

Conference

Cultures of computation and quantification in the ancient world

Monday 25 – Friday 29 March 2013, Paris

Organised by the

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

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

Call for papers

The SAW project invites proposals for papers on the conference topics. Please email your abstract (maximal length 2500 characters) in English or French to Karine Chemla, chemla@univ-paris-diderot.fr with a cc to saw.ercproject@gmail.com , to arrive by Friday 7 December 2012 at the latest.

Background

The goal of the first phase of the project SAW is to describe and understand the practices of mathematics that developed in relation to administrative and economic activities, mainly, but not exclusively, in ancient China, the Indian subcontinent and Mesopotamia. The choice of this first goal relates to SAW's general ambition, which is to bring to light a variety of practices of mathematics in the past in each of these geographical areas. Sources testifying to the mathematical activities carried out in relation to administrative and economic activities bear witness to practices of computation and quantification that are not uniform. This is why the specific issue chosen to achieve our aim during the first phase of the project is to describe practices of computation and quantification in their variety.

The most important moment of this phase will include a conference, which will be held between 25 and 29 March 2013 and which will be devoted to the description of these cultures of computation and quantification.

To identify these cultures, we will pay the closest attention to the following features:

Numbers and Quantities

The questions raised include the description of how numbers and quantities were designed, written down, and how they were objects of computation. In particular, the use of “abstract numbers,” e.g. non-measured numbers, on the one hand, or of measured quantities, on the other, and the relationship between them in the context of mathematical activities will be a topic of specific attention. We will also attempt to clarify what can be said about the emergence of place-value number systems.

Measuring Units, Standards of measurement, Prototypes and Conversion

The questions raised above indicate that we ought not assume, as historians have often done in the past, that operations were applied on “abstract” numbers and that the issue of “measured quantities” was one merely related to non-mathematical uses of quantities. In this

respect, the shaping of the system of measuring units, in particular regarding areas, volumes and capacities, the design of prototypes, the use of these systems, and the ways in which conversions were carried out require special attention.

Operations and Operands

We are interested in the sets of operations that can be identified in a given context as well as the work on operations for which evidence can be found. Part of this work includes how operations were designed as mathematical objects.

Procedures and Tools for Computing

The main questions in this respect will be: Can we restore how operations were executed in different contexts and with which kinds of computing instruments? Moreover, what can be learnt from the way in which texts for procedures executing operations were written down?

Epistemic Values

Can we find evidence of the epistemic values that led practitioners to work on operations and numbers in one way rather than in another, or to choose one option over another one?

Contexts

The notion of “context” in history of science appears to us to designate an essential concern, but one that is less simple than it seems to be. Indeed, when approaching cultures of computation and quantification of the past, it appears relevant to distinguish between various types of contexts, each of which can be meaningful for our topic. We intend to deal with the general issue of distinguishing between different notions of context in history of science, while we carry out our research on cultures of computation and quantification.

These criteria should allow us to detect the work carried out on operations and quantities. They may help us understand that operations, as well as numbers, were by no means simple objects, but the outcome of intensive research. These criteria also provide us tools with which to perceive a variety of practices and of cultures of computations and quantification in the past, where apparently previous historiography of mathematics implicitly conveyed the idea of uniform entities in China, the Indian subcontinent and Mesopotamia. On the basis of the identification of such a variety, new questions can be raised. For instance, we will also be interested in the relationship between the cultures of computation and quantification identified.

The conference aims at devising a first synthesis regarding the cultures of computation that will have been identified. We hope that, in addition to capturing and discussing features of these cultures of computation, each contribution will devote some space to outlining the way in which computations were treated in past historiographies of mathematics. In addition, we intend, at the end of the conference, to improve our understanding of what a “culture of computation” can be and which features are most relevant to perceive and characterize it.