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Mini-Workshop: History of Numerical and Graphical Tables

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Abstract. Numerical tables were one of the most commonly used instruments of calculation from the earliest periods for which we have evidence of mathematical activity until the appearance of computing machines. Such tables (including graphical tables) are interesting both as tools of calculation and insofar as traces for certain social and scientific activities of the practitioners by, and for, whom they were produced. Nevertheless, despite the fact that the historical record has preserved thousands of tables from a broad range of civilizations, these tables have themselves received relatively little critical study. Hence, it has seemed to us both useful and innovative to consider the problem of tables in general by bringing together specialists of the different mathematical traditions and of the various professional milieus in which numerical tables have been developed. The workshop allowed us therefore to make significant breakthroughs in our understanding of the places and roles of tables in the history of science, and should bring us to publish a collective book on this subject.

Mathematics Subject Classification (2000): 01A16, 01A17, 01A20, 01A25, 01A30, 01A32, 01A35, 01A40, 01A55, 01A60, 11-03, 62-03, 65-03, 65A05, 65S05, 68-03.

Introduction by the Organisers

The mini-workshop *History of numerical and graphical tables* was organized by Renate Tobies (Jena) and Dominique Tournès (Saint-Denis de la Réunion). Travel funding was provided by a grant from French National Research Agency (project HTN 2009-2013 "Histoire des tables numériques").

The organizers' main goal was to put together a group of 19 participants with a wide range of interests in and around the subject of numerical tables. The meeting was attended by specialists of the different mathematical traditions (Egypt, Mesopotamia, Greece, India, China, the Arabic World, Europe since the Middle Ages) and of the different contexts for the development of tables (astrology, astronomy, metrology, arithmetic, mathematical analysis, numerical calculation, mechanics, physical sciences, engineering, school mathematics, administration and management, etc.).

The schedule began with nineteen talks covering all historical aspects of numerical and graphical tables. Abstracts are proposed in this report in the same order as the corresponding talks were given. For efficiency, these talks were grouped in five sessions on the following themes:

- What is a numerical table, from mathematical and linguistic points of view, and in the modern context of computers?
- Techniques of table calculation (interpolation, finite differences, mechanization).
- Arithmetical tables and other numerical tables.
- Ancient astronomical tables.
- Applications of tables in social and economic life (navigation, artillery, engineering).

The second half of the week was devoted to work more specifically on the project of a future collective book entitled *The History of Numerical Tables*. A provisional table of contents was elaborated. Some important methodological questions, essential to structure the book and to link chapters between each others, were treated more precisely:

- Texts for tables.
- Interpolation techniques.
- Transmission of knowledge through tables.
- Mechanization of tables.
- Tables in interaction between university and industry.

One consequence of the broad range of backgrounds of the participants is that the meeting was particularly rich and fruitful. A second meeting will take place in France in 2012 to achieve the writing of the book.