MUNI

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant	Mgr. Čeněk Šašinka, Ph.D.
Habilitation thesis	Cognitive Processing of Spatial Information with Respect to Various Visualization Methods and Individual Differences
Reviewer	Prof. Dr. Benny Briesemeister
Reviewer's home unit, institution	IU International University Department of psychology

Dr. Šašinkas habilitation thesis demonstrates an impressive amount of research concerning the perception of maps and their different designs and functionalities, the cognitive processes involved, cultural differences regarding those processes, published in very prestigious international journals. These findings are accompanied by an updated methodological and theoretical framework that enables future research in that direction. He investigates the research questions from several angles and brings in different perspectives, which he combines into a holistic psychological model at the end.

The habilitation thesis is especially strong with regards to opening research about geography/maps to a psychological perspective, combining cognitive processes, interindividual and cultural differences with map processing and design. Dr. Šašinka designs experiments that walk the fine line between ecological and internal validity, which in itself is quite impressive. Given the fast technological advances in recent years, the research manages a difficult task, that is incorporating technological developments such as digital true 3D maps and VR environments, which further strengthens the ecological validity and keeps the research at the pulse of the time. The pluralistic approach applied here, combining qualitative and quantitative research methods, is also remarkable, and the thesis is not short of new perspectives and ideas, trying to explain the diverse findings in the field with new ideas, mainly coming from psychology.

Moreover, Dr. Šašinka contributes to the development of new research tools that allow fellow researchers to continue this line of investigation in the future. Both, Hypothesis and Toggle are tested to be reliable and easy to use research tools that are open for the scientific community. Dr. Šašinka went through great lengths to demonstrate that these tools meet international standards, can be used to replicate known effects and provide reliable data with new experimental designs.

Apart from these strengths, there is one critique I have with the thesis which relates to its structure. As already pointed out, the thesis has a very broad scope, starting with empirical research, adding methodological development and culminating in a theoretical framework used to put the results into a bigger context. This is a very exploratory research approach, and I am not criticizing this approach per se, but given the theoretical framework (lens model) chosen, I would have encouraged Dr. Šašinka to take a more rigorous explanatory approach, testing concrete hypotheses of the lens model from the start. It might have helped to achieve a more coherent set of results with clearer implications, advancing the theory even further.

Notwithstanding that critique, the thesis is a very strong addition to the field of empirical research in geology and cognitive psychology. Especially the method development aspect of it, I am expecting to have profound and long lasting effects on the scientific community.

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

1. Given what you know now, if you had to travel back in time and redo the thesis, how would you approach it differently?
2. Given that especially within psychology there is a strong debate about replication biases, which of the results that were obtained would you expect to stand the test of time?
3. Based on your results, would you argue that there is an effect of culture on top of effects of cognitive style? Or are possible effects explained with cognitive style alone?
4. Often, the result has been that the optimal design is determined by the task at hand – would you agree that task/design interactions are the most promising field of research for the future in that field and if so, how would that relate to your model?

Conclusion

The habilitation thesis entitled "Cognitive Processing of Spatial Information with Respect to Various Visualization Methods and Individual Differences" by Dr. Čeněk Šašinka **fulfils** requirements expected of a habilitation thesis in the field of social sciences.

Date: July 31st 2023   Signature: