ROMANIA

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Problems of physical deterioration on vernacular buildings in Transsylvania – Râsca village and open-air museum "Astra", Sibiu – a comparative study

Introduction

The built vernacular heritage is the fundamental expression of the culture of a community and its relation with the surrounding territory – a continuing process of adaptation and transformation.

Due to the progressing homogenization of culture and the socio-economical transformations on a global level the built vernacular heritage is extremely vulnerable.

In addition and completion to the "Venice Charter" the General Assembly of ICOMOS held in Mexico 1999 adopted the "Charter on the Built Vernacular Heritage" and the "Principles for conservation of historical wooden structures", both formulating basic principles for conservation and practical restoration work. In this way the general methodology for protection and conservation of vernacular structures and their cultural message are defined.

The alterations of building materials used in vernacular structures caused by time and climate cannot be treated separately. The problems of physical deterioration also have to be related to the biological analysis and need to be included in considerations on structural solutions, especially because vernacular structures are currently erected using local building materials from places of resources already disappeared.

Case study – traditional housing in Râsca village, Cluj county

Râsca municipality located in the Western Carpathians is the biggest settlement of the area, covering about 58 km^2. The boundaries include the villages of Râsca with the hamlets of Onicesti, Plesu, Upper Râsca and Cristesti, Dealu mare, Lapustesti and Marcesti. The settlement is spread over several hills and along three small river valleys collected by the river Râsca. A medieval castle dating from the Gelu period is mentioned both in written and oral documents of the area, but after several excavations and also ethnographical studies were without results research was given up.

The Râsca area as well as a rather large part of the Western Carpathians are listed protected areas both for nature and history.

The recording of vernacular architecture is very difficult due to the large dimensions of the area but especially to the transformations which started already in the 1950s by replacing the traditional roofing by industrial materials on almost all the traditional houses. Therefore the identification of authentic old houses is very difficult. Most of the few preserved old buildings are either abandoned or in very bad condition, inhabited by very old people or looked after sporadically by some relatives of the former owners. The local administration is not interested in any conservation or repair because of the lack of funds, but also because the building of new houses increases the income of the population living from forestry and timber constructions.

Most of the investigated buildings are very modest houses erected by the inhabitants themselves, a population with a very low income. This may be one explanation why they have been preserved in their authentic condition. The houses belong to the log-house construction type set on a small stone basement, the roof being covered with shingles. Most of the deterioration is caused by the lack of maintenance work related to the old age of the people living there, the young ones migrating towards the cities.

Physical deterioration is mostly caused by the degree of humidity in the air, which is very high almost all through the year, the speed of the wind, the large amount of snow for c. five months a year and also numerous springs on the slopes growing to torrential rivers in spring and a high quantity of precipitations on a square meter. Even during the year 2000, which was very dry compared with normal conditions, a high amount of humidity could be observed on almost all the timber constructions, but no active biological attack. Structural alterations also happened both to the timber construction and the stone basement masonry.

Case study – traditional structures inside the open-air museum of "Astra", Sibiu

Founded in 1963 as a "Museum for Popular Technology" the "Astra" museum succeeded in collecting and conserving more than 150 traditional buildings from all the distinct regions of Romania. The laboratories of the museum provide research and conservation facilities, where the problems of physical deterioration are treated in relation to biological attacks, executing periodical measurements by using thermo-hygrographical, ph- and luxmeter equipment.

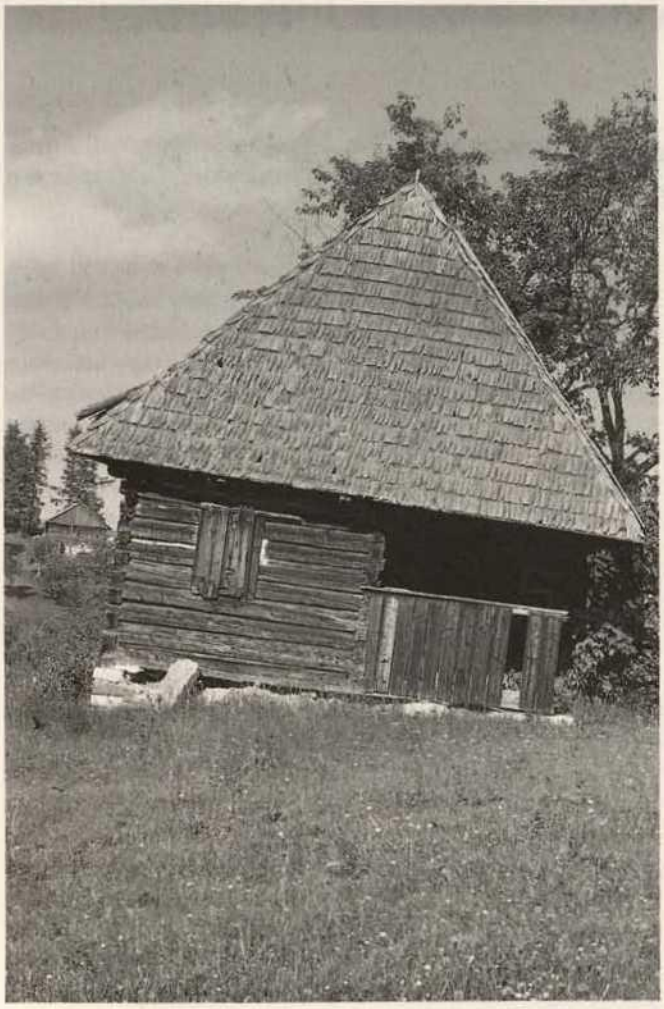
In order to assure a mostly authentic presentation of the buildings inside the museum area the placement is following the natural conditions of the territory including a lake, the latter being surrounded by quite a large number of the exhibited vernacular constructions (see the plan of the museum).

The measurements of the last years documented the rather high degree of humidity in the air, the high level of groundwater and also the high quantity of precipitations in the area. In spite of the very high temperatures registered in 2000 which contributed to the evaporation of a relatively high amount of humidity from the soil and the timber structures of the buildings inside the museum, the rising humidity especially inside the basement masonry is still obvious.

The deterioration problems have been analyzed by categories of constructions:

First of all the numerous mills placed directly along the shore of the lake are exposed to deterioration by air, humidity and biological attack.

The second category are the farmstead buildings erected on masonry basements, some of the latter being covered by clay

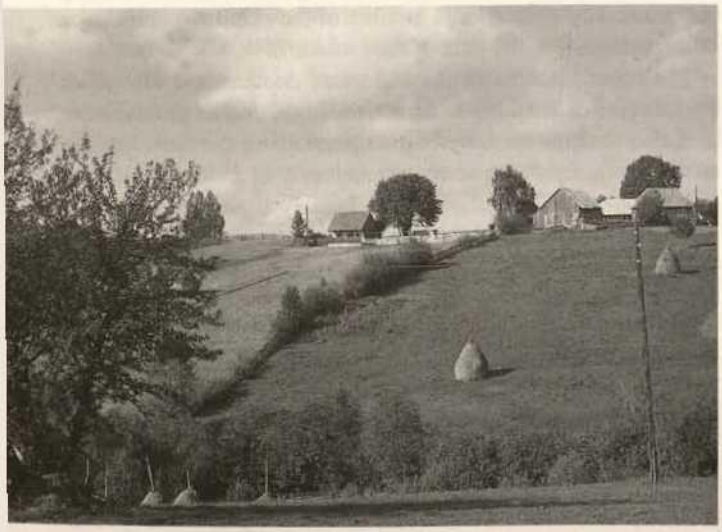


Traditional wooden house in Râsca village

plaster. Deterioration observed is caused mainly by their placement on a slope, producing a difference in height of around 50 cm between the basement masonry on the valley side and the hill side. Infiltrations have produced exfoliation of the plaster or even complete decay, in some cases cracks and also dislocated stones inside the masonry. On most of the houses the impact of humidity on the plaster can be observed. The rain water has an immediate impact on the shingle roofing but also on the side walls especially when the eaves are too narrow. At the same time the lack of any draining system normally increases the quantity of water remaining on the soil surface which is absorbed by the building materials. In this case the timber reacts like a filter, absorbing the humidity from the lower part of the building and – when the posts are fixed directly in the basement masonry – leading it to the horizontal logs and the ceiling construction. Thus the development of fungi cultures is being promoted. The presence of fungi is always the confirmation of a high percentage of humidity inside the structures of a vernacular unit. Prevention measures are necessary, especially for the timber elements. Special treatments are executed in the laboratories equipped with fumigation utilities, impregnation basins, vacuum treatment, deep freeze utilities of 4 m capacity, high temperature and humidity treatment against fungi etc.

First aid methods for vernacular structures

The cracks inside the masonry are pointing at the changes inside the structures. Most frequently the increased ground water level is responsible for structural deformations and the deterioration of the wall timber. The monitoring of cracks is necessary, using plaster marks for observation. The very high ground water level



◁ Râsca village

must be reduced by a draining system. If the soil level in front of the basement masonry is too high, it should be reduced in order to avoid remaining water on the soil level.

The cracks inside the masonry could be filled by using a mixture of clay with straw (if the mortar is clay-based) or with lime mortar. As most of the old vernacular buildings have no eaves gutter, the lower parts of the exterior walls are exposed to rain water and melting snow. The simplest preventive measure would be the execution of a draining ditch filled with gravel not deeper than the foundations level. As the shingle roofing was never executed to last for hundreds of years (without periodical replacement of deteriorated parts) the repair of the roofing by replacing the deteriorated parts is the only way to save the structures.

Conclusions

The comparative study has pointed out the importance of regular maintenance work on traditional buildings and also the risk of producing considerable problems when creating artificial groups of buildings, like in open-air museums where the developed microclimate is promoting and even intensifying biological attack which cannot be stopped or eliminated. Such conditions are not or only rarely met at vernacular constructions remaining *in situ* even if they are in very bad condition.

As a conclusion the development and implementation of a recording program for vernacular architecture in the hill area of Cluj county is absolutely necessary. At the same time the small amount of funds for restoration work should be directed from the artificial groups of buildings towards the original ones *in situ* which are in bad condition.

Astra open-air museum, windmill

Traditional wooden house in Râsca village ▷