

A METHOD OF CREATING VERNACULAR HOUSES' PICTOGRAMS BASED ON "CLIMATE – FORM" IMPACT AND RELATIONSHIP: HOUSES' PICTOGRAMS; PART 2

Kliment Radoev, Wu Deng

Abstract

This paper aims to present a method for creating a world map with pictograms of local houses as an electronic source, as the creation of a system of pictograms describing the components of the architectural form of vernacular houses is presented in Part 1 of this study. Due to influences imposed by a particular climatic context, these components acquire their shape.

Many books and articles have been written on the subject, but they suffer from one of the following shortcomings concerning the current goal: they are too comprehensive and specific or oriented towards specific philosophical or cultural thinking. The pictograms proposed in the first part, on the other hand, are based on a global approach from many perspectives on a specific problem such as shape, scale, shell, holes and others.

Both parts of this study use as a primary source of research the work on the dissertation "Method for Studying of Vernacular Housing Structures and Technologies Worldwide."

The quintessence of this second part is a world map of vernacular houses. It is presented with the help of a *.kms file to be viewed on google maps. For each map territory (or at least for those known to the authors), a pictogram (from the first part of the work) describes the local vernacular houses.

VERNACULAR STRUCTURES' ENVIRONMENTAL APPLICATION

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Abstract

The study provides an environmental analysis of vernacular structures. Following the environmental factors – climate and resources, it extracts the essential structural features from a set of 88 examples of vernacular structures and arranges them into categories. These structures are evenly distributed around the globe located in different climate zones and recourses regions in order to have sufficiently reliable result from the study. The categories are analyzed in line with their similarities and differences, quantity and exceptions. The structures built of different material determine different types in the structural material category, for example, and they are estimated by their quantity, prerequisites, technological implementation and others. The structures possessing form working with pure compression, bending or tension are types in the form category. Their features are compared to the material category. This example gives a notion of the provided cross-analysis of all the categories – by material, technology, static geometry, form and others related to the environmental factors.

Thus, many significant trends can be delivered. These trends are evidence of VS application achieved by a natural evolutionary process. These trends are guidelines for sustainable development and implementation of structures in an efficient and environmentally friendly way.

METHOD OF CREATING VERNACULAR HOUSES PICTOGRAMS BASED ON "CLIMATE – FORM" IMPACT AND RELATIONSHIP: HOUSES' PICTOGRAMS; PART 1

Kliment Radoev, Wu Deng

Abstract

The purpose of this paper is to present a method of creation of a pictogram system describing architectural form components of vernacular houses; those components acquire their form due to influences imposed by a particular climatic context. Many books and articles have been written on the topic but they suffer from one of the following disadvantages regarding the current goal: they are too comprehensive and specific or they are oriented towards particular philosophical or cultural thinking. The pictograms proposed in this research are on the other hand based on a global approach of many views of a specific problem such as form, scale, enveloping, openings and others.

The research method is based on the existing literature, important guidelines for creating pictograms in general, and a unique investigation of 87 vernacular houses. A template for the extracted data about their form, function, structure, composition and technology is used for this investigation. Following established methods, it is proposed to use (and respectively exclude) some of the climate influences which may or may not be relevant to certain house's features.

A set of pictogram rules has been created and based on them ten houses' pictograms from different climate zones and different continents were created as a test. The pictogram method of studying vernacular houses provides an important global overview of the most essential house members generated in reaction to the climate. It allows for rough estimation and partial comparison in order to spread an indispensable foundation for future deeper research.

This research will ultimately lead to the creation of a world map of vernacular houses' pictograms as an electronic source, which is further explored in part 2 of this study.

A SYSTEM FOR INTEGRATED EXAMINATION OF LONG SPAN STRUCTURES AND STRUCTURAL BUILDING ELEMENTS

Kliment Radoev

Abstract

This paper proposes a system examining the structural elements of building. It makes a classification and systematization within a matrix template. This is based on an existing, integrated architectural and engineering at classification system declared by Radoev [1], which includes long span structures based on vernacular forms. Its mathematical processing leads to the emergence of a new system from the basic structural elements of the building as an extension and addition to the existing matrix. What is significant about the system is that it is architectural and structural at the same time - two aspects being considered inseparably from each other. These aspects are considered without the unnatural separation of the structures to architectural or engineering (or other).

A theoretical system like the present gives several opportunities:

- Clear visual and logical order of the structural elements of the building, which demonstrates their origin from vernacular architecture, from each other and from their functionality.
- Pedagogically correct and holistic model for presentation, teaching and learning of structural elements together as an integral part of long-span structures
- Morphological examination of structural elements in accordance to some fixed or variable parameters and different case studies based on them.

Classification systems have been created based on many and different criteria. However, the proposed here makes significant difference between elements of building in general and structural elements of building

i.e. those which are a part of the main building structure. The developed system proposes an overall, "quick overview" fashion mathematical model which gives to the classification perceivable appearance and provides opportunities for multiple investigations relevant to different parameter combinations.

A THEORETICAL METHOD OF CLASSIFICATION, SYSTEMATIZATION AND EXAMINATION OF STRUCTURES

Kliment Radoev

ABSTRACT:

The study explores a theoretical method of incorporating architectural and engineering approaches of classification, systematization, examination and typology of structural systems. There is presented an investigation of vernacular houses examined in the dissertation "Method for Studying of Vernacular Housing Structures and Technologies Worldwide." The investigation continues by delving into the main structural principles, geometrical patterns, states and properties of the structures in terms of generation of architectural space. There is also a typology and mentioned categories examination in terms of architectural structure mass generation. Further, a new typology and cross examination of the findings from both initial searches becomes clear. A crucial point of the research is an arrangement of the investigated categories of structure systems in a model and elaborating a new method of analysis, classification and typology. The study shows a specific application of the method to several case studies. There are available comparisons and amplification to the existing structure system classification. Thus, it is possible to carry out some improvements to the existing typology and conclusions over it.