

Seminar SAW:History of Mathematics, History of Economic and Financial Practices

PROGRAMME 2011–2012

Organisation: [Karine Chemla](#), [Agathe Keller](#), [Christine Proust](#)

The seminar takes place on **Fridays, 9:30 - 18:00**, usually in **Room Mondrian — 646A**, 6th floor, Building Condorcet, Paris Diderot University, 75013. Exceptions are listed below. Interactive [campus map](#) showing metro and RER station and bus stops.

As part of the [SAW project](#), this year seminar explores connections between ancient **documents for practical use**, such as **contracts, accounts, administrative papers**, and **mathematical texts**. The objectives are to gauge the mathematical knowledge of those who produced these documents and to identify the environment that attracted scholars who wrote mathematical texts. The seminar is intended as a meeting of historians of mathematics with historians of economical, financial, and administrative acts, with assyriologists, indologists, sinologists, and other specialists.

16 December 2011 Exceptionally, room Klimt — 366A

:: 1. Numbers and operations : Mathematical texts, administrative texts

What are the numbers found in different mathematical texts ? What kind of numbers do administrative texts testify of ? Were such numbers only made for writing, or could they have been used in computations ? What kind of mathematical operations are evoked by administrative texts, implicitly or explicitly ? Do these features allow us to grasp continuities between mathematical sources and documents of day to day practice, or do they manifest striking differences ?

Introduction :

Karine Chemla (ERC Project SAW & SPHERE)

Number and operations in contexts linked to administration and astronomy in ancient China

Charles Malamoud (EHESS)

Counting and measuring in the Arthashastra's administrative system [Abstract](#)

Laurent Colonna d'Istria (University of Geneva)

The notation of fractions in the kingdom of Mari

Grégoire Nicolet (University of Geneva) : reply

For personal reasons, the following talks have been postponed

Sreeramula Rajeswara Sarma : *Numbers and operations in Sanskrit mathematical texts*

Xiaoli Ouyang : *Enigmatic numbers on the margins of administrative records from Ur III Mesopotamia (c. 2112-2004 BCE)*

6 January 2012

:: 2. Using positions : Mathematical practices, accounting practices

Position is a device used by mathematicians and accountants alike. This workshop compares uses of positions by different practitioners in different geographical locations.

Christine Proust (ERC Project SAW & SPHERE)

Uses of place-value notations in cuneiform mathematical texts [Abstract](#)

Jens Høyrup (Roskilde University)

On the notion of " $\text{Exp}10$ ($\log10$ (modulo 1))" –observations of a former teacher of engineering students on the use of the slide rule [Abstract](#)

Zhu Yiwen (ERC Project SAW & SPHERE)

Positions of counting rods in ancient China

Agathe Keller (ERC Project SAW & SPHERE)

Positional and tabular notations in Sanskrit mathematical texts (7th - 10th centuries) [Handout](#)
[Presentation](#)

Mathieu Arnoux (ICT (Identités, Cultures, Territoires), University Paris Diderot)

Ancient accounts and history of accounting. A medievalist's reflection on the use of quantitative data

Liliane Perez (ICT (Identités, Cultures, Territoires), University Paris Diderot & SPHERE)

Artisans' accounting practices and operations skills in the 18th century [Abstract](#)

Grégory Chambon (University Bretagne Occidentale) and **Laurent Colonna d'Istria** (University of Geneva) : reply

20 January 2012

:: 3. Trade, loans, interests, and customs

Commercial transactions have left traces in practical documents and in mathematical texts. Are the two connected ? Are there any contextual links ?

Cécile Michel (CNRS, UMR Histoire et ARchéologie de l'Orient Cunéiforme (HAROC))
Price, interest, and tax calculation by the Old Assyrian merchants (19th century BC)

Christine Proust (ERC Project SAW & SPHERE)
Economical problems in cuneiform mathematical texts : an example of a list of problems on buying and selling (YBC 4698)

Takanori Kusuba (Osaka University of Economics, Osaka)
Rules and examples for interests and loans in Sanskrit mathematical texts

Peng Hao (Center of Bamboo and Silk Manuscripts, Wuhan & Jingzhou Museum, China)
Salaries of government official according to the writings of the Qin and the Han dynasty
Reply : **Karine Chemla**

Stéphane Lamassé (University Paris Panthéon Sorbonne) et **Olivier Mattéoni** (University Paris Panthéon Sorbonne)
Computing and accounting in the 15th century

Grégory Chambon (University Bretagne Occidentale) and **Laurent Colonna d'Istria** (University of Geneva) : reply

3 February 2012 Exceptionally, room Klimt — 366A

:: 4. Accounting in administrations, taxes, and salaries

What sources provide information on the way taxes and income taxes were levied ? What is the status of these sources ? What environment do they point to ? What links can be drawn between different kinds of sources ?

Bertrand Lafont (CNRS, UMR Histoire et ARchéologie de l'Orient Cunéiforme (HAROC))
Accounting practices in Sumer : Some illustrations

Robert Middeke-Conlin (ERC Project SAW & SPHEREt)

Creative accounting : Anomalies in bookkeeping during the Old Babylonian period [Abstract](#)

Michael Loewe (Cambridge University)

The place of figures in the administration of China's early empires [Abstract](#)

Peng Hao (Center of Wuhan University and Xingzhou Museum)

Governmental tax revenue according to the documents of the Qin and Han dynasties

Agathe Keller (ERC Project SAW & SPHERE)

Introduction. [Presentation](#)

Price of people and distributions : From merchant communities to games in Sanskrit mathematical texts of the 7th-12th centuries

Vijaya Ramaswamy (Jawaharlal Nehru University, New Delhi)

Tax structure in ancient India : A view from the South

9 March 2012

:: 5. Grains and granaries

Grain was an essential commodity of the ancient world. Both administrative documents and mathematical texts refer to problems of grain management, which was often a state matter. What historical approaches can help us to understand grain accounting and the mathematical tools it required ?

a.m.

Grégory Chambon (University Bretagne Occidentale)

Measuring grain in Mesopotamia : storing, controlling, and delivering grain

Robert K. Englund (UCLA)

Grain and time calculations in the 4th millennium BC Mesopotamia [Abstract](#) [Presentation](#)

Karine Chemla (ERC Project SAW & SPHERE) & **Ma Biao** (Yamaguchi University)

Management of grains, measuring units, and the imperial policy of the Qin and the Han

p.m.

Agathe Keller (ERC Project SAW & SPHERE) *Introduction : Grain problems in Sanskrit mathematical texts* [Presentation](#)

Vasundhara Filiozat (Historian)
Weights and measures in South India from 6th to 16th century, with special reference to Karnataka

6 April 2012

:: 6. Constructions and excavations

Ancient mathematical texts include numerous problems on all sorts of constructions. What are connections between these problems and related procedures, on the one hand, and practical documents on construction, on the other ?

Corinna Rossi (Collegio di Milano)
Ancient Egypt : Planning and cutting the royal tombs in the Valley of the Kings

Martin Sauvage (CNRS, USR 3225, Société Préhistorique Française et UMR Histoire et ARchéologie de l'Orient Cunéiforme (HAROC))
Mathematical computations in the management of public works in Mesopotamia (end of the 3rd and beginning of the 2nd millennium BCE) [Abstract](#) [Presentation](#)

Christine Proust (ERC Project SAW & SPHERE)
Bricks as units of volume : Reference texts and problems [Abstract](#)

Toke L. Knudsen (SUNY Oneonta, New York State)
Bricks real and imaginary : The altar constructions of the Sulbasutras [Abstract](#)

Donald B. Wagner (Nordic Institute of Asian Studies, Denmark)
Mathematics and the planning of public works in China, Han to Yuan [Presentation](#)

Paul Benoit (University Paris 1 Panthéon Sorbonne)
Mine topography and trigonometry at the end of the Middle Ages and during the Renaissance

11 May 2012

:: 7. Land registers and surveyors : Measuring lengths and areas

In the ancient world, land surveying was a specialised activity, which required mathematical knowledge. What sources document this activity ? Are there any connections between these sources and mathematical texts ?

Sergio Alivernini (Sapienza University, Roma)

The mathematical knowledge during the III Dynasty of Ur in the light of land surveying texts

[Abstract](#)

Christine Proust (ERC Project SAW & SPHERE)

From land surveying to geometry : Kish school exercises

Agasibagil Jagadish (Venkatappa Art Gallery, Bangalore) (subject to confirmation)

Text and practices : Land measure in South India. A special reference to Karnataka [Abstract](#)

Xiao Can (Hunan University)

Measurement, calculation, and management of fields in the Qin and Han dynasties according to the excavated documents

Zou Dahai (Institute for the History of Natural Sciences, Chinese Academy of Science, Beijing)

The methods for calculation of fields and land system in the Middle Ancient Period of China

15 June 2012

:: 8. Names of operations : Meaning of the terms and sociolinguistic analysis

Can names given to operations give us clues as to the context in which mathematical documents were produced ?

Jens Høyrup (Roskilde University)

On paleo-babylonian mathematical terminology and its transformations in the mathematics of later periods

Mathieu Ossendrijver (Tübingen University)

Mathematical terminology in Babylonian astronomical texts [Presentation](#)

Michel Federspiel (University Blaise Pascal, Clermont-Ferrand)

Comparing uses of verbs expressing operations in Classical Greek geometry (Euclide, Archimedes, Apollonius)

Karine Chemla (ERC Project SAW & SPHERE)

Names of operations in ancient China : which hints can we read from them ?

Pierre-Sylvain Filliozat (EPHE)

Computing in different Indian languages