The reuse of small agricultural buildings. A methodological and practical example in ‘Ribera del Duero Soriana’ (Central Spain)

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ABSTRACT: Traditional farm buildings play an important role in the image of rural landscapes. Over the last 50 years, the increasing depopulation of the European rural districts, the evolution of agricultural techniques and changes in the activities and ways of life of rural society have given rise to the loss of traditions and the dereliction of many vernacular buildings, which are no longer useful for their original function. The reutilization of these obsolete constructions for either new economic or residential purposes means new activities and people in the rural habitats, the preservation of local identity symbols and an energy saving compared with new construction. This paper contributes to the International scientific community a methodological approach to the undertaking of an institutional scheme for the recovery of the traditional agricultural architecture in a regional context. A method to carry out the analysis of the rural built heritage in four successive steps (inventory / typological characterization and selection / catalogue and assessment of the facility to the change of use) is described here. Simultaneously, a practical work carried out by the authors in a rural district of central Spain (Ribera del Duero, Soria) is shown as an illustrative example. More than 800 vernacular agricultural buildings have been studied in that area to analyse their reusability potential.

Conference Topic: 6 Recycled architecture (re-use, upgrading and rehabilitation of buildings)

Keywords: Vernacular farm buildings, reuse.

1. INTRODUCTION

Farm buildings are outstanding visual features in the countryside landscapes. The use of local materials, techniques and building details turns the vernacular architecture of a specific rural area into a heritage resource to be conserved as a local identity symbol and an ethnographic testimonial legacy about the way of life of the rural population [1].

For the last few decades, the European countryside has undergone deep changes, which simultaneously mean a risk and an opportunity for the preservation of the built heritage.

The need to modernize and adapt the old vernacular buildings to the requirements of a mechanized agriculture and the new theories of animal husbandry, the lost of local traditions and the increasing depopulation and ageing of the rural villages have given rise to the obsolescence of a high number of traditional agricultural buildings and consequently to its abandonment and damage.

At the same time, the increasing boom experienced by the rural tourism offers an opportunity for the development and diversification of the economies of many rural areas by means of the marketing of local produce, the creation of small services businesses and the enhancement of the natural and built heritage [2].

This new climate of increasing interest and concern for the preservation of the vernacular architecture in the countryside has caused the launch of specific local initiatives for the recovery of old traditional rural constructions. In a European context, it is worth mentioning the LEADER and PRODER EU schemes for rural development, INTERREG Program for the cooperation amongst border areas or the RAFAEL Project for the preservation of the European Cultural Heritage. A research carried out by the authors at a national level allows to estimate in more than 310 millions of Euros the public funds invested by the LEADER Initiative in the Spanish rural areas from 1991 to 2000 to conserve the built heritage [3].

The carrying out of this kind of schemes requires a systematic work to study and characterize the vernacular rural architecture in a regional context, as well as the adoption of valid criteria to evaluate the reusability potential of the traditional constructions.

This paper aims to contribute to the international scientific community, and more specifically to the local entities launching architectural conservation programs, with a methodological proposal to undertake this kind of initiatives. From the authors’ practical experience in a rural area located in Central Spain, the different steps will be outlined and some useful tools will be shown.
2. METHODOLOGICAL APPROACH TO THE PRESERVATION OF THE VERNACULAR ARCHITECTURE IN A RURAL AREA

The full detail study of all the vernacular buildings located in a rural district is a non-viable task, since their number can be estimated in several thousands. Therefore, a previous work of identification, characterization and selection of the most representative examples is needed.

To comply with that objective, a sequential approach to the vernacular built heritage through four successive steps is proposed:

(i) 'inventory' or location of the existing buildings.
(ii) typological analysis and selection of representative examples.
(iii) 'cataloguing' or detail study.
(iv) assessment of the reusability potential of the catalogued buildings according to a set of indicators measuring feasibility to the change of use.

Figure 1: Methodological approach to the study of the vernacular architecture in a rural district.

2.1 Inventory

The priority objective of the 'inventory' phase is to identify the traditional agricultural buildings present in the region and to determine their location through the UTM coordinates.

Moreover, basic information for the typological classification of the buildings (access, type of settlement, plan and roof configuration, materials or building details) will be compiled during this first step.

Provided that the number of constructions to be studied in this phase is quite high, documentary sources are helpful resources. Cadastres, aerial photographs and topographical maps provide useful information about the local place names, original building uses, layouts or settlement guidelines.

The referred documentary work must be complemented with field trails to verify and complete the available information, and particularly to obtain a photographic database, which properly managed by specific software, makes easier the typological characterisation of the vernacular building architecture.

2.2 Typological analysis and selection of representative examples.

A desk study of the compiled data will allow us to identify the traditional building typologies present in the research area. That classification will allow valuing the architectural significance of the existing vernacular constructions.

In order to systematize the typological classification process, the following procedure can be applied (Figure 2).

Figure 2: Systematic procedure for the typological classification of traditional agricultural buildings.

A preliminary selection of the most significant vernacular farm constructions, which will be part of the catalogue, can be undertaken according to the following criteria:

- Architectural, historical and ethnographical values.
- Building condition.
- Location: Landscape value and ways of access.

2.3 Catalogue

Once a sample of the most significant vernacular farm buildings present in the study area has been selected, a detail field study of each construction must be carried out.

Information will be compiled in the following ways:

a) Written data (by means of a card).

b) Photographic record (context photographs; external views of each facade and building details).

c) Measuring and scale drawings.

2.4 Evaluation of the suitability for reuse

The objective pursued in this phase of the methodology is to obtain a numerical value ('reuse index') to assess the suitability of each traditional building to be reused. That will allow the local action groups to set a list of priorities.

Different authors have analysed the existing relation between the morphologic characteristics of a
building (altimetry configuration, dimensions and plan or openings, amongst other) and its feasibility to a change of use [4], [5] and [6]. Nevertheless, in spite of the important influence of the morphologic building features, other factors such as location, way of access; available infrastructures and services; historical, ethnographical or landscape values; property; legal status, and very particularly the required rehabilitation works must be considered, as well.

Figure 3 show a systematic classification of the different variables cited above. Two groups can be identified: (i) extrinsic variables depending on the context and intrinsic ones depending on the own physical characteristics of the construction [7].

**EXTRINSIC VARIABLES**
- Location
- Landscape Value
- Settlement Type
- Access
- Site Features
- Services & Infrastructures
- Socioeconomical Issues
- Property
- Social Group
- Legal Status
- Local Plan Regulations
- Building Codes

**INTRINSIC VARIABLES**
- Architectural Value
- Historical Value
- Ethnographical Value
- Others
- Dimensions
- Altimetry
- Plan Configuration
- Specialized Areas
- Luminosity
- Building Condition
- Building Pathologies

Figure 3: Variables influencing the potential of a traditional rural building to be reused.

The assessment of the constructions can be done according to the specified indicators using an intuitive scale (-1: Negative effect) and (+1: Positive effect).

To obtain the value of the ‘reuse potential index’, it is necessary to weight the defined valuation criteria. This must be particularly done according to the priorities and specific aims of every local rural development plan.

3. A PRACTICAL EXAMPLE: SCHEME FOR THE REUSE OF TRADITIONAL FARM BUILDINGS IN RIBERA DEL DUERO SORIANA (CENTRAL SPAIN)

In order to illustrate the proposed methodological approach, a practical example carried out by the authors in a rural district of Central Spain is presented bellow [8].

3.1 Description of the study area

The study region, called Ribera del Duero Soriana, consists of 22 localities in the central area of Spain. It covers a total area of 1150 km² both sides of the river Duero that cross the territory. Population is under 500 inhabitants in most of the villages because of the rural exodus happened from 1970 up to now. The main population centres are placed near the river: El Burgo de Osma (5002 inhabitants), San Esteban de Gormaz (2184 inhabitants) and Langa de Duero (631 inhabitants).

Figure 4: Map showing the location of the study area.

Agriculture is the main economical activity in the area, particularly focused on the growing of cereals and vineyards. The last one has got an important rise during the last few years, since 14 of the localities belong to the D.O. Ribera de Duero. Table 1 shows the population and number of inventoried farm buildings in each of the studied villages.

**Table 1: List of studied villages**

<table>
<thead>
<tr>
<th>Locality</th>
<th>Inhabitants</th>
<th>Inventoried buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcozar</td>
<td>68</td>
<td>24</td>
</tr>
<tr>
<td>Alcubilla del Marqués</td>
<td>81</td>
<td>18</td>
</tr>
<tr>
<td>Aídes de San Esteban</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>Atauta</td>
<td>112</td>
<td>103</td>
</tr>
<tr>
<td>Bocigas de Perales</td>
<td>117</td>
<td>7</td>
</tr>
<tr>
<td>Castillejo de Robledo</td>
<td>228</td>
<td>77</td>
</tr>
<tr>
<td>Fuentecambrón</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Gormaz</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Ines</td>
<td>44</td>
<td>19</td>
</tr>
<tr>
<td>Langa de Duero</td>
<td>631</td>
<td>12</td>
</tr>
<tr>
<td>Miño de San Esteban</td>
<td>101</td>
<td>21</td>
</tr>
<tr>
<td>Morcuera</td>
<td>41</td>
<td>91</td>
</tr>
<tr>
<td>Navapalos</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Olmillos</td>
<td>66</td>
<td>26</td>
</tr>
<tr>
<td>Peñafla de San Esteban</td>
<td>70</td>
<td>23</td>
</tr>
<tr>
<td>Piquera de San Esteban</td>
<td>57</td>
<td>29</td>
</tr>
<tr>
<td>Quintanas de Gormaz</td>
<td>199</td>
<td>19</td>
</tr>
<tr>
<td>Recuerda</td>
<td>73</td>
<td>140</td>
</tr>
<tr>
<td>Rejas de San Esteban</td>
<td>90</td>
<td>9</td>
</tr>
<tr>
<td>Soto de San Esteban</td>
<td>168</td>
<td>95</td>
</tr>
<tr>
<td>Valdanzo</td>
<td>82</td>
<td>16</td>
</tr>
<tr>
<td>Veillos de San Esteban</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2368</td>
<td>813</td>
</tr>
</tbody>
</table>
3.2 Inventory of vernacular farm buildings

An inventory of traditional farm constructions present in the study area has been undertaken in two different stages: a desk identification phase has been developed using as documentary sources the Cadastre of 1974, containing 1:1000 scale maps, to locate the vernacular farm buildings sited in the village settlements and the Topographic National Map 1:25000 to identify those constructions placed outside the settlements perimeter. After comparing the information provided by these two documentary sources with local informers, 813 selected vernacular farm buildings were visited and basically studied (the selected sample represents the different typologies present in the region: subterranean wine cellars, dovecotes, winepress houses, sheep-houses, water mills, forges, barns and other particular local constructions).

The collected data (location; access; building condition; building features and significant details) have been processed using a computerized card that make easier the later selection of representative farm buildings that will make up the catalogue of vernacular agricultural architecture in the area. Figure 5 shows a sample of the referred computerized card belonging to a winepress house in the locality of Castillejo de Robledo.

![Figure 5: Inventory computerized card.](image)

**Figure 5:** Inventory computerized card.

3.2 Typological analysis

A selection of the different typologies of traditional farm buildings present in the studied region (Ribera del Duero Soriana) is showed in the figure bellow.

![Figure 7: Typologies of traditional farm buildings in Ribera del Duero Soriana.](image)

**Figure 7:** Typologies of traditional farm buildings in Ribera del Duero Soriana.

A computerized photographic database of regional rural architecture is a very useful tool to carry out the typological analysis and the characterization of the buildings [9]. After classifying the digital images according to a series of descriptors (Geographical location, date, building techniques, materials, details and so on), advance search options are available. The following utilities can be cited amongst others:

i) Search the complete photographs set for a particular building.

ii) Making of albums of local typical building details (openings, masonry walls, roofs or eaves, amongst others).

iii) Selection of images relating to a specific building typology.

iv) Analysis of the special building characteristics of a particular sub-area.

3.3 Making a catalogue of representative vernacular farm buildings

The developed local catalogue in the studied area consists of 33 traditional farm buildings, which are representative of the main agricultural buildings typologies present in the region.

Each of these buildings has been measured and a complete set of graphical and written data has been compiled to allow the later assessment of its potential for being reused. The available information has been organized as follows: Sheet 1 shows the information related to the geographical location of the building; sheets 2 and 3 provide written data presented as a card; sheet 4 shows a selection of the photographic record and, lastly, sheet 5 contains a complete set of plans of the catalogued building. Figure 8 shows the partial reproduction of a subterranean wine cellar in the locality of Alcubilla del Marqués.
3.3 Assessing the reuse potential by means of a ‘reutilization index’: A case study.

The pursued aim is helping the local association 'Tierras Sorianas del Cid' to select a vernacular building to house a small museum about local vernacular architecture and tourism office, amongst four pre-selected possible alternatives. The evaluation criteria, weights and results are shown in Figure 9.

<table>
<thead>
<tr>
<th>EVALUATION CRITERIA</th>
<th>WEIGHT</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE CONTEXT</td>
<td>x3</td>
<td>1.8</td>
<td>1.5</td>
<td>-1.5</td>
<td></td>
</tr>
<tr>
<td>SOCIOECONOMICAL &amp; LEGAL FACTORS</td>
<td>x1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>BUILDING SINGULARITY</td>
<td>II.1</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>MORPHOLOGICAL CHARACTERISTICS</td>
<td>II.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>BUILDING CONDITION</td>
<td>II.1</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

Assigned values for each variable ranges between (-1) and (+1) divided into the number of variables considered for each evaluation criterion. Weighing is carried out as follow: a first index (1 – low importance, 3 – medium importance or 5 – high importance) allows to weigh the value of the general evaluation criteria (site context; socio-economic & legal factors, building singularity, morphological characteristics and building condition). A second value allows to assess the importance of each particular variable (0.5 - low / 1 - medium / 1.5 - high).
As can be noticed, the evaluation process allowed setting a priority order amongst the candidate buildings to be reused, being a useful tool for taking a decision. At present, the referred initiative is at a project stage.

At present, the methodological approach shown here is being used by the Rural Development Group ‘Tierras Sorianas del Cid’ to manage the rural built heritage and to give priority to the reuse of the most valuable examples in a district of Central Spain. Properly adapted to the special characteristics of other regions, it can be a useful tool for public administrations and local groups concerning with the preservation of rural architectural heritage.

CONCLUSION

The respectful conversion of old traditional constructions to adopt new productive or social uses constitutes from our point of view a way of making a success sustainable conservation of this kind of architectural resources and their continuity as visual landmarks in the European countryside. The establishment of new small businesses in the rural villages, the maintenance of an image of ruralness in the countryside landscapes and the energy saving in comparison to new construction can be cited as the more positive effects [10].

For the last few years, different initiatives to conserve and recover the vernacular architecture have been launched in the European rural areas, but many of these schemes lack of a necessary overall view. In order to allow the preservation of the most valuable and significant examples, a regional analysis of the present vernacular constructions is needed.

This paper provides a methodological approach to carry out this kind of schemes. Different useful tools as documentary sources, computerized inventory cards or photographic databases are described here and a procedure to assess the potential of a traditional vernacular building to be reused is also presented.

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