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Opponent's review of the dissertation thesis

Doctoral student: **Ing.arch. Bardhyl Rama**

Ecodistricts - planning and design principles based on case studies

Supervisor: Doc.Ing.arch. Dalibor Hlaváček, Ph.D.

I prepared the opinion for the edited and supplemented second version dissertation of the doctoral student Ing.arch. Bardhyl Rama. During the first reading of the edited dissertation, I briefly compared the original and edited versions of the dissertation, then I paid close attention to the parts that the author edited respectively reworked on a larger scale.

In 1st Chapter – Introduction: in sub-chapter 1.2 Research questions, the author revised the text and omitted the hypothesis, substantially revised sub-chapter 1.4 - Methodology. He substantially revised the 2nd Chapter - Theoretical background. The 3rd Chapter remained in its original form except the introductory sub-chapter devoted to research methodology. This sub-chapter was transferred into sub-chapter 1.4 Methodology. Chapters 4th a 5th remained more-less in their original form. The author modified chapter 6th – Conclusions and significantly modified the introductory part of the Appendix dedicated to questionnaire survey methods marked no. 7. The list of references has also been modified due to the mentioned modifications and inserted new parts. I conclude that the adjustments had a positive impact on the quality of the dissertation.

My original opponents review was compiled according to the usual syllabus, which is used in the academic environment at Slovak universities, from the actuality of the topic, through the set goals, descriptions of the methods that were used to achieve them, the benefits of the work, the application of the results to the final statement of the opponent. After reading the modified work, I came to the conclusion that, in principle, my comments on the individual points of the outline from the original assessment do not change, so I will briefly comment only on those parts of the work that were modified in a more fundamental way.

In 1st Chapter – Introduction, the author edited and supplemented sub-chapter 1.4 Methodology. Its division into 12 sections enables the reader to clearly follow the author's procedure and individual steps in researching the given topic. The editing was definitely beneficial for the dissertation, especially the more detailed explanation of the principle of selection of criteria and indicators (Tab.1 p.26) and the principle of selection of investigated locations (Tab.2 p.28). I accept the arguments of the author and the criteria chosen by him for the selection of the researched ecodistricts, but if the work has the ambition to "grow beyond" the borders of Germany, in that case it would be appropriate to deal with another location

within Europe with different climatic, economic, cultural, historical and administrative conditions.

I found the Bo01 ecodistrict in Malmo to be an interesting location, also because there will be less opportunity to implement larger territorial units in the future. I understand the author's effort, that when choosing the assessed locations, he relied on the selection by the professional public opinion of the most recognized ecodistricts, which should be a model for newly designed town quarters of this nature.

Regarding the 1st chapter, I would like to note the author's reference to the sections in the 3rd chapter on p.22 and p.23 (and also in the 7th Appendix on p.202) listed in brackets as A.1.9, A.2.9, A.3.9, which corresponds to the original designation of sections dedicated to personal observation. In the main text, the doctoral student suitably modified the marking of sections in accordance with the overall marking of chapters, sub-chapters, sections by numerical marking only, i.e. 3.1.9, 3.2.9, 3.3.9.

The author made extensive adjustments in the 2nd chapter – Theoretical background, which I appreciate highly positively. When editing, the author responded to a certain extent to the comment of the opponent Prof. Achten, who stated that Theoretical background should present the *state-of-the-art review* of research and development related to ecodistricts. I particularly welcomed the fact that he tried to interpret some elementary definitions of terms in the context of current documents such as the SDGs framework, the 2030 Agenda for Sustainable Development, IPCC documents, etc.

In chapters 3rd, 4th, and 5th, the author made only minor adjustments to the designation of some sections (3.1.9, 3.2.9, 3.3.9), minor adjustments to the text (e.g. addition of the number of parking spaces per residential unit) and what I appreciate, he supplemented the pictures of the situational drawings by indicating the cardinal points ("North"), which is important information if we evaluate ecologic conscious design.

In the 6th chapter - Conclusions, the author, in addition to modifying some wordings of the sentences, made more fundamental modifications in the subchapter 6.2 dedicated to personal knowledge from visiting the assessed locations.

Since I am not an expert in questionnaire surveys, I will not comment on the 7th Appendix dedicated to the field survey, but I highly appreciate the author's ambition to obtain authentic information directly from the residents of ecodistricts. The number of interviewed respondents corresponded to the possibilities of the doctoral student, but provided a certain picture of the opinions of the residents of ecodistricts on living in such specific type of housing estate. Carrying out such a survey with sufficient informative value requires contacting/interviewing a considerable number of respondents, which exceeds both the personnel and time possibilities of the individual.

Before giving my final opinion, I would like to make a few personal remarks.

To the references:

The dissertation mentions a remarkable number of sources, 282 of which 267 are dated after 2000, so it can be concluded that he worked with current sources of information. According to the content of the individual contributions, their authors are mostly from an academic environment. Perhaps the statements and opinions of the designers would be a valuable information on ecodistricts. Reading descriptions of the ecodistricts, I did not find the names the architects or urban planners who participated in the designs of the assessed ecodistricts or some important buildings in ecodistricts. An exception is the architect Rolf Disch, author of the Sun Ship complex in the Vauban ecodistrict (under picture no. 5.3 on p. 166). The architect mentioned is wrongly listed in the References (on p.223) as Rolf Disch. The last name of the author is listed first in the list of references. It would be appropriate to rearrange this item to the authors under the letter "D". I would be interested in the reason why the doctoral student in the text of thesis does not mention the authors of urban and architectural works.

To the principles of planning and designing and the nature of the research:

Chapter 5th is called *Principles of planning and designing ecodistricts based on case studies*. Despite Prof. Achten's comment and his proposal to call the chapter *Comparison of Case Studies*, the author keeps the original title of the chapter. I agree with Prof. Achten's opinion on this for two reasons. The first is the nature of the research work. As I stated in my first review, I characterize Barhyl Rama's dissertation as **follow-up** or **investigative** research. The author collects sorts and evaluates information. I perceive the benefit of this work in the position of summarizing information that is of a general nature and can be useful both for future founders of ecodistricts, public administration, as well as for their designers. The second reason is to dampen the author's ambitions to formulate/establish generally applicable rules/principles for designing ecodistricts based on case studies. I came to this conclusion during a detailed study of the dissertation, when I came across some disputed claims. For example on p.72, the author states that *most buildings are oriented east-west, which is suitable for access of the sun throughout the day*. This statement is based on the original typological rules for designing residential buildings. This east-west orientation is not the most appropriate in the case of designing a building in harmony with the environment (Knowles, R.: *Ritual House – Drawing on Nature's Rhythms for Architecture and Urban Design*, Island Press, 2006). In addition, when I compared the orientation of the streets in Vauban, Kronsberg and Bahnstadt according to the attached "North", in no case was the street network oriented directly north-south and east-west (the so-called Jefferson grid), but rotated to the axis north-south. In Vauban it was approximately 25° and 65°, in Kronsberg 27° and 63°, in Bahnstadt 40° and 50°. Tilted grid approximately by 45° is called the Spanish grid. Streets oriented in this way provide optimal insolation and shading of buildings and their surroundings throughout the year. On p. 191 the author states: *Setting a mandatory energy requirement for ecodistrict buildings has proven successful, but when considering future ecodistricts, this work shows that the passive house standard **should be** the minimum requirement for all buildings in the district*. Establishing such a rule for each building is not realistic, because each individual building in the urban context has different conditions for obtaining energy from the environment (ambient energy). The charm of a set of buildings is that they work on

the principle of synergy/cooperation. Buildings that have more favorable conditions for the access of the Sun and air flow, ventilation, etc. they share these advantages with buildings that are located in less favorable locations. Sharing is one of the basic principles of ecodistricts. With this note of mine, I would like to indicate that the values presented in the work remain at the level of recommendations and do not grow into ambitions to become compulsory standards for designing eco-districts, which would indicate the use of words like "must" or "should be". I perceive case studies mainly as an inspiration, not as the standards.

Conclusion and opinion of the opponent

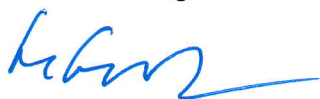
I will allow myself to paraphrase one idea of the author from the introduction of his work. He describes the ecodistrict as an environment whose primary mission is to enable its residents a high quality of life and simultaneously support actions to move towards climate-neutral goals. In this work, author looks for ways how to bring these two, often contradictory components into harmony and to provide inspiration, ideas, and materials for future designers, developers and founders of such settlement quarters. It is an attempt to solve an equation with several dozen unknowns. I highly appreciate this Sisyphean effort of the doctoral student and recommend the dissertation for defense.

Here I would like to quote part of my opinion from the first review.

After a detailed study of the dissertation, I conclude that the doctoral student Ing.arch. Bradhyl Rama is well versed in issues related to the chosen research topic and was able to summarize the information and knowledge obtained in the submitted dissertation.

He demonstrated the following skills that a doctoral student should acquire during the completion of his doctoral studies: the ability to define research topics, the ability to formulate research problems, the ability to identify and use paradigms, concepts, theories and methods of obtaining information that are appropriate for the field and topic of research, the ability to determine and appropriately use sources of important information and identify and use relevant search aids, Ability to evaluate evidence and draw appropriate conclusions, ability to communicate appropriately in written, oral and graphic forms, ability to use IT and Internet resources, ability to quote sources accurately and appropriately, ability to prepare, process, explain and present information using appropriate qualitative and quantitative procedures, the ability to plan, manage and report on research.

These acquired abilities, which the doctoral student documented in his dissertation thesis, confirm his competence for scientific work. I recommend that the dissertation of Ing.arch. Bardhyla Ramu was accepted, presented for defense and after successful defense awarded him the scientific degree of Philosophiae Doctor (Ph.D.).



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