

## **Seminar SAW**

### **Seminar Exploring 19th and 20th centuries historiographies of mathematics in the ancient world 2015-2016**

organized by Karine Chemla, Matthieu Husson, Agathe Keller, Christine Proust  
and the SAW group  
Université Paris Diderot, Condorcet Building - room 483A 9:30 am to 5:30 pm

<http://sawerc.hypotheses.org/seminars/internal-seminar-historiography-2015>

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## **Presentation**

The organization of this seminar marks the beginning of the third and last phase of the SAW project. Our aim is to explore various facets of 19th and 20th century historical research about ancient mathematical sciences, especially those attested to by sources written in Chinese, the languages of the Indian subcontinent and cuneiform script.

After a brief examination of 17th and 18th century writings on mathematical sciences of the ancient world, we will analyze how worldwide in the first half of the 19th century roughly speaking, different milieus (orientalists, Confucian scholars, Indian pandits, mathematicians, philologists, theologians, etc) began systematically exploring mathematical sources of the past. We will analyze the issues and sources they privileged, their methods of inquiry and interpretation, the values they prized, the networks and the institutions to which they belonged and the contexts in which they carried out their historical work. After having focused on historical writing before the professionalisation of the history of mathematics, we will turn to the time period of professionalisation.

Against this background, we will then concentrate on two specific topics important for the SAW project: the historiography of computation and the historiographic treatment of measurement units in the history of ancient mathematics. Finally, we will examine more global issues: how the different historiographies of ancient mathematics approached questions of comparison and circulation, and how they dealt with issues related to culture, civilization, and similar topics. The past and present-day uses of history of mathematics in specific communities will be equally at the center of our interest in this final part of the seminar.

The seminar is intended as a meeting of historians of mathematics with historians of philology, of orientalism, assyriologists, indologists, sinologists, and other specialists.

## Programme

### November 13<sup>th</sup>, 2015 - Historical approaches to ancient mathematics and astral sciences in the early modern period

**Presentation:** Historical interest in ancient mathematics and astral sciences, and more specifically, when from different parts of the world, is noticeable in different contexts of the early modern period. This session aims to understand the various motivations that prompted this interest, and also how those who wrote about this topic carried out historical treatments of ancient mathematics. We further want to explore the type of sources on which these early practitioners of history of mathematics and astral sciences relied, and how they treated them. Did they explore sources coming from different parts of the world? In case they did, we want to understand why they did so, and how they accommodated their variety.

**Christopher Minkowski**, *The sense of history in Indian astronomical texts*

**David Rabouin**, *Wallis as an historian of Algebra*

**Antoni Malet**, *Milliet Dechaux's history of mathematics*

**Florence Hsia**, *Reconstructing science in sinographic archives*

**Christopher Minkowski** (Boden Professor of Sanskrit, University of Oxford)

*The sense of history in Indian astronomical texts*

**Abstract** - Until recently, the usual story that has been told about premodern Indian historiography is one of failure, of the lack of an independent genre that corresponded to what one finds in Greek or in Chinese. Recent work has suggested that there are, nevertheless, Indian texts that display a recognizably historiographical orientation, especially in the early modern period.

When it comes to the Indian astral sciences, the pluralist and interpenetrated profile of the discipline - aware of its connection to astral sciences outside India; not tied to a single human founder and his 'root' text; and in competition in the later period with a rival tradition expressed in Arabic and Persian - appears to have given rise to a distinctive use of historical writing.

I shall examine an early (6th Century) doxographical work, Varāhamihira's account of five astronomical schools of thought that preceded him, and consider the nature of the historiographical dimension that is present there. I shall then turn to a number of relatively less known works by early modern authors, among them Nityānanda's Sarvasiddhāntarāja, where an historical account is used to justify borrowing principles and techniques from the rival, Persianate astronomers.

**David Rabouin** (SPHERE)

*Wallis as an historian of Algebra*

**Abstract** – In this talk, I will present Wallis’s views on the history of Algebra, as they appear in his treatises of 1657: *Mathesis universalis*, and of 1685: *A Treatise of algebra, both historical and practical*. The original mixture of history and conceptual presentation given by Wallis will be analyzed and I will detail the original conception of Algebra, which arise from this approach. I will also emphasize the contextual elements leading to the project of an “English” Algebra at the end of the XVIIth century.

**Antoni Malet** (Universitat Pompeu Fabra, Barcelone)

*Dechales’s history of mathematics*

**Abstract** – The Jesuit C.F. Milliet Dechales (1621-1678) is the author of one of the most famous and popular early modern mathematical encyclopedias, *Cursus seu mundus mathematicus* (1674, enlarged edition 1690). It opens with a substantial, over a hundred-folio-page long „Proemial Treatise“ (*Tractatus proemialis*) devoted to the „progress of mathematics“. Likely one of the most comprehensive histories of mathematics antedating Montucla’s 18th-century masterpiece, it is organized by subfields and covers the gamut of mixed mathematics—astronomy, geometry, arithmetic, mechanics, optics, music, geography and navigation, and architecture. The many early modern historical narratives about the mathematical sciences, from Regiomontanus’s *Oratio* (1464) onwards, have been aptly characterized stressing their literary form and goals rather than their historical content. Rhetoric, humanistic topoi, and philosophical filiations turned the histories of mathematics into powerful tools for different purposes. They provided legitimation to the mathematical sciences as well as to their teachers and authors, but also contributed to define the role and boundaries of the discipline. Using Dechales’s account we will analyze the role mathematics played in the 17th-century Jesuit educational agenda.

**Florence Hsia** (University of Wisconsin, USA)

*Reconstructing science in sinographic archives*

**Abstract** – This seminar addresses some critical methodological issues in addressing European approaches to Chinese scientific traditions prior to the nineteenth-century institutional emergence of sinology as an academic discipline. A series of early modern case studies focusing on mathematical sciences illustrates how the production of such expert knowledge in this period can be usefully analyzed by reconstructing historically contingent processes of constituting and structuring sinographic (textual, visual, and material) corpora.

## **December 18<sup>th</sup>, 2015 - History of mathematics and the astral sciences in the ancient world in a context of professionalisation. The case of Mesopotamia**

**Presentation** - This session examines some of the first works on the history of mathematics and astral sciences in Mesopotamia, in the context of professionalisation of history of science by the late 19th century and early 20th century. In which intellectual context and in which milieu did the interest for cuneiform mathematical and astronomical sources emerge? How did the different protagonists of the early historiography of cuneiform mathematics and astral sciences approach these sources? Which assumptions did they bring to their study? Which topics did they favor?

**Martina Schneider/Pierre Chaigneau**, *Chaldean/Babylonian mathematics according to Hankel and Cantor*

**John Steele**, *Abraham Sachs and the History of Babylonian science*

**Teije de Jong**, *The rediscovery of Babylonian Astronomy: a historiographic narrative*

**Victor Gysembergh**, *"Greek" science, "Babylonian" science? A vexata quaestio in the historiography of science*

**Martina Schneider** (Mainz Universität) & **Pierre Chaigneau** (SAW Project, SPHERE Université Paris Diderot)

*Chaldean/Babylonian mathematics according to Hankel and Cantor*

**Abstract** - At a time when little was excavated and known in Assyriology, Hankel and Cantor, interested in the history of mathematics, set out to write about mathematics of the "Chaldeans" or "Babylonians". What were their sources? How did they use them? What kind of mathematics were they interested in? How did they represent these cultures, in what terms: linguistic, geographical, racial, and/or ethnical?

**Teije de Jong** (Astronomical Institute Anton Pannekoek, University of Amsterdam)

*The rediscovery of Babylonian Astronomy: a historiographic narrative*

**Abstract** - In this paper I will discuss the rediscovery of Babylonian mathematical astronomy by the Jesuits J.N. Strassmaier (1846-1920) and J. Epping (1835-1894) and the subsequent more extensive studies by their colleague F.X. Kugler S.J. (1862-1929) in the period 1880 - 1930. This early phase of the study of Babylonian astronomy took place at the Jesuit colleges in Blijenbeek, Exaeten and Valkenburg in the Netherlands. During his career Kugler pioneered virtually every aspect of Babylonian astronomy and he contributed to several disciplines in which Babylonian

astronomy played a role. He also became involved in a number of personal and scientific controversies. Well-known is his crusade against Panbabylonism, a school of thought that tried to show that the most important mythologies and world religions originated from an ancient system of astral myths diffused from Babylon. When in the early 1930's Otto Neugebauer (1899-1990) entered the field of Babylonian mathematical astronomy this pioneering phase had come to an end.

**John Steele** (Brown University)

*Abraham Sachs and the History of Babylonian science*

**Abstract** - The meeting between Abraham Sachs and Otto Neugebauer which led to Sachs taking up a position at Brown first as Neugebauer's assistant and then as a fellow professor in the Department for the History of Mathematics marks a crucial turning point in the study of the Babylonian exact sciences. Although Sachs's contributions to the field have often been hidden to outsiders by the shadow of Neugebauer, Sachs made significant contributions to the study of Babylonian mathematics and astronomy in his own right. This paper will explore those contributions and compare the work and approach of the philologist-who-learned-science Sachs with those of the mathematician-who-learned-philology Neugebauer.

**Victor Gysembergh** (Université de Reims)

*"Greek" science, "Babylonian" science? A vexata quaestio in the historiography of science*

**Abstract** - My talk will focus on three instances of the reception of cuneiform texts on Mesopotamian science by scholars of ancient Greece. I will begin with Franz Boll's collaboration (ca. 1900-1922) with assyriologist Carl Bezold on Greek and Mesopotamian astral sciences. I will continue with J.K. Fotheringham's assessment of « The Indebtedness of Greek to Chaldaean Astronomy » (1928). Finally, this will lead me to the exceptional group of scholars which formed around the journal *Quellen und Studien zur Geschichte der Mathematik, Astronomie und Physik* (1929-1938), including students of ancient Greek science and philosophy such as Fotheringham, O. Neugebauer, J. Stenzel, O. Toeplitz and O. Becker.

## January 8<sup>th</sup>, 2016 - Historiography of ancient mathematics and astral sciences in India before its professionalisation

**Presentation** - Here, we wish to explore diverse aspects of how the history of mathematics in the Indian subcontinent was written before its institutionnalisation and professionalisation in the middle of the 20th century. Who were the actors in the 19th and early 20th century who found sources and made them available? How did they edit and translate such sources? How did they have them published? Were they guided by specific ideas of what a mathematical text, or an old Indian text should be? Who read and commented on these newly available sources? How were they commented upon? With what questions or issues were such sources read and interpreted? How were they integrated in wider reflections on the history of mathematics or on mathematics itself? What conceptions of proofs, quantities, algebra, series, geometrical objects etc. were dealt with when confronted with these texts? These are some of the questions that we hope to raise, specify and discuss.

**Ivahn Smadja**, *Crossing Borders: Henry Thomas Colebrooke and his European readers*

**Kevin Lambert**, *Counting on Power: George Peacock, the History of Arithmetic and the Late Georgian British Colonial State*

**Agathe Keller & Catherine Singh**, *Editions and translations of Sanskrit Mathematical and Astral texts in India at the beginning of the twentieth century*

**Ivahn Smadja** (SAW project, Université Paris Diderot)

*Crossing Borders: Henry Thomas Colebrooke and his European readers*

**Abstract** - This contribution will attempt to analyze the reception of the pioneering work by Henry Thomas Colebrooke (1765-1837) on ancient Sanskrit mathematical sources, in nineteenth-century France and Germany. Who read Colebrooke? And how? While pursuing which agendas? Did crossing borders change the way Colebrooke's scholarship was approached? Did it prompt new questions and inquiries? Did crossing boundaries between disciplines or scholarly practices change the prism through which Colebrooke's work was read? By putting the emphasis on the complex dynamics of cultural transfers involved in that multifaceted reception, I will provide an overview of the various actors who played a significant part in this story and the distinctive contexts in which they happened to operate. I will attempt to characterize the main differences - if any - between the French and German receptions of Colebrooke, by analyzing how philology and mathematics interacted in a specific way in Germany, in contrast to what occurred in France. However, as will be shown, questions and concerns nonetheless migrated from the French to the German context.

**Kevin Lambert** (Fullerton college, California, USA)

*Counting on Power: George Peacock, the History of Arithmetic and the Late Georgian British Colonial State*

**Abstract** - In this paper, I will explore Cambridge mathematician George Peacock's history of arithmetic in terms of particular ways of classifying, mapping, and displaying knowledge that also served as justifications for the nineteenth-century British colonial state. As Peacock began his work on his history of arithmetic in the 1820s, Cambridge University was becoming an example of what Bruno Latour has called a center of calculation; a central node in an information network in which various kinds of reports, maps, and objects were collected and translated into a regime of scientific knowledge. East India Company officers such as Henry Thomas Colebrooke provided important resources that Peacock would use to construct a world history of arithmetic that situated counting practices from a variety of times and places around the world into a progressive history culminating in European symbolic algebra. By describing how and why Cambridge became a center for the exchange of knowledge collected from around the world, I will begin investigating the close association between Peacock's imaginings about the history and power of algebra and the imaginings of British colonial state power in India. I will also say something about how Peacock's historically informed philosophy of algebra shaped the theoretical practices of a second generation of British mathematicians such as Augustus De Morgan.

**Agathe Keller & Catherine Singh,** (SAW project, CNRS-Université Paris Diderot)

*Editions and translations of Sanskrit Mathematical and Astral texts in India at the beginning of the twentieth century*

**Abstract** - By the time Datta & Singh published their long lasting manual "History of Hindu Mathematics" in 1937 in Lahore, a certain number of Sanskrit mathematical and astral texts had already been edited, and sometimes translated into English. Who made these publications? Why? What ideas of what an ancient Sanskrit mathematical texts should be shaped such publications? Did this have a lasting effect on how these texts were perceived? We will especially focus on two cases, S. Dvivedin's edition of the Brāhmasphuṭasiddhānta (1902) and Rangacarya's edition and translation of the Gaṇitasārasaṃgraha (1912).

## January 22<sup>nd</sup>, 2016 - Historiography of ancient mathematics and astral sciences in China before its professionalisation

**Presentation** - The official histories composed in China since at least the 1<sup>st</sup> century BCE, and in particular the technical treatises they contained, were a site in which a historical approach to earlier mathematics and astral sciences developed. This earlier type of historical work will be compared with renewed forms that interest in the history of ancient mathematics and astral sciences took in East Asia from the end of the 18<sup>th</sup> century onwards, and before the professionalisation of the history of science. Finally, we will be interested in the relationship between these new developments in East Asia, and the emergence of a historical interest among Europeans towards the ancient mathematics and astral sciences in East Asia. The networks along which information on these topics circulated in Europe will be examined, as well as how information was transformed while it circulated. This session will specifically explore the various forms the interest in ancient mathematics and astral sciences took in these different contexts. We will examine the reshaping of the past in the form of the production of editions of ancient texts so far hardly available, or even lost. We will also be interested in how these ancient documents were interpreted, compared with others, and which import they had for those who worked on them. We will further examine the milieus in which such forms of historical endeavor were cultivated and what was at stake for them in these historical approaches. We will finally be interested in the various types of approaches to ancient mathematics and astral sciences that took shape accordingly.

**Daniel Morgan**, *A Sphere unto Itself: the Death and Medieval Framing of the History of Chinese Cosmology*

**CHEN Zhihui**, *Wylie's translation of the terminologies for the traditional Chinese mathematics*

**Martina Schneider & Karine Chemla**, *The reception of Alexander Wylie's Jottings on the science of the Chinese. Arithmetic in Europe in the 19<sup>th</sup> and early 20<sup>th</sup> centuries*

**MIZUNO Hiromi**, *When Cultural History Meets Mathematics: Wasan and Yoshio Mikami*

**Daniel Morgan** (ERC Project SAW & SPHERE, CNRS-Université Paris Diderot)  
*A Sphere unto Itself: the Death and Medieval Framing of the History of Chinese Cosmology*

**Abstract** - This paper attempts to explain the apparent lack of dialogue between Indian and Chinese cosmologies in Six Dynasties and Tang China. Modern historians like Qian Baocong, Nōda Chūryō, Henri Maspero, Wolfram Eberhard, and Joseph Needham coming all the way to our day tell the same essential story about the history of cosmology in China: that the history of cosmology is the history of instrumentation (two-dimensional diagrams and gnomon planes vs. three-dimensional sphere instruments); that there were three true 'schools', the contest between which was settled by the second century, almost as soon as it had begun; that subsequent centuries were defined by crackpot ideas that threatened the rightful winner; and that Monk Yixing dealt the topic

a final *coup de grâce* in the eighth century. I argue that this narrative derives from the primary sources at our disposal, i.e. Shen Yue and Li Chunfeng's 'heavenly patterns' monographs of the fifth and seventh century, respectively, and Gautama Siddhārtha's *Kaiyuan zhanjing* of 729. Revealing something of the complexities underlying this neat *telos*, I attempt to reveal how and why particular medieval authors were complicit in this narrative. The reasons are very specific to each man's circumstances: Gautama, a Chinese-born Indian working at the Tang Clerk's Office, whose task was to synthesise Chinese tradition; Li, who appropriated his predecessor's work to turn it against him and argue for a different version of history; and Shen, who was following the party-line of one side in a debate that was far from over... all of which leads back to a single misinformed petition in 178 from someone making excuses to be released from his banishment in the northern wastes. One of the curious results of this narrative as it came to be over the second to eighth century is that Indian-origin cosmology that we know to have been present at that time was denied any rightful place in the history of technical knowledge. In the modern era, lastly, I will discuss how this medieval, exclusionist narrative sees continued use in comparative history of science for the ends of drawing an absolute dichotomy between Chinese and Western thought.

**Résumé** – Cette communication tente d'expliquer le manque apparent de dialogue entre cosmologies indiennes et chinoises dans la Chine des Six Dynasties et des Tang. Les historiens modernes tels que Qian Baocong, Nōda Chūryō, Henri Maspero, Wolfram Eberhard et Joseph Needham racontent en effet jusqu'à nos jours la même version de l'histoire de la cosmologie en Chine, à savoir que l'histoire de la cosmologie est d'abord l'histoire de l'instrumentation (le diagramme et le plan de gnomon à deux dimensions contre l'instrument sphérique à trois) ; qu'il y avait trois véritables « écoles », entre lesquelles la compétition fut achevée à peine commencée au deuxième siècle de notre ère ; que les siècles suivants sont marqués par des idées stupides qui menacent le gagnant légitime; et que le moine Yixing donna un coup de grâce final au VIIe siècle. J'affirme que ce récit dérive des sources à notre disposition, c'est-à-dire les monographies sur les « Signes Célestes » rédigées, respectivement, par Shen Yue (Ve siècle) et Li Chunfeng (VIIe siècle), ainsi que la collection *Kaiyuan zhanjing* de 729 de Gautama Siddhārtha. Après avoir mis en évidence certains complexités de cette téléologie, j'essaie de mettre au jour comment et pourquoi certains écrivains médiévaux se sont rendus complices de ce récit. Les raisons sont toutes spécifiques aux circonstances de chacun : Gautama, un Indien né en Chine, qui travaillait au Bureau du Scribe des Tang, tâchait d'offrir une synthèse de la tradition chinoise; Li qui s'est approprié l'œuvre de son prédécesseur pour la retourner contre lui, en soutenant une vision différente de l'histoire; et Shen qui n'adhérait qu'à la ligne d'un parti dans un débat qui était loin d'être terminé... le tout dérivant d'une seule pétition mal informée de 178, rédigée par quelqu'un qui cherchait des excuses pour être relâché de son bannissement dans le nord. Un des résultats curieux de ce récit, pendant sa formation entre le IIe et le VIIe siècles, est l'exclusion de toute cosmologie d'origine indienne de l'histoire des connaissances techniques. Pour ce qui est de

l'ère moderne, enfin, je discute la manière dont ce récit se poursuit dans l'histoire comparative des sciences dans le but de polariser la pensée chinoise et occidentale.

**CHEN Zhihui** (ERC Project SAW)

*Wylie's translation of the terminologies for the traditional Chinese mathematics*

**Abstract** - In his *Jottings on the Science of the Chinese. Arithmetic*, Alexander Wylie outlined a general history of Chinese mathematics in English language. It was inevitable to translate some specialized terminologies when he explained some specific examples. The translation of these terminologies significantly embodies the comparison between the mathematics in China and the one in the West. This presentation focuses on Wylie's translation, trying to find out how the English versions of the terminologies were shaped. It could be seen that the translation of the terminologies was shaped by the co-influence of two factors: the works by the mathematicians such as De Morgan in Britain, and the milieus in China, including the mathematical books and the Chinese scholars' interpretation upon which Wylie relied.

**Martina Schneider** (ERC Project SAW & Mainz Universität) & **Karine Chemla** (ERC Project SAW & SPHERE, CNRS-Université Paris Diderot)

*The reception of Alexander Wylie's Jottings on the science of the Chinese. Arithmetic in Europe in the 19<sup>th</sup> and early 20<sup>th</sup> centuries*

**Abstract** - Protestant missionary Alexander Wylie's *Jottings on the science of the Chinese. Arithmetic*, published in 1852, was a major contribution to a history of mathematics and astral sciences in ancient China, which made brand new knowledge on the topic available for the first time in the West. The text was mainly known in Europe through a German translation that Biernatzki published (1856) in the *Journal für die reine und angewandte Mathematik*, and two French adaptations of the latter, published respectively in 1862 and 1869, by Olry Terquem (in two parts, in *Bulletin de bibliographie, d'histoire et de biographie mathématiques*, and *Nouvelles annales de mathématiques*) and Joseph Bertrand (in *Journal des Savants*). As Ulrich Libbrecht already emphasized in his 1973 book, these translations were adaptations, and contained mistakes, which affected the reception of Wylie's work in Europe, and consequently the image of mathematics in ancient China. This talk aims at studying the transformations brought about by the translations, and interpreting how they changed Wylie's original intention. It also aims to examine the reception of these various publications.

**MIZUNO Hiromi** (University of Minnesota, USA)

*When Cultural History Meets Mathematics: wasan and Yoshio Mikami*

**Abstract** - My paper discusses the Japanese mathematician and historian of *wasan* (Japanese mathematics), Yoshio Mikami (1875-1950). Internationally known by the 1920s as the first person to introduce *wasan* to the English-speaking world and the first Japanese member of the International Society for history of Science, Mikami was nonetheless marginalized in the Japanese academia. What is fascinating about Mikami is his innovative adoption of the newly emerging genre of the cultural history to the historical study of *wasan*. While innovative and even subversive of the established academia, Mikami's approach essentialized the Japanese culture at the sacrifice of class and gender differences and political contexts and eventually facilitated the fascist discourse. My paper explores historiographical issues Mikami's approach raises for us, the issues associated with seeing a non-Western mathematics as part of the "indigenous culture."

## **February 19<sup>th</sup>, 2016 - Historiography of ancient mathematics and astral sciences, with a focus of China, and the Indian subcontinent: The beginnings of professionalisation**

**Presentation** - The history of ancient mathematics and astral sciences, and in particular interest in the mathematical sciences of China and the Indian subcontinent, underwent a movement of professionalisation in China, India, as well as in the West from the 20<sup>th</sup> century onwards. What was at stake in the professionalisation of ancient history in these different contexts, and which transformation did it represent in the historical work carried out on these topics? These are two of the questions that will be addressed in this session. In particular, we will attempt to examine the parts devoted to a historical approach to ancient mathematics and astral sciences in these contexts. The political backgrounds, in which these developments took place, and how these backgrounds left an imprint on the knowledge produced, will also be topics of interest to us. In this respect, in addition to examining the case of professionalisation in China and India, we will also focus on the cases of USSR and the USA.

**Jiří Hudeček**, *Evidential Scholarship and New Humanism: Li Yan and Qian Baocong as Historians of Chinese Mathematics*

**Dhruv Raina**, *The 'Analytics' and the Indologists: How the history of mathematics shaped mathematics education in Nineteenth Century India?*

**Ksenia Tatarchenko**, *Old Truths for Tomorrow: Sketching Professional, Popular and Amateur Histories of Ancient Mathematics in the Soviet Union*

**Alma Steingart**, *Cold War Antiquities: Histories of Mathematics in the Postwar United States*

**Jiří Hudeček** (Charles University, Prague)

*Between Evidential Scholarship and New Humanism: Li Yan and Qian Baocong as Historians of Chinese Mathematics*

**Abstract** - Chinese mathematics became an object of scholarly study in China between 1915 and 1920. The establishment of history of mathematics as a professional academic discipline in USA, Europe and Japan played a crucial role in the acceptance of history of mathematics as a “scientific” pursuit; but there was also a contingent factor of the simultaneous emergence of two strongly determined figures, Li Yan (1892-1963) and Qian Baocong (1892-1974), who took it as their lifetime duty to investigate Chinese mathematical tradition and write its reliable history from a Chinese perspective. This talk will introduce the main intellectual traditions motivating their historiographic writing, including traditional evidential scholarship (*kaozheng*), essentialist visions of national culture from Japan, comparative histories of world mathematics from USA, the May Fourth “doubting of antiquity” (*yi gu*) and George Sarton’s take on the “New Humanism”. I will show the reflection of these ideas in the choice of topics and actual style of writing produced by these two major historians.

**Dhruv Raina** (Jawaharlal Nehru University, Delhi)

*The 'Analytics' and the Indologists: How the history of mathematics shaped mathematics education in Nineteenth Century India?*

**Abstract** - Inspired, in part, by the Scottish mathematician, John Playfair, British Indologists set out in search of the canonical texts of Indian mathematics and logic from the last decades of the eighteenth into the early decades of the nineteenth century. The publications of Indologists such as Davis, Burrow and Colebrooke played an important role in shaping ideas about the nature of Indian mathematics in Britain and provoked criticism in France. The papers of Colebrooke on the history of algebra and mensuration and the history of logic in India were particularly influential within the circle of Indian mathematicians. In this talk I shall try to argue how the reception of these papers within the circle of 'Analytics' subsequently went on to shape the dialogue between British educationists in India and so called traditional scholars; and in fact influenced the choice of books to be translated into the regional languages. I shall in this context like to take up the translation of two books authored by Augustus De Morgan into Marathi and Gujarati.

**Ksenia Tatarchenko** (Université de Genève)

*Old Truths for Tomorrow: Sketching Professional, Popular and Amateur Histories of Ancient Mathematics in the Soviet Union*

**Abstract** - Throughout the existence of the Soviet Union, the Russian language publications on the history of ancient mathematics proliferated, aiming at teachers, students and historians of mathematics as well as generally cultivating a mathematical culture among their audience. But how was the "mathematical culture" and the narratives about the past mathematical knowledge used to build a communist future? In this talk I explore three prominent functions of the professional, popular and amateur histories of ancient mathematics: ideological, pedagogical and disciplinary myth-making. I start with an overview of the Moscow school of the history of mathematics in a larger context, from the rise of the Soviet version of science studies, "naukovedenie," to the generational struggle within the mathematical community, the infamous "Luzin affair." Next, I analyze the pedagogical and political stakes behind a set of texts dedicated to teaching and popularizing the history of ancient mathematics in the post-war period. Finally, I show the interplay between the new discipline of computer science in search of its own origin story and the Soviet claims on the ancient knowledge of medieval Central Asian mathematics, in a volatile region on the eve of the war in Afghanistan.

**Alma Steingart** (Harvard Society of Fellows, USA)

*Cold War Antiquities: Histories of Mathematics in the Postwar United States*

**Abstract** - The twentieth century witnessed a proliferation of historical writings about mathematics for both popular and professional audiences. Morris Kline, Edna Kramer, Dirk Jan Struik, and Carl Boyer sought to provide a grand narrative connecting ancient mathematics to its contemporary manifestations. As I will demonstrate in this talk, two main features characterized these works. First, they were concerned with the applicability of mathematics and the way mathematical ideas were crucial to what they conceived of as the progress of humanity. Second,

they were marked by an interest in the ways in which mathematical ideas and tools were transmitted and transformed across cultures and time periods. As such, they reflected the anxieties that characterized the authors' own experiences – concerns, namely, about the uses of mathematical ideas for political and social purposes, and about the transmission of scientific knowledge across the Iron Curtain. These midcentury historical forays into the world of ancient mathematicians are therefore examples of what some scholars have termed “usable pasts.” They tell more about the status of American mathematics during the Cold War than they do about the past.

## **March 18<sup>th</sup>, 2016 - Historiography of calculation and computation in the ancient world**

**Presentation** - In the 19<sup>th</sup> and 20<sup>th</sup> centuries, some mathematical milieus perceived mathematical activities related to computation as having a status inferior to other types of activities. A similar attitude can be perceived in various historiographies of mathematics and the astral sciences. Two facts seem to attest to this attitude. Documents testifying to a use of various number systems and computations were less studied than other types of documents. "Peoples" who were perceived to have given numbers and calculation pride of place were downplayed for this reason, when compared to "peoples" who had dealt with other types of mathematical topics, or used other methods to approach astral phenomena. This workshop aims to inquire into the history of the historiographies of number systems, number use, and computations, with the following questions in mind: Can a link be established between the two phenomena mentioned above? Which types of historiographies of number use, number systems and computations were written in different social contexts? How were these historiographies written? In other words, what were the sources of these historical inquiries? Did such historiographies rely on other fields of inquiry (such as philology, life sciences, and anthropology) for their values and methods? How were number use, number systems and computations described? What were the values involved in their assessment? How did various historiographies study and understand engagement with number in the ancient world? To which social entities ("social group," or "civilization") were number and computational activities believed to be attached?

**Baptiste Méléès**, *Conceptions of Computation in Historiography of Mesopotamian Mathematics*

**Lisa Indracollo**, *Number, Units, and Conceptual Categories. Conceptions and misconceptions about numbers in China and the West*

**Serafina Cuomo**, *The other Greeks - notation, calculation, and cultural classification?*

**HIROSE Sho**, *Observation versus Computation in Indian Astronomy*

**Baptiste Méléès** (Archives Henri Poincaré)

*Conceptions of Computation in Historiography of Mesopotamian Mathematics*

**Abstract** - During the last century, in which appeared both computability theory and complexity theory, conceptions of computation varied a lot; such variations may have changed, in turn, the way historians of mathematics perceive their very objects. The clearest way to test this hypothesis is to examine variations in the study of one and the same object. I will thus try to show how Mesopotamian mathematics in general, and more particularly a set of clay tables, were described by some major authors

from the 1930s to the 2000s: Thureau-Dangin, Neugebauer, Sachs, Knuth and Høyrup. What are the conceptions of computation which underlie their seemingly neutral and objective descriptions? Although very close in history, those authors were actually contemporaries of deep mutations occurring both in mathematical logic (with computability theory as the study of computation models) and in computer science (with complexity theory as the study of algorithms). Knuth was even one of the major actors of those mutations. In a very short amount of time, computation ceased to be a mere static relation linking a mathematical formula with a timeless result and began to be seen as a dynamic process requiring both time and resources. Hence, computations began to be described as programs rather than mere arithmetical formulae.

This example will show how quickly a shift in the science and technology of a given society was followed by a shift in its very historiography of mathematics.

**Lisa Indraccolo** (University of Zurich)

*Number, Units, and Conceptual Categories. Conceptions and misconceptions about numbers in China and the West*

**Abstract** - In the 19<sup>th</sup> and 20<sup>th</sup> centuries, Western scholars often developed misleading preconceptions about Chinese scientific thought and methods. In particular, achievements in the field of mathematics were dismissed as primitive, and Chinese conceptualizations of numbers were labeled underdeveloped. As the present paper aims to show, these preconceptions failed to acknowledge the actual value and the originality of Chinese proto-scientific and scientific thinking. China has a rich intellectual history in the field of the exact sciences. There is abundant evidence of the existence of a concept of number and of a highly developed, complex computational system already in Shang Dynasty's (16<sup>th</sup>-11<sup>th</sup> century B.C.E.) oracle bone inscriptions. Chinese discourse with numbers and on numbers unravels its complexity through the ages in a canonical set of mathematical texts (the so-called *Suanshu shijing* or *Ten Classics of Mathematics*), but also without such canon, as a few recently acquired manuscript sources prove. Moreover, not only are numbers advanced intellectual instruments to seize upon reality, but the very concepts of 'number' and 'unit' in themselves are at the core of a subtle meta-reflection in Chinese thought. The present paper further analyzes these concepts and their role as knowledge categories in early Chinese philosophy, further problematizing their relationship with and their use in relatable mathematical sources. In this analysis, a selection of pertinent examples drawn from early Chinese philosophical texts will be taken into consideration, focusing especially on the works of Gongsun Long (4<sup>th</sup>-3<sup>rd</sup> century B.C.E.), a pseudo-historical thinker associate with the so-called "School of Names" (*mingjia*).

**Serafina Cuomo** (Birkbeck College, University of London)

*The other Greeks - notation, calculation, and cultural classification?*

**Abstract** – The historiography of mathematics of the 19th and 20th century has often tried to classify the papyrological evidence relative to mathematics (arithmetical tables, geometrical problems, metrological exercises, etc.) in ways that reflected ideas about cultural traditions, 'styles' or contexts of practice. But what are the assumptions behind ascribing a certain text to a 'Greek' tradition, or a 'school' environment? How are continuities created between mathematical papyri of pharaonic, and Roman times? In this paper I will explore the ways in which mathematics on papyrus (in Greek, but I will try to include demotic as well) has been labelled, and pigeon-holed, and why.

**HIROSE Sho** (SAW, SPHERE Université Paris Diderot)

*Observation versus Computation in Indian Astronomy*

**Abstract** – It is often debated whether the tradition of astronomy in India was purely computational or whether it involved observation. The aim of this presentation is to explore the history of such an opposition.

I shall first focus on the contrasting opinions of two historians in the 19th century: Henry Thomas Colebrooke assumed that observation was important for the Indian astronomers as much as it was for the Greeks and Arabs, while Ebenezer Burgess raises an objection to this view. Burgess chooses, from a number of other texts, the "*Sūryasiddhānta*" as a representative Indian astronomical treatise to translate and publish, and remarks that it shows how observation was crude and unimportant in Indian astronomy. While Burgess remarked that his evaluation of observation had yet to be reexamined due to lack of evidence, his ideas were followed by Otto Neugebauer and David Pingree, influencing the modern view on Indian astronomy.

## April 15<sup>th</sup>, 2016 - Historiography of measurement units

**Presentation** – Metrology is not a topic that had been of great interest for historians of mathematics. They often even eliminated this facet in their description of the sources, and they did not give pride of place to documents that exhibited the mathematical work related to metrology. Measurement units appeared to many historians as conveying transparent meanings, which did not require special attention. Yet metrology is a key area in the history of physics. The purpose of this session is to begin thinking about the divorce between historians of mathematics and physics with regard to metrology. How were measurement units considered, or deliberately ignored, by historians of mathematics? To what extent have certain approaches of measurement units had an impact on the understanding of mathematical notions considered as essential, such as numbers, arithmetic, or algebra? How did historians of mathematics differ (and how do they still differ) from historians of physics in the way in which they discuss measurement units and, more broadly, quantities?

**Présentation** – La métrologie n'est pas un sujet qui a beaucoup intéressé les historiens des mathématiques. Ils ont même souvent éliminé cette facette des sources de leur description, de même qu'ils n'ont pas accordé d'importance aux documents qui témoignaient du travail mathématique lié à la métrologie. Pourtant, c'est un domaine essentiel de l'histoire de la physique. Le but de cette journée est d'amorcer une réflexion sur ce divorce. Comment les unités de mesure ont-elles été considérées, ou délibérément ignorées, par les historiens des mathématiques? Dans quelle mesure certaines approches des unités de mesure ont eu des conséquences sur la façon dont ont été construites des notions mathématiques essentielles comme les nombres, l'arithmétique ou l'algèbre, sans que cela n'ait été thématiqué par les historiens du fait de la transparence qu'ont souvent eue les unités pour eux? Comment les historiens des mathématiques se sont-ils démarqués et se démarquent-ils toujours des historiens de la physique dans le regard qu'ils portent sur les unités de mesure et, d'une façon plus large, les quantités?

**Marie-José Durand-Richard**, *The English Algebraists: from the practice of arithmetics to its theory*

**Pierre Chaigneau**, *In the jungle of Mesopotamian metrologies: on Thureau-Dangin's first approach to cuneiform numbers and quantities*

**Nadine de Courtenay**, *Two different roles units can play in the mathematical formulation of physical relations*

**WANG Xiaofei**, *La réforme des poids et mesures et le calcul d'arithmétique lors de la Révolution Française*

**Marie-José Durand-Richard** (SPHERE, Université Paris Diderot)

*The English Algebraists: from the practice of arithmetics to its theory*

**Abstract** - English algebraists of the first half of the 19th century, notably George Peacock (1791-1858) and Augustus de Morgan (1806-1871), conceived of algebra as belonging to the larger mental process of symbolisation of the mathematical language derived from arithmetical practices. This talk will focus on the way each of them considered how the abstract concept of number was elaborated from the concrete practice of numbers within the various human activities in which mathematics is implied. A special attention will be paid to their commitment in attempts to have the decimal system adopted in England.

**Résumé** - Les algébristes anglais de la première moitié du 19ème siècle, en particulier George Peacock (1791-1858) et Augustus de Morgan (1806-1871) inscrivent leur conception de l'algèbre dans un processus plus vaste de symbolisation du langage mathématique à partir des pratiques de l'arithmétique. L'accent sera mis dans cet exposé sur la façon dont ils envisagent l'un et l'autre l'histoire de l'élaboration du concept abstrait de nombre par rapport à la pratique concrète des nombres dans les différentes activités humaines impliquant les mathématiques, en accordant une attention particulière à leur implication dans les tentatives d'adoption du système décimal en Angleterre.

**Pierre Chaigneau** (SAW Project, SPHERE Université Paris Diderot)

*In the jungle of Mesopotamian metrologies: on Thureau-Dangin's first approach to cuneiform numbers and quantities*

**Abstract** - This talk aims at studying a corpus of papers published by François Thureau-Dangin, mostly in the *Revue d'Assyriologie* during the first decades of the 20th century, in which the famous assyriologist undertakes to decipher and clarify the at the time widely unexplored jungle of metrologies of the ancient cuneiform Middle East. It is often stated that this task lead him to the study of cuneiform mathematics, an investigation that culminated with the publication of *Textes mathématiques babyloniens* in the year 1938. How numbers, quantities, and measuring units were treated in these papers? What were the views of our scholar regarding the cultural range of the reconstructed metrological systems? With such questions in mind, we may be able to reveal lines of influence of these researches on Thureau-Dangin's later work on history of mathematics.

**Nadine de Courtenay** (SPHERE Université Paris Diderot)

*Two different roles units can play in the mathematical formulation of physical relations*

**Abstract** - One seldom takes into consideration how much the construction of a shared system of units contributes to shape the way in which we represent physical relationships mathematically. I will first

review the two paths that have been followed in the nineteenth century in order to put physical relations into the form of mathematical equations and point out that they involve quite different conceptions of the role of units. I will go on to examine how these two paths became articulated in the double interpretation of the equations of physics advanced by Maxwell, and now implicitly accepted by physicists. I will finally examine how this double interpretation came to the fore in the context of the discussions raised by the passage from the MKS to the MKSA system of units in the 1950s and why it largely escapes our notice today.

**WANG Xiaofei** (SAW Project, SPHERE Université Paris Diderot)  
*The reform of measurements and weights in the French Revolution and the changes in teaching arithmetic*

**Abstract** - The reform of measurements and weights, set off in France in 1790, in the wake of the French Revolution, perfected the metric system and facilitated enormously calculations. In correlation with this, there was also a major change in the ways of teaching arithmetic, and the relationship between the arithmetic of measured quantities and that of decimal numbers was modified. This is reflected in Condorcet's posthumous publication of the treatise on arithmetic in 1799, and Lagrange's lectures on elementary mathematics at the Ecole normale in 1795. In fact, arithmetic got recognized of its fundamental status, as Lagrange mentioned arithmetic and geometry as two wings of mathematics. At the same time, we see an interest in France in the history of mathematics in ancient Greece, and also in the "arithmetic of the Greeks". On the occasion of the publication in 1807 of the translation of Archimedes' *Opera Omnia* by Peyrard, who had already published the translation of Euclid's *Elements* three years before, Delambre inserted in the book an article titled "*De l'Arithmétique des Grecs*" in the same book. Moreover, Jean Guillaume Garnier, who had been Lagrange's assistant at the Ecole polytechnique, compiled an extract of Delambre's memoir, when the second edition of his *Traité d'arithmétique* appeared in 1808. These facts suggest that the interest in Greek arithmetic and the reform of arithmetic are related. Indeed, in Garnier's *Traité d'arithmétique*, the history of Greek arithmetic is treated side by side with the ancient and the new arithmetic.

This talk would like to examine why Greek arithmetic became a specific topic of interest, and why the interest was not limited to Greek geometry. Moreover, I would like to examine how this topic was dealt with in the context of the change in the way of teaching arithmetic, from arithmetic of measured quantities to arithmetic of decimal numbers. Finally, I will attempt to understand why Garnier's book combines history of mathematics and arithmetic with and without measuring units.

## **May 20<sup>th</sup>, 2016 - Historiography of comparison & Historiography of circulation, with a particular reference to the ancient mathematical sciences**

**Presentation** - Comparison has been an essential operation since the beginning of the historical approaches to ancient mathematical sources coming from everywhere in the world. This holds true for mathematics as well as much more widely. This workshop aims to address the following issues, based on the historiographies of mathematics and other disciplines. What has been compared with what? Were the comparanda of the same nature, or were they totally different? For which entities were the comparanda understood to stand for? How was comparison carried out? Were models for comparing taken from other disciplines (philology, natural history, ...)? Was the aim of the comparison to inquire into a contrast between the comparanda, or was it to inquire into similarities, in order, for instance, to take them as a basis to deal with questions of circulation of knowledge? How wide was the focus of the comparison? Was comparison carried out between two facts, between two types of approaches to similar entities, between two contexts, between two regions of the world? What were the factors taken into account in the comparison?

**Justin Smith**, *The 'Hard Problem' of Comparative Intellectual History: The Case of Europe and India*

**Pascale Rabault**, *Oriental languages and the development of comparative linguistics in the 19<sup>th</sup> century*

**Francesca Rochberg**, *The Ancient Astral Sciences of Babylonia and the Greco-Latin World: Highways and Byways of Comparison*

**Karine Chemla, CHEN Zhihui, Daniel Morgan & ZHOU Xiaohan**

**Célestin**, *19<sup>th</sup> century uses of comparison in the historiography of mathematics and astral sciences in China*

**Justin Smith** (SPHERE, Université Paris Diderot)

*The 'Hard Problem' of Comparative Intellectual History: The Case of Europe and India*

**Abstract** - In this presentation I would like to outline some broad methodological and historiographical considerations that may help to make clear what it is we are undertaking when we undertake to study 'Indian philosophy'. The 'we' here is meant to refer, principally, to scholars and readers who started their intellectual careers with a different default conception of philosophy, for whom 'European' or 'Western' philosophy remains, to speak with the structuralists, the unmarked category. The purpose is not to undertake a study of comparative philosophy, in which the questions and arguments of one tradition are measured against those of another. There is significant scholarly controversy as to the best methods, and even as to the worthwhileness, of such comparative study. Comparison, at a minimum, requires a theoretically neutral standpoint that precludes the possibility

of interpreting one of the doctrines or traditions under comparison in terms of the other. According to G. E. R. Lloyd, there are in fact two core principles that must be adopted for any meaningful comparison: one must avoid generalization, and one must also avoid a 'piecemeal' approach, placing individual theories alongside one another "as competing answers to the same (probably modern) question about the 'nature of reality'." But if we do not presume to know at the outset what the questions are to which ideas and arguments are intended as answers, then our research will necessarily be focused on finding these questions, a task which depends largely on discovering "the characteristic interests which informed [the] activities in specific social settings" of the historical figures we are studying. Thus, I would like to investigate what might be called 'the hard problem' of comparative intellectual history: how to set about the project at all, in the absence of pre-given questions selected from the one tradition or the other.

**Pascale Rabault-Feuerhahn** (UMR Pays germaniques/Transferts culturels CNRS-ENS, Paris)

*Oriental languages and the development of comparative linguistics in the 19<sup>th</sup> century*

**Abstract** – In the historiography of linguistics, the German linguist Franz Bopp (1791-1867) is generally considered as a key figure in the rise of the scientific comparative approach to languages. Basing on this assumption, there is a tendency to make a strong distinction between 18th and 19th century linguistics, but also between the French and the German linguistic traditions. Comparative grammar is described as a conscious alternative to the previously existing French tradition of « grammaire générale ». Given that Franz Bopp demonstrated the existence of the Indo-European family of languages on the basis of his knowledge of Sanskrit, the birth and development of Sanskrit studies in Europe is justly considered as a major cause for this paradigmatic shift. Yet one must not forget that Franz Bopp learnt Sanskrit in Paris, where he was also a student of Antoine Isaac Silvestre de Sacy in Persian. Silvestre de Sacy was both a Persian and Arabic scholar and a prominent representative of “grammaire générale”. He was also instrumental in founding the chair of Chinese and the chair of Sanskrit at the Collège de France in 1814. Against this background, this paper aims to examine some aspects of the role of Oriental linguistics in the development of the comparative method in 19th century Europe. If it meant a shift from the universalizing perspective of “grammaire générale” to the more particularistic approach of comparative linguistics, how do we have to understand the claim of most contemporary Oriental scholars that the various branches of Oriental scholarship aimed at making the picture of humanity complete?

**Francesca Rochberg** (University of California, Berkeley, USA)

*The Ancient Astral Sciences of Babylonia and the Greco-Latin World: Highways and Byways of Comparison*

**Abstract** - The discoveries of cuneiform Babylonian astronomy and astrology on one hand and Hellenistic Greek scientific texts dealing in astrology and alchemy on the other both had an impact on the historiography of science, necessitating a thorough re-evaluation of the nature of ancient Near Eastern and Mediterranean science. First, Babylonian mathematical astronomy challenged probably the most entrenched idea about the history of science for much of the Twentieth Century, namely, the idea that science originated with the Greeks. Second, in light of Greek astrology the post-positivist turn in the history and philosophy of science abandoned the idea that 'magic' and 'science' were mutually exclusive universal ahistorical categories and that Greek science could no longer be seen in wholesale contrast to Babylonian as exemplifying rationality and progress. This lecture addresses the comparative rationality of the ancient Near Eastern versus Greek and Greco-Latin traditions of astronomical science in terms of the historiography of comparison and its pitfalls.

**Karine Chemla, CHEN Zhihui, Daniel Morgan & ZHOU Xiaohan**

(ERC Project SAW & SPHERE, UMR 7219, CNRS & Université Paris Diderot)

*19<sup>th</sup> century uses of comparison in the historiography of mathematics and astral sciences in China*

**Abstract** - At the end of the 18th century and during the 19<sup>th</sup> century, various milieus in Europe and in China developed an interest in the history of ancient mathematics and astral sciences in ancient China. How was comparison between different bodies of mathematical knowledge, or different mathematical practices, instrumental in the approach to this field of inquiry? This is the main question this talk will address. We will examine in particular how comparison between different areas of the planet in this respect ("horizontal comparison") affected the aims practitioners of history set for their historical inquiry, and how it affected their methods. We will also be interested in their practice of comparison, and the different meanings they attached to comparisons. Finally, we will also analyze how "vertical comparisons" (comparisons between different moments in the history of China) were carried out, and how horizontal and vertical comparisons interacted with each other, both in the context of mathematical activity at the time, and in the context of historical inquiry.

## June 17<sup>th</sup>, 2016 - Historiography of science, ideologies and identities (culture, civilisation, communities)

**Presentation** - This day will be devoted to exploring how the history of ancient mathematics and science at large has been written and used in the past and still is written and used today by groups of people to construct and publicize their ideologies or their identities. What implicit image of mathematics/science are put into play in such cases? What kind of histories are written, reclaimed or quoted? How do those promoting and using these histories position themselves in relation to academic histories? Are they reclaimed by specific political parties? What conceptions of culture and civilization do they use?

**Agathe Keller**, *Vedic Mathematics and its historiography of «hindu» mathematics*

**Irfan Habib**, *Legitimizing the present through mis-readings of the past: New historiographies of science in South Asia*

**LEI Hsiang-lin**, *How Did Chinese Medicine Become Chinese? Re-thinking the conception of culture in understanding Chinese medicine*

**WU Yan**, *The Issue of Calendar Era in the Context of the Formation of National Awareness in Modern China*

**Agathe Keller** (ERC Project SAW & SPHERE, CNRS-Université Paris Diderot)  
*Vedic Mathematics and its historiography of «hindu» mathematics*

**Abstract** - « Vedic Mathematics » can be the name of many things. It is the title of a book published posthumously in 1962 by a religious figure, the Śaṅkarācārya of the Puri Maṭh. Here, we will look at the posterity of the book, its enduring commercial and political success since the 1990's, especially analyzing the different meanings these two words came to mean, and the images of India's mathematical past they carried.

**Irfan Habib** (University of Delhi, India)

*Legitimizing the present through mis-readings of the past: New historiographies of science in South Asia*

**Abstract** - One common factor rampant in South Asia, since the past few decades, is the over dependence of our political elite on the past. It happens in history and culture, most often, surprisingly it is fashionable in the readings of the history of science as well. There are some valid reasons to question orientalist/colonial reconstructions and interpretations, but imagining science and scientific theories which did not exist, stretches this engagement to ridiculous proportions. It had been quite common among some Islamic scholars to perceive something they call "Islamic science", with state support and legitimacy. However, we see a patently revivalist streak being promoted in India, patronised by the state, which emphasizes the need to rewrite history and particularly

history of science. It is committed to unravel a new "nationalist" historiography of science which has been ignored by most of the liberal, Marxist and other schools of history writing all these years. I shall attempt to engage with both these trajectories and argue for a non-communitarian historiography of science.

**LEI Hsiang-lin** (Academia Sinica, Taiwan)

*How Did Chinese Medicine Become Chinese? Re-thinking the conception of culture in understanding Chinese medicine*

**Abstract** - This paper begins with a counter-intuitive phenomenon: in 1929, when the practitioners of Chinese medicine started their long-lasting endeavor to create a systematic national entity of Chinese medicine, they at the same time voted to reject calling themselves Chinese medicine (*zhongyi*). This historic decision runs against the conventional wisdom that these advocates adopted the strategy of associating Chinese medicine with "Chinese culture" and conversely got used by the governments as a tool for creating a "Chinese identity." Departing from this historic juncture, this paper is devoted to understanding how they envisioned a new "Chinese medicine" in the 1930s and through which processes, and for what purposes, it was later renamed as Chinese medicine in the Communist period? In addition, this paper draws on and recasts the history narrated in my recent book into a historiographical reflection on why the emergence of a new Chinese medicine that was self-consciously "neither donkey nor horse" (roughly "neither Western nor Chinese" but much more) is so invisible in both the historical and the public understanding of Chinese medicine. For what political functions, moreover, this new medicine has been submerged under the image of Traditional Chinese Medicine (TCM). Conversely, once we see it as such, how this new understanding might help us to re-think a series of important questions with which Chinese medicine has been associated since early twentieth century: the notion of China's modernity, the Chineseness of Chinese medicine, the exclusion of Chinese medicine from the mainstream historiography of modern medicine, and the related recent debate around the question if Tu Youyou's award of the Nobel Prize counts as a vindication of Chinese medicine.

**WU Yan**, (Institute for History of Science and Technology, Inner Mongolia Normal University, China)

*The Issue of Calendar Era in the Context of the Formation of National Awareness in Modern China*

**Abstract** - In Chinese traditional culture, calendar is the symbol of power. When a former dynasty was replaced by a new one, one of the first acts posed by the new sovereign was to "change the first month of the year (gaizhengshuo , 改正朔)." It suggests that the issue itself should be examined in a social and political larger context.

This paper focuses on the period ranging from the second half of the 19th century to the first half of the 20th century, when dramatic social and cultural changes took place in China. With respect to its international situation, China was in a very difficult position. On the other hand, with the sciences and other cultural artifacts from the West being introduced into China, Chinese intellectuals increasingly became acquainted with Western culture and proposed various political reforms, which aimed both to reform Chinese society and save the nation that was perceived to be in a dangerous position vis-a-vis western civilization. At the time the national awareness in China gradually took shape.

In this context, some new methods of era was proposed and advocated. Before then, Chinese traditional calendar always adopted Emperor Era, these new methods of era not only aimed to replace the Emperor Era, but also contained modern concept of nationhood. Among these new methods of era, the most typical ones including Confucian Era (孔子紀年), Yellow Emperor Era (黃帝紀年) and Republican Era (中華民國紀年). The "Confucian Era" was advocated by KANG Youwei, a famous political reformer in the modern history of China. Kang venerated Confucius as a "descendant of divinity" and a "hierarchy of civilization". The proposition of the "Confucian Era" meant the year when Confucius died as the first year of era. Soon afterward, however, the first year of era was modified to the year when Confucius was born. In any event, the choice of a "Confucian calendar era" was very different from the former era system. Instead of the social order that "dynasty" represented, this era system regarded the entire set of etiquettes that Confucius and Confucianism represented as a marker of cultural identity for the Chinese people.

The "Yellow Emperor Era" was advocated by LIU Shiwei. Liu advocated this idea late in the Qing dynasty. Under the pressure of domestic troubles and foreign invasions, nationalism had become widely attractive. To some extent, "Yellow Emperor era" represented an alternative when faced with double pressures mentioned above. When advocating his idea, Liu emphasized the nationalism characteristic of the Yellow Emperor as a national symbol, claiming that "the Yellow Emperor is the Yellow Emperor of the whole Han nationality, so it will carry forward the ethnical feelings of Han nationals if we use the Yellow Emperor as an era symbol." He thus directly asserted that the meaning of "saving ancestral lineage" should be embodied in the era symbol and that it should be distinguished from the aim of "saving Confucianism as a denomination", which was the point with the Confucian era. The Chinese Chronicle compiled by Liu accordingly excluded all other nationalities different from the Han nationality. After the Military Uprising at Wuchang in 1911, it was one of the tasks carried out by the revolution, that the revolutionary party immediately got rid of the calendar promulgated by Qing Dynasty, and adopted the "Yellow Emperor Era", thereby developing the concept of nation embodied in the Yellow Emperor Era.

Both Confucian Era and Yellow Emperor Era reflected the modern concept of nationhood, but there were still some differences between them. As Shen Songqiao has written that the controversy around Yellow Emperor Era and Confucian Era was direct confrontation between two sets of National symbol, namely, cultural nationalism and racial nationalism. (Shen Songqiao, 1997). In fact, this opinion summarized the main difference between these two Eras.

Both Confucian Era and Yellow Emperor Era followed the Chinese traditional calendar. Since 1912 when Republic of China was founded, Gregorian Calendar was adopted as the official calendar, with Republican Era instead of Gregorian Era.

The calendar system consisting of the Republican calendar era and Gregorian calendar constructed the concept of nationhood along these two lines: on one hand, neither a former Emperor era nor the Yellow Emperor Era, which only embodied a certain ethnic group, were adopted; instead, the Republic of China was used as era symbol, emphasizing the national-state as a multinational state and the end of imperialism. On the other hand, replacing Chinese traditional calendar with Gregorian calendar that came from foreign culture, suggested getting rid of the calendar promulgated by former Dynasties. It also expressed a desire to westernize.

However, a calendar being in close related to everyday life and customs, a new calendar could not be fully used shortly after being promoted. Therefore, for a very long time there existed a “dualistic society”, the Gregorian calendar being adopted by officials and the elite whereas the traditional calendar was still used by lower classes (ZUO Yuhe, 2002). In 1927, the National Government was established in Nanjing; in the following year, the government initiated a movement named “abolishing the traditional calendar and promoting the national calendar,” in which the calendric system consisting of the Republican calendar era and a Gregorian calendar was established as “National Calendar”. In terms of national awareness, this act aimed to impose the National calendar which represented a new unified nation, leading the masses to accept Republic of China. As a foreign culture, Gregorian calendar also took part in this process of constructing national awareness after being transferred as a symbol of national identification.

Three eras mentioned above appeared in the context that the national awareness was forming in modern China. They reflected different cognitions about the other nations and different concept of nationhood, respectively. Although these era symbols largely were circulated as some kind of political opinions, their emergences led to a new concept of time and history.

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