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Mathematical facets of measurement, measuring units, measured quantities and their uses

Symposium organised by the

ERC project SAW – *Mathematical Sciences in the Ancient World* ,

<http://sawerc.hypotheses.org/>

Endorsed by IASCUD (DHST – IUHPS)

Call for papers

The Symposium organisers now invite proposals for papers on the symposium topics. Please send your abstract (maximal length 2500 characters) in English or French to Karine Chemla, email chemla@univ-paris-diderot.fr , to arrive by Wednesday 31 October 2012.

Symposium abstract

Issues related to measurement are a key concern for the history, philosophy and sociology of the natural and social sciences. However, for mathematics hardly any attention has been devoted to them. Indeed, historians and philosophers of mathematics have dealt with measure, when it was a central notion in a mathematical theory (for instance, in Euclid's *Elements* or Lebesgue's measure theory). Historians and sociologists of mathematics have also addressed the symbolic or political meanings of systems of measuring units, their standardization, and their enactment. However, the knowledge involved in the production of measured quantities and the mathematical operations with these quantities has hardly been treated. In fact, mathematics studies (as in "science studies") seem to have shared the tacit assumption that the work with measured quantities was of no interest for the field, since past practitioners immediately converted any numerical value into an "abstract number" and their mathematical operations started when they were working with such "numbers." Measuring units appear to have been transparent for this research field. The symposium aims at exposing the shortcomings of these assumptions and at exploring the mathematical facets of measurement, measuring units, measured quantities and their uses.

— What were the mathematical facets of the work engaged in the actual design of measuring units and material standards for them? How did these facets connect with other facets of the design of measuring units? Do mathematical texts reflect this work?

— How were measuring standards used? This question implies taking into account several types of actors. Can issues related to measuring standards help us perceive distinct social groups? Can they cast light on the distinct social uses of measuring units and show how different social groups interacted in this respect?

— How did actors measure and use measured quantities? Can we identify the knowledge involved in the activity of measuring and understand how this knowledge was acquired? We also intend to identify strategies devised by actors to deal with the values they obtained. How

was the shift between measured quantities and abstract numbers conceptualized and handled in different contexts? Were instruments shaped to work and compute with measured quantities? We hope that such questions allow us to identify, through the variety of their practices, distinct social groups and the kinds of knowledge they shared.

— How can we assess the part played by measurement in the context of various types of activities and how practices of measurement were organized? In this respect tax payment and the organization of labour are as important as business or domestic activities.

We expect that this set of issues can bring mathematics studies closer to an anthropological study of actors of the past in their knowledge activities.

Symposium organizers:

Karine Chemla (history of mathematics, sinology), Agathe Keller (history of mathematics, indology), Christine Proust (history of mathematics, assyriology) – SPHERE (UMR 7219, CNRS & University Paris Diderot) & SAW

Cécile Michel (assyriology, HAROC (CNRS & University Paris Nanterre) & SAW

Robert Middeke-Conlin (assyriology, PhD candidate, SAW), Zhu Yiwen (history of mathematics, sinology, Post-doc, SAW)