

**Supervisor's Assessment of Mgr. Jana Vrhovski's Doctoral Study and Dissertation**  
**"Patterns of Thought and Numbers: A History of Mathematical Logic in Late-Republican**  
**and Early-Socialist China (1930-1960)"**

**submitted in 2021 at Department of Sinology, Faculty of Arts, Charles University**

**I. Assessment of the course of doctoral study**

The candidate enrolled his course in 2013 as a team member of the project "Deconstruction and Construction of National Traditions and Science in China", which finished in 2016. During the first three years, he worked full time on his dissertation as well as developing other scholarly interests and projects. He frequently presented at internal seminars, smaller international workshops and larger conferences (e.g. International Conference on the History of Science in East Asia in Paris, 2015), and submitted multiple articles to scholarly journals. Since 2016, he continued to work part-time on his dissertation while pursuing an academic career in Slovenia.

His dissertation emerged in continuous discussion with me and other team members and underwent important changes of focus and scope, because he amassed too much material for a single piece of writing. Much of it has already been published in separate articles. I am very satisfied with the final result, which demonstrates his ability to move from descriptive accumulation of facts to a well thought-out, compelling argument.

**II. Overall Assessment of the Dissertation**

The topic of the dissertation was chosen to reflect the larger theme of the project, candidate's background in philosophy and my own in the history of Chinese mathematics. The candidate independently identified major figures in the emergence of mathematical logic in China, reflecting important shifts in its social function and technical sophistication, and performed an exhaustive research for sources on both the content and context of these developments. From this large body of material, the final version of the dissertation constructs a clear narrative of the concept of mathematical logic in China, filling a complete lacuna in the existing limited scholarship on the subject.

The dissertation sets the history of mathematical logic in China into three intertwined stories: the search for an objective philosophical foundation for a modern society and view of life; the history of Chinese Marxism as a political force, including its menacing effects on science after the establishment of the People's Republic of China; and the application of scientific knowledge to the needs of Chinese modernisation, most prominent since the 1950s and providing a degree of insulation from political and ideological interference. At the same time, the author is well aware of the larger international context of development of mathematical logic from a philosophical subdiscipline via its place in the foundations of mathematics to becoming a readily applied discipline connected to cybernetics and automation. The connections between China and the world in mathematical logic run both ways and are successfully highlighted in the dissertation. The author independently studied history of Soviet logic and philosophy to provide the necessary background for his discussion of the Chinese developments.

The chapters on the theoretical debates about the role and position of mathematical logic and foundations of mathematics in the 1950s are especially worth mentioning in this regard. The author demonstrates how Chinese mathematicians and mathematical logicians carved out a space for these

disciplines, building on the understanding of the pre-1949 period and against strong ideological currents coming from USSR, at the same time aligning themselves with both Mao Zedong's Thought and selected positions in Soviet philosophical debates.

The author has devoted meticulous attention to summaries of all kinds of material in tables, charts and illustrative figures. He has also found new archival material pertaining to Hu Shihua, the main character of the second half of the dissertation on post-1949 developments. Throughout the dissertation, he writes in clear language, and has developed a readable style of writing especially compared to his early overly verbose attempts.

The dissertation draws on an impressive amount of sources arranged with great care in the Bibliography. Despite occasional misprints and typos, the text has to be commended for the very high level of its formal and stylistic finish.

### **III. Critical Comments on the Dissertation**

A criticism can be reasonably made that the dissertation deals at the same time with quite abstract, high-level trends in intellectual discourse and very specific, even mundane choices of topics of research and discourse. While the author is at pains to demonstrate multiple factors influencing the course of the development of mathematical logic, in the end the intellectual inclinations seem to always play the primary role for him and practical and social interests are less prominent. Especially in the chapter on the Great Leap Forward and subsequent rise of Guan Zhaozhi and Hu Shihua to prominence, the sole focus on their devotion to the protection and development of the discipline of mathematical logic seems like an insufficient explanation of both their public positions and their broader conduct. The status of Guan as a controversial and, at times, feared ideologue and competitor of Hua Luogeng is not mentioned. As mathematical logic became a firm part of mathematics, the vision of social utility of mathematics formed a cornerstone of Guan's beliefs on mathematical logic as well, which could be spelled out more clearly.

### **IV. Question for the Defense**

A point that was not clearly settled in the dissertation was the institutional identity of mathematical logic in the PRC period. Did its proponents strive to establish it separately, or were they content to keep it as a repository of techniques for computers and other applications? In other words, did at that point mathematical logicians still view mathematical logic as a possible foundation of objective knowledge, or did they internalize a view of its subservience to practice? Do post-1960 developments, understandably omitted here, shed light on this question? Was there ever a return to pre-1949 veneration of logic in China in the reform period?

### **V. Conclusion**

The dissertation is original, full of unique material and inspiration for further research. I am satisfied that it fulfils the requirements for the degree of Doctor of Philosophy and should be classified with "Passed".