

INTRODUCTION

Categorised within the field of building history and material culture, the current topic of interest includes the disciplines of technique, natural science and humanity. The applied methodology spans between “classic building technique research” with social anthropological components and material research including laboratory analysis.

Research on building history is based on a maximum dense net of material cultural markers. Their nature is complex and linked to a variety of locally and regionally connoted material aspects. Exploration of such markers is a main focus of this study. As a case study, the Himalayan region has been chosen, and the applied methodology is transferable to other areas of research. The research question within the area of study concerns interrelations between architectural macro and micro components ranging between the materialisation of ideological programmes, building techniques and building material properties. The outline of the method can be found in the structure of the chapters.

Chapter I concerns architectural methods for the materialisation of spatial concepts in accordance with religio-political programmes. The second and third chapters are both concerned with material research. Chapter II shows the relation between traditional crafts and vernacular architecture regarding technical properties of raw material and methods of processing. Chapter III goes into detail of the applied mineralogical research methods to analyse relations between the compositions of different types of clay used for crafts and building purpose. Chapter IV concerns natural resources and climate conditions and their impact on Himalayan composite constructions embedded in a Eurasian context.

CHAPTER I: ON THE MATERIALISATION OF A RELIGIOUS PROGRAMME

The question of spatial programmes, in this context of early Central and West Tibetan religious structures, requires a unification of material and religious programmatic concepts. Initially, the question for the essence of a religio-political program is raised. Universal programmes are defined and supported by canonical architectural features. Buddhist monastic structures follow geometrical and proportional concepts. Their three-dimensional design focuses on an ideal and geometrically defined common pivot and stands in an inseparable spatial relation to behavioural patterns of pilgrims and devotees. The materiality of such structures becomes part of a larger whole and extends to the spatial organisation of the surrounding settlement and beyond. Particular markers within the village compound follow this spatial concept and define the pilgrims' movements.

Analysis and comparison of religious structures provide insight into architectural methods for the materialisation of religious concepts. Besides geometric and proportional concepts, the definition of the orientation of religious structures is also of importance. Based on a reconstruction of the Khorchag Monastery, located in West Tibet, a hypothesis for celestial dependence between the layout of religious structures and a cosmological unification is emphasised. In concluding, this chapter and bridging to the following chapter, the question is raised of the impact of building materials within such spatial programmes.

CHAPTER II: MATERIAL TRADITIONS – RAW MATERIAL AND TECHNIQUES

Changing the scale by moving from spatial programmes towards material qualities leads into the topic of material research, with mineral-based materials being the focus. Regarding materials for building purposes, in addition to their use for primary constructions like walls or roofs, use for architectural surfaces plays an important role in the processing of different material qualities. According to use, we may distinguish between a quality used for simple functional local building purpose and such used for representation of a higher social status. In most cases, this difference becomes visible through the quality of the selected raw material and its processing. For a comparative purpose, different crafts have been chosen for this study – the making of flat roofs, of clay sculptures and of pottery – enabling the examination of relations between mineral compositions of particular raw materials used for different crafts. An aspect within the current research is the questioning of still existent material traditions with a purpose being to learn and understand local approaches to finding and processing proper materials.

CHAPTER III: EARTH BUILDING TRADITIONS IN BASGO AND LIKIR

In this chapter, the research conducted in Chapter II is continued on an analytical level. The research area includes the villages of Basgo and Likir, both located in Ladakh, and their close surroundings, where earth building traditions are still alive. Particular clay samples used for adobe bricks, flat roof constructions, clay plaster, pottery and also the *tab* (Tibetan stove) are analysed regarding their mineralogical composition and methods of processing. Results will be juxtaposed. Some of the samples are related to historical sites, others to contemporary constructions and building techniques. A variety of different compositions and applications enables the study of relations between historical use and living traditions. Local terms for clays are included in the comparative research so as to search for particular relations between local traditions.

Chapter IV: Himalayan composite constructions and environmental influences

Over the Western Himalayas, composite constructions have a long tradition reaching back at least into the 8th century CE. Initially, this chapter questions in a regional context transmission of particular composite techniques, which are traditionally used for wall constructions. The combination of different materials makes necessary the observation of natural influences on single components of the structure such as wood, stone and clay. A range of natural factors influencing the development of single techniques becomes evident. As a further step, material resources and climate conditions are defined for the research area. Based on these conditions, certain developments in construction are explained. For the development of particular technical features of composite constructions, their impact on a 'seismic culture' is discussed.

In order to obtain an idea of early traditions and the development of composite constructions, the investigation of historical structures is an essential part of this study. The development of certain techniques in accordance with environmental conditions is analysed. A continuous change of composite constructions can be monitored, showing their transformation in a regional context.