

Series in the History and Philosophy of Mathematics Seminar: **Exploring operations.**
Workshop: **Arithmetical Operations: which theoretical problems?**

How to capture theoretical work carried out on operations on the basis of sources from ancient China?

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Abstract

Among the operations that were chosen in ancient China as building blocks for writing procedures, division seems to have had a specific history. The talk was devoted to capturing the specific features of division and the transformations of division that could be perceived on the basis of the earliest known mathematical documents from China. I argued that division could help us identify two distinct mathematical cultures in ancient China. In this respect, interestingly enough, the mathematical classic devoted to the mathematics of astronomy, *The Gnomon of the Zhou*, seems to be closer to the manuscripts from early imperial China that we now know than it is from *The Nine Chapters*, a book probably completed in the first century CE. These two sets of documents may thus bear witness to distinct mathematical cultures, a fact that awaits further research. Among the features distinguishing division from the other operations in the manuscripts from early imperial China, I emphasized the fact that division is the only operation whose operands are designated by technical terms and which is not in the earlier time period prescribed by means of a verb. Moreover, clearly division was perceived as a difficult problem and much attention was devoted to questions linked to it. I gave evidence that there may have been a shift in the way of carrying out division, as there has also been a shift in the understanding of the relationship of division with other operations, eventually understood as cognate operations. To deal with this topic, it is essential to ponder on how clues found in texts can help us approach the theoretical work carried out on division.