

History of Science, History of Text Programme 2013—2014

Condorcet Building of the Paris Diderot University

Programme

November 21, 2013: How sources document ways of working

**From 9:30 am till 5:30pm
Room Malevitch, 483A**

Rich Kremer (Darmouth College)

Exploring the social worlds of the medieval Latin astronomical codex

Abstract: Most large European libraries with rich manuscript collections hold codices often simply described in catalogs as "astronomical tables." Dating usually from the 14th to 16th centuries, these codices may contain widely varying texts—medical, astrological, calendrical, and computational. They may also include paper instruments with moving parts or describe how to make and use instruments in brass. In this seminar, I shall examine several examples of such compilations and ask what they tell us, if considered not as individual texts but as physical codices, about their early social worlds. Produced by scribes and authors, owners and bookbinders, libraries and collectors, these codices contain hints about the early social worlds they inhabited, hints ranging from colophons, ex libris inscriptions, other users' marks or signs of wear to the structure of the texts brought together. Who wanted such astronomical compilations? How were these books used? Did their users consider themselves to be 'astronomers' or 'astrologers'? Can we find common patterns that might enable us to define a genre of the 'astronomical compilation'? Until recently, most historians of medieval Latin astronomy tended to focus on the content of texts. Can we tell different stories if we focus on codices?

Isabelle Charmantier (University of Exeter)

Carl Linnaeus's Paper Slips

Abstract: In this paper I want to present results from a Wellcome Trust funded research project studying the ways in which the Swedish naturalist Carl Linnaeus (1707-1778) assembled, filed,

and cross-referenced information about plants and their medicinal virtues. It is a well-known fact that Linnaeus was one of the first to write about a "natural system" of plants and to suggest that plants of the same "natural order" share similar pharmaceutical properties. His manuscripts, held at the Linnean Society (London) and various institutions in Sweden, provide an excellent opportunity to understand how information processing practices determine such ideas. They document how Linnaeus experimented with a variety of paper-based information technologies throughout his career -- including commonplace- and notebooks, maps, schematic diagrams and drawings, collections of loose paper sheets, sometimes folded up to form slim files, annotations in interleaved copies of Linnaeus's own publications, and paper-slips resembling index cards. I will focus more specifically on these paper slips, investigating how Linnaeus and his student Daniel Solander first experimented with paper slips in the 1750s when cataloguing the Queen of Sweden's cabinet of curiosities, before both of them eventually used them in their personal work, in very different and idiosyncratic ways. Solander's paper slips became one of the main catalogues for specimens held at the British Museum.

Marta Hanson (Johns Hopkins University & Currently Visiting Fellow Templeton Project in the History of Science and Religion in East Asia, Dept of the History & Philosophy of Science, Seoul National University)

Understanding is Within One's Grasp (liaoran zai wo 瞭然在握): Hand Mnemonics and Chinese Arts of Memory

Abstract: What knowledge in Ming China was considered important enough for ordinary people to memorize, how did they memorize it, and where was such memorized knowledge valorised, performed, and used? The Chinese phenomenon of hand mnemonics" (*zhangjue* 掌訣) works as a heuristic device to enter both the mind of the people who likely used them and the social world in which the knowledge summarized on the hand was valued enough to memorize. Medical prognosis and fate prediction were two of the most important arenas of knowledge in which memorization was not only highly valued but also pragmatic in daily life. After the fifteenth-century publishing boon, these bodily arts of memory bridged esoteric and vernacular domains of knowledge, particularly in the realms of astrological prediction and medical prognostication. Hand mnemonics in Ming almanacs and medical texts illustrate not only comparable techniques to memorize medical and mantic numerology but also important connections between medicine and astrology in late imperial China.

In this talk, I will first present an overview of hand mnemonics in Chinese culture, then in medicine and astrology, and finally, focus on examples of arts of memory – enumeration, versification, visualization, and corporealization – and connections between medical & astrological-numerological practices in the early 17th-century physician Zhang Jiebin's classic medical text, the *Classified Canon with Illustrations & Commentary (Leijing tuyi 類經圖翼 1624)*.

January 23, 2014: Parts of text

From 9:30 am till 5:30pm
Room Malevitch, 483A

Enno Giele (Heidelberg Universitaet)

Bamboo, Wood, Silk, and Paper: The Writing Materials of Early China

Abstract: Why do we find so many ancient Chinese documents written with brush and ink on wooden boards and strips, if according to traditional sources the usual writing material was "bamboo and silk"? Was the well-known form of a multi-strip document (cè 冊) really responsible for the building-block-nature of early Chinese literature or rather the form of a wooden rod with multiple writing surfaces that Michael Loewe once suggested as the possible origin of the literary component of "pericope" (Shaughnessy) (*zhang* 章)? And how does that relate to the "chapter" (*jié* 節) that seems to clearly originate in the physical properties of bamboo? How far do the physical properties of the writing materials influence the forms of Chinese writing culture at all? Does the shift from "fascicle" (*pian* 篇) to "scroll" (*juàn* 卷) as a counting unit in the library catalogues from antiquity to medieval ages really just reflect the shift from bamboo to paper? What, if any, part did silk scrolls play? Was silk rolled up at all? These and similar questions concerning ancient Chinese writing materials will be dealt with in this paper so as to arrive at a more critical appraisal of manuscript culture in early China.

Mark McClish (Birmingham-Southern College)

The Composition of the Arthasastra: On Kautilya's Use of Sources and the Evolution of the Text

Abstract: The *Arthasastra* of Kautilya (ca. 100 CE) is the only surviving treatise from classical South Asia devoted wholly to statecraft. It is a very valuable text for many reasons, but for the purposes of this talk, it is most important in that it preserves a number of technical discourses from the early classical period otherwise largely lost to us.

For, given the variety of individual practices and areas of expertise involved in the enterprise of statecraft, the composer of the *Arthasastra* needed to draw on a number of pre-existing discourses, some of them clearly quite technical in nature, to provide instruction on various aspects of governance. Such discourses include what we might think of as "applied knowledge" and often take the form of discrete "topics" (*prakaranas*) or "subjects" (*adhikaranas*) within the text: construction, state finance, agriculture, law, animal husbandry, autopsy, and so forth. As such, the *Arthasastra* can rightly be considered an important compendium of technical literatures from early classical South Asia found nowhere else.

My primary interest in the text has been the manner of its composition: how it came to the form in which we now receive it. That Kautilya used a number of sources has long been recognized, and a well-regarded study by Thomas Trautmann has attempted to prove this through statistical analysis of the frequency of certain lexemes. What has been lacking, and what I have tried to provide in my

own work, is a comprehensive theory of the composition of the *Arthasastra* based on clear philological analysis.

In my talk, I will present the key features of the text and the methods of textual criticism that I have used to help bring to light the various “layers” or “strata” of the text. In this, I will seek to make clear the philological reasoning upon which my results depend. I will then turn to look at the various layers of the text themselves. Such analysis yields a variety of insights about the composition of the text as well as its sources, and it is in this regard that useful observations can be made about the presence of technical discourses in the text itself in respect of both their content and presentation.

Isabelle Lémonon (EHESS, Centre Alexandre Koyré) *La Table alphabétique et analytique de chimie de Mme Dupiery : quels enjeux de savoir ? / Mme Dupiery's Table alphabétique et analytique de chimie : What's to know ?*

Le système des connaissances chimiques, publié en 1801 par Antoine François Fourcroy en 5 tomes (puis complété par 6 autres tomes) est accompagné par une table alphabétique et analytique des matières, rédigée par Madame Dupiery. L' « exactitude » et le « soin » apporté à cette table par sa « consoeur en chimie » est salué par Fourcroy, lui-même. Cette table de 170 pages, est un des minces indicateurs de l'implication de Madame Dupiery dans l'entreprise scientifique. Que peut-elle nous apprendre quant aux savoirs mis en jeu par cette « collaboratrice » de l'ombre ?

Le système des connaissances chimiques, published in 1801 by Antoine François Fourcroy in 5 volumes (and supplemented by six other volumes), is accompanied by an alphabetical and analytical table of contents, written by Madam Dupiery. The accuracy and care brought to the table by his fellow member is greeted by Fourcroy himself. This 170 pages long table is one of the thin indicators of Madam Dupiery's involvement in the scientific enterprise. What does it teach us about the knowledge brought into play by this collaborator of the shadow?

February 20, 2014: Modes of writing with parts of texts

From 9:30 am till 5:30pm
Room Malevitch, 483A

Julie Lefebvre (Université de Lorraine, CREM, EA3476)

Une approche linguistique des parts de texte : les parts de texte comme observatoire de l'activité métatextuelle des scripteurs/ A linguistic approach to parts of text : parts of text as marks of the metatextual activity of writer.

Abstract: Lors du séminaire HSHT 2012-2013, la présentation du travail d'Ugo Dionne (*La Voie aux chapitres – Poétique de la disposition romanesque*, Seuil, Paris, 2008) nous a permis de questionner la notion de « part de texte » à partir du champ des études littéraires. Nous souhaitons poursuivre ce questionnement depuis un champ disciplinaire connexe, celui de la linguistique et,

plus précisément, d'une linguistique de l'énonciation qui s'attache à étudier l'expression de la « subjectivité dans le langage » (Benveniste 1966) en portant attention aux traces de l'acte d'énonciation observables dans l'énoncé.

Ayant distingué d'une part, « nom de part de texte » (ainsi dans un titre comme « Chapitre 1. XXX ») et « référence à une part de texte » (comme, par exemple, dans « Ce chapitre traitera de... », observable dans le fil du texte) et, d'autre part, « référence aux parts du texte tenu en main » et « référence aux parts d'un autre texte », nous exposerons les questions soulevées par l'étude d'un corpus de références à des parts du texte tenu en main extraites de textes contemporains (XX^{ème} siècle) de genres discursifs variés. Nous montrerons notamment comment ces formes, dans lesquelles les scripteurs prennent pour objet leur écrit « fait texte », dessinent différentes postures énonciatives qui permettent de caractériser des genres discursifs et des écritures singulières.

Abstract : Last year, we have questioned the notion of « parts of text » through the presentation of Ugo Dionne's works (*La Voie aux chapitres - Poétique de la disposition romanesque*, Seuil, Paris, 2008). We want to continue this inquiry from the view point of a closely related discipline, that is, linguistics. More precisely, we will talk from the point of view of an enunciative linguistics that aims to study the expression of « subjectivity in language » (Benveniste 1966) through the observation of marks of the enunciation's act left in the utterance.

We will first make a difference between « naming a part of text » (for example, in a title like « Chapter 1 - XXX ») and « referring to a part of text » (like in « The second chapter aims to... », which can be observed in the text's development). We will also establish a distinction between « referring to the parts of the text held in one's hands » (for example « This section aims to... ») and « referring to the parts of an other text » (for example, « See Dionne 2008, Chapter 2 »).

We will then present the questions resulting of the study of a corpus of references to parts of texts « held in hands » extracted from contemporary texts (20th century) belonging to various discursive genres. We will show in particular how these forms in which writers are dealing with their writing as it has to be « shaped as a text » give informations on different enunciative « postures » that can be used in the characterization of discursive genres and singular writings.

Florence Bretelle-Establet (CNRS, SPHERE, & ERC Project SAW)

La citation étudiée depuis plusieurs points de vue : revue bibliographique/A bibliographical review on the practice of citation approached from different standpoints and disciplines

Abstract: In the last decades, researchers in scientometrics, sociologists of science, philosophers, and linguists have reflected upon citation and the act of citing. While there still does not exist a theory of the citation, however, the huge research that has been done on citation, from all these perspectives —citation and the question of intellectual influence, citation as a marker of social belonging, citation as a particular discourse act—, have shed light on many aspects of the practice or “praxis” of the citation that can be helpful for those who work on scholarly texts that often if not always resort to this writing practice. In this talk, I make a review of the literature dealing with the question of citation.

Rita Watson (ISAW-NYU)

Writing, Theory, and Conceptual Change

Abstract: Writing has been argued to create a distinct repertoire of beliefs, concepts, and attitudes that are both discontinuous with prior mental content and core to the emergence of modern science, philosophy, and epistemology broadly conceived. Mature writing has been called a theory of language, an explicit construal of language in graphic form, the material nature of which has the potential to alter the role of linguistic objects in ordinary thinking and reasoning. Claims about writing and mind such as these are consistent with current understandings of mind and culture, and can be clearly differentiated from earlier notions of a nonce cognitive change, a distinction between “kinds” of minds, or a cultural divide between the rational and pre-rational attributable to literacy. A view of writing as theory and its invention as problem solving will be explored, taking early scribal practice in cuneiform culture as evidence

March 20, 2014: Parts of texts, Preparing the completion of the book on parts

**From 9:30 am till 6 pm (exceptionally)
Room Mondrian 646A**

Danielle Jacquart (EPHE)

Les miscellanées scientifiques dans les manuscrits médiévaux

Abstract: tba

Florence Bretelle-Establet & Stéphane Schmitt (ERC Project SAW & SPHERE, CNRS)

Preparing the completion of the book on parts of text

Matthieu Husson (ERC Project SAW & SPHERE, CNRS)

Evrat de Conty's translation of Aristotle's Problems: a look at the manuscript tradition of the problem 35 on music

Abstract: Completed in 1380 for Charles V, Evrat de Conty's translation and commentary of Aristotle *Problems* into French is for many reasons an interesting document when it comes to the study of how scientific texts were shaped and elaborated. A first set of reasons concerns Evrat de Conty's aims and means. Evrat de Conty proclaimed his aim was to restore and clarify the true meaning of the Aristotelian compilation which since the 13th c was famous for its obscurity. He

uses a complex material: the Latin translation of Aristotle's *Problems* by Barthelemy of Messine in Sicilia in the middle of the 13th c. and the commentary on it made by Pietro d'Abano in the beginning of the 14th c. This last text existed in more than one version. A second set of reasons stems from the exceptional manuscript tradition which has reached us for this text. We have a copious autograph manuscript which can be describe as a "corrected second draft." This manuscript allows us to see the author at work while writing and making copious corrections of his text in several later edition readings. We also have 5 other manuscripts of the text. All are close to the autograph but with varying relations to it. A wide range of questions can be addressed with this material. Some of them relate to the author at work on the manuscript: how is Evrat copying and amending his own text? What are the textual means used in this work: colors, diacritic signs, type of writing, margin, etc. ? How far can we go in the identification of the different layers of text in the autograph manuscript? How does Evrat de Conty translate and use Pietro d'Abano and Barthelemy of Messine works in his text? Can we identify the version of Pietro d'Abano used by Evrat de Conty? Does Evrat de Conty incorporate other sources and how? How does he deal with his own additions? Some other questions relate to the variations of the manuscripts tradition. What are the variants found in the various later copies of the text? What can they teach us about the copying process, the audience intended for the manuscript? How far can a text be altered by the manuscript tradition and still be presented as the same text? Relying on existing published and unpublished ongoing studies of Conty's text and Pietro d'Abano's commentary we will look at some of these questions focusing on one particular instance from the section XIX of the *Problems*.

Karin Preisendanz

On quotations, citations, etc. in Sanskrit science texts (provisional title)

Abstract: tba

Workshop, Joint workshop with the Hamburg Center for the Study of Manuscript Cultures, May 8-10, 2014

From 9:30 am till 5:30 pm

Room Mondrian 646A

Topic: *What can scientific manuscripts teach us about manuscripts?*

May 22, 2014 : Mathematical Commentaries

From 9:30 am till 5:30 pm
Room Mondrian 646A

K. Chemla (ERC Project SAW & SPHERE, CNRS)

Commentaries on mathematical texts. Results and new questions

Abstract: The presentation offers an overview of the issues that appeared to me relevant to address in the research I have so far devoted to mathematical commentaries, based on the study of Liu Hui's and Li Chunfeng's commentaries on *The Nine Chapters*. In particular, I shall summarize how reading commentaries as commentaries and observing commentators as readers of canons have offered perspectives in my view essential to interpret these ancient writings. At the moment when I plan to turn to a new set of mathematical commentaries, of a completely different nature, I shall sketch some of the new issues that appear promising for future research. The focus will be placed on how research on mathematical commentaries can help us think about diversity in mathematical practice in ancient China.

Agathe Keller (ERC Project SAW & SPHERE, CNRS)

Mathematical and textual practices in Sanskrit mathematical commentaries, 7th-10th century

Abstract: This presentation will be an informal survey of the different perspectives by which Sanskrit mathematical commentaries can be approached with the aim of understanding and describing the mathematical practices (including textual practices) of both the commentator and the treatise it glosses. Such perspectives range from understanding how a working surface-- on which diagrams are drawn or numbers written -- is represented in the text of commentaries and interacts with the text itself; to using speech act theory to recover how both the treatise and commentary not only execute an algorithm but also how they understand it; studying modalities of justification and grounding of algorithms in such corpuses; and reflecting on what such studies tell us of the conceptions of what a mathematical text should be.

Micheline Decorps (CHSPAM, SPHERE, CNRS)

Un exemple de commentaire mathématique à la fin de l'Antiquité : le commentaire d'Eutocius d'Ascalon aux Coniques d'Apollonius de Perge.

Abstract:

Glenn Most (The University of Chicago and Scuola Normale Superiore di Pisa)

tba

June 12, 2014 : Orality and the historian of science' s written sources. Discussing the issue in preparation.

**From 9:30 am till 5:30 pm
Room Mondrian 646A**

Christine Proust (SAW project & SPHERE)

Mémorisation des mathématiques dans les écoles de l'ancienne Babylone / Memorizing mathematics in Old-Babylonian schools

Abstract: Mathematical texts from Mesopotamia are the oldest traces of mathematical activities that came down to us. One can hardly imagine that texts written more than four thousand years ago have preserved, in a way that would be intelligible to us, the trace of the context of orality in which they were probably produced. However, several reasons should make us revise this pessimistic.

One reason lies in the nature of the sources on which historians of Ancient Near East, among them historians of mathematics, work. They are archaeological sources, that is to say, documents produced by the hands of actors which we study the practices and knowledge. This situation contrasts with the study of other mathematical writings, like those of ancient Greece, which have been transmitted by a long scholarly tradition, and on which we only know late witnesses. The material aspects of these archaeological sources inform us about the practices of all kinds that accompanied the act of writing.

A second reason lies in the existence, among the finds of archaeologists who excavated the major sites in Iraq, Syria and Iran, of a large number of so-called "school tablets", namely, the writings produced by young scribes during the first stages of their training. These writings reflect oral communication between students and masters.

A third reason results from the context in which the school tablets were written. This is a sensitive period in the intellectual history of Mesopotamia, where oral tradition is facing the emergence of the practice of writing, particularly in the transmission of knowledge. What are the marks in mathematics texts, of this upheaval? What were the consequences of the emergence of long-range communications, in space and in time? Answering these questions may help to explain why mathematics texts appear heavily in our sources at the beginning of the second millennium BCE, while many indications show that mathematical practices appeared much earlier.

In this contribution, I will examine a set of mathematical school tablets from the site of Nippur, in central Mesopotamia, dating from the early second millennium BCE. I will focus to clues which allow understanding the environment in which the school tablets were written by young scribes. These indices include the physical aspects of the school tablets, the layout of the text, or mistakes. Smallest details may contribute to uncover essential elements of this environment, such as the

multi-lingualism, the memorization processes, the learning by recitation, the use of memorized tables, or the computation practices with a device.

Daniel Morgan (SAW project & SPHERE)

Muddled Math and its Implications for Early Chinese Manuscript Culture.

Agathe Keller (SAW project & SPHERE)

Le chapitre mathématique de l'*Aryabhatiya* (499) comme une compilation de règles orales/ *The mathematical chapter of the Aryabhatiya (499) as a compilation of oral rules*

Abstract: A Keller will study *Aryabhatiya* (a 5th century astronomer)'s mathematical rules composed in Sanskrit. These rules (*sutras*) are often considered to be oral with a mnemonic aim and an educational purpose. In this paper, a close look at how these rules were crafted will be carried out. The difference between how algorithms are stated versus how they are executed will be used to reflect on the context from which these rules derive. Indeed, a formal orality be inferred from the versification of these rules and the way their commentaries reflect upon them. Further, by examining the great diversity of algorithmic expressions, their mnemonic flavor will be underlined as will be demonstrated that the mathematical chapter of the *Aryabhatiya* is probably the result of a compilation. Such a treatise then, if it has the name of an author, should be seen as a collective endeavor. Finally, this paper will examine the historiographic trope which considers treatises and commentaries as teacher's or student's notes.

Antonio Garcia (University of Alicante)

Orality, writing and the learning of chemistry.

Abstract: Public lectures and experimental demonstrations, one of the more widespread forms of teaching and popularization of experimental science in the 18th and 19th centuries, constitute a privileged space for the study of interactions between orality and writing. In this article we analyze the lecturing style used by Louis Jacques Thénard (1777-1857) in the chemistry courses he taught at the Collège de France in the early 19th century through the notes taken by some of his listeners who, following an old and extended tradition, produced rich and detailed notebooks wherein they reconstructed the contents of the lessons. The writing practices associated with these student notebooks and the way this activity interacted with other writing, reading, observation and manipulative practices related to studying experimental sciences such as chemistry are also discussed.

David Rowe (Mainz University)

A Communal Project in Göttingen: On the Evolution of Felix Klein's Lectures on the History of 19th-Century Mathematics.

Abstract: Klein's wartime lectures were originally conceived as providing an overview of major developments during the nineteenth century, arranged both thematically as well as along the lines

of competing national traditions. Delivered over several semesters, they were written up by various auditors as typescripts some of which afterward circulated in select circles. Not long after Klein's death in 1925, Richard Courant enlisted the services of Otto Neugebauer to help prepare the first volume for publication in Springer's "yellow series" under the title *Vorlesungen über die Entwicklung der Mathematik im 19. Jahrhundert*. This volume soon became a classic and influenced the writings of historians from Dirk Struik to Eric Temple Bell. This alone might be reason enough to wonder about the content and context of Klein's original lectures. Another reason relates to the second volume, which is somewhat more technical than the first, and aims to show the interplay between mathematical formalisms and concurrent developments in physical theory. A primary reason for this thematic shift came from Klein's involvement with Einstein's theory of relativity, which was taken up by Hilbert, Klein, Runge, and several other Göttingen mathematicians during the war years. Luckily, Klein preserved his lecture notes from this period so that it is possible to gain a fairly clear idea of how he went about preparing his talks in Göttingen. We can thus form a picture of what he spoke about, when, where, and to whom. Some of Klein's lectures were attended by faculty members (Runge, Carathéodory, et al.), as well as post-docs (including Emmy Noether), and a small number of students. Elisabeth Klein, his youngest daughter, prepared the typescript for the first series of lectures. Klein's notes indicate numerous conversations with Emmy Noether and others who assisted him at this time. By comparing passages from the original notes with the typescripts made by his assistants, as well as the published texts as prepared by Neugebauer and co., we can gain a picture of the communal activity that helped produce this singular text, which became famous as Klein's personal vision of a mathematical culture that was fast receding into the past.

Martha Cecilia Bustamante (SAW project & SPHERE)

Orality and writing in Emile Borel's notebook

Abstract: The article by M. C. Bustamante concerns the notes the mathematician Emile Borel took during the course on radiation theory, given by Paul Langevin at the College de France in 1912-1913. It examines the scientific content of the notes and their physical form. It shows on the one hand, how the notes refer to the collective dimension of the course, and , on the other hand, the particularities that can only be explained by the characteristics of the oral expression of Langevin . To expand her point, while showing the specificity of notes taken by the mathematician, she examines notebooks on other courses given by Langevin. They are the only record we have of the courses to which they relate. Langevin did not publish his lectures. This might suggest that he was convinced of the impact of oral presentation in the transmission of scientific knowledge.