

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant

Mgr. Bc. Zdeněk Stachoň, Ph.D.

Habilitation thesis

Experimental Research in Cartographic Visualization
name and surname, including academic degrees

Reviewer

Liqiu Meng

Reviewer's home unit, institution

Chair of Cartography and Visual Analytics, Technical University of Munich, Germany

[Review text]

The habilitation thesis has revealed a very good overview of the candidate about the continuous evolution of cartographic communication theories since 1960ties, the extension of cartographic symbolization and visualization methods along with the technological developments.

The candidate is very well aware of

- the current state of experimental research in cartography over the last three decades and the existing deficiencies in the lack of experimental evidence,
- the interdisciplinary nature of cartography with links to natural sciences and the human aspects of the social sciences, and
- the necessity of experimental studies to test cognitive hypotheses related to human-centered and contextual cartographic design

The habilitation thesis contains 12 published research papers from 2011 to 2022 with the candidate as first author on 2 papers, co-author and corresponding author on 3 papers, and co-author on 7 papers. These papers are logically structured in the thesis, addressing at first the technical details of developing online tools for controlled experiments, and then various qualitative and quantitative investigations on effectiveness, efficiency and satisfaction of cartographic visualizations. The map use tasks in conducted experiments range from atomized perceptual task to more complex cognitive operations in varying social-cultural context. The semi-structured interviews, questionnaires, thinking-aloud and eye-tracking are among the most popular methods of user studies.

The research works were carried out in a number of national and international projects, reflecting the candidate's sustainable contribution, his ability to work in teams in the Department of Geography, Faculty of Science at the Masaryk University, and his capacity of interdisciplinary and international collaborations with research teams from other disciplines and other countries.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

- (1) What makes an online software platform for experimental research of user experiences different from other online tools?
- (2) How can you further increase the number and diversity of participants for user studies based on an open software platform?
- (3) What do you think about the assumption that showing users that their feedback is embedded in the map design loop might motivate them to contribute more?
- (4) Can you explain your interpretation of why visually separable and non-separable bivariate mappings are called extrinsic and intrinsic bivariate mapping respectively?
- (5) Why is the software "Hypothesis" intended for quantitative data acquisition whereas EyeTribe tracker for qualitative eye-tracking data recording? Would you clarify your understanding of the quantitative and qualitative data acquisition?
- (6) Could you elaborate your understanding of scalability and replicability of experimental research in cartography?
- (7) How have you incorporated your research findings into the education curricula of geography and for which learning scenarios or application domains?

Conclusion

The habilitation thesis entitled "Experimental Research in Cartographic Visualization" by Zdeněk Stachoň **fulfils** requirements expected of a habilitation thesis in the field of Cartography, Geoinformatics and Remote Sensing.

Date: 2023.01.01

Signature: