

MINI WORKSHOP IN THE
HISTORY AND PHILOSOPHY OF THE PRACTICE OF MATHEMATICS
Copenhagen University, Roskilde University, University of Southern Denmark, Aarhus
University,
28 –30 November 2011

Theme

The usefulness of epistemic tools for investigating the history of the practice of mathematics

Venue: Sandbjerg, Sønderborg

Organisers: Danish Network for History and Philosophy of Mathematics

*Observing the practice of operations and capturing changing theoretical insights. Views
inspired by the earliest known Chinese mathematical sources*

Karine Chemla

SPHERE (REHSEIS), CNRS & University Paris Diderot

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The key idea put forward in the talk is that mathematical operations were not in ancient traditions merely tools, but they were objects of research. This can be illustrated by the case of division, root extraction and quadratic equation in ancient China. Clearly, Chinese sources from the 1st century CE onwards bear witness to a subtle understanding of the relationship between these three “operations” and to an ongoing theoretical reflection about them. However, the structure of the set of operations does not seem to be the outcome of an extension of division, but rather that of a reconceptualisation of the operations of division and root extraction as well as their relations to each other. This thesis can be argued for on the basis of the recently discovered mathematical manuscripts dating from the times of the early Chinese empire.

The talk brought to light the epistemic techniques by means of which practitioners could work on operations as objects. These include number systems, calculating tools, the way of writing down algorithms and relationships between names, the way of naming technical components of operations. The talk put forward the hypothesis that these epistemic techniques may have undergone a key shift in correlation with the transformation of the set of operations listed above.

The argument relied on a use of traces grasped in several features of the documents.