Applied Research Partnerships with Developing and Transition Countries
Swiss Universities of Applied Sciences and Universities of Teacher Education

Foto: Daniel Pittet

Project title

From the Geosciences to the Material Culture in Shekhawati region (India)

Thematic focus

Architectural surfaces, conservation of cultural heritage

Year

2010

Project location

Shekhawati region, Rajasthan, India

Swiss Institution

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Partner Institution

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Description

Rajasthan, especially the Shekhawati region, has a tradition of "fresco lustro" wall paintings decorating the large mansions called ‘havelis’ in the local language, funeral monuments, temples, step-wells, reservoirs and caravanserai, expression of the architecture, art and culture of the past tradition. Nowadays these historical buildings with external and interior wall paintings of great value suffer the total absence of maintenance and sometimes the adoption of extravagant conservation criteria (inadequate and synthetic painting materials, adoption of techniques far from the tradition).

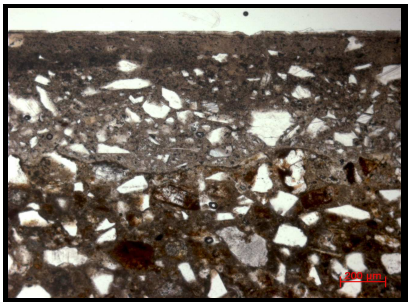
Shekhawati region offer an ideal setting for the developed project which envisages a comprehensive approach from geosciences to the material culture, i.e. from the natural environment to final application.The paintings, used for decoration of the façade are like the pages of a book of history unfolding the scenes of ancient socio - religious texts with visible influence of the modern Europe. The stimuli to undertake this research comes from the observation that this rich cultural heritage is at the brink of passing into oblivion and urgently needs elaborate scientific investigations to propose guidelines for the intervention to preserve the wall paintings.

Development relevance

The project is an application-oriented research where geosciences and material culture would be integrated on a common platform: the cultural heritage conservation and the preservation of legacy of Indian cultural identity. The collaboration between Indian and Swiss researchers and students represents an additional value.

Swiss partner had the opportunity to interact with new artistic techniques and decay processes typical of a dry climate and Indian partner consolidated the application of analytical techniques to other parallel fields. Two workshops in India and Switzerland helped to share the experience involving scientists, students, conservators, art historians, architects.

Decoration of the ceiling (interior). Sarduhl Sigh Chhatri dated 1750 in Parasrampura (Shekhawati region).



Petrographic examination (N//) of a typical stratigraphy displaying a plaster (loi in the local language), a marmorino layer (shimla) and a final limewash. Sample from Harlaka step-well in Mandawa (Shekhawati region).

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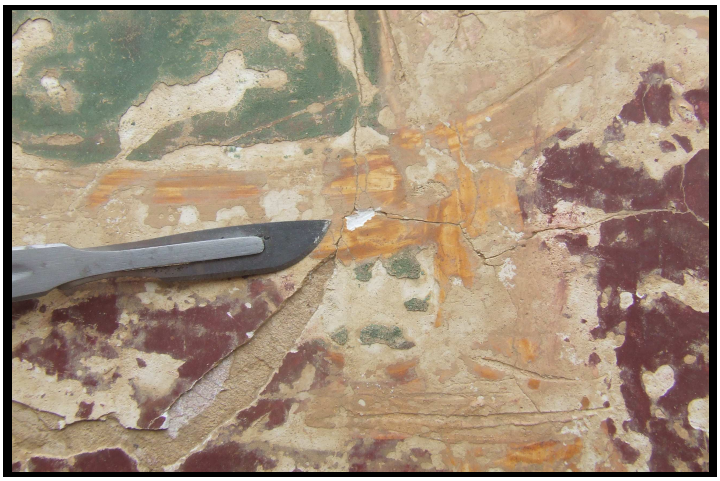
Main features of the project

The history of the “material culture” finds its roots in the artefacts, production technologies, the relationship between men and objects, the daily small applications and the social implications . “Be able to do an artwork” starts with the choice of the appropriate raw materials; it continues with the choice of the instruments for the exploitation, working steps of processing and transformation into the end product. This needs meticulous planning of individual activities and a social organization of the work. The culture of oral and manual transmission of the knowledge is going to an irreversible end. Geosciences can provide a good support for maintaining this tradition for being able to reconstruct various stages of the human knowledge in many fields of the artistic production.

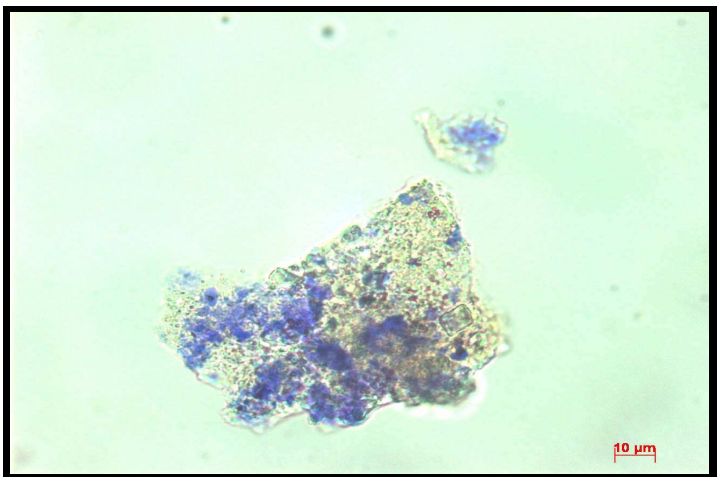
The conservation of architectural surfaces requires appropriate and compatible painting raw materials, suitable techniques and ability to preserve the artwork for the present and future generations. Appropriate painting materials aim to guarantee the chemical stability and physical similarity. Coherence in the pigment characteristics would ensure the temporal and spatial durability; however, the purity of the pigment and its properties such as hiding power, the transparency under the light depend on the mineralogical and chemical composition. Therefore, detailed geological information is one of the pre-requisites while searching for appropriate pigments for substitution or integration of the original.
The scientific approach includes the study of materials using analytical procedure such as microscopic examination of the samples, X-Ray Diffraction, Infrared Spectroscopy, Scanning electron microscopy coupled with Energy Disperive Spectrometer, portable X-Ray Spectrometry.

The project intended as an Application-oriented research
- In-situ analysis of selected monuments in the Shekhawati region, further supported by laboratory analysis, both on the painting raw material sources close to the sites as well as the collected materials from the surfaces.
- To develop awareness among the haveli owners and local municipal bodies on preserving this unique cultural heritage and offering technical assistance in selecting the right methodology and material for restoration.
- It is intended to regain old painting practice in order to establish conservation criteria to be adopted by the local municipalities and the organizations for the conservation of cultural heritage.
- Sharing all the competencies gained in the field of the earth pigment analysis (both raw and in-worksite materials) through two workshops in India and Switzerland.
- Students of the two universities were actively involved during the project.

The project intended as an Application-oriented development
- Use of eco-materials represents a major issue and contemporary research topic at international level, not limited to developed countries only; the proposed research is on this line.
- Creation of a network on earth pigments (http://colouringearths.elearninglab.org)
- The project will provide a useful platform for interaction of specialists from different disciplines (anthropologists, art historians, archaeologists, conservators, conservation scientists, architects).



Yellow, red and green colouring earths traditionally used to decorating the architectural surfaces in Shekhawati region. Detail of a decoration from the external wall of the Poddar chhatri in Ramgarh (Shekhawati region).



Artificial blue ultramarine under polarizing microscope in transmitted light (N//). This pigment was imported from Europe since 1860.