

INTERDISCIPLINARY APPROACH IN PROMOTING EARTH CONSTRUCTION TECHNIQUES IN THE BANAT REGION, ROMANIA

Florescu Elena Roxana^{1*}, Bica Smaranda Maria²

¹Arch. PhD student, "Politehnica" University Timișoara, Faculty of Architecture,
florescu.roxana_arh@yahoo.com

² Prof. Dr. Arch., "Politehnica" University Timișoara, Faculty of Architecture,
smaranda.bica@upt.ro

*Corresponding author

Abstract

With the current development of the Banat region in Western Romania, the elements that define its patrimony and regional identity begin to be acknowledged and promoted. The former province of the Habsburg Empire, the Banat region constituted the territory of massive colonization at the middle of the 18th century – beginning of the 19th century in order to create a military outpost in front of the Ottoman Empire's offensive. In order to achieve this strategic goal, a massive process of colonization was undertaken, bringing craftsmen from several areas of the Habsburg Empire - Germans, French, Italians and Spanish, gathered for developing this previously unoccupied territory.

The systematization of the territory thus leads to the development of villages by adapting the constructive techniques to the existing local resources. These colonization periods denote sustainability in terms of regional development as they promoted the alignment of local traditions with the new pattern of organization of localities and individual dwellings imposed by the Habsburg Empire. All these regulatory measures have also set up a regional specificity - the villages organized in the chessboard style with dwellings using earth as the main building material.

Nowadays, the heritage elements have to be acknowledged for their unique character - the adaptation of foreign influences on the background of a local civilization, the development of a typical rural Baroque in Banat. The current necessity of promoting this kind of architecture comes at a time when rural areas are abandoned. Local initiatives aim to make good use of this regional brand - earth constructions, in order to provide identity and continuity to a diffuse rural territory. The contact with European heritage research centers – CRAterre France, constituted key elements in addressing the promotion and preservation methodology.

In order to ground the initiative, an awareness campaign was undertaken about the potential of earthen architecture as a regional brand through workshops in local festivals, school presentations, exploratory trips. An interdisciplinary approach to social and constructive efforts is the only one able to inspire a contemporary and sustainable perspective on this type of heritage. What needs to be developed is a regional strategy for promoting the existing heritage, both among civil society, as well as for construction specialists, sociologists, local artisans, potential tourists.

Keywords: Interdisciplinary workshops, sustainability, earth constructions, regional brand.

1. INTRODUCTION

The Banat region has always an area of boundary between the Ottoman Empire in the South and the Austro-Hungarian Empire in the North. This has led to a development in several stages, each of which has a peculiar specificity in the area's multicultural character. After 1716, the Habsburg administration had focused its attention on a more vigorous development of the Banat economy and its building fund, as the existing conditions did not match the requirements. Colonization was a necessity stemming from the very status of the province Banat at the border of the empire. Military and religious causes, driven by the need to strengthen the borders and create a mass of Catholic population on which the Habsburg monarchy is based, led to massive colonization of the region with a German population as well as with other nationalities (Italian, Spanish, French, etc.)

The colonists were settled on the strategic routes used mainly for military reasons, but also other natural factors contributed; the area of the first colonization was on a higher terrain, located at the rising of the swamp region and in the west of the mountains, where the climate was considered more bearable for the newcomers and the soil more fertile. The Habsburg administration also wanted to have a faithful human resource that could be recruited for the army or oppose resistance to a possible Turkish invasion, in close cooperation with the military units. The colonists brought with them advanced agricultural and handicraft techniques which can be seen throughout the following years of development (Țintă, 1972)..

2. BUILT HERITAGE

The lack of a nobleman in Banat resulted in the 18th century architecture in the absence of baroque houses or country houses. It is only after the sale of the domains at the end of the century and the beginning of the 19th century that the noble residences, the houses of the estates will be raised, all in one way or another, a tribute to the new classicist style. Many of Banat's craftsmen take advantage of this optimal opportunity to learn the profession at a contemporary level, and the ones learned to apply them, of course, in a form adapted to the spirit of folk architecture, and to the construction of peasant houses. Some elements of style used in the compositions of the so-called Peasant Baroque are testimony to these influences.

Both the public buildings in the center of the locality and the dwelling houses will be designed to best meet the requirements of this new framework. Between 1720 and 1810, Baroque-inspired churches were erected in Banat, and with the construction of the churches the new formal elements were revealed.

If, to this point, the baroque was at the edge of the area of influence by adapting it to such a wide scale, namely to all nationalities and to all confessions, the Baroque style deployed its gravitational center eastwards in the center of Europe taking its place the more and more obvious classicism. The time difference and its adaptation to a space away from its origins gave the baroque manifestations the chance to develop in these landscapes, in original forms and variants, both architecture and literature, art, landmark and other areas of manifestation, primarily in terms of the need for representation.

As a result of the increase in welfare, often due to the poor quality of the buildings made in a hurry, the German settlers moved to renew this dwelling house with a more sustainable one (Bejan, 2005). This second house also had a new function: the representation of well-being. Starting from urban models already made under the influence of the late Austrian Baroque, this house will present a round fronton. The Swabian villages adopted the first forms of a curved fronton after Baroque models. The appearance of such a fronton in the Romanian villages can only be mentioned from the second half of the nineteenth century, sporadically at the beginning, generalized especially in the last decades of the last century and the first decades of the 20th century.

But not all Baroque houses were newly built houses. In many cases, where the construction of the rammed earth technique was well done, only the façade was replaced, which was done exclusively for a representative purpose, afterwards covering the entire surface of the Banat after the revolution of 1848-1849. Decorating the facades of houses, especially those of Baroque influence, had become a new branch of folk art in Banat (Pop, 1942).

On other public buildings, a great variety of new forms of construction and decoration have been overlapped and forced through the construction and decoration of the dwelling house, the mirror of a rapid development of the province in less than a hundred years. This development included the changes in the structure of the rural population until the beginning of the nineteenth century, the consolidation of the peasant economies and the accelerated differentiation of the peasantry, which will also be reflected in the differentiation of the popular architecture.

The establishment of the peasant baroque appeared in Banat already at the end of the eighteenth century, the way and forms of achievement being brought either by calfs left from these areas on their training trips or by Austrian craftsmen established on these lands.

Until the first half of the nineteenth century, the façade was approximately square, and the height of the gable wall was equal to the height of the house to the cornice. After this period, the width of the façade widened, and around 1900 the cross-sectional house appeared.

Both longitudinal and transverse houses are characterized by horizontal decorative elements (cornice, socket, ornamental strips marking) that dominate the composition and contribute to the uniqueness and identity of the entire street profile. The proportion and grouping of voids (doors and windows) and vertical decorative elements (frames, columns) have the role of harmonizing and balancing the composition of the façade (Fig.1., Fig.2.).

The relatively few decorative elements have been applied in various compositions, from the beginning some motifs and procedures are noticed, which are not missing today, two hundred years later, in the compositions applied by craftsmen on new houses in the villages of Lunca Timisului. The year of construction, various forms of the tree of life, solar signs, religious motifs, window frames, as well as some structural elements (the prominent cornice and, as vertical elements, imitation of columns and pilasters made of plaster relief) are part of the repertoire more frequent and perennial of this area.

The desire to decorate has also been maintained for the new edifices emerging during the gradual urbanization of the rural environment, in cross-country houses that do not offer so well-marked surfaces as the longitudinal house. In this type of house the fronton from the street disappears as an ornamental field; the ornamentation will be applied on the new facade, on the front of the yard or on the gates (Bizerea,1975).



Fig.1.(left) Serbian House from 1927, Voivodina region, <http://www.banaterra.eu/romana/banatul-romanesc-casa-sarbeasca-din-1927>



Fig.2. (right) Typical house of the Swabians, Borlova, 20th century, <http://muzeul-satului.ro/planificavizita/ce-pot-vedea/expozitia-permanenta-arhitectura-vernaculara/gospodarii/borlova-judetul-caras-severin-1897/>

A special situation occurs at the end of the sec. XX when the social structure of the Banat Plain (and in some of the Banat Mountains) changes radically by leaving the Germans and bringing Romanian populations into their place. Due to the precarious material situation of the new inhabitants, they did not make radical changes to the Swabian households, but they did not maintain them properly, as many households were degraded.

3. INTERDISCIPLINARY APPROACH

Nowadays, the heritage elements have to be acknowledged for their unique character - the adaptation of foreign influences on the background of a local civilization, the development of a typical rural Baroque in Banat. The current necessity of promoting this kind of architecture comes at a time when rural areas are abandoned. Local initiatives of promoting the built heritage aim to make good use of this regional brand - earth constructions, in order to provide identity and continuity to a diffuse rural area (Gheorghiu, 2002).

These activities started in a multidisciplinary group around cultural initiatives made up of more professionals

in related fields (architecture, landscaping, anthropology, craftsmen, artists), concerned with the quality of the design and implementation of architecture, but also to educate the public for its perception and correct valorization.

The objectives of the various associations are:

- promoting quality architecture and constructive crafts,
- development of studies and policies regarding the existing heritage, urban and rural public spaces, where the community can find its place for social and cultural manifestation.

All these initiatives represent cultural services of public utility with a role in ensuring social cohesion and community access to information. In order to succeed in this endeavor an interdisciplinary approach was initiated in the academic environment as a bottom up initiative with many participants that have other disciplinary research commitments as well, but can provide a different perspective to the whole process. In the case of the built heritage in Banat, the interdisciplinary research method is a way of integrating missing data, techniques, tools, perspectives and concepts from more disciplines in order to advance understandings or to solve problems whose solutions are beyond the scope of a single discipline or a field of research. This kind of initiative must integrate a long-lasting action plan starting with initial education methods and introductions of the elements that define a regional identity and continues with feasible solutions that can leave a mark on the community and its future development.

An actual interdisciplinary approach means the study of the specific topic through projects with the scope of developing problem-solving skills and lifelong learning skills. In the case of the built heritage, an interdisciplinary approach means a link between theory and practice by understanding the current issues and their origin and trying to propose feasible solutions with the existing resources (Dabaieh, Sakr, 2015). Considering the many issues in regards to the current state of the built heritage in the Banat region, an interdisciplinary approach is the only way of achieving results as it can involve economic, social and political factors.

Considering the international interest towards sustainability and the potential of well-preserved heritage, earth constructions represent an opportunity of promoting the local identity and to deliver a strategy that can be economically feasible from different points of view – academic research, tourism, social cohesion. In order to create a sensible approach towards fostering the cultural value, understanding and appreciation of the built heritage should be disseminated towards a wider public that can afterwards spread the information. However, to be able to apply such notions there are still many challenges towards taking further practical steps – workshops, presentations, further research in academia and in the construction field.

3.1. Activities

The activities started within the architects community in Timișoara tried to engage more the general public through local events and presentations. Equally, there was a good appreciation among some local people who lived in clay buildings, but this was not properly transmitted, and thus vulnerable to loss.

REcult Association from Timișoara, together with its partners is developing the cultural project “About earth. People and their homes from Banat” as a campaign to raise awareness of the potential of rural houses made out of earth. This initiative aims to identify ways to transform the earth constructions into a regional brand given their extent representation in the area. The project was co-funded by AFCN (Administration of the National Cultural Fund) and selected as an official event of the European Year of Cultural Heritage – 2018. The project enhances the public's perception of earthen heritage by delivering a diverse range of interventions at a cultural landscape scale. A part of some of these activities were: creating short clips that are testimonies of people building or living in earth houses (Fig.3.,4.), presentation workshops held at Banat's Crafts Fair, Plai Festival, producing a pedagogical material for the secondary and higher education level by addressing the technical and conceptual aspects involved in earth construction.

To create a segment of potential professionals that can deliver a coherent message regarding earth construction, different exchanges were made with the CRATerre Research Center, France. Afterwards, the contact with international institutions represented key elements in addressing the promotion and preservation methodology by providing information and examples of the existing international research. The aim was to create the premises of integrating the earth building techniques into the UNESCO Heritage list as to ensure the continuation of the local constructive crafts.

It was possible to form a small group of technical specialists, but the information remained inaccessible to the local population so the knowledge accumulated by different professionals was then transferred in an

interdisciplinary workshop within a much larger cultural event that connected both the traditions of the area – Ruga satului (local community event in all villages of the region), and a new concept event - Electroruga, a festival of electronic music.

Objectives of the workshop:

- Inform and train the local workforce so that they can carry out maintenance work and restoration of earth buildings,
- Demonstrate the potential of different techniques and how they can be used and interpreted to respond to different needs,
- Improve the management and monitoring of the area with the training of local partners to ensure the dissemination of information and awareness of the population.

The key achievement was rising the cultural value of earth buildings in the minds of the local community. When all the individual actions fade, this is what will sustain the area's earth buildings in the long term.



Fig.3.,4.(left,right). Image extracted from the movie „Povestea unei case meșteșugite / A Story of a Crafted House” , showing architect Vasile Oprisan in his rammed earth house in Grăniceri, Timiș,
<https://www.youtube.com/watch?v=Xzdsedxwba0>, Published by REcult and Lezard Films on 01.11.2018

3.2. Case Study Regio Earth

A more complex workshop regarding earth construction was organized in Buzad, Timiș - The Regio Earth Festival 2018. Initiated by an interdisciplinary team of researchers trained at CRAterre, the event was at its second edition. The first edition was held in Hungary and the third one will take place in Serbia in the summer of 2019. This activity comes with the purpose of exchanging knowledge within the region considering its similarities in terms of the earth build fund. Regio Earth was initiated by an team of professionals that believe in the potential and immaterial patrimony of the earth to become a representative element of the Banat plain area and the rest of Romania. The location of the event was Buzad, a village on Lipovei Hills (belonging to Bogda commune), 45 km from Timișoara. The area became known for the holiday village of Altringen and the Charlottenburg village, founded by Swabian colonists. Buzad remained isolated, with an aging population, young people going to town or abroad. It is one of the few localities in Timiș where there is no GSM signal. But this rupture of the modern world was considered interesting for a young group of Timișoara. Three years ago, they set up The Village, a unique concept of teambuilding and corporate events, with pavilions made out of rammed earth.

In order to reach the existing community, Regio Earth 2018 was organised around the date of an existing local event – Ruga, the local prayer, as well as its modern representation, the electronic music festival Electroruga. The local prayer - Ruga is a manifestation typical for Romanian villages and is held at the time of the sanctification of the church, usually in a feast dedicated to a saint. The event is usually held at the local cultural center or even outdoors if the weather allows. All members of the community gather together with their guests: relatives and friends, even people that moved into other villages or to the cities nearby. Each village has its own habits, but the structure is pretty much the same.

The alternative event was ElectroRuga, an electronic music festival with an unique concept in Romania that tries to mix tradition and innovation. The festival proposed reinventing the traditional custom of Ruga – the local prayer, in a new format for the young, urban public. So besides the electronic music playlist, there were

also some workshops that offered: experimental film screenings, theater improvisation, yoga workshops, painting and sewing workshops, etc.

3.3. Regio Earth Workshop Methodology

The project team was made up of 2 Romanian architects who completed their studies at ENSTA Grenoble (DSA - Les cultures constructives et le développement durable). The approach started at the European level through the financing of strategic trainings in order to reintroduce qualifications such as those necessary for traditional constructive techniques, a well-established initiative in the context of less and less vocational and technical schools.

The interdisciplinary character permitted to bring scientific research with everyday experience of engineers, builders, NGOs, business owners and local community together as well as all the participants at the ElectroRuga festival, that had the chance to observe the results of the workshop (the pavilion).

The main organizers were members of the REcult Association, along with the network of trainers trained at the CRAterre Center. The event was also attended by: Association for Tourism Promotion and Development Timis APDT, Bogda Commune Public Administration, West University Foundation Timisoara FUVT, National Institute of Patrimony - INP, TERRA pia, Hungarian Straw bale Association (Hungary), Fine Arts and Crafts Club (Serbia), Associated Citta della Terra Cruda - Italy, "În comunitate" Association, French Institute Romania - Timișoara branch, German Cultural Center - Timișoara, TVR Timișoara, Romanian Architects Order - Timiș branch.

The main location of the workshop was the former school premises of Buzad which was transformed into an alternative cultural space and local museum. The format of the workshop proposed 5 days of activities between 27th and 31st of August 2018. The first day consisted in an introduction of the authors and tutors, as well as the main topics to be addressed around the actual construction site – the pavilion (Fig.5.,6.).



Fig.5.,6. Images from the workshop activities Regio Earth 2018, August 27th, REcult Organisation

The workshop started with presenting the characteristics of the local earth. On the field, simple tests were made to assess certain characteristics of the material and confirm, or deny, the suitability of the earth for its use in construction. These tests are quite empirical and can show if additional laboratory tests are needed (Anger, Fontaine, 2009).

1. **Visual examination:** The dry earth was examined to appreciate the importance of its sandy fraction and its fine fractions. Large pebbles, gravel and large sands were removed to facilitate evaluation (this operation was applied to all subsequent tests).

2. **Odor test:** By a simple inspection, the organic composition of the earth was determined. This test was amplified if the earth was heated or humidified.

3. **Sample formation of spheres:** For assessing the cohesion force, several spheres with a diameter of about 5cm were formed by hand using clay at soil moisture. The earth that contained more clay stuck to the fingers when trying to model it, while earth that had less clay in its composition could be modelled into shape and cracked easily after drying.

4. **Cutting test:** An earth sample at soil moisture was cut with a knife. By inspecting the sections, the content of clay was observed. The sample with a glossy area contained more clay, while the other sample that had a weaker cohesive strength had an amorphous, silty surface.

5. **Proof of dry resistance:** Resistance of the dry sample when pressured and the amount of dust resulted provides information about the type and amount of fine particles.

6. **The friction test:** Earth rich in clay stuck on the fingers and when it dried, it was only removed by washing.

7. **Determination of colour:** The colour of the earth in wet state indicated different chemical compositions. Dark colours suggested hummus components. However, the colour of the earth was not important to determine whether it is usable in construction or not.

A theoretical introduction of different building techniques is made which is followed by a practical phase in which the physical building steps are explained. Every tutor has a role in initiating a technique, while the volunteers contribute in actually building a part of the pavilion, as every single wall has a specific layout: reconstructed adobe from an existing building, light earth made with fibers, a Japanese technique using rice fibers, torchis, an oven (Fig.7.8.). The schedule of the following 4 days was divided into 2 parts: the first part of the day consisted of actual construction work around the pavilion and the second part was mainly a presentation of one of the tutors regarding their particular field of research in terms of earth as a construction material followed by questions and answers. Participants were confronted with real research programmes initiated worldwide and how different communities tried to tackle solutions with the existing resources. Even though the difference in terms of interest, the experimental side of the activities permitted participants to understand better practical issues related to the material.

In order to create a more interesting format, each participant was invited to participate in the 4 main sections regarding the different techniques presented. The format of the workshop demanded tighter collaboration between the participants in order to transfer knowledge as effective as possible considering the time frame. The tutors encouraged learning between all attendees to participate more actively and enjoy the informal character of the interactions. Also, as the work progressed, participants obtained feedback faster by ongoing dialogue, achieving their targets and also interacting with different aspects that touch rural communities: gentrification, lack of professional work force, different methodologies for achieving a social impact for communities, the contact with academic research themes.

In the case of Regio Earth, a good organizational scheme was prepared beforehand in order to ensure a cohesive workflow. This was possible with the help of the different actors involved that contributed in terms of logistics, funding. As a pedagogical tool the workshops provided a great experience for the participants in terms of time-focused activities, practical knowledge and collaboration between different parties.



Fig.7.8. Images from the workshop activities Regio Earth 2018, August 27th, REcult Organisation

4. CONCLUSIONS

Research becomes truly interdisciplinary when it is just not posting two disciplines together to create one product but rather is an integration and synthesis of ideas and methods. For the Banat region, these first activities become a bottom up initiative started within a small academic group where research is a primary need and training becomes a by-product in order to ensure a critical mass able to perpetuate the effort. Considering the existing resources, the initiatives developed a loose management structure because of lack of funding or a cohesive national/regional strategy.

That is why many activities of promoting the built heritage are punctuated by the will-power of small groups. In order to sustain these initiatives and to make them more efficient in delivering their purpose, a local strategy has to be created as to allow all these efforts to come together, to form a stronger community that can sustain its wrights in terms of identity, culture and future well-being. These create the premises of the next important concept-transdisciplinary, an interdisciplinary approach but within a system or structured plan through encouraging participation and involvement of different social members in an action research plan, while the participatory component applied in this research is a social process in which a group of individuals decide upon the future of promoting earth construction techniques as a symbol of local specificity, as a tourist attraction. Last but not least, promoted correctly and integrated into coherent programs, the built heritage can generate various and multiple sources of income for the locals.



Fig.9. Images from the workshop activities Regio Earth 2018, August 27th, REcult Organisation

REFERENCE LIST

- [1] A. Țintă, "Colonizări habsburgice în Banat 1716-1740 (Habsburg colonisation in Banat 1716-1740) " Timișoara: Facla, 1972,
- [2] A. Bejan; E. Pataky, "Aspecte ale vieții cultural-științifi ce timișorene în a doua jumătate a secolului al XIX-lea și începutul secolului al XX-lea". Societatea de Istorie și Arheologie și Societatea de Științe Naturale, în „Banatica”, 13/ I, Reșița, 1995.
- [3] N. M. Pop, " Populația Banatului în timpul lui Iosif al II-lea (The population of Banat during the reign of Joseph II) " , Lucrările Institutului de Geografie - Universitatea din Cluj, 1942,
- [4] M.Bizerea, "Banatul ca unitate și individualitate istoricogeografi că în cadrul pământului locuit de români", în „Tibiscusetnografi e", volum editat de Muzeul Banatului, Timișoara, 1975
- [5] T.O.Gheorghiu, "Locuire și neAșezare", Paideia, 2002;

- [6] M. Dabaieh, M. Sakr, (2015).“Transdisciplinarity in rammed earth construction for contemporary practice”,p.107-113, *Earthen Architecture: Past, Present and Future – Mileto, Vegas, García Soriano & Cristini (Eds) © 2015 Taylor & Francis Group, London, ISBN 978-1-138-02711-4*
- [7] R. Anger, L.Fontaine, “Bâtir en terre“, Editions Belin, 2009, ISBN: 978-2-7011-5204-2