

TALLER DE BÓVEDAS 2024



Historical Techniques

BEYOND SUSTAINABILITY

2 weeks
Construction Workshop

ARDISA - ZARAGOZA - SPAIN



Tradition: A modern approach



Introduction

Our team of architects has years of experience, combining their professional activity with the research and dissemination of historical construction techniques. Mainly in brick works but also combining the use of wood. The members have developed workshops over the years for research and construction of traditional techniques and rehabilitation of historical heritage and work in unique and sensitive landscape environments. This has been done in collaboration with various companies and universities.

This activity has been recognized with awards, such as the Honorable Mention in the Rafael Manzano Martos Prize for Classical Architecture and Restoration of Monuments 2013, for the work of Restoration and Rehabilitation of the Churches of the Region of "Arquitectura Negra" of Spain, characterized by the use of slate as an almost exclusive construction material.

At the same time, other members of the team have developed research and extensive experience in the survey and repair of unique historic structures.

As a result of this experience, we have launched numerous workshops dedicated to specific aspects of these constructions, from the structural to the finishes, also investigating the possibility of responsible use of all this knowledge in current architectural works. We provide a point of view focused on the full actuality of these techniques. Recovered from the break of the Pandemic, we have resumed the activity with the proposal of a highly inspiring intensive long workshop that aims to change the perspective of students or professionals about a type of architecture that is still found in the majority in the world. Many of today professionals do not understand these techniques and therefore do not contemplate the possibility of use.

We will try to instill the coherence of the rehabilitation, the reuse, the use of the existing and the deep learning of the relationship of this architecture with the landscape and with time, to generate a current architecture, much more responsible.

Objective

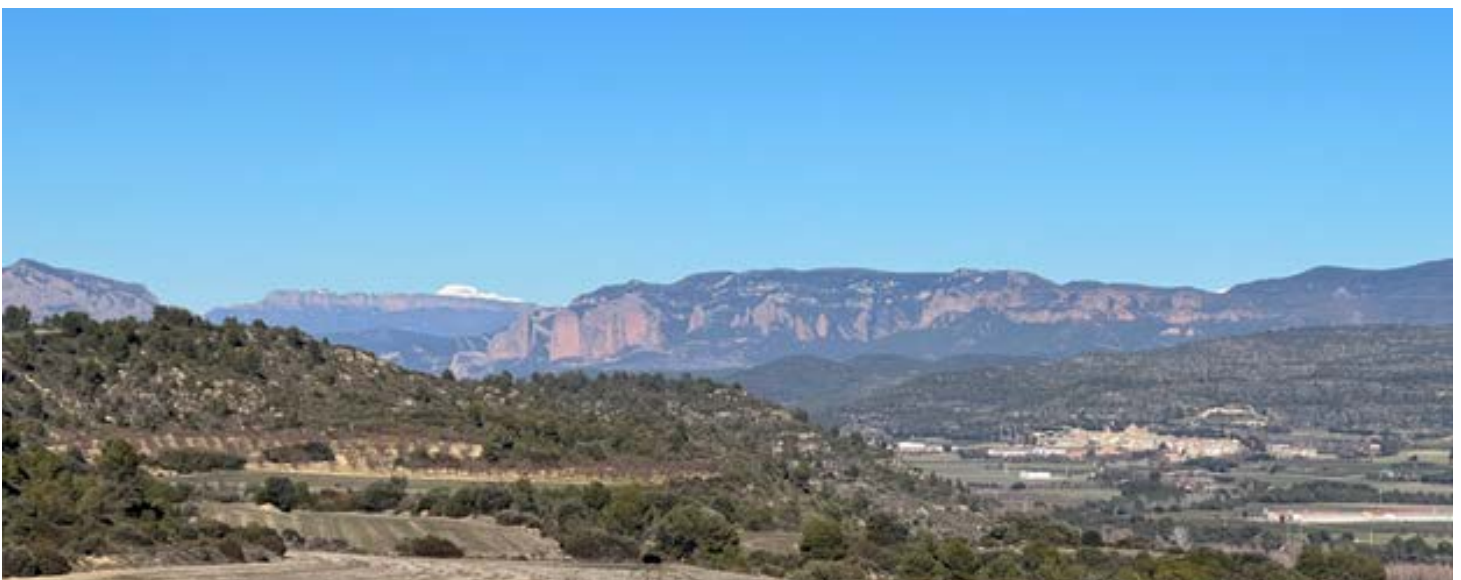
Identification, recognition, and learning of traditional and historical construction techniques.

Proposals for the reuse of these techniques in the conservation of heritage and in proposals for contemporary constructions in sensitive environments and new buildings with low environmental impact and materially, socially and culturally respectful of the natural and historical environment.

These proposals connect with the new trends of use of techniques that are not aggressive to the environment, advocate reuse and repair against the destruction and use of biocompatible systems and materials.

Healthy environmental regulation systems, rejection of materials with additives and substances not tested and generators of pathologies or allergies (Syndrome of the sick building). Use of natural light and a whole philosophy of "free hardware" in which all the elements of the construction are susceptible to be repaired by transparent means, without proprietary solutions. It also seeks transparency and suitability of the origin of the materials and components used in the processes and finally the analysis of the life cycle and the total impact of our construction, both from the energy point of view (Carbon footprint) and from the final waste when the building dies.

All this philosophy is condensed into differentiated blocks aimed at quickly acquiring certain skills that allow students to enter this field and be able to promote actions and demand solutions in their environment to users and technicians. Above all, to be able to generate new constructions incorporating these values from the beginning.





2 weeks

Construction Workshop



The workshop

The proposal includes a construction workshop within a unique landscape and historical environment. The activity is part of a series of reconstruction and rehabilitation works of an abandoned village in the region of the Spanish Pre-Pyrenees. It is an activity that is practical, puts students in contact with manual work and with the handling of traditional materials, techniques and tools and produces a very positive effect on learning.

In parallel, the value of this will be placed within a solid theoretical framework that covers criteria of sustainability, resilience, temporary survival and durability, low carbon footprint and biocompatibility of materials and solutions. This theoretical framework seeks a deep understanding of the techniques to draw conclusions, guidelines and criteria applicable to our more common architectural work.

This type of architecture teaches us that repair and reuse are possible, that its permanence is proof of its resilience to climatic phenomena and historical events and that it almost always admits a new look that can bring it back to life. Also the use of new technologies in landscape modeling, restitution, thermographic analysis, chemical will be treated.

For this, an intensive course of 2 weeks of on-site work is proposed with the support of masons experienced in models and in real buildings. All the activity will be complemented with the theoretical basis appropriate to each moment and type of work.

To this end, the course is organized into five major areas of knowledge:

- I. Materials
- II. Structures
- III. Construction systems
- IV. Pathologies and repair
- V. New Requirements-Insulation-Facilities...

In each of them, the most relevant aspects will be addressed.

In structures, the use of geometry and mass as structural decision, load-bearing walls, vaulted systems, etc.

In materials, use of lime versus cement, aerial lime, hydraulic lime, plaster, unprocessed stone, earth, brick, brick without firing, etc. In construction systems, the various solutions in foundations, enclosures, roofs, eaves, resolution of holes, containments, etc. will be detailed.

Within the pathologies and their repair, they will be trained to detect the most common damages, their prevention and repair once they have manifested.

Finally, in view of the experience, discussion will be held and examples of good practices and the openness of our architecture to welcome what has been learned will be proposed.

The Landscape

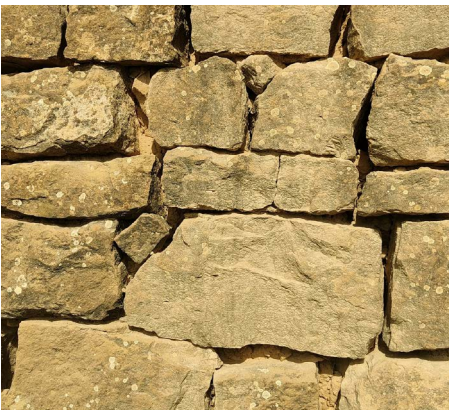
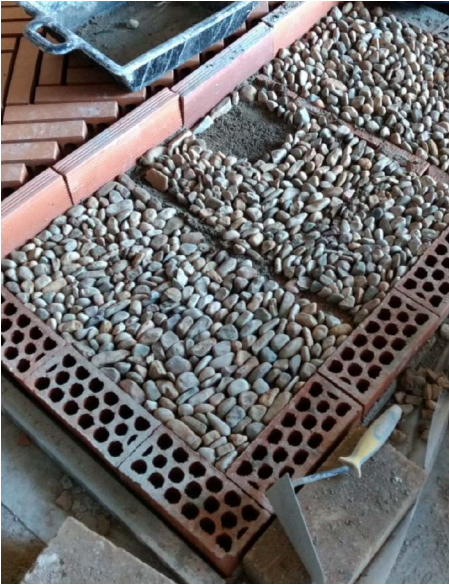
Much of the value of this type of architecture is its understanding as part of the landscape. It is not an architecture that can be understood without its surroundings. It is not interchangeable and is unique and irreplaceable. Hence its value and the sense of its preservation. The stone materials were carved from the same site where the village stands. It is located at the top of a hill that borders the valley of the Gállego River to the east. Due to its elevated position at the end of these Somontanos, at the meeting between the valleys of the Arba de Buel and the Gállego, delineating the north of the Ebro Valley, it has privileged views towards the Pyrenees.

The Site

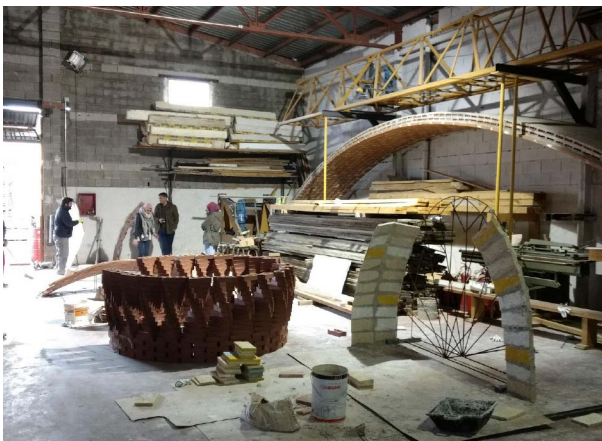
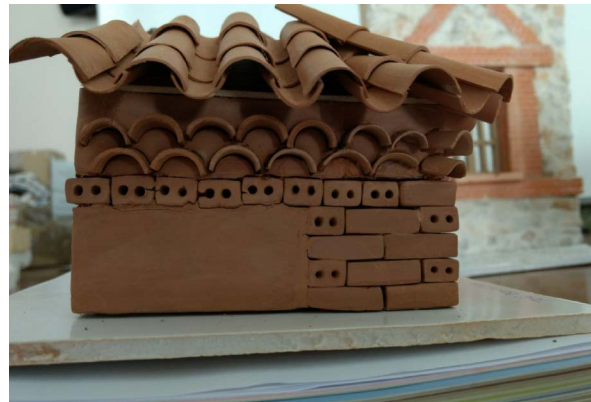
The site "Sierra de los Blancos" was established in the 1500s and was inhabited for several centuries until abandonment by the rural exodus in the 1960s. There are vestiges of the houses in a state of ruin and of the entire urban fabric. It is popular architecture of sandstone ashlars; and a church built in stone with brick vaults that is still preserved. It is accessible by car on a gravel track and is frequented by cyclists, hikers and visitors of a new tourism that seeks in the landscape and in the memory of the places new niches of interest.



2 weeks Construction Workshop



2 weeks Construction Workshop



2 weeks

Construction Workshop



Practice

During the 10 days of work, in the prepared models and in some existing constructions the students will experience the “doing”, not limited to listening and far from a passive teaching by digital means.

They will be able to try, make mistakes, repair, redo, always helped by qualified masons.

They will learn the rudiments and basics of identifying, use and handling the various materials:

Mortars and pastes. Lime, cement, plaster, sand and additives.

Bricks. Manual made, specials, face view, rasillas, etc.

Earth. Adobe, rammed earth and BTC (Compressed Earth Block)

Stone

Woods

It will be possible to directly contemplate these materials in existing constructions.

It will focus on structural concepts far from the usual: Low tension foundations, without reinforcements. Unconventional foundations Load-bearing and retaining walls, buttresses, cable-stayed walls.

Stability by gravity. Horizontal vaulted structures.

In particular, the cohesive vaults will be emphasized, as they do not require formwork and because an example is available in the village church.

The constructive logic, times and organization of enclosures, roofs, protection against water, etc. will be detailed.

The logic of the rigging, dry or mortar placements, etc. will be reviewed.

Special care will also be taken in the treatment of coatings. Here we will focus on the use of breathable, very durable, repairable materials.

The use of gypsum, earth, lime plasters (hydraulic and aerial), use of plant elements as reinforcing part of coatings, paints and natural pigments will be discussed..

The most common pathologies of these constructions will be discussed, how to detect them and ways to address their repair.

Finally, part of the day will be reserved to identify and discuss what was discussed during the day in surrounding buildings, taking advantage of breaks and displacements to observe the aspects treated in real buildings.

Conferences and talks

In addition to the introductory lecture, during the course of the workshop talks will be given on demand about each process and if necessary in the same place of the work. It is thus possible to interact quickly and fix the learning in the moment.

Cultural trips

During the intermediate weekend, visits to monuments and relevant architecture of the environment will be scheduled with specialists from the area deepening the concepts discussed during the workshop.

Lodging

The students will be hosted in nearby “Casas Rurales” that also constitute an example of rehabilitation of ancient structures such as “corrales” and farms.

End Party

As a culmination, the last day will be of reflection and proof of what has been done. Weight Bearing Load and Breakage tests of some of the structures. Finally the enjoyment of a gastronomic party in the framework of our workplace during the two weeks where you will taste food and dishes of the area as a complement to the built heritage.

The gastronomic heritage represents all the best of the survival of traditions, of ways of understanding the world through food and this in its most exalted facet is associated with the celebration and enjoyment of life once the hardest tasks are finished.

Team



Construction Management:

Julio Jesús Palomino:

Graduate of Architecture at ETSAM. MUPAAC master degree.

Julio Palomino:

Graduate of Architecture at the University of Alcalá de Henares.

Dr. Manuel Fortea:

Doctor in Architecture at the University of Extremadura.

Alberto Navarro:

Diplomate at Auroville Earth Institute:

"Compressed Stabilized Earth Blocks and Arches, Vaults and Domes".

Specialists and specific collaborations (To be defined):

History:

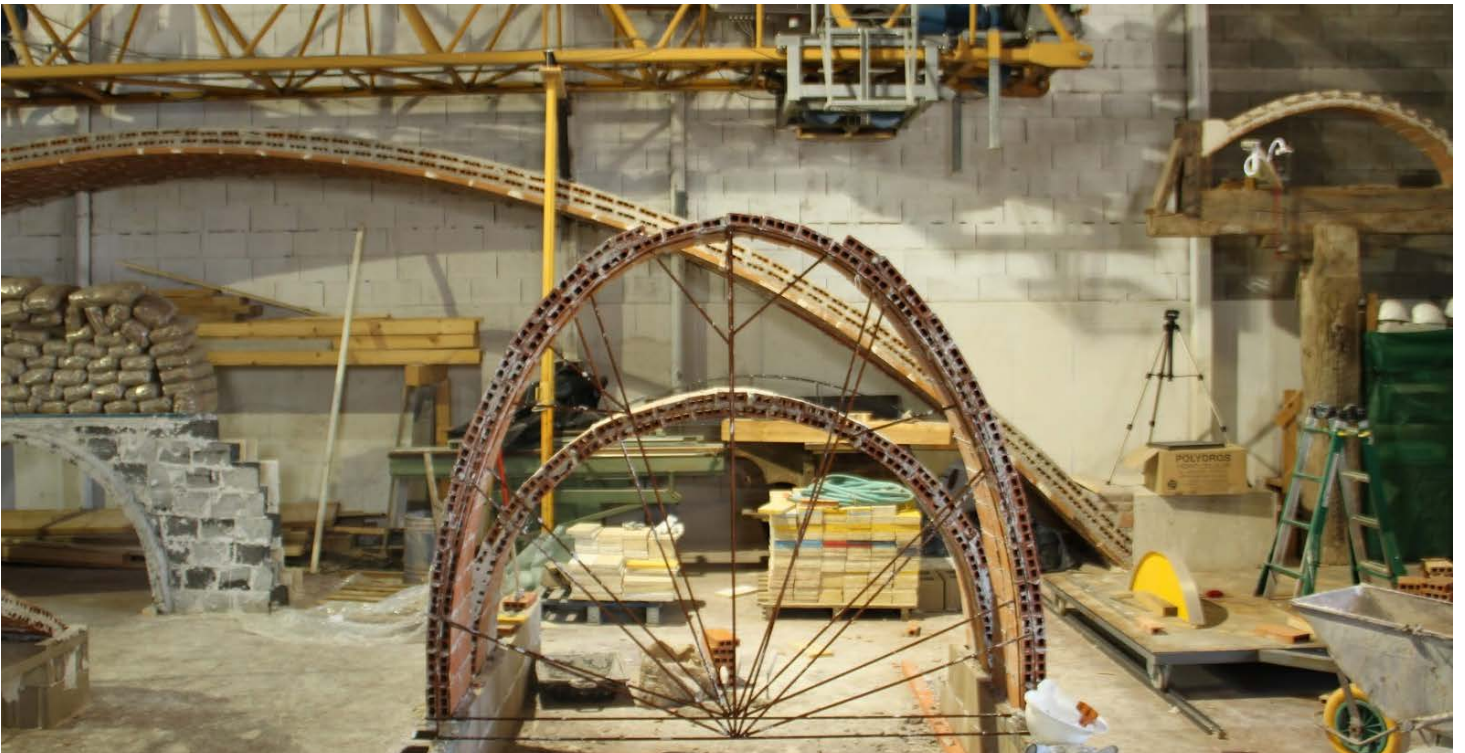
Gypsum:

Vaults - Timbrel Vaults:

Stone:

Masons:

Two teams of expert masons will collaborate throughout the entire duration of the workshop.



Program



Week 1:

Day 1:

Reception. Accommodation. Transportation to the site. Detailed explanation of the program and familiarization with the location.

Presentation and organization of teams, distribution of tools, and contact with the master masons for the planned and ongoing construction sites.

Group discussion.

Day 2:

Introduction to the basic use of tools. Concepts of layout, leveling, plumb lines, full-scale squares and angles. Setting and plumbing of rules, etc.

Day 3:

Introduction to construction materials. Description and handling of plaster, lime, cement, sands, stones, gravel.

Mixing, mortars and lime concrete.

Day 4:

Introduction to construction elements. Bricks, blocks, masonry, tiles, etc. Bonding patterns, installation methods, construction sequence.

Incompatibilities.

Day 5:

Introduction to structural elements. Load-bearing walls, retaining walls, foundations, vaults, stairs, bracing, buttresses, etc.

Weekend:

Day 6:

Optional formative excursion. Examples of vernacular architecture, rural urban areas and landscapes.

Evening/night for dining, leisure time.

Day 7:

Optional formative excursion.

Evening/night for dining, leisure time.

Week 2:

Day 8:

Work on site. Groups work in the construction of models and pre-prepared locations. Tasks assisted by masons.

Final group discussion. Suggestions, conclusions, doubts, questions.

Day 9:

Work on site. Groups work in the construction of models and pre-prepared locations. Tasks assisted by masons.

Final group discussion. Suggestions, conclusions, doubts, questions.

Day 10:

Work on site. Groups work in the construction of models and pre-prepared locations. Tasks assisted by masons.

Final group discussion. Suggestions, conclusions, doubts, questions.

Day 11:

Work on site. Groups work in the construction of models and pre-prepared locations. Tasks assisted by masons.

Final group discussion. Suggestions, conclusions, doubts, questions.

Day 12:

Work on site. Groups work in the construction of models and pre-prepared locations. Tasks assisted by masons.

Final group discussion. Suggestions, conclusions, doubts, questions.

Evening - Workshop farewell party.

