


# REPORT

APABE

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by Prof. Dr Arch. Ekaterina Sentova, Faculty of Architecture, University of Architecture, Civil Engineering and Geodesy (UACEG), Sofia

**Subject:** Dissertation work of arch. Kliment  Radoev for the award of educational and scientific degree "Doctor", in the scientific speciality "Architecture of buildings, structures, facilities and details", professional field 5.7 "Architecture, construction and geodesy", Department of Urban Planning, Theory and History of Architecture, Faculty of Architecture, University of Structural Engineering and Architecture (the USEA) "Lyuben Karavelov", Sofia

**Dissertation topic:** "Method for Studying of Vernacular Housing Structures and Technologies Worldwide"

**Grounds for drafting the report:** This report is presented in my capacity as a member of the Scientific Jury, appointed by Order № RD - 00011 / 07.01.2022 of the Rector of the USEA "Lyuben Karavelov", under Article 29. Para. 2 of the Regulations for the development of the academic staff of USEA and decision of the Faculty Council of Faculty of Architecture FA at USEA (Record №6 / 22.12.2021), and according to the decision of the Scientific Jury - Record 1 from 18.01.2022.

## 1. General description of the work

The set of materials presented by architect Kliment Radoev includes dissertation work with two appendices to it (maps and dictionary) and abstract. The dissertation contains three main chapters, developed on 305 pages, 123 figures (photos, diagrams, drawings), 41 of which were made by the author, 50 author's matrix tables and bibliography, containing 515 Bulgarian and foreign titles, with literary and web sources. Appendices are an integral part of the work. They include 7 pages of author's definitions of notions used in the work, studied and used 22 maps (including an existing collection of traditional houses around the world), as well as two maps developed by the author - partial map of architectural types of traditional houses around the world and partial evolutionary tree of traditional houses around the world, also presented in fig. №118 in the dissertation.

### Relevance of the work:

The conducted in-depth, and wide-ranging studies give the author a reason to formulate convincing arguments in support of the relevance of the work of vernacular houses. The review of existing research justifies the need for a unified research system on vernacular houses, suitable for implementation by professionals in an open format. According to the author, such a system would make it possible to take into account specific details and features of the subject in place (in-situ), which is impossible from a distance. The importance of the topic of the work is justified by the need for systematic research on certain characteristics, criteria and scientific means, which is why the connection with other sciences is necessary. Drawing conclusions about the evolutionary processes in creating vernacular houses is also essential for modern requirements for energy efficiency and environmental friendliness in the building sector, including houses. Such a unified system would allow the efficiency of storage, use and handling of knowledge about vernacular houses. The topic of the



work clearly defines the main directions of the study and its relevance, substantiated in the Introduction to the work, which defines the object, subject, purpose and objectives of the study. The outlined scope is definitely of crucial importance for the conduct of the overall study - the period under consideration has no starting point, and the final one is the one in which the signs of authenticity or features of the term "vernacular" are lost. For this purpose, the author defines explicitly basic concepts to determine the individual aspects of the scope of work, further developing and applying a glossary (notion apparatus) with explanations of the meaning of the used terms.

The doctoral student has set **a goal** - to develop a scientific and theoretical apparatus - a method for systematically collecting, comparing, and analyzing information about vernacular houses. Regarding the set goal, the **research tasks** are outlined in the logical sequence according to which the doctoral thesis is structured.

The research **methods** used correspond to the set goal and tasks. A complex approach based on a wide range of scientific methods is flexibly used alone or in combination, with the application of system-structural analysis and synthesis. The research is based on textual and illustrative materials - theoretical studies from literary sources, websites of cultural organizations and scientific institutions, including direct studies, with specific sites visited by the author.

**Chapter 1. - Theoretical basis of the study**, in addition to the introduction, it includes a detailed description of the mechanism of the study and a general presentation of the developed and studied examples in the countries where their study extends, subject to detailed analysis in **Chapter Two**. The research mechanism adopted by the author proceeds in a sequential process, with the initial completion of a template from a preliminary set of data (scars), which are examined until the significant ones are sifted (subsequently systematized in a matrix) and the final form of the template is established. From the accumulated information, hypotheses are formulated, the observation and analysis of which leads to the establishment of conclusions, following the objectives of the methodology. The following are outlined: the ways of data collection, research areas, and the algorithm of research of a vernacular house type. As a result, a table with systematized data for studied countries, regions and realizations of vernacular houses was prepared, grouped by the author under the names - *developed* (30 houses in 13 examples) and *studied examples* (64 examples).

The **second chapter** discusses in detail the **developed and studied examples**, with comprehensive implementation of the adopted research mechanism, in its sequence and methods for collecting and processing information. For example, in the section - Developed examples, the research begins with a pre-created template of indicators, which widespread data on the vernacular house can be analyzed. After studying identical architectural elements and features, which compare the houses, the template is modelled (with the gradation of insignificant, irrelevant for the work purposes and significant parameters) until it acquires a conditionally "ready" look to establish the final type of matrix. According to its parameters, all 94 examples of the work have been reviewed and supplemented, as 30 of the houses were collected in 13 examples (matrices) and analyzed in detail, so the author calls them - developed.

In the section - studied examples, a short presentation with text and illustrative material of the remaining 64 examples are made, with general descriptions and specific characteristics. Thus, according to the author, all 94 houses collected in the second chapter are a collection of examples. Its



presence is the main basis for observation and analysis to form the hypotheses, the proof of which is fundamental for the formation of the methodology's basic framework, as the dissertation's goal.

**The third chapter - Theoretical Analysis** analyzes the main, basic issues of paramount importance for the content of the methodology, grouped into four parts: *premises, properties of the vernacular house, taxonomy - family, type, kind and nomenclature*. The analyzes of each part are carried out with the same approach - a set of indicators is introduced (with definition and explanation of relevant terms), a hypothesis is formulated and a research mechanism is applied (an algorithm created by the author to prove it). As a result of the analysis, significant indicators are selected and determined, with a significant impact on vernacular houses and relevant conclusions. The approach in studying the interaction - factors / premises and proving the formulated "zero" hypothesis is similar. The potential impact of individual factors is subject to proof and only then the significant ones are separated as premises, the grouping of which by functionality contributes to the argumentation and the transformation of the hypothesis into a thesis. The considered premises lead to certain properties, the study of which is the basis for the formulation of the next hypothesis (first). The adopted approach is repeated until achieving of the separation and grouping of the significant properties in a system, which proves the transformation of this hypothesis into a thesis.

The second hypothesis outlined by the author is essential for the preparation of a classification subordinated to a taxonomic system, so proving this hypothesis has the most complex approach of all. It is based on the analogy of biological features with architectural properties, the analysis of which leads to the construction of a taxonomic system, with specific elements and terms (defining the terms "*category*", "*rank*", "*similarity*" and "*equality*"). The derivation of ranks in a hierarchical sequence - family-type-kind-variety and their content description is following (Fig. 117). Thus, in practically, the author proof his second thesis that the vernacular house is a product of natural evolution and it is possible to create a taxonomic classification system. The idea is to create a unified structure for the analysis of the differences between vernacular houses through taxonomy, taking into account all the architectural features in a clear categorization.

At first glance, the author's approach in the attempt to prepare a nomenclature of vernacular houses, with the creation of a system of naming in the taxonomy, through letter abbreviations of certain indicators - Fig. 122 of the work, seems relatively complicated. Also, some clarification of the accepted terms and concepts is needed, in connection with a clearer delineation of the area of distribution. The created naming system is applied back to the developed examples from the second chapter. Practically, the introduced nomenclature ensures the administration of the taxonomy, which inevitably necessitates the introduction of terminology, definition of concepts and argumentation of their overall connection. The approach applied in the naming system is analogous to the study of the other distinctive aspect related to the nomenclature - the area of distribution of the vernacular house. The author analyzes the concepts defined in this direction in detail in order to show the way in which they are related and respectively interdependent, for example - the distribution of *Family, Type and Kind* and their varieties, according to *Area (family), Zone (type) and Region (kind)*. This proves how the spread can lead to different types and kinds of vernacular houses in one area or in different parts of the world and their possible transformations.



The abstract presents adequately the content of the dissertation, as it correctly presents the main parts of the work, the results achieved and scientific contributions.

## **2. Scientific and scientifically applied contributions of the candidate**

The contributions of the work are built on a thorough analysis, with an established mechanism for research, as well as in the systematized conclusions to the individual parts of the dissertation, mainly in Chapter Three (*prerequisites, characteristics, taxonomy and nomenclature*). The summary analyzes basic issues of vernacular houses and their archaeological, historical and architectural research. In this regard, the derived summaries stand out, illustrated in graphical form - Figure 123. *Formation and distribution of the vernacular house* and fig. 118. *Partial evolutionary tree of vernacular houses around the world*.

Generally, I accept the outcomes indicated by the doctoral student, which have different weight, according to their scientific, theoretical and applied nature. The proposed structure of the methodology has a certain contribution to the theory, with its consistently related parts, as an approach to data collection and classification in a matrix, including the creation of a system of taxonomy and appropriate naming. The system makes it possible to reflect in a complex and systematic way the data on the origin, evolution, character and hierarchy of vernacular houses, including their technical characteristics, which has a certain **innovative theoretical contribution**.

### **Scientifically applied contributions:**

- the collected and analyzed information, with examples of researched and developed vernacular houses, is a kind of collection (chapter two of the work) and can be used for educational purposes and ongoing research;
- the developed theoretical model and approach, the various mechanisms and techniques used in the creation of the taxonomy, the implemented single continuous thread connecting the content of work with modern trends in architectural design can find application in the process of teaching students in architecture and civil engineering;
- the complex, complete and balanced approach, with in-depth study of causal relationships and impacts, is definitely useful in the study and design of buildings, according to the criteria and methods of sustainable architecture;
- in this relation, I accept the outcome of the work indicated by the author - notably the application of systematized analytical information useful for creating a regulatory framework and legislation for environmentally friendly construction, with norms and rules for design and implementation of environmentally friendly solutions related to local conditions, traditions, needs and opportunities.

## **3. Notes and recommendations**

With the presented material the author shows in-depth knowledge not only in the considered issues, but in the wider field of architecture and its connection with other sciences. Some omissions and technical errors have been made, which in no way diminish the quality of the work.

The scale of the research and its content, the performed analyzes and conclusions within the main structural parts of the work presupposes a much larger number of publications than those indicated by the candidate (two independent and two co-authored). They should find a place on a broader

publication of the author, including research journals registered in Scopus and/or Web of Science / Clarivate Analytics.

As systematic scientific research, the dissertation with a unique and different philosophical point of view on vernacular houses can be printed after editing and shortening. I recommend that the developed and researched examples be published separately as a textbook, with brief explanations.

#### 4. Conclusion

The presented dissertation satisfies the requirements of Art. 6, para. 3 of the ZRASRB and the criteria for obtaining the educational and scientific degree "Doctor". The research contains theoretical and scientific-applied results, with relevant contributions in the field, which complement and enrich the existing knowledge.

The dissertation shows that the author has in-depth theoretical knowledge of the speciality and abilities for independent research.

Based on the conclusion made in this report, I provide a high estimation of the dissertation and propose to the Scientific Jury - **arch. Kliment Radoev** to be awarded the educational and scientific degree "**DOCTOR**" in the scientific speciality "Architecture of buildings, structures, facilities and details", in the professional field 5.7 "Architecture, construction and geodesy".

February, 2022

Author of the report:

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