Gergő RADEV & Gergely RODICS

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CONTEMPORARY ARCHITECTURAL AND ARTISTIC REFLECTIONS ON THE ROLE OF BARNS IN THE 21ST CENTURY Gergő RADEV & Gergely RODICS

Re-Barn

CONTEMPORARY ARCHITECTURAL AND ARTISTIC REFLECTIONS ON THE ROLE OF BARNS IN THE 21ST CENTURY



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The publication can be downloaded from the BarnCulture project-website in four languages: https://www.barnculture.eu/

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Introduction

This publication was created as a result of the international project "BarnCulture", in which six architects and twelve visual artists worked together from three countries: Hungary, Germany and Romania. We aimed to contribute to the development of a high-quality built environment and the protection of the built heritage of Europe's rural areas. In order to achieve this goal, we have been engaged in the planning and promotion of innovative and green solutions for barn conversions over the two years of the project.

The plans for conversion were created as a result of the joint work of architects and visual artists, but independent works of art inspired by barns were also created. When developing the plans, we emphasized green and sustainable solutions as well as affordability in order to make conversion a realistic alternative for even the less wealthy rural families to utilize an old barn as a home, an office or a cultural venue.

The barn

So, what exactly is a barn? It was originally a large building for the storage of fibre feedstock for animals (straw and hay), which often, but not always, also incorporated the stable. As traditional, semi-sufficient family farming is heading towards its final demise throughout Europe, these buildings—where they still exist—tend to lose their function and are mostly demolished, burned as firewood or sold as building materials. However, they have an important role in the village landscape and are important heritage buildings, and it is therefore worthwhile to save them for future generations. Their size, imposing appearance and minimal internal divisions make them eminently suitable for accommodating other functions, be it an apartment, a small business or a cultural space. Preserving them also has many environmental benefits: instead of buying new, we recycle the existing building materials, which almost always come from the surrounding area and are almost always some kinds of natural material (stone, clay, wood etc.). Thus, it is also advisable to take these materials into account as guidelines during the renovation.

Steps of the collaboration

The most important steps of the two-year collaboration were:

- 1. organizing a study trip to Germany, three creative art camps, and an international meeting, in order to expand the knowledge of the participating artists and architects and develop their cooperation,
- 2. realization of barn-related fine art works by the twelve visual artists selected by competition,

3. an exhibition in Hungary of the twelve fine art works created,

- 4. creation of twelve barn conversion proposals by the combined work of architects and visual artists,
- creation of three barn conversion designs to propose solutions for the challenging balancing act between meeting the new demands of heating the building on the one hand, and keeping the original appearance of the barn as much as possible on the other,
- 6. creation of photo exhibition panels from the fifteen barn conversion plans,
- 7. creation of two types of publication in electronic and printed form, in four languages (Hungarian, German, Romanian, English),
- 8. exhibitions and events, with the purpose of publicising the project results, and to create future collaborations in order to increase the number of barn conversions across Europe.

Organizations

Three organizations cooperated in the project:

- Community College of Art for the Carpathian Basin from Hungary as the leader of the consortium (https://muveszetinepfoiskola.hu/)
- Agri-Cultura-Natura Transylvaniae Association from Romania, as the project originator and local partner (https://www.acnt.ro/)
- Landcare Association Neumarkt in der Oberpfalz from Germany as a local partner (https://www.lpv-neumarkt.de/)

All three organizations have previously dealt with architecture-related projects. The Hungarian partner has renovated several historic buildings, and has also created a cultural space in an agricultural building in Kápolnásnyék. The Romanian partner organization has been dealing with the protection of the built heritage of Transylvanian villages for decades, and its headquarters is in a converted barn in Csíkdelne. The German partner set up its training centre in a new barn-shaped building near Habsberg.

Each partner organization undertook to prepare four barn conversion plans in their own country, of which at least one was to be a cultural venue, and one a housing conversion. The planning work was preceded by the work of the visual artists to create contemporary works of art inspired by the experiences gained—the aim of which was to come into direct contact with, and explore the traits and potentials of, existing barns. In addition, their task was to work together with an architect on a conversion plan in order to enrich it through the uniquely different insights of a visual artist. For this reason, in our publication, next to each plan, we present on the one hand the contemporary artworks created and on the other hand those (one or more) proposals which are organically integrated into the given plan.

Within the framework of the BarnCulture project, two types of publications were produced. A longer one, with more conversion designs, targeting those who have a deeper interest in barn conversions, and a shorter publication, in which we present fewer plans, whose purpose is more to be a teaser, an inspirational "handout" for those who may not have thought about barn conversions yet. Both publications can be downloaded in digital form from the project's website (https://www.barnculture. eu/) and you can also access them via the websites of the partner organizations presented above.

How to use this book

This book is recommended for building professionals (in design as well as construction), creatives, barn owners and other interested parties. The purpose of this book is not to provide university-level engineering expertise or doctoral thesis-level material. Our intention is to present an approach to the possibilities of utilization of existing barns in a comprehensive and understandable manner.

AFTER THE INTRODUCTION. THE BOOK IS DIVIDED INTO THREE MAIN PARTS

- 1 individual barn conversion plans and related artworks
- 2 work processes and methodology, and
- 3 the technical basics for barn conversions.

We have separated the sometimes incomprehensible and sometimes boring technical content from the barn conversion designs themselves. If you would be interested in more details, we recommend contacting the architect of the individual barn designs via email or phone.

Co-creation between architects and artists

The teams from the three countries present their barn conversion plans in separate chapters. In this shorthened publication, there is space to showcase only one design per country, but a total of twelve designs were created, which can be explored in our 130-page publication available for download on our website: https://www.barnculture.eu

The last chapter of designs is the presentation of three possible solutions to one problem: how to approach the balance between modernisation and heritage protection. Each team represents different approaches to the same topic, starting from different initial conditions, proposing slightly different perspectives. Thus, the nature, scale and the integration of the artworks into the design also change. There are interesting differences in the three approaches:

THE HUNGARIAN TEAM

In the case of the Hungarian team, the architects and artists created the projects (focus areas) by working individually, providing a shared place for both architecture and art. The projects were created by processing real, surveyed barns, but behind the projects there are suggested functions rather than the needs of a real owner. The proposals of the visual artists regarding the functions of the buildings and some technical solutions were also incorporated into the plans.

THE ROMANIAN (TRANSYLVANIAN) TEAM

The Romanian (Transylvanian) team processed real barn conversion commissions architecturally, and here the artistic activity is more distinct from the architectural work. Artistic contributions are rather seen as decorative elements to the barn spaces rooted in the traditions of the region. With one exception, artists had no structural or conceptual contributions.

THE GERMAN TEAM

The German team's approach is dominated by the unity of art and architecture: their projects show the results of teams where architecture and art are completely intertwined, and hardly separable. Their projects respond to the real needs of the barn owners.

We could have dedicated a whole separate book to the presentation of the full work and results from both the architectural and artistic sides. However, this book is more of a summary, in which we do not intend to dive too deep into the individual areas, but to highlight the collaborative work, and the suggestions and inspiration derived from it. This is the focus which we would like to share with our readership.

In addition to the presentation of the projects (first part), the reader will also find some lessons learned from the collaborative work and the description of the entire process. You can learn about the experiences of shared creation, and trips and discussions, which could be useful for communities, organisations or project teams who would like to engage in similar activities.

Technical basics

If anyone would like to dig deeper, we especially recommend the third major topic of the book, in which we provide practical guidelines for the technical implementation of projects. One of our main messages is that the revitalisation of existing buildings (working with old materials, natural materials, archaic structures) requires special expertise. In the past, most of this expertise was widely understood. Today, due to the modernisation of construction techniques, most of this knowledge has been lost, but at the same time, new materials and new procedures have also been developed, which can also be applied in such projects. This chapter is not intended to provide comprehensive, hands-on construction skills: rather it demonstrates that there is professional, modern construction technology available for the renovation and conversion of these buildings. As in all chapters, here too we have attempted to create a comprehensive picture so that those who feel inspired can get started. Of course, this initial push is not enough to implement the entire barn conversion project, but it can certainly assist in the decision as to whether the project is viable or not.

The heritage and the future of rural communities

This book is a collection of ideas: you can find interesting and coherent content on each page, so you can look through the book both randomly and in a linear fashion. The team of authors undertakes to provide additional information and even to establish and assist collaborations. We would like this topic to become an active part of communities' thinking, ensuring the preservation and proper management of rural farm buildings, thus consciously shaping the environment, heritage and the future of rural communities throughout Europe.

Focal Points

IN THE COOPERATION BETWEEN ARCHITECTS AND ARTISTS The focus area was created as follows

The point of inspiration for the project was the spaces of the barns. The architectural-engineering approach and the artistic approach had to be combined in a way that reflects on the past, present and future of the barns.

It was an exciting and sometimes challenging task to get to know the perspectives of the team members, to distinguish their points of view, or to summarize them adequately. There were times when the inspiration for the joint work was provided by the visual details of the barns, its different materials, traditional building techniques, or even the history of the building. Due to the scale of the project, this type of energy and creative intention could take many forms. Sometimes the two teams (architects and artists) worked separately, then came together and held discussions to influence each other's work. This kind of mutual inspiration took shape when they were identifying smaller areas—so-called "focus areas"—inside or outside the barn. The purpose of the focus areas was to condense the team's thoughts and creative intent in a way that was architecturally well-defined, so that an enriching, artistically valuable intervention could take place. This needed to be done in a coordinated manner, guided by more general lines of thought: however, a focus area was always an emphasis of a selected detail. These emphases are different for every barn, but what they have in common was their ability to highlight the creative intent and to catch the attention of users and visitors.

In this way, the joint work, directed to more focused areas, became truly effective, and we feel that we succeeded in resolving the contradictions between the engineering and artistic aspects. In this work, translating each other's thoughts into their own "language", and finding the guiding idea or directing principle that helped in choosing the focus area, to which the individual works of art could be attached, played a major role. We recommend this working method, developed during the project, to teams where representatives of disparate fields of expertise aim to reach a common, meaningful result.

FIRST PHASE

Getting to know the team members, introducing areas of expertise and creating a common context, which in our case was the situation and condition of barns in the respective country.

SECOND PHASE

Gathering inspiration through practical activities, presenting each other's ideas, and brainstorming together.

THIRD PHASE

Individual work—the specialists worked separately, clarifying and refining their possible individual contributions as well as the emerging common goal.

FOURTH PHASE

Summarizing experiences, thoughts, ideas—choosing focus areas.

FIFTH PHASE

Teamwork in each field of expertise, with regular discussions and more intensive sharing of ideas.

SIXTH PHASE

Discussing established, specific, relevant solutions and selecting emphases and works that match the original guiding idea.

SEVENTH PHASE

Documenting and refining results.

Hungary INTRODUCTION OF THE HUNGARIAN CREATIVE TEAM

For the Community College of Art for the Carpathian Basin, as the Hungarian partner in the project, an important consideration in selecting architects and artists was that they should be at least partly connected to the Academy's local region, specifically the area around Lake Velence. Therefore, when reviewing the submitted applications, this regional connection was considered an important aspect alongside professional expertise and references. As a result, the choice fell on architect Gergő Radev, as well as the sculptor couple Edit Nagy and Balázs Pintér. It is an exceptionally fortunate circumstance that Gergő Radev had previously been involved in the design of barn conversions and the preparation of a professional publication about barn conversions. At the same time, the focus of his professional work lies in the use and promotion of environmentally friendly and traditional building technologies. Therefore, he became one of the authors of this publication as well.

From the pool of applicants, a fantastic team was ultimately formed. Although they were already exceptional professionals and artists before their meeting, the time spent together—co-working on study trips, in creative camps, and through mutual inspiration—significantly enhanced their creative energy. This is clearly reflected in every plan and piece of artwork that was created.





GERGŐ RADEV



BALÁZS PINTÉR



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KRISZTINA CZÉTÁNY



ZOLTÁN BEREI



EDIT NAGY

GERGŐ RADEV architect, the lead architect of the Hungary-team

I am a certified architect, and as the head of the Forest Modelling Engineering Office, I support mutually beneficial cooperation between nature and people. I'm also winner of the László Vargha Award of Folk Architecture, a graduated journeyman of the Károly Kós Association on organic architecture and a board member of the "My Grandfather's House" Foundation which supports the renovation of important rural architecture in Hungary. Working together with the master architects of the Károly Kós Association, and during the years spent organizing construction summer camps, I came to understand the creative spirit that shapes the environment and community, which I support and promote as an architect and entrepreneur. I believe that we can create value together with nature: by paying attention to and searching for new solutions. The organizations I work with support, cultivate and develop responsible, sustainable and environmentally friendly construction and architecture. We want to make available to everyone the modern, healthy and relevant solutions, and the best practices, with which we can jointly build an exciting and truly "clean" future. Our work extends from the representation of biophilic, gentle architectural principles to the support of on-site construction, and the education of children and future generations.

KRISZTINA CZÉTÁNY

artist

I studied ceramics at the Vocational High School of Fine and Applied Arts in Budapest, following which my interest turned to cinematography. I therefore graduated with a degree in motion picture and media. Later, I wanted to explore the possibilities inherent in art therapy, so I completed the MOME art therapy training. I am currently interested in conceptual art and art therapy, both exciting fields that provide opportunities for creativity and personal development. For me, what is attractive is when there is a concept or an idea, a story behind a work of art. This was the driving force in the installation entitled "Self-generation". For the finished work, the process of making it, as well as the creative work done in the community, were important to me, as well as meanings deeper than the merely visual.

DÁNIEL MAGYAR architect

I am an architect, born in Veszprém, and a trained therapist. I completed my architectural studies at the Fachhochschule Kärnten in Austria, and gained an internship at the Spoerri-Thommen architectural office in Zürich. I wrote my thesis on the depopulation of villages and the countryside in general, dissecting the phenomenon and looking for solutions as an architect. In the light of this, one of my favourite topics is which tools are available to an architect which can be used to create a community, even by rethinking existing buildings, and where each person is situated in this. Nowadays, I am typically active as a freelance architect in the Balaton Uplands (Hungary).

ZOLTÁN BEREI

artist

I graduated from the Moholy-Nagy University of Arts, majoring in media. In addition to creative work, teaching is an integral part of my activities. After graduating from university, during a litter-picking exercise in Budapest, I discovered a small yellowed book, a so-called "direction guide", that informed me that Bodrogköz, where I grew up, was part of the Dada district. From then on, it became obvious to me that my birthplace also determined my becoming a Dadaist artist. The motifs of the completed works show many internal connections with the networking efforts of Dada, Fluxus and Infermental video periodicals. I often work together with other artists and my students on joint projects, which are characterised by a kind of experimental tendency.

BALÁZS PINTÉR

artist

In 2004, I graduated from the Hungarian University of Fine Arts, majoring in sculpture. I live and work in Mór with my wife Edit. I most enjoy working with wood and clay, and holding a dialogue with natural materials. The creative process is just as important to me as the end result. My works can intentionally give the impression of being sketchy, because these motifs record the power released during the making. At the artist colonies, we can continue ideas that were started long ago, and new ones can also develop: in an ideal situation for me this is one of the high points of creative work.

EDIT NAGY

artist

In 2006, I graduated from the sculpture department of the Hungarian University of Fine Arts. Since then, I have been living in Mór with my husband Balázs Pintér, a sculptor, and our two sons. In recent years I have mainly created public, figurative works in bronze and stone. I am happy that I am now re-living the form-language of my earlier non-figurative small sculptures that has always been alive in me. Artist colonies are important because they are nests of pure creative work. My small sculpture entitled "Layers", made at the workshop, is made of Ytong bricks coated with adobe. A horizontally layered, airy, undulating form, inspired by the landscape, the clouds floating above it, and the harmonious swaying and division of the living earth reaching below ground level.

Community Workshop

KŐVÁGÓÖRS, HUNGARY

Architects: Gergő Radev & Rita Verba Artists: Zoltán Berei, Krisztina Czétány



Existing Condition



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Artistic Concept

Conversion concept

In terms of its location, mass, function and use of materials, the building possesses values that make its cultural significance indisputable. The aim of our concept is to endow the building with a new function that emphasizes the existing values and fills the place with life again. Due to its former function and scale, the barn may be suitable for creating a community workshop that also serves the social needs of today. A place where creation and craftsmanship take centre stage, where you can carry out DIY and repair. A community space that connects people, where father and son can create and pass on their knowledge, where you can experiment and be curious, and where professional tools and professional help are available for all of this.

In terms of the spatial organization of the building, it guides the visitor through the process of creation. First comes learning, then come the joint, and later the individual practice and creation. Finally, a separate part of the building provides space for the sharing of experiences and the presentation of creations/results. With the inclusion of external spaces, the use of space becomes more and more informal. The concept is based on sustainability and the use of local resources. The honest, raw surfaces of the materials appear on the building—red sandstone, white plaster, wood, reed—reflecting the local features, e.g. stone from the local sea of rocks, reed from Lake Balaton. The stone material found in the neighbouring sea of rocks plays an important role in the characteristic architectural appearance of the village, thus becoming one of the cornerstones of the concept. The installation, created by the interweaving of architecture and art, is connected to the stone material found in the area, creating space-games and giving space to creativity.

Gergő Radev



From the sea of stones to the garden of stones

The motif of the Sea of Rocks in Kővágóörs appears in the reimagined barn, where the stones are made of wood, glass, and stone. Each patterned stone has a function, it is interactive, for instance they emit light, they react to movement, sound or touch. They light up when someone gets close to them and speak when you stroke them, or move when someone steps on them. The stones can also have a sensor that determines the temperature of the environment: their colour changes depending on the temperature, for example, if the temperature is high, they will turn red, or if it is low, they will be green, but the lighting of stones can also change depending on the noise level. Further consideration of the motifs does not stop within the walls, it also expands into nature. Scattered throughout the garden they become comfortable resting places, cool in the heat of summer and warm in winter.

The role of stone in architecture is primarily the creation of space, while in art it is the creation of objects. Both professions attribute symbolic meanings to the stone such as strength or durability. Its role is also significant in orientation: just think of the cairn: a human-made pile or stack of stones that mark the way in caves or on mountain routes. The stone garden is an installation created by the intertwining of architecture and art, which encourages spatial games that can revive forgotten forms of spatial perception, filling them with symbolic meaning.

The placement of the stones in the garden can be a symbol of stability, representing the significance of the passage of time, or even the relationship between nature and man. Such installations can awaken deeper thoughts in visitors and give them an opportunity for self-reflection. We can think about the limits and possibilities in our own lives. How can we overcome our own limitations, what new perspectives can we discover? These questions can help us develop a deeper relationship with our environment and ourselves.

Stones, spaces and different perspectives all make people look at their surroundings with fresh eyes. The rock garden installations were designed so that viewers can physically walk through them. This interactivity gives visitors the opportunity to come into direct contact with the artwork and thus gain a deeper experience. The permeability helps the viewers to be not only observers, but also active participants in the artwork.

The arrangement of the stones offers different views from different angles and distances. This encourages viewers to move, change their perspective, and thus discover the artwork again and again. This dynamism helps them not only to see a static image, but to experience a constantly changing phenomenon and to look at their surroundings differently. Stones are natural elements, but in an artistic context they take on a new meaning. This contrast helps viewers re-evaluate everyday objects and their environment.

Krisztina Czétány



Black: Retained structure Red: New structure Yellow: Structure to be demolished



Artistic contributions

We started the BarnCulture project in 2023. In the art camp we created artwork that reflected in general on the contemporary functions of the barn buildings, and the materials and tools stored there. My co-creator Krisztina Czétány and I worked together. As the project progressed, we also got involved in the plans of two real buildings awaiting renovation.

Artistic concept of the Soul-sled

The ideas attached to the community workshop are a continuation of our work entitled Soul-sled made during the art camp. In the villages, people used to pull their small and large loads with human power on wooden sledges. The sledges were taken apart and stored in the barns together with the other vehicles when not in use. Our work Soul-sled was inspired by the study tour in Feked. On its regular, narrow strip plots, there are tall Saxon houses, and next to them are barns and pigsties with carved columns. A very characteristic motif of the house fronts is the tall, narrow door. The people who dwelt there brought out their dead through these soul doors. Our Soul-sled responds to the soul door. We pull the soul through the village with the human-powered sled.

The body of the sled was carved from a log cut in half. We painted its upper surface white. Bark floats above the sled. Underneath is a tablecloth crocheted by Krisztina's 101-year-old grandmother. Here is a photo from the turn of the century. I came up with the idea of mobile workshops by further thinking about the concept of soul-sled and pedestrian sled. In this workshop-concept some buildings can be moved and slid into each other by pulling them on sled-runners. The result is the creation of community spaces and workshops that are based on "community traction". It is a ritual that precedes the work process: with a joint effort the workshops are re-arranged according to the given task.

Community workshop = community towing = ritual = right to repair.

Zoltán Berei





Germany

The German partner in the project, the Landcare Association of Neumarkt in der Oberpfalz, had a different approach when selecting the team members (architects and artists) to the Hungarian and Romanian partners. The aim of the Association from the beginning was to involve a young team in the project. The call for participation was announced on the Association's website as a public call for tenders, and local architectural firms and other partners were informed and invited. Rather than making a strict distinction between the responsibilities of artists and architects, the artistic element was represented by the participating architects. They had strong education in design and art as part of the German architectural curriculum, and they presented their individual artworks and exhibitions in their CV. Thus, the German six-person team was made up of young architects with different levels of professional and artistic experience.

This approach has proved to be extremely successful. During the art camp, the participants quickly found their way to collaborate. The professional training and experience gained at different institutions led to exciting exchanges of ideas, which triggered their creativity. The artistic works created as part of the project, as well as the design of the barns included, began during a joint brainstorming session, following which the final works and architectural plans were completed in teams of two or three.





ALISSA BODLER

Alissa Bodler completed her Bachelor's degree in architecture at the Technical University of Munich and the University of Antwerp. During her studies, she consistently focused on visual art and has already produced several works of art on various material characteristics. In doing so, she always tried to perceive a place precisely and then reproduce it in its essence. In architecture, she is particularly interested in existing buildings and their further use and transformation. Alissa is currently working as the Department of Urbanism and Housing, Studio Krucker Bates at the Technical University of Munich.



FLORIAN ROTH

Florian Roth was born and raised in Munich. He is currently studying for his Master's degree in architecture at the Technical University of Munich. His Bachelor's thesis Realmontagen—Bauteile im Freien—dealt intensively with the old southern cemetery in Munich. The work resulted in a spatial installation that was developed entirely from the site and aimed to permanently change visitors' perceptions of the existing architectural settings. Existing spaces were staged with the help of minimal and reversible interventions. In addition to his studies, Florian works at Uns Architecture, Urban Design and Interiors and at the Department of Architectural Design and Conception under Prof. Uta Gra. He is also involved with the community radio station Radio 80000.



LEONHARD THUMANN

Leonhard Thumann studied architecture at the Technical University of Munich and the Polytechnic University in Milan. He has been awarded the Hanns Seidl Foundation Scholarship and the Erich Mendelsohn Prize. As a young architect, he has been working since finishing his studies not only on designs in an urban context but also repeatedly on architecture in rural areas and in the open landscape. During the design process, he likes to draw on the visual arts, particularly in the conception phase, and examines local conditions and spatial ideas in installations and sculptures.

ALDIS PAHL

Aldis Pahl studied architecture at the MSA | Münster School of Architecture and at the Technical University of Munich. where she graduated with a Master degree with honours. She is a co-founder of Studio-PahlGrotheus, a freelance architectural design studio that focuses on resilient architecture. In this context, she is also involved in teaching, initially as a correction assistant at the department of Prof. Isabella Leber in Wiesbaden. Currently, she has an independent teaching assignment at the MSA | Münster School of Architecture. Additionally, she works in the competitions department of Fink and Jocher and has been employed at Herzog & de Meuron's offices. Furthermore. she has curated exhibitions of her own work, which are situated at the intersection of public discourse on architecture and politics. In one of these exhibitions, she presented her thesis on the significance of the non-colour white in relation to spatial perception, which was awarded the BDA Master Award.



PHILIP STÖCKLER

Philip Stöckler studied architecture at the Münster University of Applied Sciences and at the Swiss Federal Institute of Technology in Zürich. During his studies, his Bachelor's thesis entitled "Symbol—Industrie Architektur" was awarded the Münster University of Applied Sciences Prize and the BDA Master's Prize. He worked at Herzog & de Meuron in Basel and is currently collaborating with different architecture practices on various projects. Since February 2023, he has been a research assistant at the department of Anne Holtrop at the ETH Zürich, which focuses on research into Material Gesture.

SVEN GROTHUES

Sven Grothues studied architecture at the MSA | Münster School of Architecture and at the Technical University of Munich, where he graduated with a Master's degree with honors. He is a co-founder of Studio-PahlGrothues, a freelance architectural design studio that focuses on resilient architecture. In this context, he is also involved in teaching, initially representing Prof. Joachim Schulz Grünberg at the Chair of Urban Planning at the Münster School of Architecture. Currently, he has an independent teaching assignment. Additionally, he works in the competition department of Fink and Jocher and was employed at the Herzog de Meuron office. Furthermore, he curated exhibitions of his own work, which are situated in the intersection of public discourse on architecture and politics. One of these works focused on the perception of space and was exhibited in the form of a walkable sculpture at the Wewerka Pavilion in Münster.





Visitor Centre and Event Space

WOLFSTEIN, GERMANY

Philip Stöckler Leonhard Thumann Alissa Bodler



Conversion design

The design presented for the transformation of the barn at the Wolfstein castle ruins ties in with the theoretical examination of the art object "223" and with its structural substance, and translates this into a real spatial configuration for a visitor centre. The preservation of the existing architecture in its entirety forms the basis for the architectural action. Minimally invasive and additive interventions make it possible to preserve the character of the existing architectural qualities of the barn and at the same time achieve ecological and economic sustainability.

In line with this strategy, both the solid stone base and the wooden roof structure of the former hayloft are fully insulated from the inside to allow the house to be used all year round. The ridge and gable façade of the attic are formed by insulating polycarbonate twin-wall sheets. This translucent façade envelope allows plenty of daylight to flood into the roof space, which is specific to the typology of the barn, and at the same time paints an abstract picture of the context without losing focus on the interior.

The spatial configuration of the existing barn, with its hayloft on the upper floor and the stables on the ground floor, will be fully preserved. The individual room areas will be assigned new functions as part of the conversion: the lower area of the barn will be converted into a back office with a reception counter and sanitary facilities in the former cattle stalls, a central foyer zone that can be used in a variety of ways, as well as storage areas and a new access to the upper floor. The re-structuring of the existing access arrangements with a more spacious staircase and a scissor lift is essential, particularly with regard to future use. On the one hand, these measures enable increased occupancy and barrier-free use of the building and, on the other hand, a high degree of flexibility to the upper floor.

The multi-purpose room on the top floor provides a solution for the limited space available in the barn and thus allows for a productive conversion of the former agricultural building. The room can be equipped with different movable furniture according to the respective programming, using the scissor lift and the storage areas on the first floor. The open-use space can be used in various ways, such as for workshops, dining, film screenings, or as an exhibition venue, and increases the intensity of use of the atmospheric space within the loft.

Philip Stöckler

Existing Condition



er Architectural Visual Designs





Architectural Visual Designs



LEGEND

- 1. Visitor Center
- 2. Castle Ruins
- 3. Exhibition Space
- 4. Reception
- 5. Back Office
- 6. Restrooms
- 7. Storage
- 8. Staircase and Lift
- 9. Multifunctional Attic Space
- 10. Layout for Exhibition with Display Panels
- 11. Layout for Workshop
- 12. Layout for Dining
- 13. Layout for Screenings / Video Presentations
- 14. Wardrobe
- 15. Buffet
- 16. Lounge Corner







"223"

The art object "223" is intended to draw attention to the specificity of materials and objects which already exist. Using a simple technique, it is possible to combine existing objects to create a new one. The artwork was created by collecting pieces from and around the barn at Wolfstein. It brings together at a glance the colour and material spectrum and thus provides a basis for the architectural design. As a symbol for the barn, the object shows that existing things have a value that must be protected.

Alissa Bodler



Transylvania

INTRODUCTION OF THE ROMANIA-TEAM

Because 90% of farm holdings are under 5ha (Eustat, 2020) Romania has a huge number of barns as well. They are an everyday part of the village landscape. Thus, in the call for the selection of the project team, in addition to professional requirements, we were able to include conditions that required that the applicant preferably have some form of experience with barns. The two selected architects had had such design work before, and one of them had carried out several years of research on the topic. Among the visual artists, there is one who also deals with the protection of built heritage, and one of them lives in a barn that he transformed himself. Below you can read a short introduction of the two architects and four visual artists collaborating in the project.



GYŐZŐ ESZTÁNY



ERNŐ BOGOS





ALPÁR PÉTER



IMRE BERZE



PÉTER RIZMAYER



JÁNOS SZÉCSI

GYŐZŐ ESZTÁNY

architect, the lead architect of the Romania-team

I am the owner and chief designer of the architectural firm Esztány Stúdió in Csíkszereda (Miercurea Ciuc). I was born in 1972 in Gyergyószentmiklós (Gheorgheni), in the Hungarian-populated part of Transylvania, Romania. I completed my high-school studies in mathematics and physics in Csíkszereda. I graduated from the Faculty of Architecture at the Technical University of Cluj in 1996, then between 1997 and 1999 I graduated from the school of the Károly Kós Association founded by the famous Hungarian organic architect Imre Makovecz. I am currently an active member of the Architectural Advisory Board of the regional rural development office "Csík LEADER Local Action Group" and of the Art Committee of the Roman Catholic Architectural of Transylvania. My mission: serving my community, and my creed: experiencing the joy, love and freedom of creation, as well as recognizing and passing on the beauty, goodness and truth in the created world. My work community, the Esztány Stúdió architectural office, is an architecture, in the spirit of our role model, the 20th century Transylvanian architect, Károly Kós. As an architect working in the Hungarian part of Transylvania, I have long been interested in the past, present, but especially the future of the region's architecture. My research topic: vernacular-inspired, traditional, renewable and organic local architecture. Saving the barns of Székelyföld (the Hungarian populated part of Transylvania) is also important to me, and many of my research, publication and design activities have been related to this topic since 2015.

ERNŐ BOGOS

architect

I was born in 1961 in Csíkszépvíz (Frumoasa) in Romania. I completed my studies in the artistic lyceum in Csíkszereda (Miercurea Ciuc) and then in Marosvásárhely (Târgu Mureş). In 1990, I graduated from the Ion Mincu University of Architecture in Bucharest with a degree in architecture. After graduating, I also completed my studies at the Károly Kós School founded by Imre Makovecz. I have been working in my own architectural office since 1997, and I have been a member of the Hungarian Academy of Arts since 2013. For me, barns are an integral part of the cultural landscape in which we live and which we inherited from our ancestors. I consider it important in my work to be able to pass on something from this heritage to posterity.

ALPÁR PÉTER

sculptor, the leading visual artist of the Romania-team

I was born in 1976 in Sepsiszentgyörgy (Sfântu Gheorghe), Romania. I completed my high school studies at the Art High School in Sepsiszentgyörgy, and then in 2001 I graduated as a sculptor at the University of Fine Arts in Temesvár (Timişoara). I completed my doctoral studies at the Faculty of Arts at the University of Pécs in Hungary. My professional activity is primarily related to contemporary sculpture, natural art and performance. I am an active participant in the international contemporary art scene, and have created works in many parts of the world (Korea, India, Iran, South Africa, Denmark, Poland, etc.). I am a member of the National Association of Romanian Artists. Currently, I also work as a lecturer at the Faculty of Music and Visual Arts at the University of Pécs, at its Sepsiszentgyörgy branch. I consider it very important to include contemporary culture, old-fashioned materials, and built heritage that has lost its function, are re-evaluated and filled with new, updated content. In this way the values banished to the environment of museums can once again become the value of the present culture and society, thus ensuring its survival

IMRE BERZE

I am a sculptor, born in 1985 in Székelyudvarhely (Odorheiu Secuiesc), Romania, where I still live and create. In addition to my work in the studio, I work as a museologist at the Haáz Rezső Museum in Székelyudvarhely, and teach sculpture at the Faculty of Music and Visual Arts at the University of Pécs, at its Sepsiszentgyörgy (Sfântu Gheorghe) branch.

PÉTER RIZMAYER visual artist

I was born in Budapest, Hungary in 1977. I graduated from the painting department of the Hungarian University of Fine Arts in 2008, but I also pursued video studies in parallel. I work as a freelance restaurateur. I moved from Hungary to the small village of Árkos (Arcus) in Transylvania in 2019. Since graduating, I have mainly made video installations and video performances. Each of my creations is related to nature, and I examine the world around me through this lens. For me, everything starts with nature, this is the basis, the building is the person itself. I walk in nature and nature walks in me. With the medium of video, I can minimize human-often harmful—intervention in nature. Art should not pollute the environment. In my installations, I look for the metaphysical values of the world around us by focusing on individual elements and forces of the landscape. At the Hungarian University of Fine Arts, it was architecture that really interested me, including how to approach a built space organically, and the barn as a landscape element symbolizes this organicity even in today's world (for example, if you walk through a Transylvanian village), as if they were created iust for my video installations.

JÁNOS SZÉCSI visual artist

I am a visual artist living in Lövéte (Lueta) in Romania. I obtained my painting diploma at the Faculty of Arts at the University of Pécs in 2010, in Hungary. I currently teach at the Department of Fine Arts in Sepsiszentgyörgy (Sfântu Gheorghe). The spirit of the place, the remains of the rich and archaic culture, my work, the beautiful nature, and—last but not least—my family, attracted me to live in Transylvania. I live in a barn that I personally relocated and transformed into our family home and my atelier.

Residential Barn

ÁRKOS, TRANSYLVANIA

Architect: Győző Esztány *Artist:* Péter Rizmayer



Location

The barn to be converted is located in the village of Árkos (Arcuş), which is located 4 km northwest of Sepsiszentgyörgy (Sfântu Gheorghe) in the valley of the Árkos river. The two main attractions of the village are the Unitarian Fortified Church and the Szentkereszty Castle.

Its settlement structure preserves the pattern of traditional Székely Hungarian settlements. The plot in question has a traditional arrangement with a relatively large yard. The house is located at the front of the plot and the barn is at the back, while behind it there is a spacious orchard that stretches all the way to the river Árkos.

Concept, function

The ground floor of the farm building consists of two large spaces, built of timber and natural stone walls, with fodder storage in the loft. Currently, the barn operates as an artistic community space under the name 'Water-barn', which is a result of the artistic initiative of this project, and hosts numerous fine art events and exhibitions.

The owner would like to extend the function of the existing residential building to the barn as well. The large loft space would serve as a summer room, and in the former stable a living room, a kitchen-dining room and a bathroom would be added. In the attic above the stable, two children's rooms are planned, with window booths and nooks, and above them, an elevated children's nook with a rope net floor and a panoramic window. The plan is designed according to the customer's needs.

I thought it significant to preserve the original experience of the space, in particular the larger, open areas. For this reason, we broke through and opened up the dividing walls in the children's bedrooms, and the roofs overhead. Wherever possible, we solved issues of internal divisions of space using permeable wooden screens and rope netting for the same reason. The double-height shaded living room installed in the middle of the barn provides a cool, airy and intimate lounge and relaxation space during the summer heat. In this project, the barn is to have a supplementary function to the residential building, but in general such a small barn could function as an independent apartment for a smaller family too.

Győző Esztány



Architectural Visual Design



LEGEND

- 1. Summer Room
- 2. Bathroom
- 3. Kitchen / Living Room / Dining Room
- 4. Children's Room

Black: Retained structure

Red: New structure

Yellow: Structure to be demolished









Existing Condition

The relationship between architecture and fine arts

The fine art installation emphasizes the "light play" of the planks in the large space, so part of the architectural concept is to keep the weatherboarding in its original form, which makes the space usable as a summer lounge. A similar play of light is also created in the windows of the children's rooms, where the existing external planks can be rotated. Based on the artist's idea, a "house in the house" concept was created with the partial weather-proofing of the barn, with a smaller heated space separated by straw bale walls, and a small lookout tower on the roof ridge of the barn. The straw bale elements also provide some of the furnishing. In addition, we strengthened the connection between outside and inside by creating transitional spaces: for example, we created square window niches in the children's rooms where they can sit and feel as if they are outside.

Environmentally friendly, green architectural solutions, sustainability, tradition

First of all, we considered it important to retain and restore the original building materials. The newly added materials—such as the glass surfaces, the wooden elements, straw bale constructions and the rope mesh floor—are environmentally sound, organic materials which respect the original elements and integrate nicely into the existing building materials.

Győző Esztány



Artistic Concept

Artistic inspiration

The concept emerged from the location of the barn on the plot: on one side, there is a well and the residential house, and on the other side, an apple orchard with a stream at its far end. The barn is positioned at the boundary of these two spaces, separating the flowing stream water (the orchard) from the stagnant well water. The well is the only living well in the area; the others have dried up. For this reason, there were several small water-gates (which appears in my Water-Gate installation) through which people could enter the property. The nearby neighbours collected water from this well for their families and animals.

It goes without saying how important water is for life, including family life. Water will be brought into the interior of the barn, filling its space with life. My goal is for the water to permeate the space like the light filtering through the cracks between the wall-planks. Here, water will not be the force of floods, but of creation. I intend the water to be a symbol of the future life of the barn and to draw attention to the sanctity of the unity of family life.

The Water-Gate installation, created from buckets arranged throughout the barn space, speaks about the community-building power of water. It is placed in the central position as an analogy to the old water-gates that once stood on the plot. The gate can be perceived as a Gothic or Renaissance arch, transforming and filling the space with sacred content.

Péter Rizmayer



Model project

THE DILEMMAS OF MODERNIZATION AND HERITAGE PRESERVATION

The aim of the model project was to utilise the extraordinary pool of knowledge of the three national teams on barn conversion. Thus, we challenged them to respond to probably the most difficult trade-off in barn conversions: heating the space vs. maintaining the original appearance. The issue is less significant if the barn is built of stones or bricks or if it is plastered. Therefore, the challenge included the criterion of applying it to a traditional timber structure. We chose a "model barn" in Romania, and on the condition that the owner has to build one of the proposed conversion plans in it. Since Romania is the country that probably has the highest number of existing wooden barns in Europe, the ideas generated through the model project could have a very strong impact on future barn conversions.

The selected "model barn" is therefore a timber structure with two large gates, with timber walls and the roof tiles exposed from inside, and a door towards the guestrooms. The space has a stage and is a venue for events such as concerts, exhibitions or family events. It has a capacity of up to 80-100 seated guests.

The task was to design a creative and aesthetically appealing solution for the "Barn Hall" which

- enables the people to feel comfortable in the space during cold weather
- either does not alter at all, or only proposes very minimal changes to, the outside look of the barn; thus, the original surfaces (timber and rooftiles), the supporting structure and the large space should remain visible
- uses and respects nature-friendly and traditional building methods
- is sound insulating—as a courtesy to the neighbourhood during parties or concerts
- is inexpensive, or at least affordable for middle class people

The intervention can remain in place over the whole year or can be easily removed

- if removable, the removal/build-back process should not take more than a few hours, should be possible without involving heavy machinery or skilled workers, and the fabric should be storable in a significantly smaller space than the Barn Hall
- if not removable, it should be movable, able to be packed away or hidden for the warm period of the year.

The three national proposals had significantly different approaches, and the main challenge of keeping the structure visible resulted in three different proposals: one covered the building from inside, one from outside, and one chose insulation between the timbers without covering them.

Download the high resolution poster in 4 languages







Hungarian Team

PROS:

Keeps the internal walls visible; provides opportunity for complete space heating; uses naturefriendly building materials; proposes attractive hints of traditional building methods and decorations; provides significant sound insulation.

CONS:

Completely covers the old walls outside, and the roof area inside; removing/rebuilding is a serious project twice a year which needs a team of skilled workers; not cheap; storing the insulation during summer requires a large space.



PROS:

Easy to pack away; affordable; gives a special new look and atmosphere; keeps the feel of the large space; uses nature-friendly materials; can be used during the summer if necessary; provides some sound insulation; one unskilled person can open/close.

CONS:

Hides the timber walls and roof; doesn't completely stop the outside air coming in; blocks natural light coming through the large gates and the glass rooftiles; can present challenges regarding fire safety regulations.

Romania team

PROS:

Keeps the timber walls visible inside and outside; affordable; only the lower section of the building has to be heated; provides some visual access to the attic area; uses-nature friendly materials; easy to remove; can be stored in a fairly small space during summer; proposes attractive hints of traditional decoration (to the ceiling) and traditional rugs (to the carriage doors); unskilled team of 1-2 people can remove/rebuild; provides some sound insulation.

CONS:

Foldable ceiling is not removable, cannot be packed away and is difficult to clean.

The choice of the owner

The third plan was chosen, although some modifications turned out to be necessary during the construction process.

Walls were sealed with natural sheep wool treated against insects and fire. This was extremely easy to apply and only small quantities were necessary, making it very affordable. It was worth cladding it with clay or wood to stop birds and other animals from collecting it for their nests.

A wooden frame holding plexiglass windows was built in the southern gate with a proper wooden door to fit with the other doors of the barn. The wooden frame was painted and distressed to fit the surrounding structure. The frame consists of three similarly sized sections which can be removed and rebuilt by one or two unskilled people with just the help of a screwdriver.

The rug-curtain was built of local handwoven rugs fixed on wooden haystack-poles traditionally stored in barns. It can be easily removed and each rug can be washed in a washing machine and easily reinstalled.

The ceiling was built in a different way than proposed: no planks nor foldable structures were used: instead, foil-type materials were applied on wooden haystack-poles. At the beginning of the building process, it turned out that in one corner three timbers were structurally weak because of insect damage, and therefore the heavy foldable ceiling had to be avoided. Instead, a patchwork of transparent foils and semi-transparent sun-sails were used. These are not only lightweight materials but provide air tightness, and allow the light to enter from the attic area, while at the same time enabling visual contact with the roof. They can easily be removed and reinstalled, and are easy to wash.

Dark infrared heaters were suspended from the timber structure of the ceiling which provide just enough heat for an event without infrared light emission, or the noise of hot air blowers, both of which can be disturbing during performances.



The transformation of the northern and southern gates

Technical summary

MODERN TECHNIQUES FOR TRADITIONAL BUILDINGS

The renovation and modernisation of barns, sheds and general agricultural buildings does not demand complicated solutions or material specifications. Following the existing structure's craft principles will make the work simple and unambiguous to carry out. This chapter draws together an illustration of the basic guiding principles of material specification and technological palettes necessary for the renovation and re-building of old barns, sheds and even traditional dwellings. In the course of the renovation work, the involvement of the responsible professional becomes important, who with their experience and modes of over-arching technical presentation can help with the realisation of the modernisation project. So that this guide can help everyone to access applicable technical solutions, the book's authors recommend the involvement of professionals throughout the process, since they can understand the existing building's conditions and "needs".

The course of renovation and modernisation

The preservation of existing barns can be advantageous from many points of view. If we decide to pursue this path, the following processes must be followed:

- 1. Making a survey of the building's condition
- 2. Specification of the requirements, the cost range and the likely timescales
- 3. Determination of the new function
- 4. Choice of materials and technologies
- 5. Preparation for the works and how they are to be carried out

The above five phases would each merit their own chapter. However, the goal here is the determination of the technical content (specification of materials and technologies), to have an overview of the route to be followed.

Understanding initial conditions

So that we can understand the building in all its particulars, it is important to get to know the existing structures and their condition:

- 1. The type of the foundation and its depths;
- 2. The walls' material, thickness and if there is any problem with moisture;
- 3. The floor structures' construction, loadbearing capabilities and layers (build-ups);
- 4. The roof's structural system, the material and condition of the roof covering;
- 5. The condition of doors and windows and their lintels;
- 6. The layout of rooms and their measurements.

The concept

If we are to consider renovation and modernisation, then the dimensions and magnitude of the alterations, and the chosen materials and solutions, all depend on the needs, the likely cost range and the technical requirements of the alteration work itself. It is best to set these down on paper as soon as possible in the process, so that any inconsistencies can become clear.

Determination of the technical content

When planning the transformation of an existing building, follow the steps below when making choices about materials and technology:

- 1. Preservation: preventing further damage of the existing building structures
- 2. Renovation: repairing the building's structure without any associated conversion work
- 3. Conversion and extension: additions to the building's existing structure, significant re-modelling works
- 4. Modernisation: transformation to achieve contemporary needs and demands

PRESERVATION AND RENOVATION

In this phase, we must diagnose and halt causes that harm the building, and only after this can we proceed with the relevant repair of the structure.

THE IMPORTANCE OF CONDUCTING WATER AWAY

In case of natural materials, to prolong their lifespan, it is vital to deal with damp and to keep moisture away. Our tasks here are:

 $1-{\rm to}$ gather and drain the rainwater from the roof – at least 5m away from the building.

2 – surface water should be conducted away with the help of either ditches or drains. Drainage systems should in any case be installed above foundation depths, thus if the drainage is directly next to the walls we have to determine the depth of the foundation.

WALLS

When repairing and re-building walls, we must pay attention to the movement and shrinkage of each type of material—existing timbers should be repaired with new, dry timbers, while in the case of earthen mixtures we should use fibrous materials which can resist cracking (straw, chopped straw, shiv/chaff or hay), or we might need to make our mixture leaner. If walls are wet, they must first be allowed to dry out, and only after this we should repair them, or fit the insulation etc. In the case of diagonal cracking originating from subsidence, we should consider the underpinning or replacement of the foundation. Moreover, to equally distribute the load of the roof it may be worth installing a timber or concrete ring beam.

FLOORSLABS AND ROOFS

These structures are generally made of timber; thus, our task is to prevent damp spots, and the damage by insect who live beneath the bark. In roof structures, it is common to remove or modify the tying or bracing elements for better utilization of space—verifying their presence is an important task. The role of slabs is mostly to make an extra storage space in the attic. During renovations, we may encounter various configurations. We need to ensure that the new ceiling is airtight and that

moisture is controlled by using vapor-retarding, vapor-permeable films (recommended on the inside). However, we should avoid trapping moisture or humidity within the structures, as this can significantly reduce their lifespan.

CONVERSION, EXTENSION AND MODERNISATION

NEW STRUCTURES

The following aspects are recommended to be considered when constructing new structures: thermal expansion and movement; vapor permeability and water tightness; thermal bridging; airtightness.

THERMAL EXPANSION AND MOVEMENT

Earthen and wooden fabric expands and moves in a different way to brick and stone (due to heat and moisture), and so these can move apart from one another once installed. Such movement can be moderated or reduced by keeping them shaded, or with concealed reinforcements. Concrete construction can often be combined with brick and stone structures, although reinforced concrete is a better conductor of heat, and so it is worthwhile forming the outer face with stone, brick or thermal insulation. When adding a new section to an existing building, it is recommended to create a movement joint where the two structures can move independently.

VAPOR PERMEABILITY

If the water absorption and vapor permeability of two surfaces differ significantly, the surface may become stained due to moisture. If the wall is damp, additional moisture will escape through vapor-permeable materials, leading to faster deterioration of these. It is advisable to pair vapor-permeable materials (such as clay or brick) with other vapor-permeable materials, or if this is not possible, ensure the potential for ventilation. A key consideration when designing floors is that a damp-proof membrane may expose the walls to a higher moisture load. This can be mitigated by using gravel, drainage, and installing vents. If there is a point in the structure (such as the edge of the floor) where moisture can escape, it will do so. A solution may be the use of partially vapor-permeable materials (e.g., perlite concrete, solid brick, etc.). As a basic principle, structures should be designed to be open to moisture movement towards the exterior—this can be achieved by increasing the vapor permeability of each layer as it moves outward, so moisture entering the structure can escape toward the exterior.

THERMAL BRIDGING

Most natural building materials are massive and poor insulators—wood being the exception. New insulated structures, on the other hand, are lightweight and have good thermal insulation properties. When combining these two types of structures, thermal bridges and interstitial condensation can occur, which could damage the structures. If thermal insulation for old structures is not feasible, it is useful to slightly undersize the connecting structure to match the existing structure's properties.

AIRTIGHTNESS

If a building is to be insulated, its air-tightness must also be ensured, since any air that can get out of the building will carry heat away with it. It is therefore important, in considering the ability of different components to be built together, to pay close attention to the behaviours of the various types of construction. Airtightness can be achieved most simply by the application of renders and plasters, or with the installation of breather membranes and vapour-open membranes.

INSULATION

It is certainly worthwhile insulating the exterior of the building, using breathable and (where possible) natural and locally sourced materials. Insulating renders can be useful here, as well as bulk or board type materials installed within the construction, and materials which can themselves be rendered. If we insulate the interior face of the walls, a rule of thumb is to use one third of the thickness of the estimated exterior insulation thickness.

FLOORS

In the case of new floor surfaces and structures, we can make use of gravel and foamed glass gravel layers, which being anti-capillary will resist the uptake of water. It is important that fine soil particles do not migrate into these layers. If the site is particularly wet, then we can use internal drainage, which we connect with external systems, or for which we can build in separate ventilating channels. A gravel bed should be at least 150 mm deep.

WINDOWS AND DOORS

When selecting new windows and doors, it is worth considering the principles of relative coldbridging—old walls are in all probability not insulated to the highest standard, and so we need to choose appropriate methods. For sealing we can make use of wool, or hemp tow. Wood-framed windows are appropriate to a traditional building and increase its real estate value. We can also build in technologically appropriate windows and doors in synthetic materials—in this case choose a colour shade that matches the building.

FINISHES AND FITTINGS

It is possible to fit more or less any type of finish to a newly made floor. It's also important not to overdo insulation, for instance only applying water-resistant surfaces in bathrooms where there is direct exposure to water. Concrete structures are well-suited for very damp areas, but they are vapor-tight structures, so when used over large areas, they can accumulate significant moisture and direct it toward connected structures, such as the walls.

HEATING AND COOLING SYSTEMS

Contemporary heating systems tend to use large surfaces and relatively low temperature installations: underfloor heating, wall heating etc. In the case of timber-framed (i.e. lightweight) buildings one can consider ceiling heating and cooling as well. We usually don't cool the floors due to condensation. These systems function with traditional heat-producing installations: wood-burning stoves, and gas boilers. New types are also available, including air-source heat pumps, ground-source heat pumps, photovoltaic solar cells and hot water solar collectors.

RECOMMENDED ENVIRONMENTALLY FRIENDLY BUILDING MATERIALS

With the renovation and modernization of agricultural buildings, we also create a new the environment, and for the future, we can not only set an example but also create problems with improper 'development'. On the next page, we have summarized some gentle, environmentally friendly building materials whose use is beneficial and healthy for old buildings, the environment, and users.

| BUILDING MATERIAL | AREA OF USE | ADVANTAGES | DISADVANTAGES | |
|--|--|---|---|--|
| INSULATION | | | | |
| Light earth | Additional insulation for floor and wall insulation, or infill for timber-frame construction, filling of spaces in or in between structures—treatable with borax against fungal growth | Easily obtainable, can be installed without leaving voids/ gaps, malleable material which can be shaped to fit any space, re-useable, waste-free | High labour input required, not suitable for bearing loads, long drying times: 3-4 weeks depending on its thickness | |
| Blown cellulose and wood fibre insulation | Suitable for insulation to walls, floors and roof planes | Can be installed without leaving gaps, not susceptible to rodents | The closing of all surfaces must be almost perfectly gap-free to take advantage of the blowing process—non load bearing, requires a separate structure | |
| Wood fibre board insulation | Suitable for the insulation of construction not directly exposed to moisture | A diverse range of boards is manufactured: this allows for quick professional installation in a variety of density and thickness | More difficult to obtain, high cost | |
| Foamed glass insulation in granular form | Insulation for use in areas sensitive to dampness (plinths, floors) | Loadbearing, brings together both the [non-capillary] gravel bed and insulation into one construction layer | Not always easy to obtain and/or afford | |
| Expanded perlite additives to form insulating mortars and renders/plasters | Insulation which can be used on the inside and outside of existing buildings | Easy to install, moisture-open while guarding against excessive moisture intake, individual thicknesses can be applied with different handling | Requires reinforcement with a plastic mesh or glass fibre mesh, use of these materials requires attention and precision (preparation of all surfaces and in mixing the product) | |
| Reedboard | For elevations and floor insulation, finishing of partition walls | Locally sourced, relatively cheap building material, simple to install | Fixed board sizes—ability to cut to size depends on circumstances and requires significant labour input | |
| Dry-packed mineralised woodchip | Natural filling material (pugging) for suspended floors and slabs above vaults | Loadbearing, works in thin layer as a leveller | Not always easy to obtain and/or afford | |
| RENDERS, PLASTERS AND | AGGREGATES | | | |
| Lime-based paints and renders/plasters | Suitable for rendering and finishing both internal and external areas and surfaces | Diverse range of products available, suitable for demanding areas, mildew-resistant with antibacterial properties | frost-sensitive, highly caustic | |
| Clay renders/plasters and topcoats | Specialist product, primarily for plasters and finishes to internal areas and surfaces | Diverse range of products available, broad range of colours, re-useable, waste-free, easy to produce a smooth finish and easy to compact | Appropriate use depends on circumstance, requires a specialist training and understanding of the material, adjusting of mixture by experimental samples | |
| Lime topcoats | Specialist product, for plasters and finishes to internal and external areas and surfaces | Diverse range of products available, broad range of colours, re-useable, waste-free, easy to produce a smooth finish and compactable, not sensitive to moisture | Appropriate use depends on circumstance, requires a specialist training and understanding of the material | |
| Expanded perlite and expanded clay | Insulating additive, insulating filling (not loadbearing) | Easy to use and install | Ease of obtaining materials is variable | |
| Air-permeable (drying) renders/plasters, Waste Tyre Ash (WTA) repair mortars | Plinth renders for internal and external use | Good ability to withstand moisture and salts | Specialist knowledge for surface preparation and application required | |
| WALL STRUCTURES | | | | |
| Hempcrete | Wall infill | Good abilities to deal with damp and provide insulation, monolithic construction (few layers in build-up) | Specialist knowledge is necessary, ability to obtain materials is variable, mixture is caustic due of lime | |
| Porous concrete walling materials and insulating boards | Infill and loadbearing walls, for preparation of plinth walls and internal insulation | Easy to use/install, ready for use, simple and quick construction | Only moderately loadbearing, susceptible to frost (a gravel bed is required below) | |
| Straw bale | For elevations and floor insulation, finishing of partition walls | Locally sourced, relatively cheap building material, simple to install, many system-solutions | Fixed bale dimensions, building depends on circumstance and time of year, demands on labour | |
| Adobe bricks and wattle & daub walls | For building loadbearing and infill walls, ensuring thermal mass, and as part of a vapour management strategy | Materials are easily formed and adapted, exchangeable with other materials, can be renovated, and waste-free | Production can be slow, 3-5 weeks' drying time | |
| Compressed earth blocks and rammed earth | For building loadbearing and infill walls, ensuring thermal mass, and as part of a vapour management strategy; the plinth in any case must be formed of dense brick | Materials are easily formed and adapted, exchangeable with other materials, can be renovated, and waste- free, faster production | More susceptible to damp than adobe bricks, professional assistance required to establish soil quality | |

SUMMARY

The above summary is intended to help with the work of experts. The preservation of old buildings, and their expert care and further building, can be a challenge in today's fast-paced world, but the work invested will certainly be rewarded.

Principles of building development

- 1. Cost-effectiveness and simple realisability,
- 2. Reasonable cost-benefit ratio (achieving significant change with a realistic investment),
- 3. Establishing priorities,
- 4. Adaptation to building structures and conditions,
- 5. Stopping negative trends and establishing new, beneficial ones.

The above principles create a set of solutions that align with the existing natural building structures and which are easily implementable with the involvement of the local community. This is important because combining old and new materials and technologies with radically different behaviours is complex and often leads to deterioration of the structure.

A further advantage of local, simple technologies is that they are easy to teach and to learn—anyone can master them, without the need for either specialist tools or the attendance of professionals from remote locations.



Further information: https://www.ermin-architects.com/

FURTHER TECHNICAL MATERIALS IF NECESSARY

REPAIR OF EARTH WALLS

Most commonly we would start with limited removal of damaged fabric layers, until we find sound material or substrates on which we can then build our new layers. The desirable properties of the surface:

- Clean (dust free)
- Dry
- Durable (stable, hard)

There may be many types of cracking within the wall—these can originate from the natural movement of the wall itself, or arise from external conditions—in this latter case it is worthwhile looking in to the causes of these with the assistance of a professional.

The first type of cracks are reparable, being usually vertical cracks around the window parapets/ sills, or at the junctions of internal and external walls. These cracks can be filled and re-plastered after cleaning and filling the gaps with wedge-shaped pieces. Any fissures must be raked out, cleared of dust and loose material and moistened. First one must select the wedges to be used for the repair (primarily brick- or tile-pieces) which should be inserted every 150-200mm tightly into the crack. Once the pieces are selected, fill the gap with clay mortar (plaster material) and insert the wedges. The wedge should not move when gently tapped by hand! If the wedging is not done properly, the crack will reopen.

Another possibility is wall stitching—in this case, solid bricks are inserted every 200-300mm along the crack, with the crack line running through the middle of the brick. These measures detailed above are appropriate for long cracks which are thicker than a finger's width. Narrower, shorter sections can be simply cleaned and filled. It is recommended that the upper surface of any filler be reinforced—thus one would rake back the existing finish by 3-5mm depth, 100-150mm width on each side of the crack, and after dusting and moistening the surface, a loose-weave jute, hemp or linen cloth/scrim can be worked into the repairing render, which will bridge the crack. This step should be done after the wedges and crack filling have dried.

The repaired and cleaned wall can then be finished with a smooth surface of render or plaster. By "plaster" here we can mean earth mortar, while by "render" we would signify lime or cement mortars.

PLASTER

There exist both traditional and contemporary approaches—the latter we recommend because of the difficulties of obtaining local fibres—but both are viable. The traditional system starts fundamentally with the local soil, with the addition of a little sand and a great deal of fibrous additives (chopped straw or chaff). As a starting point the proportions of this would typically be clay subsoil:sand:fibre = 12:1:3-4. In contrast to this, a modern mix would work with higher sand and lower fibre contents, starting proportions being clay subsoil:sand:fibre = 12:36:1-2 In these mixes sand is responsible for the hardness of the material, the clay is present as a binder. One can also add old earth bricks and/or lime-free crushed plaster to the mix.

PREPARATION OF SAMPLES

This is recommended if we are not working with broken up/recycled materials, or when we plan to work on a larger surface area with plaster. A suitable set of samples should be prepared, each with varying proportions of ingredients, adjusting one key component at a time in each sample. The samples should be made of equal thickness and all on the same surface, with a minimum area of 250×250mm. Make sure that the samples are individually identifiable, and comparable with each other! Those that crack the least, and which adhere most strongly to the base-board, are the ones to choose. The goal is not to achieve zero cracking, but rather to choose those whose shrinkage on drying does not lead to separation from the base-board, or does not disintegrate into pieces, since it should not be too fragile. Material with too much sand and with too little binder (clay) will not be robust, and can result in a finish which will rub/dust off easily—in short, it's important to avoid extremes.

We need to distinguish between coarse and finishing plaster. Coarse plaster is between 10 and 20mm thick, and may be formed of several coats, but always only after the preceding coat has dried. With coarse plaster it is not an absence of cracking which is important, but rather its ability to form

an even surface with good adhesion. This prepares for the finishing plaster, which is a finer layer, 2-3mm thick, and which gives the final surface finish. The thinner the material, the finer the fibres we use, so in this finishing material we would use horse dung rather than chaff or chopped straw (the traditional recipe is sand:subsoil:horse dung = 1:2:½). The dung should be free of straw, and well broken-up when mixing the plaster: once it has dried there should no longer be any smell to it. In order to avoid bacterial infection when mixing by hand it is recommended to use gloves! In contemporary mixes we would normally add sand and clayey subsoil to the mix, but not horse dung—sand:subsoil = 1:4. In case of cracking it can be necessary to finish the surface with an extra coat of a thinner, more dilute plaster finish—this consolidates minor cracking and leads to an integrated and consistent surface.

It is necessary to wait for each layer to dry out between coats, otherwise the surface will crack and fail. It is possible to reinforce the surface with a natural or synthetic mesh, which should be worked in to the top third of the freshly-laid coarse plaster basecoat.

WORKING THE PLASTER

The surface to be plastered should be clean (dust-free), dry and stable. The wall should be scratched up with a mason's trowel, brushed down and moistened with water. Plaster can be applied to the surface with the hands, or using a trowel or scoop, or with a machine. It is then smoothed out with large movements, using a batten or straight edge. A plank is placed at the base of the wall, so that any plaster which falls off during the work can be re-used. You should start at the bottom of the surface and work your way upwards. The area you work on should only be so large that the material used can be smoothed properly before it cures/dries. Generally speaking, 1-2 base coats, one smoothed-coat and one finish coat are sufficient to form a finished wall surface. After each coat has dried it should be scraped down in order to remove any projecting lumps, and this will also allow you to check the quality of the surface. With the smoothed plaster coat, we can work with a steel smoothing trowel, or with a Japanese metal trowel, or even with a sponge. A metal smoothing tool will compact the plaster and give a mirror-like finish, while with a sponge you will get a more granular appearance similar to the render. To rework a finished surface it will be necessary to moisten it again. It is important to decide on the requirements of the work—how much do we want a "mirrorsmooth" finish? Everything is possible, but everything also comes with a cost.

REPAIR OF STONE WALLS

In the case of stone or brick walls it is necessary to rake out and replace the joints (grout). This can, for example, be simply done using cramping iron—the depth of the raking out is generally between 30 and 50mm. If the mortar is so soft that it can be raked out more deeply than this, or if there is simply nothing in the joints, then it is best to proceed with one small area at a time (around 0.5–1 square metre) and to refill each area as soon as possible.

LIME RENDER

Lime renders are worked in a similar fashion, although it is not recommended that they be applied to a wall already finished with an earthen finish. Surfaces such as brick walls, reed mat, reed board and stone can be rendered in this way. After the preparation of the base area (scratching, dusting and moistening), the base coat can be applied, which should be smoothed and rubbed back. It is worthwhile here to maintain a 20mm maximum thickness as in the previous example. There is no absolute need to apply a finishing coat of render. To render stone walls or plinths we can use an improved lime mortar recipe of sand:lime:cement 4:1:1/12 (that is, the proportion of cement is 2-5%), here we refer to slake lime as lime. The cement makes the surface more durable, adheres better to smooth stone surfaces, and achieves good durability in less time in damp environments. The proportions for lime-sand render (lime mortar) in the first coat where a reed mesh is present should be sand:lime 3:1; in general, for surfaces and walling this should be sand:lime 4:1. Pure lime mortar should remain workable for a long time—if covered over with water (i.e. to keep air away from the mix), it should be useable the next day after stirring and knocking up. The improved (cementitious) mortar is workable within 1-2 hours, since the cement component will in any case cause the mix to set. Do not use lime mortars on wall surfaces which are very "thirsty" (absorbent)!

LIMEWASH

The whole wall surface, once repaired and the mortars cured, should be limewashed with 2-3 coats, using brushstrokes made perpendicular relative to the previous coat.

Limewash has disinfectant properties, and will prevent the formation of mould and mildew. It is recommended to re-limewash every year or two years.

- For the first coat, use 10 litres water to 4 litres (4 scoops) slaked lime
- For second and third coats, use 10 litres water to 6 litres (6 scoops) slaked lime

It is possible to limewash over paint made with synthetic emulsifiers/dispersal agents once a foundation has been applied. For the foundation you can use a dilute cellulose-based wallpaper paste (CMC) in two coats, which is water- or milk-based.

Plinths can be painted in limewash mixed with soot—this has a grey colour and water-repellent properties.

INCREASING WATER RESISTANCE TO ELEVATIONS

Complementing the above traditional methods, we recommend the use of mineral silicate paints on exposed rendered surfaces. This kind of paint has both water-repellent and vapour-open properties, allowing any water within the structure to escape. For plinth surfaces, you can work with improved lime mortars or with repair mortars classed under WTA information sheets. (WTA = Wissenschaftlich-Technische Arbeitsgemeinschaft für Bauwerkserhaltung und Denkmalpflege = Scientific working group dealing with building renovations and monument protection). You can use water-resistant and vapour-open renders, produced either by mixing on site or by obtaining bagged (ready-mixed) products, which can be applied to the repair of traditional brick and stone surfaces.

Conclusion

The BarnCulture project was not only an architectural and artistic initiative but also a shared process of thinking, learning, and development. Through the collaboration of three countries, six architects, and twelve artists, we have not only transformed physical buildings but also sought to create space for a unique mindset: the belief that old, traditional buildings can be revitalized and adapted to modern needs without losing their historical, cultural, and architectural value. Barns are not just structures; they are witnesses to the past, the hard work, and the life stories of communities who built and used them.

Throughout the conversion process, not only materials and forms can be renewed, but our way of thinking too. We aimed not only to preserve the past but also to shape these buildings with an eye to the future. Green solutions, the sustainable re-use of materials, and the creation of community spaces were all key aspects that lay at the heart of the project.

We are proud that, as a result of the collaboration between three countries and three organizations, we have not only created new and exciting architectural designs, but also articulated an idea that can help improve the quality of life in rural communities, while respectfully preserving architectural heritage. We extend our heartfelt thanks to every creator, expert, and supporter involved in the BarnCulture project. Without their contributions, this publication would not have come to life, and the opportunity would not have arisen for barns to tell their stories—not just of their past, but of their future as well.

We hope that our publication will be an inspiring read, not only for professionals but for everyone, and that it will contribute to the revitalization of more barns in the three project areas and beyond, across the rural landscapes of Europe.

As the leaders of the three organizations involved in the conceptualization, preparation, and execution of this project, we would like to express our commitment to preserving built heritage and promoting sustainable development. Our work does not end with this project. We will continue!

Eszter Rodics Thumann Werner Gergely Rodics

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This publication (printed in four languages) was created through the collaboration of artists and professionals from three countries: Hungary, Germany, and Romania. Our goal was to offer ideas for preserving the built heritage of rural areas while seeking modern and sustainable solutions. Six architects and twelve visual artists worked together to breathe new life into old barns, keeping affordability and environmental protection in mind.

The barn conversion plans presented include numerous innovative solutions and technical renovation ideas, providing inspiration for rural families to repurpose their agricultural buildings into living spaces, business spaces, or cultural venues. As a result of this creative collaboration, not only architectural plans but also unique works of art have been created, drawing inspiration from the world of barns. The BarnCulture project, with its colourful and diverse vision, aims to contribute to the renewal of rural areas in Europe by creating harmony between the past and the future.





https://www.barnculture.eu/

Gergely Rodics