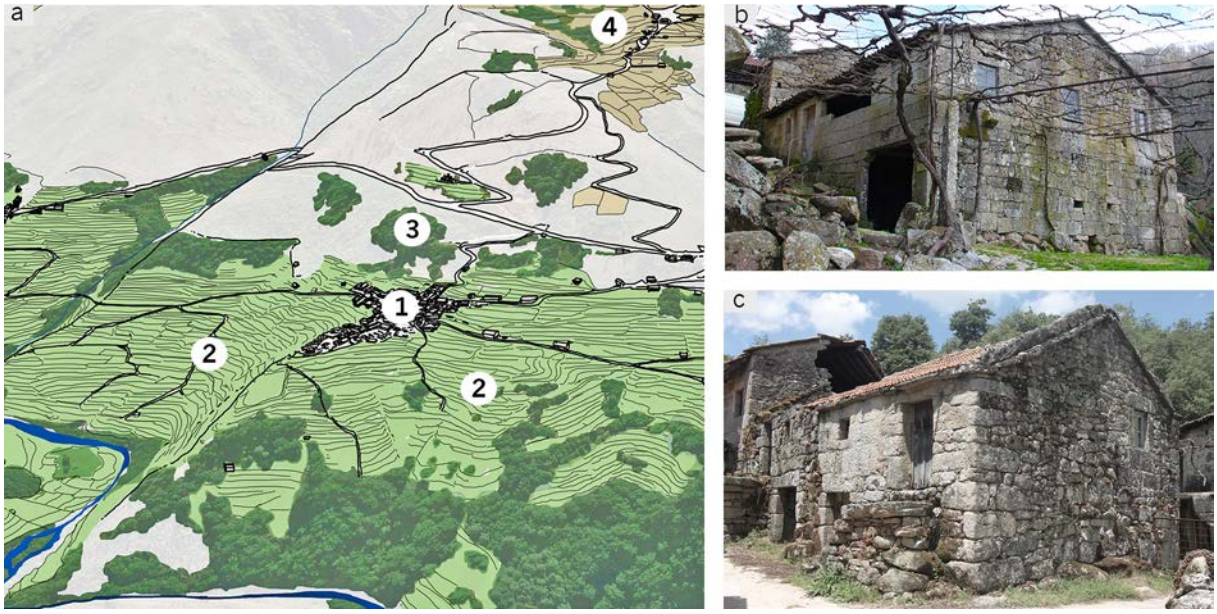

Figure 8 – (a) Highland agro-pastoralist and vertical transhumance system (scheme): 1 – concentrated settlement; 2 – farming terraces; 3 – forest areas; 4 – mountain range plateaus farming and pasture areas with temporary settlements. (b) large mountain range farmhouse, with balcony (Ponte da Barca); (C) small mountain range farmhouse (Melgaço).

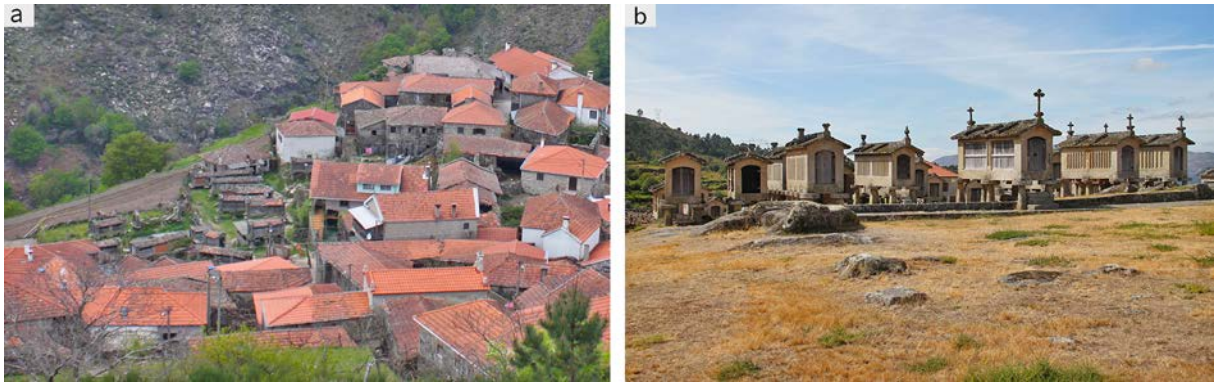

Figure 9 – (a) aerial view of a mountain range settlement with a view of one of its groups of *"espigueiros"* (Arcos de Valdevez); (b) group of *"espigueiros"* and haystacks (Ponte da Barca).

Through a process of programmed disaggregation, the valley farmhouse typical layout was reduced in many cases to a single building configuration, difficult to distinguish from rural houses, by relocating to other areas of the settlement of some of its key elements such as the granaries, threshing floors or stables. As shown in Figure 9, although being private property (e.g. individual *"espigueiros"*), these elements were grouped to improve their protection, but also to rationalize the use of shared structures such as threshing floors or irrigation infrastructures. Such planned strategy allowed to optimize structures maintenance and agrarian tasks such as drying and producing grain, by placing its structures in the best sunny and ventilated areas of the settlement, or by placing stables at near exit roads, thus reducing herds movements inside the settlement. Following these principles, the mountain range farmhouse estate was formed by the disaggregated farmstead, (buildings + infrastructures located in groups), areas of farming terraces and forest land located at surrounding mountain range slopes. Additionally, as part of more elaborated and complex social and economic strategies, the mountain range farmhouses owned shelters and/or pasture and farmland located at the mountain range plateaus temporary settlements [10]. Showing reduced gross area and volume, when compared with the valley farmhouse, mountain range farmhouses were built in large dry stack granite stone blocks, generally without renders on the exterior, thus presenting a much harsher and austere aesthetics. To such image contributed the reduced dimensions of windows and doors

(protection against cold), and the small balconies and porches. Agrarian buildings such as stables, generally built in very irregular rubble dry stack masonry, and initially, the thatched roofs, gave these buildings a very primitive aspect. Mountain range farmhouses design kept the oxcart when possessing and enclosed farmstead, however, with no use for them, large chimneys and large two-storey granaries were absent. Examples of mountain range farmhouses and of typical farmstead layout are presented in Figure 10.

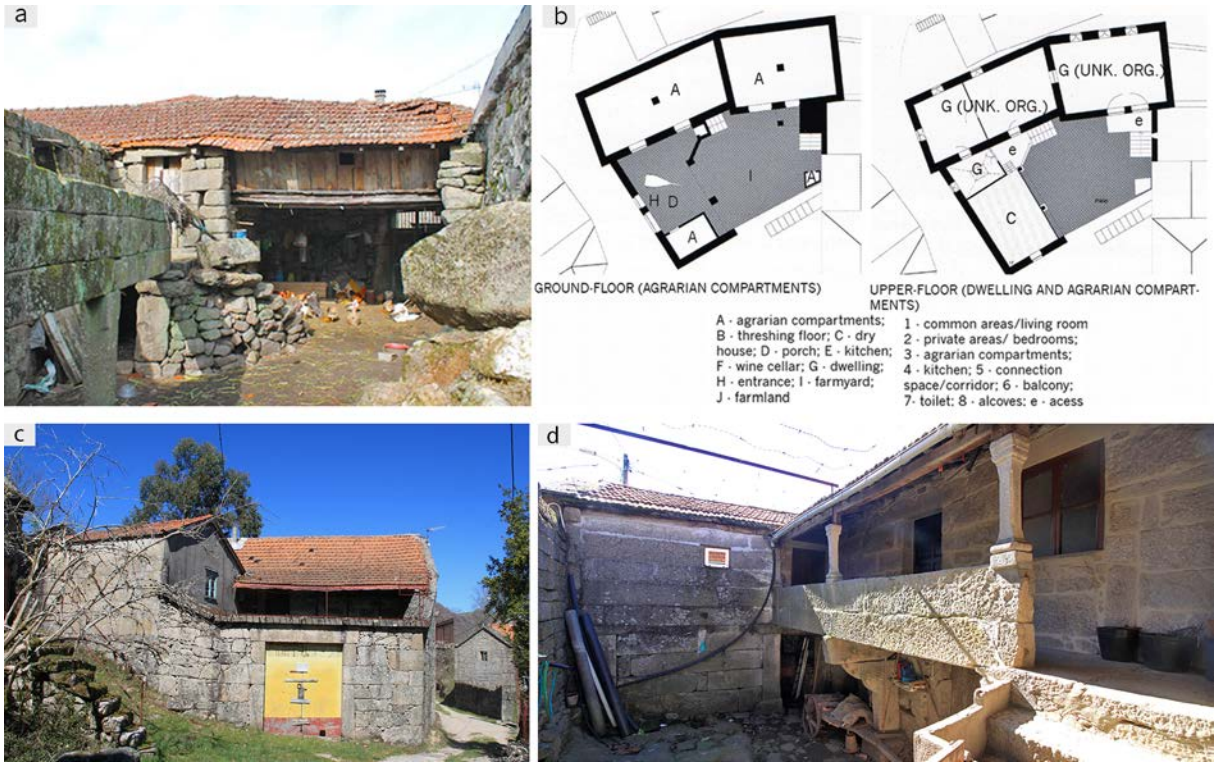

Figure 10 – Mountain range farmhouses: (a) view of a courtyard [11]; (b) example of farmstead layout (Arcos de Valdevez). (c) road view of a farmstead (Arcos de Valdevez); (c) view of a large balcony (Melgaço).

4. MATERIALS AND CONSTRUCTION

From a constructive point of view, stone masonry is part of Northwest Portuguese common rural cultural identity [4]. As shown in Figure 11, buildings were mostly constructed in long lasting granite, but also with schist, built either in dry stack or using soil as mortar, and using timber to make pavements and roofs covered with clay rooftiles or straw. Such elements shaped a structural box system used for centuries in rural Portugal. Very thick load-bearing walls would provide solid and lasting structures, but also protection from rain, wind or excessive sun, thus keeping buildings fresh in the summer. Due to high thermal inertia, walls preserved the fireplace's warm during the winter [12]. By placing cattle at the ground-floor, dwellings located above used the animal's temperature to warm the house in the winter. Farm walls were generally built using stone collected from cleaning the farm soil. Although several sources of clay existed and were used to produce rooftiles, clay brick masonry construction was residual. For being an assembly system [13], masonry walls and timber structures were reconstructed, adapted and perfected through centuries of continuous use, allonging buildings functional longevity, and therefore, becoming an indispensable part of regional identity. Stone and wood, but also residual granitic or clayey soil were very abundant in the Northwest natural environment [14]. Being ordinary raw materials, their use and handling was natural to farmers, masons and carpenters. Therefore, except for lime, buildings were the outcome of using nearby construction materials, but also from very intuitive building techniques, passed through generations as part of indispensable farming knowledge.

Although with still much to discover regarding its origins and building techniques, corbelled domes from the Highland are a very authentic example of the above-described equation, see Figure 11c. Making

use of an intuitive, yet complex building technique, corbelling allowed communities to shape and build lasting mountain range shelters in remote temporary mountain range settlements [15]. Such buildings were made of local stone and are a perfect combination of shape, functionality and remarkable resilience to climate and abandonment [16]. The same technique, combined with stone roofing, was also used around the Highland to build mills, community ovens, shelters and stables.

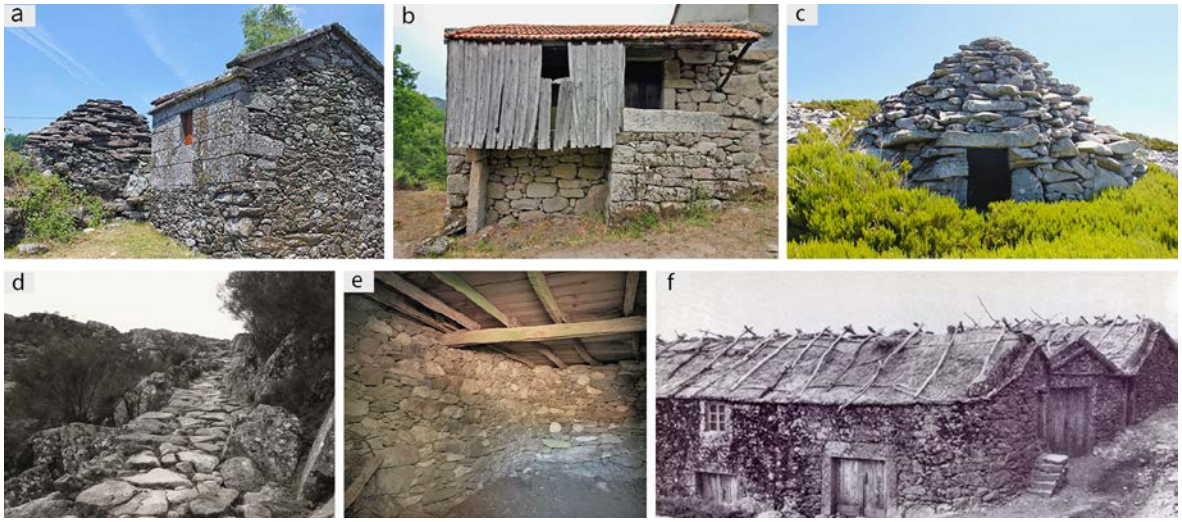

Figure 11 – Examples of different materials and construction techniques: (a) rubble, ashlar and corbelled dome granite dry stack masonry; (b) timber wall and balcony; (c) shelter in corbelled dome dry stack granite masonry; (d) granite pavement on mountain range path; (e) wooden floor structure; (f) thatched roofs.

5. CONCLUSIONS

The landscape and traditional ways of life shaped the Northwest Portuguese vernacular buildings and settlements. From the field visits that made this research possible, one recognized the severe state of abandonment, ruin and loss of authenticity and identity that this heritage has been devoted. Main causes may be pointed out to rural exodus, unsuitable interventions to adapt buildings to contemporary life standards and agrarian industrialization. With high cultural and economic potential, if treated with care, a significant amount of this valuable vernacular cultural heritage can still be preserved for future generations. Therefore, specific morphological and typological features were pointed out in this paper as fundamental to preserve vernacular farmhouses identity, hence preserving settlements memory. From the very few farmhouses still in use, one can confirm the resilience of both natural materials and constructive solutions. Their study may bring valuable lessons about built environment sustainability and can contribute with new eco-friendly solutions to the construction industry branches focused on heritage preservation and rehabilitation. However, much work is still required to return these heritage buildings to daily use, to allow them to catch up with contemporary lifestyle standards, but without risking the loss of their key authenticity and identity features.

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